

PERFORMER CUB
mobile carpet cleaner
and
BRIDGEPOINT
SYSTEM IV

OPERATION &
SERVICE
MANUAL

PROCHEM

PROFESSIONAL CHEMICALS CORP
325 S PRICE RD, CHANDLER, AZ

Welcome—and congratulations on your purchase of the *PERFORMER CUB Cleaning Unit*. This instruction manual has been designed as a guide for operating and servicing the *PROCHEM CUB Cleaning Unit*.

The *PERFORMER CUB*, in addition to being a superior entry level carpet cleaner, also can be used for upholstery cleaning and light high pressure washing applications.

In addition to these features and benefits, this unit offers you personal convenience. All of your instrumentation and controls have been positioned for easy access to the operator and easy maintenance.

Proper operation and service are essential to the efficient functioning of the unit. When maintained correctly the unit will have a long, trouble free life.

The headings: **CAUTION**, **WARNING** or **NOTE** are used to warn you of steps which must be taken to prevent **DAMAGE** to the unit and/or personal injury. Make certain that you read these instructions entirely before proceeding with the operation of this unit.

The service methods described in this manual are explained in such a manner that servicing may be performed accurately and safely. Proper service varies with the choice of procedure, the skill of the mechanic, and the tools and parts available. Any questions pertaining to operating or servicing this unit should be directed to your nearest *PROCHEM* dealer.

This operation and service manual is written specifically for the *PROCHEM "PERFORMER" CUB CLEANING UNIT* which is manufactured by:

PROFESSIONAL CHEMICALS CORPORATION
325 SOUTH PRICE ROAD
CHANDLER, ARIZONA 85224.

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Published by Professional Chemicals Corporation

Second Printing: November 1990
Printed in U.S.A.

TABLE OF CONTENTS

Component Repair	26
General Service Adjustments	22
Maintenance	23–25
Operation	15–21
Parts Listing	34–46
Receiving and Installing	1–8
Specifications	III
Systems	9–14
Troubleshooting	27–32
Warranty	II
Wiring Diagram	33

INDEX

Acceptance of shipment	1	Lifting the unit	3
Auto waste pump malfunctions	32	Loss of water pump pressure	27-28
Battery maintenance	24	Loss of water pump volume	28
Battery preparation	8	Loss of vacuum	29
Bolting down the unit	5	Loss of chemical	29-30
Chemical flowmeter malfunctions	32	Low water temperature	31
Chemical pumping system	11	Maintenance	23-25
Chemical requirements	2	Oil requirements	2
Cleaning	18-19	Operation	16-21
Cleaning solution heat	19	Positioning the unit in vehicle	3
Component repair	26	Pressure regulator	25
Daily maintenance	19-20	Priming the chemical pump	17-18
Dealer responsibility	1	Priming the water pump	17
Drive belt maintenance	24	Receiving and Installing	1-8
Engine maintenance	23	Specifications	III
Engine stops running	31	Starting the unit	17
Engine will not start	30	Stopping the unit	19-20
Fire extinguisher	8	Systems	9-13
Flood restoration	19	Troubleshooting	27
Freezing protection	20-21	Vacuum pump maintenance	24
Fuel requirements	2	Vacuum system	12
General service adjustments	22	Vacuum tank filter maintenance	24
Heat exchanger maintenance	25	Warranty	II
Heat transfer system	13	Waste pump	18
Hose connections	17	Water pump maintenance	24
Installation	2-8	Water pumping system	9-10
Installing the gas line	5-7	Water requirements	2
Installing trailer gas tank and line	7	Water supply connection	16
Installing waste tank in vehicle	7		
Installing waste tank drain valve	8		

INDEX TO ILLUSTRATIONS

1/2" check valve (exploded view)	43
Chemical check valve (exploded view)	42
Chemical parts listing	38
Chemical pump (exploded view)	42
Chemical pumping system (figure 4)	11
Dimensional data (figure 1)	4
Dual jet wand parts listing	45
Engine parts listing	39
Front view parts listing	40
Heat transfer system (figure 6)	13
Mounting plate installation (figure 2)	4
Pulsation damper (exploded view)	42
Single jet wand parts listing	44
Vacuum system (figure 5)	12
Vacuum system parts listing	36-37
Waste pump (exploded view)	43
Water pump listing (exploded view)	41
Water pumping parts listing	34-35
Water pumping system (figure 3)	10
Wiring diagram	33
Y-strainer (exploded view)	42
Hose accessories parts listing	46

LIMITED WARRANTY

PROCHEM warrants your machine to be free of defects in material and workmanship. This warranty shall extend to the designated parts for the specific time period listed from the date of delivery to the user. If PROCHEM receives notice of such defects during the warranty period, PROCHEM will either, at its option, repair or replace products which prove to be defective.

Gasoline Engine (<i>thru manufacturer or local dealer</i>)	2 years
Vacuum Pump (<i>thru manufacturer or local dealer</i>)	2 years
Engine Heat Exchanger	1 year
Water Pump	2 years
Waste Pump	1 year
Wands (Except shut off valve and orifices)	1 year
Waste & Water Tanks	1 year
Pressure Regulator	1 year
All other components	6 months
Battery (<i>thru Interstate dealer only</i>) pro-rated	12 months

Disposable filters, electrical components, belts, fittings, hoses, o-rings, and other maintenance items are not under warranty.

This warranty shall not apply to defects resulting from improper installation or operation; inadequate maintenance by the customer; unauthorized modification; or misuse; or a unit which is improperly repaired.

To obtain warranty service, products must be returned to a service facility designated by PROCHEM. Customer shall prepay shipping charges for products returned to PROCHEM for warranty service and PROCHEM shall pay for return of the products to customer.

PROCHEM makes no other warranty, either expressed or implied, with respect to this product. PROCHEM disclaims the implied warranties of merchantability and fitness for a particular purpose. Any implied warranty of merchantability or fitness is limited to the specific duration of this limited warranty.

This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state, or province to province.

The remedies provided herein are the customer's sole and exclusive remedies. In no event shall PROCHEM be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

Your PROCHEM unit is designed to give you years of reliable service. However, if a problem should arise after the warranty period, follow the troubleshooting procedures in the Operation and Service Manual. If you are still unable to determine the cause and solution to the problem, contact your nearest PROCHEM Service Center for details of the services available.

SPECIFICATIONS

VAC PUMP	160 CFM @ 8"Hg 140 CFM @ 14"Hg
WATER PUMP RPM	1550 RPM
WATER FLOW RATE	2.2 GPM (max)
ENGINE SPEED (with 150 ft vac hose and water pump on)	3000 RPM
WATER PUMP PRESSURE	1000 PSI
WASTE TANK CAPACITY	52 Gallons
WASTE TANK/ENGINE SHUT-OFF ACTIVATION POINT	appx. 44 gal
CONSOLE WEIGHT	appx. 442 lbs
CONSOLE W/WASTE TANK WEIGHT	appx. 480 lbs

PERFORMER CUB OPERATION AND SERVICE MANUAL

1 RECEIVING AND INSTALLING

This chapter of the operators manual contains information on receiving, preparing and installing the *Performer Cub*.

GENERAL: This operation and service manual is written specifically for the *PROCHEM PERFORMER CUB CARPET CLEANER*, manufactured by *PROFESSIONAL CHEMICALS CORPORATION*.

DEALER RESPONSIBILITY: The *PROCHEM* dealer from whom you purchased this mobile cleaning unit is responsible for supervising the correct installation of the machine and for initial training of your operators and maintenance personnel in the proper operation and maintenance of this unit. Make certain that you receive these instructions.

ACCEPTANCE OF SHIPMENT: Every part of your *PERFORMER CUB* Carpet Cleaning unit was carefully checked, tested, and inspected, before it left our manufacturing plant. Upon receiving the unit, make the following acceptance check:

1. The unit should not show any outward signs of damage. If any damage is found, notify the **CARRIER IMMEDIATELY**.
2. Check your equipment and packing list. The standard *PERFORMER CUB* unit should arrive equipped with the following items (unless otherwise specified) as well as any extra accessories which were ordered:
 - A) Performer Cub console.
 - B) Waste tank.
 - C) Waste tank filter.
 - D) Carpet Wand.
 - E) 100 ft., of 1/4 I.D. pressure hose.
 - F) 100 ft., of 2" vacuum hose.
 - G) Vacuum hose connector.
 - H) 50 ft water hose
 - I) Convenience outlet hose.
 - J) Installation bolt kit
 - K) Waste tank drain valve.
 - L) Waste tank drain hose.
 - M) Gas line tee w/hoses
 - N) Clamps for drain and gas hoses.
 - O) Waste tank dump valve
 - P) Operation & Service Manuals
 - a. Performer Cub
 - b. Gas Engine
 - c. Water Pump
 - d. Vacuum Pump

FUEL REQUIREMENTS: We recommend the use of clean, fresh, unleaded gasoline intended for automotive use. **DO NOT MIX OIL WITH GASOLINE.** Leaded gasoline may be used if lead-free is not available. 77 Octane minimum is recommended. Using an unleaded gasoline will result in fewer combustion deposits and longer valve life.

NOTE; The use of gasoline which contains alcohol, such as gasohol, is NOT recommended. If, however, gasoline with alcohol is used, it **MUST NOT** contain more than 10 percent ethanol and **MUST** be removed from the engine during storage. **DO NOT** use gasoline containing Methanol.

For additional information see "*Storage Instructions*" in the *Briggs and Stratton Operation and Maintenance Manual* which has been provided.

OIL REQUIREMENTS: We recommend using Briggs and Stratton 10W/30 high quality detergent oil (B & S #272001) or 30 weight (B & S #100005). If these are not available, use a high quality detergent oil classified "for service SF, SE, SD or SC". No Special additives should be used with recommended oils. For additional information see page 2 of the *Briggs and Stratton Operation and Maintenance Manual* which has been provided.

WATER REQUIREMENTS: If you are operating this unit in an area where the unit will be using water in which the hardness exceeds five (5) grains (85 parts per million), a suitable water softener should be installed. The *PROCHEM PERFORMER CUB* at full pump output, requires 130 gallons per hour at 20 to 90 PSI. A water supply hose capable of delivering this volume at the above pressure is required.

CHEMICAL REQUIREMENTS: The *PROCHEM PERFORMER CUB*, due to its chemical injection pump design, can be used with a variety of chemical compounds, (either acid or alkaline), depending on the job to be done. However, to obtain optimal results with this unit, we recommend using the *PROCHEM* line of chemicals. For information on the Chemicals *PROCHEM* can provide for your cleaning operation, consult your *PROCHEM* manual or contact your nearest *PROCHEM* dealer.

INSTALLATION: Prior to starting the installation, **FIRST** read the **ENTIRE** "Installation Section" of this manual. The following recommendations should be considered **BEFORE** installing this unit.

- A. The unit should not be mounted in any motor vehicle of less than 1/2 ton capacity.

- B. If mounting in a trailer, make certain that the trailer is rated for the total weight of the unit AND trailer. Electric or hydraulic brakes should be provided, and a strict compliance of any State or Federal vehicle laws **MUST** be maintained.
- C. The vehicle tires should have a load rating above the combined vehicle and unit weight.
- D. If a wooden floor between the vehicle's floor and the unit is desired, we recommend using 1/2" thick MARINE plywood.
- E. If using a trailer, the *PERFORMER CUB* console should be positioned in order that it balances properly with respect to the axle.

WARNING:

DO NOT INSTALL THE *PERFORMER CUB* IN ANY MOTOR VEHICLE WHICH REQUIRES HIGH OCTANE GASOLINE. The *CUB* engine is designed to use regular gasoline (regular or unleaded). HIGH OCTANE GASOLINE WILL DAMAGE THE ENGINE.

1. **LIFTING THE UNIT ON THE VEHICLE:**

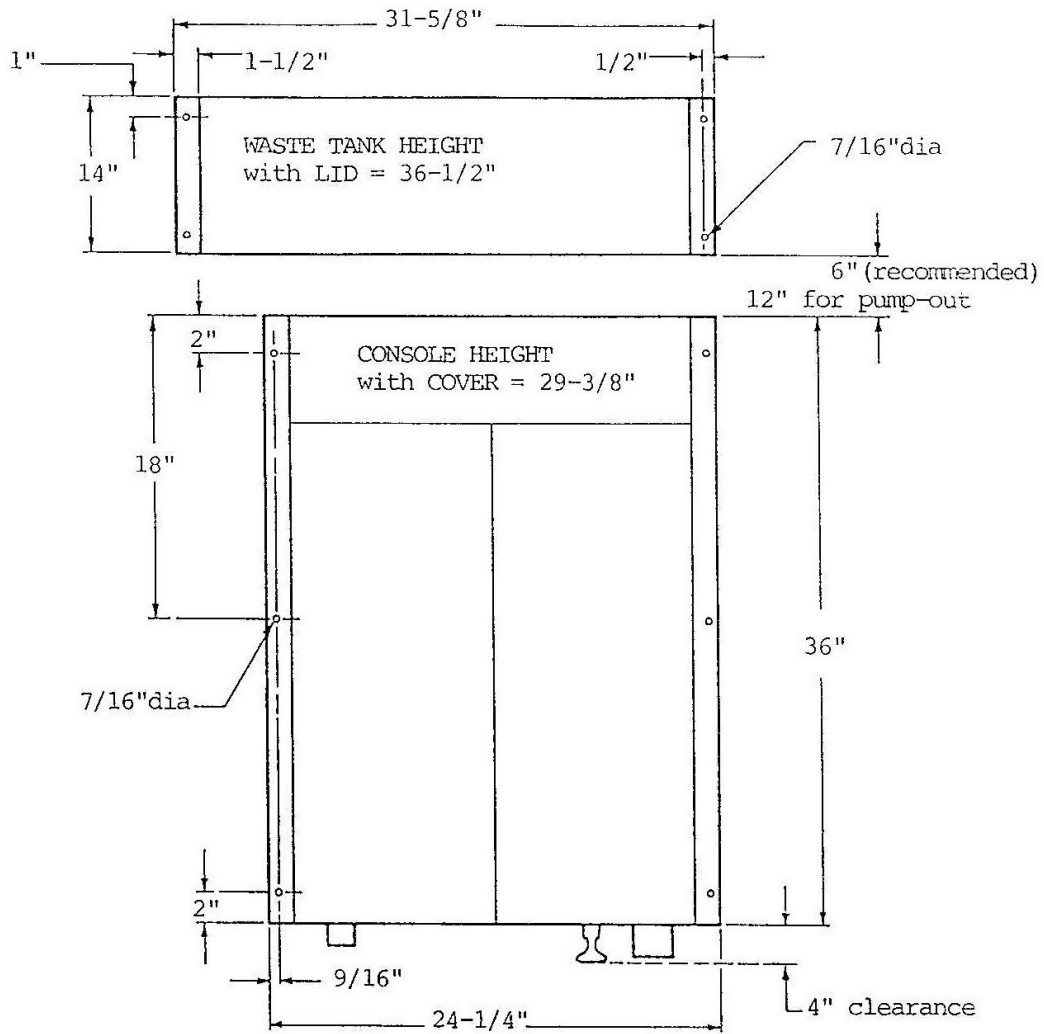
We recommend using a fork lift to lift the unit onto the vehicle. Position the forks under the unit from the front, making **CERTAIN** that the forks are spread to the width of the base.

2. **POSITIONING THE UNIT IN VEHICLE:**

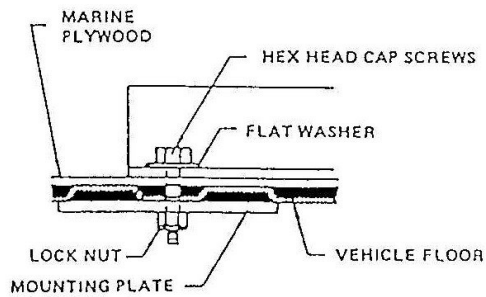
Because vehicles vary in size and openings, individuals have their own preferences as to where they want their units installed. We do not recommend any specific location for the *PERFORMER CUB CARPET CLEANER*. However, we do **STRONGLY** advise that enough space is provided to assure ample room for service and maintenance. In addition, the unit should be positioned in such a manner that mounting does not interfere with or endanger any vital components on the vehicle.

NOTE: For individuals who wish to make an engineering layout prior to positioning the unit, refer to page 4, figure 1, for console and waste tank dimensions.

DIMENSIONAL DATA (figure 1)



MOUNTING PLATE INSTALLATION (figure 2)



3. BOLTING DOWN THE UNIT AND WASTE TANK:

Once the unit and waste tank are positioned in the vehicle in the desired location, you may proceed. **NOTE:** When positioning the waste tank with respect to the console, hook up the vacuum hose and any other hoses which may connect the console and waste tank, This will ensure that the waste tank is positioned correctly.

CAUTION: Before drilling any mounting holes in the vehicle floor, make certain that when drilling, you will not do any damage to the gas tank, gas lines, or any vital component which might effect the operation or safety of the vehicle.

- A. Using the console and waste tank mounting holes as a template, drill four 7/16" diameter holes for mounting the console and four more 7/16" diameter holes for mounting the waste tank.
- B. Using the installation hardware kit:
 - a) Insert four 3/8" hex head cap screws through the mounting holes in the *PERFORMER CUB* console, and four more 3/8" hex head cap screws through the mounting holes in the waste tank.
 - b) Install the mounting plates underneath the vehicle floor. (Refer to page 4, figure 2,).
 - c) Screw the 3/8" hex head lock nuts on the mounting screws and tighten them until the console and the waste tank are firmly secured.

4. INSTALLING GAS LINE TO THE UNIT, (MOTOR VEHICLE):

CAUTION: On the motor vehicle, the gas tank must be **DRAINED** before proceeding. This will prevent the spilling of an excessive amount of gasoline when cutting the vehicle gas line.

- A. Select a location on the vehicle floor to drill a hole for the gas line from the vehicle tank to the unit.

NOTE: This location should be situated in a position that eliminates the possibility of gas line contact by either the operator(s) or accessories during the working hours or maintenance periods. We supply steel braid fuel hose. Make certain that the hose will reach the location you choose.

CAUTION: BEFORE DRILLING the gas line hole in the vehicle floor, make certain when drilling you will not do any damage to the gas tank(s), gas lines, brake lines, or any other vital component which might effect the operation or safety of the vehicle.

- B. Drill a 5/8" (.625) diameter hole through the vehicle floor.
- C. Install the 1/8" bulkhead adaptor by inserting the adaptor and tightening the nut from the opposite side of the van floor.
- D. Connect one of the fittings to the bulkhead connector. Choose the fitting which routes the fuel line hose in a suitable manner.

CAUTION: Before cutting the vehicle gas line, take precautions to catch or contain the gas in the lines after cutting, WITHOUT causing DAMAGE to the gas lines.

NOTE: The location for cutting the gas lines varies, depending on the manufacturer and year of the vehicle this unit is being installed in. This manual contains instructions for cutting the fuel lines on the FORD and CHEVROLET fuel-injected vehicles. If you have another type of vehicle or are in need of further instructions, contact the *PROCHEM* distributor from whom you purchased this unit.

- E. Connect the stainless steel fuel hose from the fuel solenoid near the front of the console to the bulkhead connector fitting.
- F. Locate the appropriate gas line in the correct location in the FORD vehicle, cut the main line just behind the gas reservoir. If the FORD vehicle has dual tanks, locate the cut in the front of the forward tank behind the fuel reservoir. In the CHEVROLET vehicle, there are 3 gas lines. (small, medium, and large). The bypass gas line is the medium-sized line. Cut the bypass line toward the rear near where the lines curve across the center of the vehicle.

Proceed as follows:

- a) Cut the vehicle gas line.

- b) Install proper gas line "tee" with the appropriate fittings where gas line was cut. The FORD vehicle will use the small barb fittings which have been provided. The CHEVROLET vehicle will use the compression tube fitting "tee" which has been provided.
- c) If small barb fittings are used, tighten the hose clamps on the vehicle gas line.

CAUTION: When routing the gas line from the line "tee" to the bulkhead connector, take precautions to prevent contact with any vehicle moving parts.

- d) Using the appropriate combination of fitting(s) and fuel hose, connect the gas line "tee" to the bulkhead connector.

5. **INSTALLING THE GAS TANK AND GAS LINE (TRAILER):**

For TRAILER installations we recommend the following.

- A. Strict compliance of any Federal or State law must be maintained.
- B. Provide a SAFE gas tank which is manufactured specifically for gasoline, has a proper filling cap, and an outlet connection that is the same size as the inlet connection on the unit.
- C. DO NOT MOUNT THE GAS TANK INSIDE THE TRAILER WITH THE UNIT.
- D. Mount the gas tank where it will be protected from any vehicle collision.
- E. When installing the gas line from the tank to the unit, use the proper size gas line.

6. **INSTALLING WASTE TANK TO THE UNIT:**

Maintain the proper distance between the console and the waste tank when positioning the components in the vehicle. Do not reverse the hoses when reattaching them to the waste tank.

7. **INSTALLING WASTE TANK DRAIN VALVE:**

The drain valve may be installed directly on the waste tank with a flexible hose. If you prefer, it may be installed on the end of a lower flexible hose, in which case a 2" I.D. flexible heavy duty hose is required.

8. **BATTERY PREPARATION:** For units which have been shipped with a "dry" battery.

To make battery ready for use, proceed as follows:

- A. Remove the battery from the unit. Read **ALL CAUTIONS** on the battery.
- B. Obtain battery electrolyte from a local auto parts supply. Proper quantity can be assured by giving the battery make and number to the electrolyte supplier.
- C. Read **ALL CAUTIONS** on the electrolyte you have purchased.
- D. Remove all six caps on the top of the battery and, while observing ALL safety precautions, pour electrolyte into each of the battery cells until the plates are covered.
- E. Replace the caps on the battery and re-install the battery on the unit.

9. **FIRE EXTINGUISHER:**

We recommend that a fire extinguisher, preferably rated for A, B, & C type fires, be installed inside the vehicle.

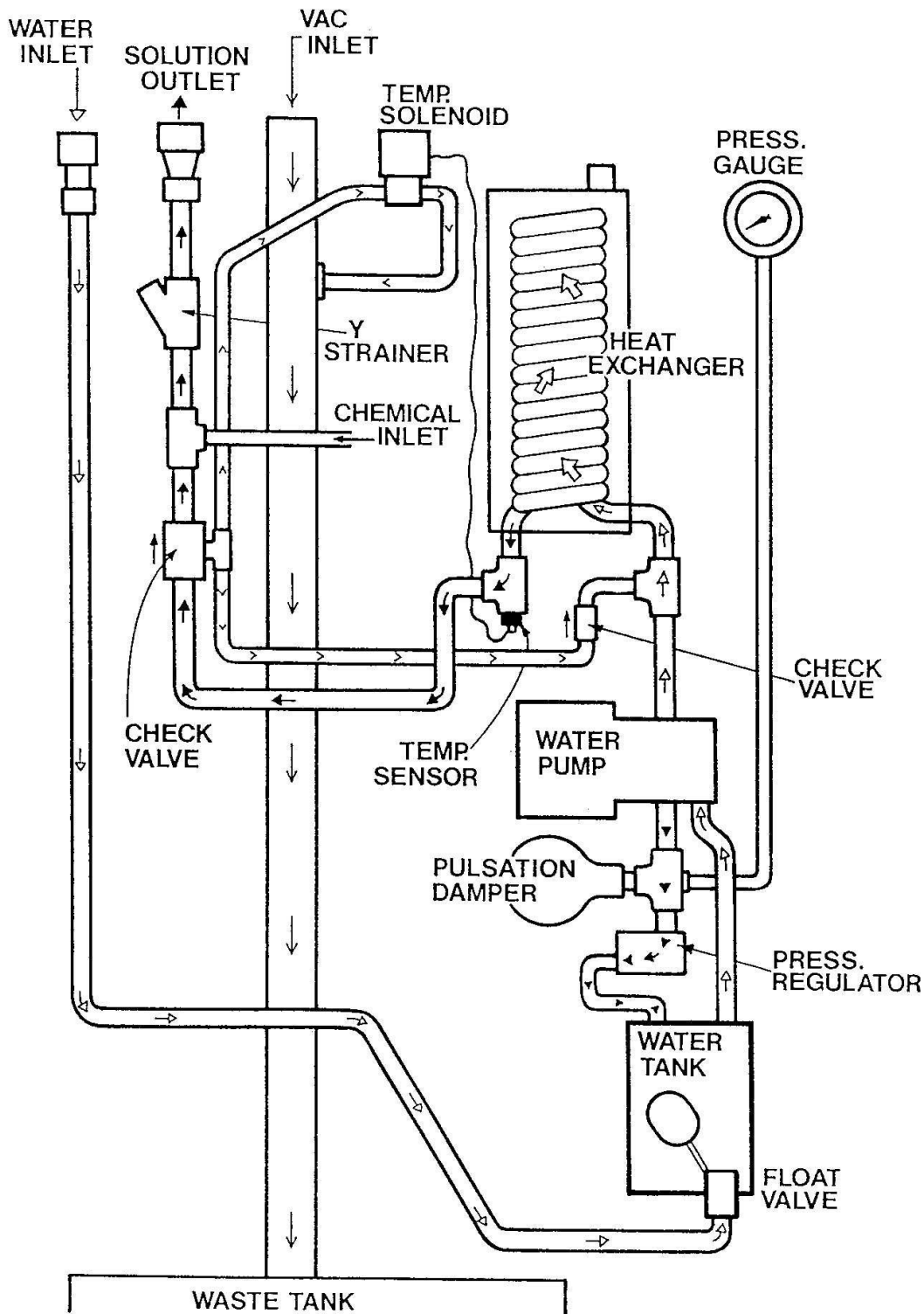
2 SYSTEMS

This chapter of the operators manual divides the unit up into systems and explains how each system works. Before proceeding into the operational and maintenance sections of this manual, we recommend acquiring a basic knowledge of how this unit functions, therefore, read the following section of this manual carefully and completely.

1. **WATER PUMPING SYSTEM:** (See figure 3, page 10)

Cold water enters the console through the water inlet connection at the front of the unit. The water then flows through a float valve into the water box. The float valve ensures that water flows into the system only when it is needed. Next the water flows into the water pump. The water pump has a pulsation damper and a pressure regulator. The pulsation damper is a nitrogen-charged accumulator which reduces pressure fluctuations. The pressure regulator is a safety device which bypasses water back to the water box if it should exceed the desired pressure. The water pump then pumps the pressurized water into the exhaust heat exchanger which raises the temperature. On the check valve itself is a tee which allows water to constantly re-circulate through the heat exchanger and become continually hotter, unless the temperature solenoid valve is open. On the outlet side of the heat exchanger piping is a temperature sensor which is attached to a temperature solenoid valve. If the water temperature exceeds 240 degrees, the solenoid valve will open, allowing hot water to be released into the vacuum inlet tube and cold water to flow into the outlet piping. This valve will close when the temperature drops down to 195 degrees. From the heat exchanger the hot pressurized water flows through a check valve to a tee where the chemical is injected. The check valve prevents separately pumped chemicals from reaching the water pump. The solution then flows through a Y-strainer, which filters debris, to the solution outlet at the front of the console.

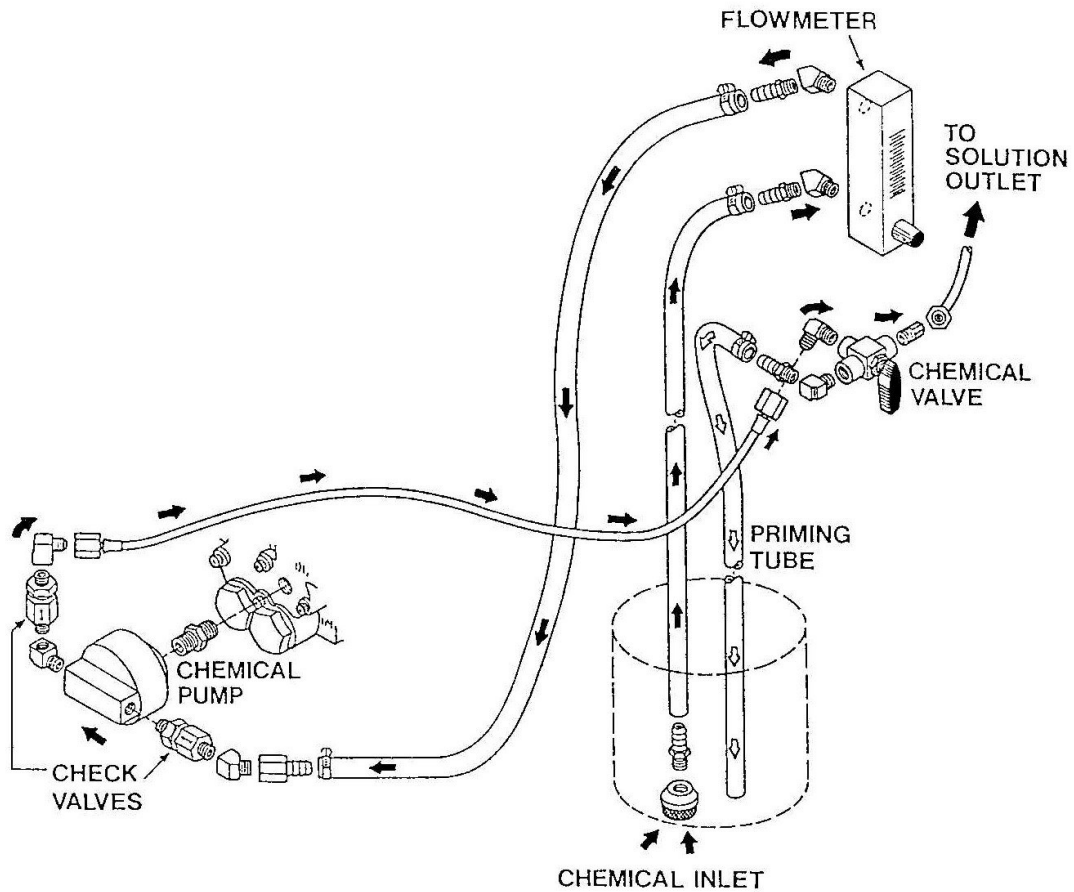
WATER PUMPING SYSTEM (figure 3)



2. CHEMICAL PUMPING SYSTEM: (See figure 4)

The chemical is sucked through a strainer from the chemical container to the flowmeter. The flowmeter indicates the rate of chemical flow. The chemical then flows through an inlet check valve into the chemical pump. The chemical pump then injects the chemical through an outlet check valve to the 3-way valve on the instrument panel. This valve turns the chemical flow on or off and primes the chemical pump as well. Next, the chemical flows to the solution outlet piping. The knob on the flowmeter controls the rate of chemical flow into the cleaning solution.

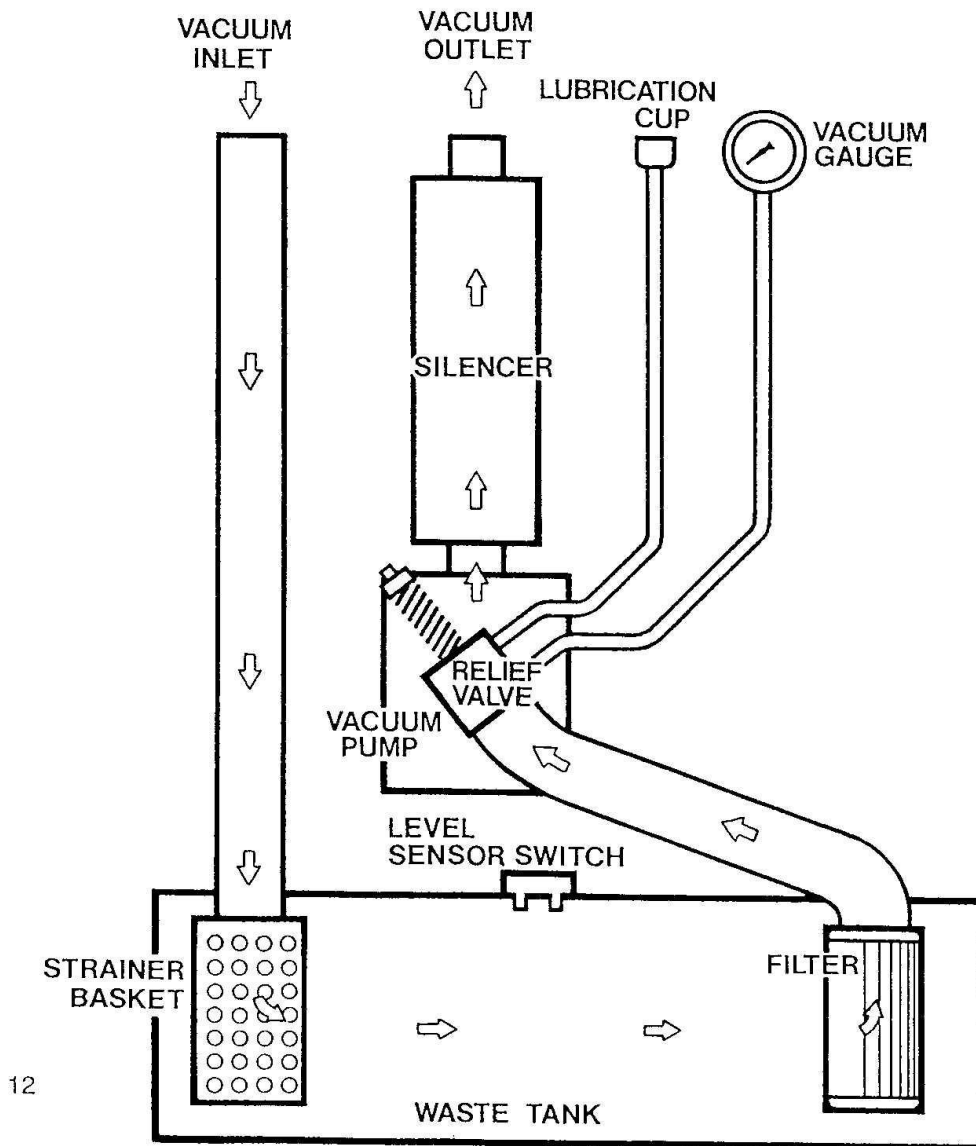
CHEMICAL PUMPING SYSTEM (figure 4)



3. **VACUUM SYSTEM:** (See figure 5)

Vacuum flow begins at the cleaning tool, with a mixture of air and spent chemicals being sucked into the vacuum inlet at the front of the console. This mixture then flows into the waste tank where larger particles are removed by a strainer basket. The fluid and smaller waste particles are deposited in the waste tank. A level sensor switch has been provided to automatically shut the unit down before it overfills past its capacity. This prevents moisture from being sucked into the vacuum pump. Next, air flows through an additional filter, which removes smaller particles, to the vacuum pump. On the vacuum pump is a relief valve which releases air into the system if the vacuum exceeds 15"Hg. The air is then discharged from the vacuum pump through a silencer into the atmosphere.

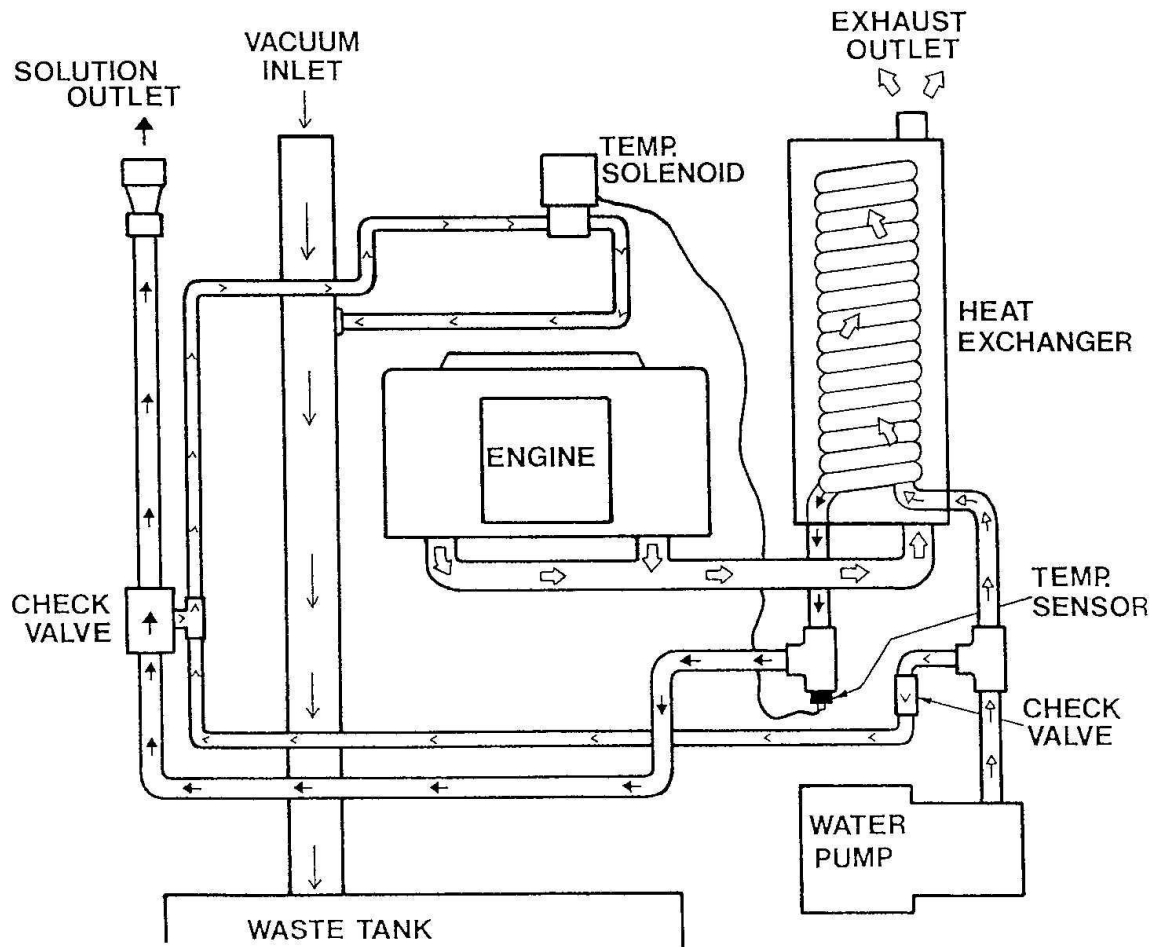
VACUUM SYSTEM (figure 5)



3. HEAT TRANSFER SYSTEM: (See figure 6)

Heat transfer begins with the hot exhaust from the engine which flows through a stainless steel tube into the heat exchanger. Pressurized water from the water pump flows through a coil inside the heat exchanger where heat is absorbed from the engine exhaust. On the outlet side of the heat exchanger is a temperature sensor which is attached to a temperature solenoid valve. If the water temperature exceeds 240 degrees the solenoid valve will open, allowing hot water to be released into the vacuum inlet tube and cold water to flow into the outlet piping. This valve will close when the temperature drops back down to 195 degrees. The hot water then flows through a check valve to the solution outlet at the front of the console.

HEAT TRANSFER SYSTEM (figure 6)



3 OPERATION

This chapter explains how to prepare, operate, shut down and daily maintain this unit. Operation of the *PERFORMER CUB CARPET CLEANER* is simple. However, only competent personnel who have had complete training should proceed.

CAUTION: This unit should NOT be operated inside a building or in any area where, in so doing, a violation of any Local, State, or Federal regulation(s) would be committed. It should only be operated in a well ventilated area because engine exhaust gases contain carbon monoxide.

1. WATER SUPPLY CONNECTION:

NOTE: If using a water supply hose which has not been used recently or if using a customer's hose, connect the hose to the faucet only and turn the water on to flush out any debris which may be in the hose. Do this before connecting the hose to console.

- A. Connect the water supply hose to the water inlet connection.
- B. Connect the other end of your water supply hose to the water supply faucet.
- C. Turn the water supply faucet on. The water will fill the water tank.

2. HOSE CONNECTIONS:

- A. Connect the pressure hose to the outlet connection at the front of the console and to the cleaning tool.
- B. Connect the vacuum hose to the cleaning tool and to the vacuum inlet connection at the front of the console.

3. **STARTING THE UNIT:** (figure 8, page 15)

- A. Turn the master switch on (the gas engine fuel pump will start operating).
- B. Start your engine.
 - 1. Pull the choke out.
 - 2. Turn the ignition key to start.
- C. After the engine is warmed up, push the choke in and turn the throttle counterclockwise. Then pull the throttle all the way out and turn it clockwise to lock it in the full throttle position. (This is the engine operating speed).

4. **PRIMING THE WATER PUMP:**

The water pump will prime itself when you start the engine. If the water pressure gauge reads 300 PSI when you open the cleaning wand, your pump is primed. If it does not, then refer to "LOSS OF WATER PUMP PRESSURE" in the troubleshooting section.

5. **PRIMING THE CHEMICAL PUMP:**

- A. While your unit is running, place the chemical feed line and the chemical prime tubing into the chemical container. **NOTE:** In placing the chemical feed tubing into the chemical, make sure that it is fully submerged since the chemical pump will NOT function if air is allowed to enter the chemical feed tubing.
- B. Turn the chemical valve on the front of the console to prime. This sets the chemical valve for priming. The chemical will then flow from the chemical container through the chemical feed tubing and back to the container through the chemical prime tube.

If the chemical does not flow:

- a. Remove the chemical prime tubing from the chemical container.

- b. Insert the prime tubing into the vacuum inlet at the front of the console. The vacuum will quickly pull the chemical from the chemical container.
 - c. When the chemical starts to flow, insert the chemical prime tube back into the chemical container.
- C. Once continuous chemical flow without air bubbles has been achieved, turn the chemical valve on the front of the unit to "CHEMICAL" and open cleaning tool. Then adjust the chemical metering valve located on the front of the chemical flowmeter to achieve the desired flow. For most purposes the average chemical flow rate is approximately two gallons per hour.

6. WASTE PUMP:

If your unit is equipped with an automatic waste pump, connect one end of a garden hose to the pump-out connection on the console and the other end to an appropriate waste disposal. **CAUTION:** DO NOT dump waste in any area which, in so doing, would violate any local state or federal law.

7. CLEANING:

Once you have completed steps 1 through 6, proceed to put the unit to work cleaning as follows:

- A. Before proceeding make sure the nozzle is functioning properly.
 - 1. To check, hold the wand about one foot above the surface to be cleaned and open the wand valve. A full spray should be observed from the cleaning nozzle.
 - 2. If the nozzle is not showing a full spray, clean or replace it.
- B. Normally, chemical is applied on the push stroke of the wand when cleaning, and vacuuming is done on the pull stroke. For heavily soiled carpets the wand may be used in a scrubbing manner, applying chemical in both the push and pull strokes. Always finish up an area with a vacuum pull stroke.

- C. When cleaning, keep the working opening (mouth) flat on the surface being cleaned. Keep the wand moving when the valve is open.
- D. The unit will automatically shut down when the waste tank contains approximately 44 gallons. This will prevent water being sucked into the vacuum pump.

8. **CLEANING SOLUTION HEAT:**

Heat for the cleaning solution is provided by pumping the water through an extremely efficient heat exchanger connected to the cleaning unit engine exhaust. In cases of long period of no solution flow (wand closed) a fixed thermostat will open a solenoid to bleed, water only, into the waste tank. On units which are so-equipped, an additional vacuum exhaust heat exchanger is provided to absorb heat from the vacuum pump exhaust.

9. **FLOOD RESTORATION:**

CAUTION: When doing flood restoration, attach the 36" convenience outlet hose to the solution outlet on the front of the console. Open the ball valve to release solution. This will prevent excessive heat in the water pumping system and allow the water box to fill, sending cool water into the water pump.

10. **STOPPING THE UNIT (and DAILY MAINTENANCE):**

- A. Turn the chemical valve on the instrument panel to the "OFF" position.
- B. At the end of each working day, allow the unit to run for 3 minutes with the vacuum hose disconnected in order to remove all moisture from the vacuum pump. Next, spray WD40 (or an equivalent) into the oil cup (on the front of the console) while the unit is running. This will lubricate the vacuum pump as well as protect the gears from rusting.
- C. If the unit is so-equipped, turn the pump-out switch to the "OFF" position.
- D. Return the engine throttle to the IDLE position by pushing the choke all the way in. Turn the ignition key to the "OFF" position.

- E. Unhook the cleaning tool, vacuum hose, and pressure hose. Place them in their storage spaces inside the vehicle.
- F. Turn the water supply faucet off. Bleed the pressure out of the water hose, unhook, and store the hose inside the vehicle.
- G. Drain the waste tank. **CAUTION:** DO NOT dump waste in any area which, in so doing, would violate any local, state, or federal law. Open the waste tank drain valve and allow to drain.
- H. Remove the strainer basket from the waste tank and clean out any accumulated debris. Re-install the strainer basket. Inspect the vacuum inlet filter in the waste tank. If there is any lint or debris, remove the filter and clean. When removing the filter, grip the plastic hexagonal section of the filter. Grasping the filter by the screen may collapse or ruin the filter. Re-install the filter, hand-tight.
- I. Rinse out the waste tank with fresh water. A small amount of "DUO®" (dual-action deodorizer) may be added to the waste tank to inhibit the growth of bacteria.
- J. Clean the unit, tools, hoses, van interior, etc., as needed. Inspect all equipment for any damage, wear, leaks, etc. Having a clean unit, which looks good cosmetically, provides a professional image to present customers and will attract future business as well.

i1. FREEZING PROTECTION:

If the unit is exposed to freezing weather, the water in the unit can freeze and may do serious damage to the unit. To avoid this, the following is recommended during the cold weather season:

- A. When the unit is not in use, always park it in a heated building.
- B. If a heated building is not available, provide a thermostatically controlled electric heater inside the vehicle.
- C. While in operation, avoid long shutdowns. Remember, the unit is providing heat while it is running. Shut it down just prior to leaving for the next job.

If a WINTERIZING KIT has been installed on the unit, proceed with the following instructions at the end of each working day:

1. Make certain that the anti-freeze bottle has an adequate amount of anti-freeze in it.
2. While the unit is running, purge the system of water and cleaning solution, and fill with anti-freeze by positioning the lever on the valve (located above the water box lid) in the horizontal position.
3. Connect one end of the solution outlet hose to the solution outlet on the console. Place the other end, which has the stopper, in the vacuum inlet until anti-freeze appears in the solution outlet hose. Shut down the unit and remove the outlet hose.
4. At the beginning of the following work day, start the unit in a normal manner. Connect one end of the solution outlet hose to the solution outlet on the console. Place the other end of the hose, which has the stopper, in the anti freeze bottle.
5. Switch the lever on the valve (located above the water box lid) to the vertical position and pump anti-freeze into the bottle until the outlet hose appears clear.
6. Remove the outlet hose and shut down the unit.

4 GENERAL SERVICE ADJUSTMENTS:

1. PRESSURE REGULATOR:

The pressure regulator serves only to hold locked up water pressure at a preset point and to bypass this water back to the open tank. Adjust as follows:

- A. With your unit running, close the cleaning tool.
- B. Loosen lock nut, turn the adjusting nut until you reach the desired pressure. The normal factory setting is 350 PSI (50 PSI above the operating pressure).

2. ENGINE SPEED:

To adjust the engine RPM, refer to the *"Engine Operation and Service Manual"* for instructions. **CAUTION: DO NOT** attempt to adjust without a tachometer and **NEVER** adjust the engine above 3000 RPM.

3. FLOAT VALVE:

As the water supply pressure will vary, it may be necessary to adjust the float in the water tank to either increase or decrease the water tank level. To accomplish this, remove the water tank cover and loosen the thumb nut on the valve, adjust the float, then tighten the thumb nut and replace the cover.

4. VACUUM RELIEF VALVE:

While the unit is running at full RPM, block the air flow at the vacuum inlet connection and adjust the tension on the relief valve until it opens at 14 inches of mercury.

5 MAINTENANCE

To assure that your *PERFORMER CUB CARPET CLEANER* has a maximum life with a minimum of down time, we strongly advise that a PLANNED PREVENTIVE MAINTENANCE PROGRAM be initiated.

1. **GASOLINE ENGINE: CAUTION:** Major engine repairs should not be attempted unless you have the proper tools and a THOROUGH knowledge of internal combustion engines.
 - A. Check the engine oil level before starting and after every five (5) hours of operation. BE SURE OIL LEVEL IS MAINTAINED. NEVER over fill.
 - B. Change the crankcase oil after the first eight (8) hours of operation. Thereafter, change oil every twenty-five (25) hours of operation. **NOTE:** Refer to the *Engine Operation and Service Manual* for type and grade of oil.
 - C. Change oil filter every 50 hours of operation.
 - D. Replace the paper cartridge filter in the air cleaner yearly or every 100 hours. Service the pre-cleaner every 3 months or 25 hours (refer to *Engine Operation and Service Manual*).
 - E. Make sure that the cooling system is kept clean, clean yearly or every 100 hours. (Refer to *Engine Operation and Service Manual*).
 - F. Clean and reset gap on spark plugs every 100 hours. **NOTE:** Never sandblast spark plugs. Spark plugs should be cleaned by scraping or wire brushing.
 - G. Replace in-line gas filter yearly.

NOTE; For additional engine service information, order # 272144 "*Vanguard Service and Repair Instructions*" from any authorized Briggs and Stratton Service Center. If service or repair is required, contact an authorized Briggs and Stratton Service Center. You will need model, type, and code number on the engine.

2. **VACUUM PUMP:** Refer to *Vacuum Pump Operation and Service Manual* for specific instructions.
 - A. Check the oil level daily to assure the proper level. **PROPER LEVEL** cannot be overemphasized. Too little oil will ruin bearings and gears. Too much oil will cause overheating.
 - B. Drain, flush and replace oil every 1500 hours or more frequently if inspection so indicates.
 - C. The bearing on the pulley end of the vacuum pump requires grease lubrication every 500 hours.
 - D. To prevent rust from building up inside the vacuum pump (if moisture exists) we have provided a lubrication cup on the front of the unit. Fill this cup with WD40 or a similar lubricant while the unit is running and the vacuum inlet is sealed. Do this at the end of each working day.

3. **WATER PUMP:** Refer to the *Water Pump Operation and Service Manual* for specific instructions.
 - A. Check the oil level daily to assure the proper level.
 - B. After the first 500 hours, drain and refill the crankcase oil with 30 weight non-detergent oil.

4. **DRIVE BELTS:** The drive belts should be inspected daily. Check for loose belts, frayed belts, and mis-alignment. Correct any of these conditions.

5. **VACUUM TANK FILTER:** The vacuum filter should be removed and cleaned **DAILY**. If this is done, the filter will last for a long period of time. Replace this filter at least once a year.

6. **BATTERY:** Check the fluid level in the battery once a week. If low, fill to the proper level with distilled water.

7. **HEAT EXCHANGER:** Proper and consistent heat exchange is a product of a well maintained engine. If an engine is not properly maintained the exhaust gases will deposit carbon on the outside of the heat exchanger coil and continuous running will affect the cleaning solution temperature. If this condition exists, remove the heat exchanger from the unit and clean the carbon off the coil. Using A212 ULTRACLEAN INDUSTRIAL CLEANER will greatly enhance the removal of carbon deposits. Plug one end of the heat exchanger and fill the heat exchanger with a mixture of one part of A212 to four parts of warm water. Allow one hour of soaking, then drain and rinse with hot water. If necessary, repeat.

8. **PRESSURE REGULATOR:** Grease should be applied to the piston o-ring inside the regulator at least once a month to prevent sticking.

6 COMPONENT REPAIR:

The following general instructions are for the repair of various components. ONLY FULLY TRAINED personnel should repair components.

1. **VACUUM PUMP:**

Refer to the *Vacuum Pump Operation and Service Manual*.

2. **GASOLINE ENGINE:**

Refer to the *Engine Operation and Service Manual*. If more detail is needed, you should procure a 272144 Service and Repair Book from a local authorized Briggs and Stratton Service Center.

3. **WATER PUMP:**

Refer to *Water Pump Operation and Service Manual*.

7 TROUBLESHOOTING

Before proceeding, you can save time by checking:

- A. That the engine speed is 3000 RPM with the throttle pulled all the way out.
- B. That the water supply is turned on.
- C. That the pump volume is correct. Check pump volume with your cleaning tool closed. Measure the water flow going back to the water tank from the pressure regulator. You should fill a gallon container in 30 seconds.

SPECIFIC PROBLEMS:

1. **LOSS OF WATER PUMP PRESSURE:** With the cleaning tool open, the water pressure gauge reads below the normal operating pressure.

PROBABLE CAUSES	CORRECTIVE ACTION
Water supply is turned off, or the float valve is improperly adjusted or stuck.	Turn the water supply on or up. Check for kinks in the water supply hose. Examine the float valve and adjust or replace. One gallon of water level should be maintained in the water box.
Water suction line plugged or sucking air.	Examine the water inlet filter inside the water box. Remove any excessive debris and replace, if required. Check for suction leaks and loose clamps or fittings. Tighten any loose fittings or clamps. Replace any ruptured hose.
Water pressure regulator dirty, stuck open, improperly adjusted, has worn seals, or is not seated properly.	Clean or repair water pressure regulator and adjust to 50 PSI above working pressure. If necessary, replace.
Improper engine speed.	Re-adjust engine speed to 3000 RPM. See <i>Briggs and Stratton Operation and Service Manual</i> .

PROBABLE CAUSES	CORRECTIVE ACTION
Low pump volume (check pump volume by closing the cleaning tool and measuring the amount of water being returned to the water tank by the pressure regulator. It should fill a gallon container in 30 seconds).	Examine the check valve assemblies in the water pump. Clean out or replace. (Refer to <i>Pump Operation and Service Manual</i> .)
Defective pressure gauge.	Replace gauge.
Orifice in cleaning tool worn or wrong.	Replace orifice.
Bleed solenoid stuck open or defective.	Clean seat in solenoid valve. Replace solenoid.

2. **LOSS OF WATER PUMP VOLUME:** With the cleaning tool open, a reduction in water volume through the tool. Pressure gauge reads normal.

PROBABLE CAUSES	CORRECTIVE ACTION
Plugged orifice in the cleaning tool.	Unplug orifice.
Cleaning tool valve is malfunctioning.	Repair or replace valve.
Defective quick-connect.	Replace defective quick-connect on high pressure hose.
"Y" strainer on unit plugged.	Clean or replace the strainer screen.
Outlet check valve is dirty, improperly seated, or the cage is improperly installed.	Examine the check valve and remove any debris. Inspect for complete seating. Repair or replace.

3. **LOSS OF VACUUM:** While doing normal carpet cleaning, the vacuum is not up to par.

PROBABLE CAUSES	CORRECTIVE ACTION
Hole in vacuum hose.	Repair or replace hose.
Vacuum relief valve sucking in air.	Re-adjust or replace vacuum diaphragm.
Gasket on waste tank faulty.	Replace gasket.
Plugged vacuum line.	Unplug or repair vacuum line.
Bad waste tank drain valve causing a suction leak.	Replace drain valve.
Dirty filter in waste tank.	Clean or replace filter.
Loose vacuum pump drive belt.	Tighten drive belt.
Improper (slow) engine speed.	Re-adjust engine speed to 3000 RPM.
Plugged vacuum muffler.	Replace muffler.
Vacuum pump worn out.	Replace vacuum pump.

4. **LOSS OF CHEMICAL:** With the cleaning tool valve open, no chemical.

PROBABLE CAUSES	CORRECTIVE ACTION
Chemical pump is improperly primed.	Prime chemical pump. Refer to " <i>Priming Chemical Pump</i> "
The strainer at the end of the chemical inlet tube is clogged.	Unclog the strainer or if damaged, replace.
Suction leak (air is being sucked into the line somewhere between the chemical container and the inlet chemical check valve).	Tighten hose clamps. Replace suction hose. Replace O-rings in chemical flow-meter and metering valve.

PROBABLE CAUSES	CORRECTIVE ACTION
Inlet or outlet chemical check valve is clogged, had damaged o-rings or is broken.	Remove any debris. Replace damaged o-ring(s) and repair or replace valve(s).
Chemical selector valve bad.	Replace.
Chemical pump diaphragm ruptured.	Replace.
Defective cylinder in the water pump.	Measure the pump volume. If volume is less than normal, refer to the "Loss of Pump Volume" section of this manual.

5. **ENGINE WILL NOT START:** During the normal start-up, the engine will either not start or will not turn over.

PROBABLE CAUSES	CORRECTIVE ACTION
Circuit breaker tripped on hot line to the master switch.	Reset circuit breaker.
Waste tank is full.	Empty the waste tank.
Defective key switch.	Replace switch.
Defective starter solenoid.	Replace starter solenoid.
Defective gas engine fuel pump.	Replace fuel pump.
Vacuum pump frozen (If the pump impellers are rusted, then the engine will stall).	Free the vacuum pump. Refer to <i>Vacuum Pump Operation and Service Manual</i> .
Dead battery.	Recharge or replace battery.
Malfunction of the gasoline engine.	Repair engine. Refer to <i>Engine Operation and Service Manual</i> .

6. **ENGINE STOPS RUNNING:** While doing normal carpet cleaning, the engine stops running.

PROBABLE CAUSES	CORRECTIVE ACTION
Loss of oil pressure.	Check oil level, oil filter and oil pressure switch.
Waste tank full or defective float switch.	Drain waste tank or replace float switch.
Malfunction of the gasoline engine.	Repair engine. Refer to <i>Engine Operation and Service Manual</i> .

7. **LOW WATER TEMPERATURE:** In all operating conditions the water temperature is constantly low.

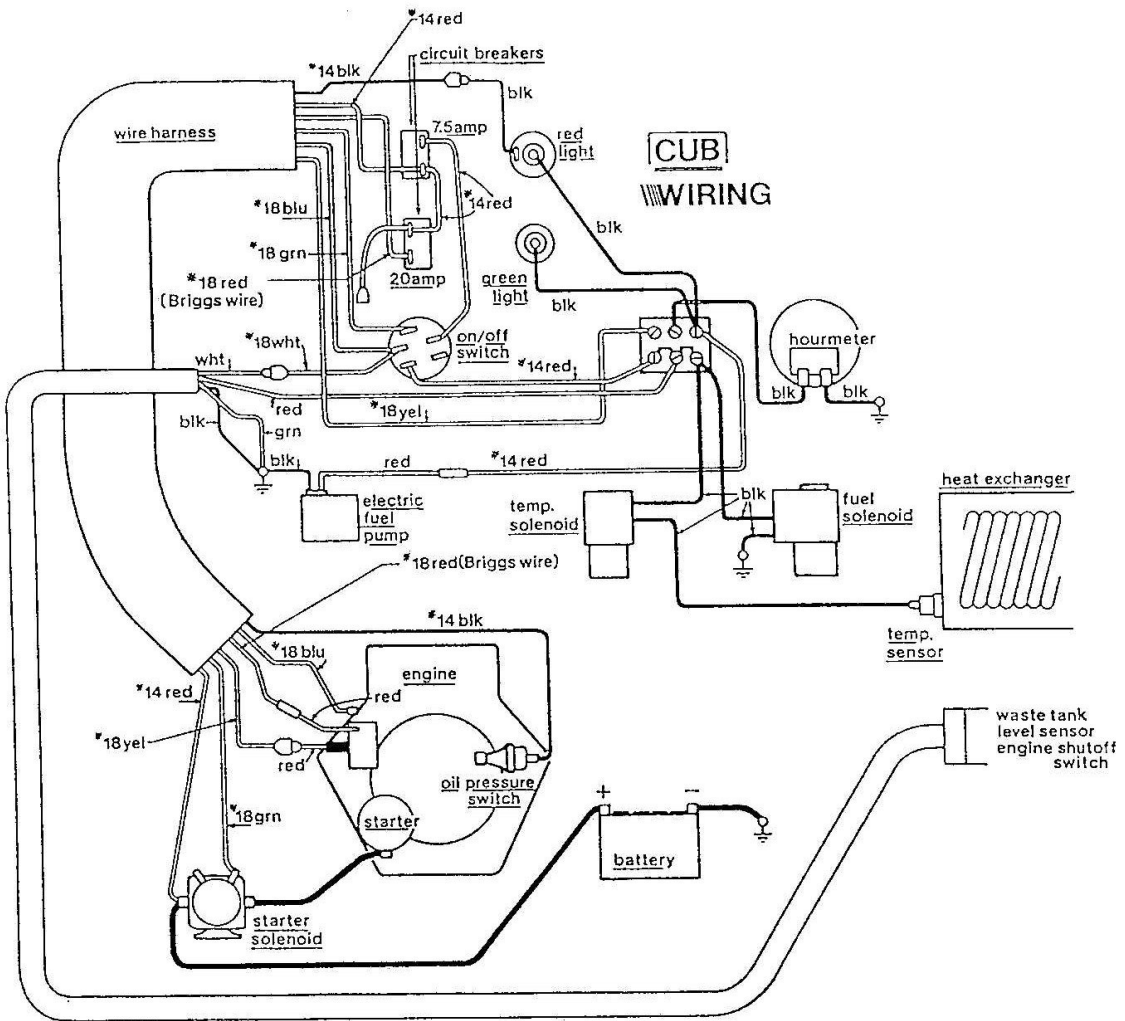
PROBABLE CAUSES	CORRECTIVE ACTION
Water supply temperature low due to cold ambient conditions.	Provide unit with warm water. Do not exceed 180° (F).
Bleed solenoid stuck open or defective.	Clean seat in solenoid valve Solenoid. Replace solenoid.
Temperature control defective.	Replace temperature control.
Cleaning tool orifice too large.	Replace orifice.
Pump pressure regulator set too high.	Reset pressure regulator. Refer to <i>"General Service Adjustments"</i> .

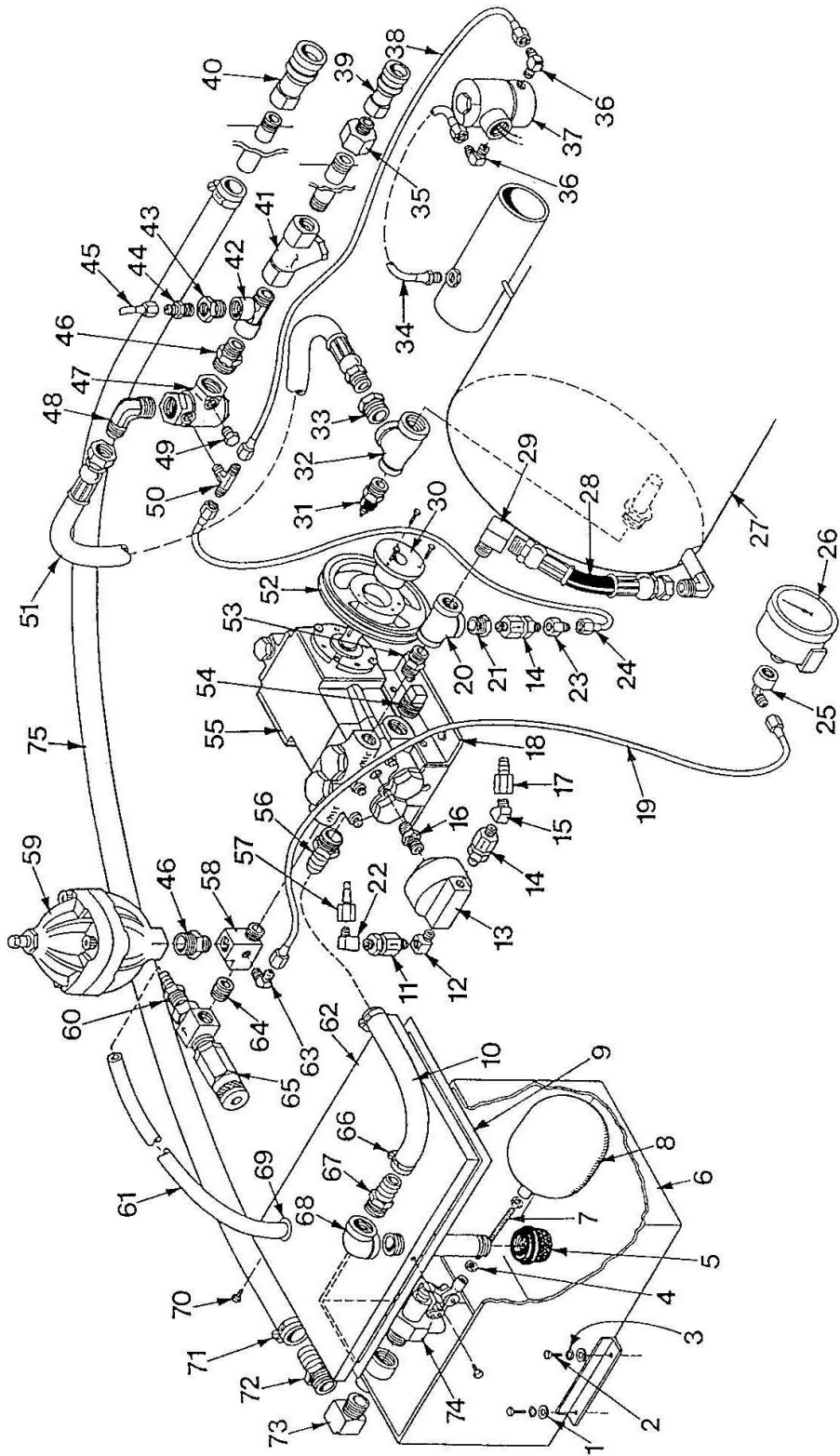
8. **CHEMICAL FLOWMETER INDICATES FLOW WITH THE CLEANING TOOL VALVE CLOSED:**

PROBABLE CAUSES	CORRECTIVE ACTION
Chemical pump diaphragm is ruptured.	Close the chemical valve on the instrument panel. If the flowmeter still indicates flow, examine the water which is bypassing from the pressure regulator to the water tank. If there is chemical in this water, replace the chemical pump diaphragm.

9. **AUTOMATIC WASTE PUMP IS MALFUNCTIONING OR NOT OPERATING: (for units equipped with an automatic waste pump).**

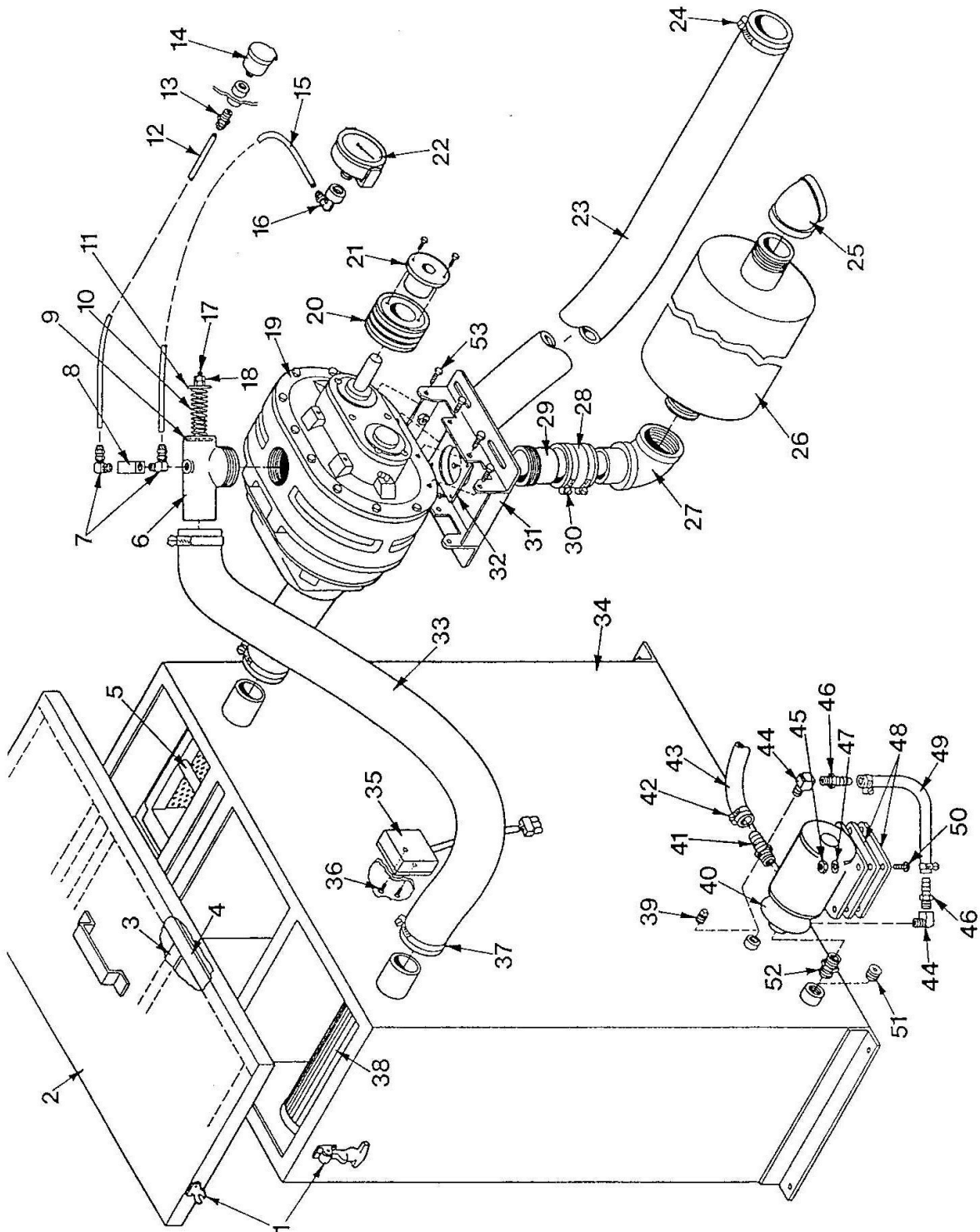
PROBABLE CAUSES	CORRECTIVE ACTION
Pump out circuit breaker on the control panel has been tripped.	After inspecting the waste pump to determine the cause of the tripped circuit breaker, press the reset button. (Check for debris clogging the impeller inside the waste pump head).
Broken seal in the pump.	If the pump volume output is less than normal, replace the worn-out seal.
Pump impeller is damaged.	If the pump volume output is less than normal, replace the pump impeller.
Broken wiring leading to the waste pump.	Check for voltage at the pump. If no voltage, find the broken connection and repair.
Worn out pump.	Check for voltage at the pump. If there is voltage and the pump does not run, replace the pump.





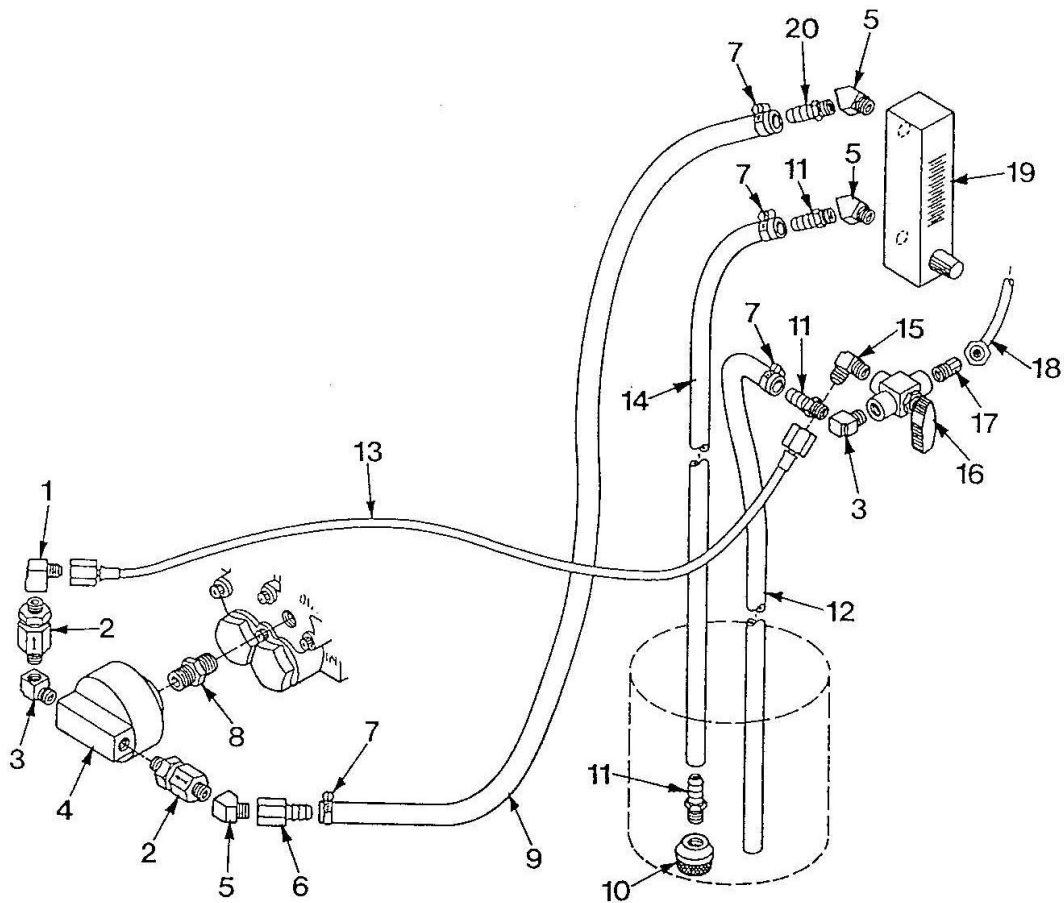
WATER PUMPING PARTS LISTING

1	02-000066	FLATWASHER, 1/4	26	18-808506	PRESSURE GAUGE	51	10-805290	HOSE, 3/8 X 25
2	00-000070	SCREW, 1/4-20 X 1/2	27	57-520049	HEAT EXCHANGER	52	44-802205	PULLEY, 1P3V6.9
3	02-000038	LOCKWASHER, 1/4	28	10-805292	HOSE, 3/8 X 8	53	11-800102	HEX NIPPLE, 3/8
4	01-000045	NUT, 1/4-20 SST	29	11-800275	ST. ELBOW, 3/8	54	11-800168	PLUG, 1/2
5	14-806540	END STRAINER	30	44-802204	HUB, P1 X 3/4	55	61-950263	WATER PUMP
6	56-501616	WATER BOX	31	35-900050	TEMP. SENSOR	56	12-800269	BARB FITTING, 1/2P X 5/8H
7	54-501576	ROD, FLOAT	32	11-800064	RED. TEE, 1/2 X 3/8	57	10-805142	SST HOSE, 3/16 X 29
8	19-807014	BALL, FLOAT	33	11-800109	BUSHING, 1/2 X 3/8	58	52-800303	M-F TEE, 3/8
9	43-807070	GASKET, LID	34	10-805111	SST HOSE, 3/16 X 12	59	41-809016	PULSATION DAMPER
10	09-805310	HOSE, 5/8 X 5	35	11-800090	CONNECTOR, 3/8FP X 1/4P	60	12-800264	BARB FITTING, 3/8P X 3/8H
11	15-808030	CHEMICAL CHECK VALVE	36	12-800040	ELBOW, 1/8P X 1/4T	61	09-805297	HOSE, 3/8 X 14
12	11-800014	ST. ELBOW, 1/8	37	15-808000	SOLENOID, WATER TEMP.	62	56-501632	LID, WATER BOX
13	41-809044	CHEMICAL PUMP	38	10-805205	SST HOSE, 3/16 X 15-1/8	63	12-800040	ELL, 1/8P X 1/4T
14	15-808030	CHEMICAL CHECK VALVE	39	13-806001	DISCONNECT, 1/4F	64	11-800156	NIPPLE, 3/8
15	11-800112	ST. ELBOW, 1/8 45 DEG	40	13-806008	DISCONNECT, 3/8F	65	15-808078	PRESSURE REGULATOR
16	11-800029	HEX NIPPLE, 1/4	41	14-806508	Y-STRAINER, 3/8	66	03-000113	HOSE CLAMP
17	12-800098	BARB FITNG, 1/8FP X 5/16H	42	11-800353	M-F TEE, 3/8	67	12-800269	BARB FITTING, 1/2P X 5/8H
18	56-501634	MOUNTING BRACKET	43	11-800111	BUSHING, 3/8 X 1/4	68	11-800361	ELBOW, 1/2
19	10-805107	SST HOSE, 3/16 X 33-1/2	44	12-800060	CONNECTOR, 1/4P X 1/4T	69	43-807506	GROMMET
20	11-800352	TEE, 3/8	45	10-805131	SST HOSE, 3/16 X 20-1/2	70	00-000067	SCREW, #10 X 1/2
21	11-800118	BUSHING, 3/8 X 1/8	46	11-800023	HEX NIPPLE, 1/2 X 3/8	71	03-000113	HOSE CLAMP
22	12-800142	ELBOW, 1/8FP X 1/4T	47	15-808049	CHECK VALVE, 1/2	72	12-800269	BARB FITTING, 1/2P X 5/8H
23	12-800311	CONNECTOR, 1/8FP X 1/4T	48	12-800171	ELBOW, 1/2P X 1/2T	73	11-800041	ST. ELBOW, 1/2
24	10-805142	SST HOSE, 3/16 X 29	49	11-800101	PLUG, 1/8	74	15-808014	VALVE, FLOAT
25	12-800035	ELL, 1/4FP X 1/4T	50	12-800085	TEE, 1/8P X 1/4T	75	09-805304	HOSE, 5/8 X 49



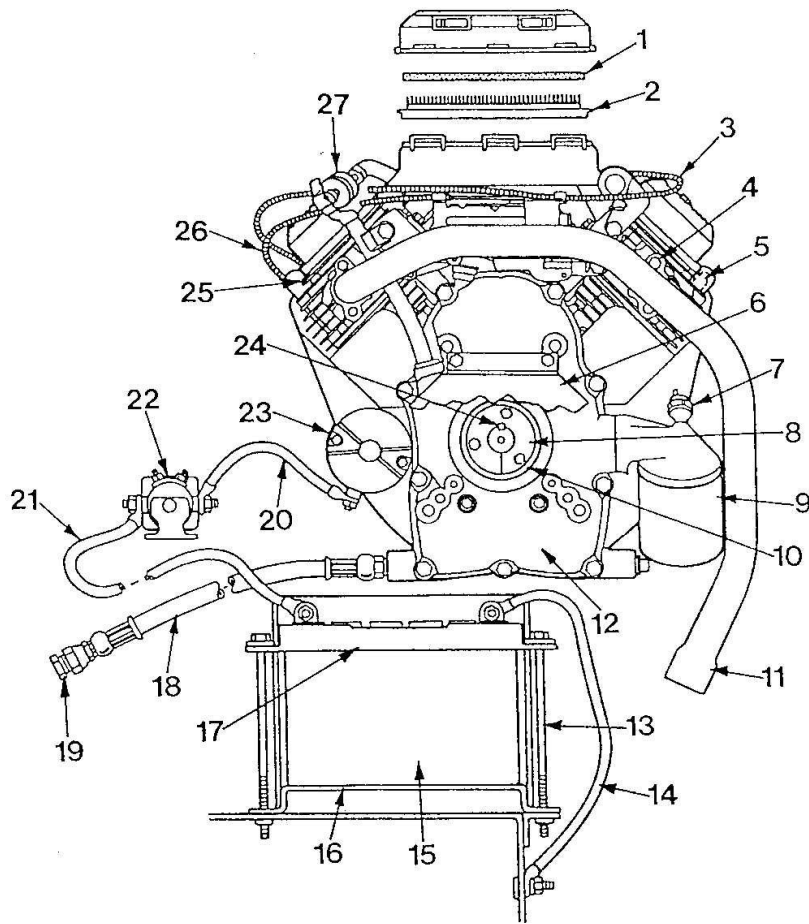
VACUUM PARTS LISTING

1	46-802510	DRAW LATCH	19	41-905012	VACUUM PUMP	37	03-000054	HOSE CLAMP
2	56-500142	LID, TANK	20	44-802138	SHEAVE, 3H3V31	38	14-806509	FILTER
3	43-807011	GASKET, 1" X 12-1/8"	21	44-802125	HUB, H 3/4	39	11-800101	PLUG, 1/8
4	43-807010	GASKET, 1" X 28-3/4"	22	18-808519	VACUUM GAUGE	40	61-950472	WASTE PUMP
5	56-501609	STRAINER BASKET	23	09-805163	HOSE, 2" X 68	41	12-800095	BARB FITTING 3/4P X 3/4H
6	52-501567	RELIEF VALVE	24	03-000054	HOSE CLAMP	42	03-000113	HOSE CLAMP
7	12-800099	ELL, 1/8P X 1/4 POLYFLO	25	11-800359	ELBOW, 1-1/2 45 DEG	43	09-805320	HOSE, 3/4 X 85
8	11-800113	TEE, 1/8 MXF	26	57-520050	VACUUM SILENCER	44	11-800014	ST. ELBOW, 1/8
9	43-807073	DIAPHRAGM	27	56-501626	VACUUM ELBOW	45	01-000105	LOCKNUT, 1/4-20
10	04-000091	SPRING	28	09-805308	HOSE 2 X 2-1/4	46	12-800041	BARB FITTING, 1/8P X 1/4H
11	02-000269	FLATWASHER, 7/16	29	56-501623	VACUUM OUTLET FITTING	47	02-000066	FLATWASHER, 1/4
12	09-805305	TUBING, 1/4 X 29	30	03-000054	HOSE CLAMP	48	50-501600	SPACER PLATE
13	12-800059	CONNECTOR, 1/8PX11/4PFLO	31	56-501622	ADJUSTING BRACKET	49	09-805307	HOSE, 1/4 X 7
14	19-800075	LUBRICATION CUP	32	43-807076	GASKET	50	00-000122	SCREW, 1/4-20 X 1-3/4
15	09-805305	TUBING, 1/4 X 29	33	09-805319	HOSE, 2" X 38	51	11-800357	PLUG, 3/4
16	12-800101	ELBOW, 1/4FPX11/4PFLO	34	56-501629	WASTE TANK	52	11-800349	HEX NIPPLE, 3/4
17	56-501614	STEM	35	32-900173	LEVEL SENSOR SWITCH	53	00-000095	SCREW, 3/8-16 X 1"
18	01-000224	NUT	36	00-000289	SCREW, 8-32 X 3/8			



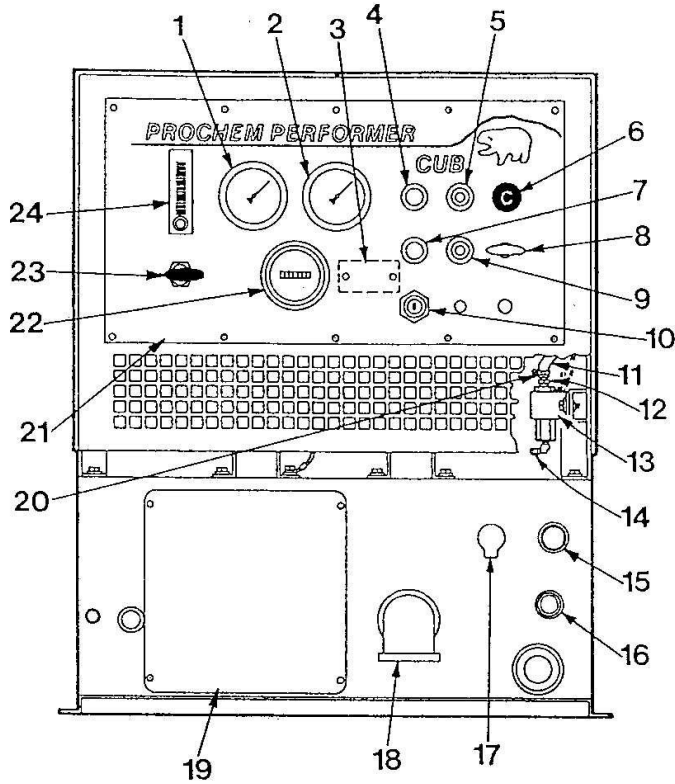
CHEMICAL PARTS LISTING

- 1 12-800142 ELL, 1/8FP x 1/4T
- 2 15-808030 CHEMICAL CHECK VALVE
- 3 11-800014 ST. ELBOW, 1/8
- 4 41-809044 CHEMICAL PUMP
- 5 11-800112 ST. ELBOW, 1/8 45 DEG
- 6 12-800098 BARB FITTING, 1/8FP X 5/16H
- 7 03-000065 HOSE CLAMP
- 8 11-800029 HEX NIPPLE, 1/4
- 9 09-805309 HOSE, 3/8 X 30
- 10 14-806506 END STRAINER
- 11 12-800093 BARB FITTING, 1/8P X 5/16H
- 12 09-805099 VINYL TUBING, 5/16 X 40
- 13 10-805142 SST HOSE, 3/16 X 29
- 14 09-805099 VINYL TUBING, 5/16 X 40
- 15 12-800040 ELL, 1/8P X 1/4T
- 16 15-808022 CHEMICAL VALVE
- 17 12-800261 ELL, 1/8P X 1/4T 45 DEG
- 18 10-805131 SST HOSE, 3/16 X 20-1/2
- 19 18-808522 FLOWMETER
- 20 12-800208 BARB FITTING, 1/8P X 3/8H



ENGINE PARTS LISTING

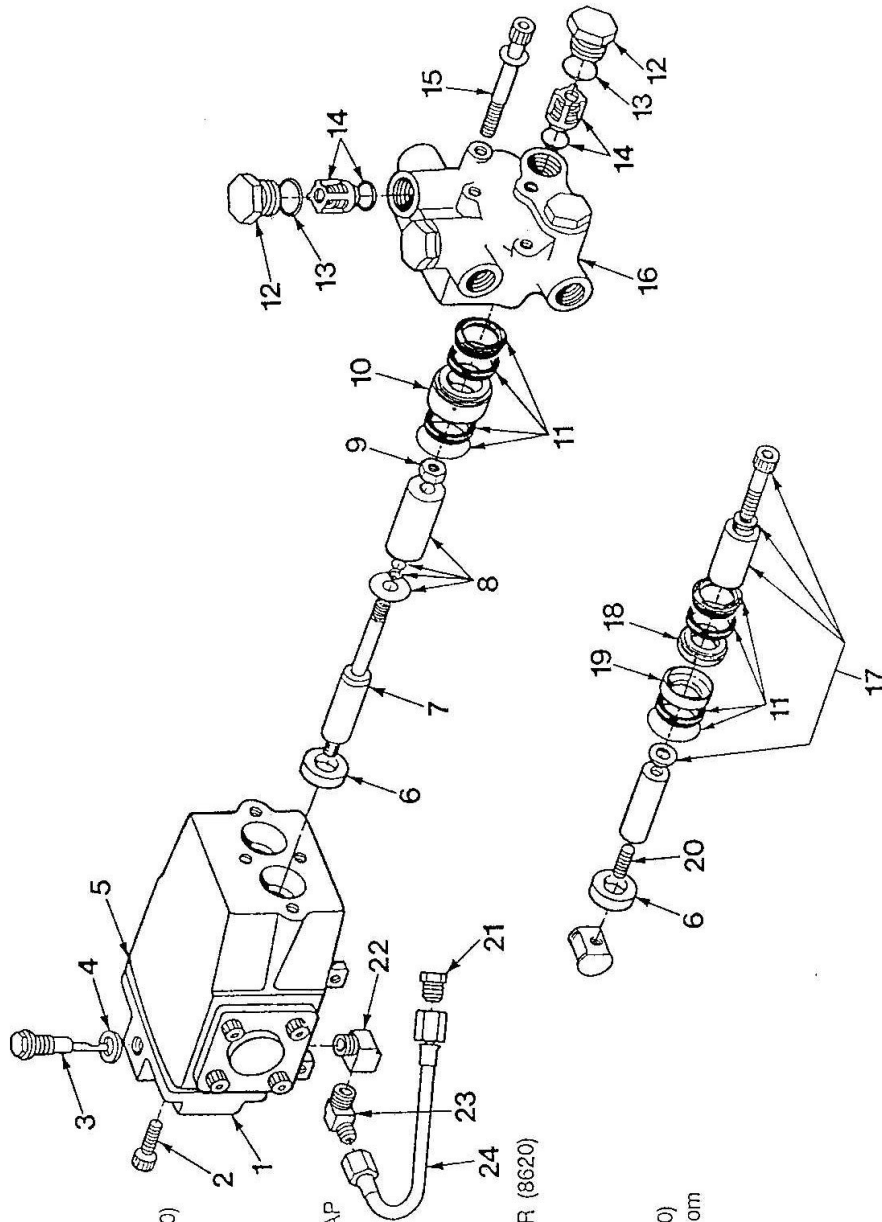
1	42-920170 PREFILTER, AIR CLEANER	18	10-805291 HOSE, OIL DRAIN
2	42-902171 FILTER, AIR CLEANER	19	12-800062 PLUG, OIL DRAIN
3	49-802518 CHOKE CABLE	20	64-950456 BATTERY CABLE, 14"
4	42-902174 GASKET, EXH MANIFOLD	21	64-950434 BATTERY CABLE, 27"
5	42-902169 SPARK PLUG	22	35-901002 STARTER SOLENOID
6	56-501630 GUARD, BELT	23	42-902176 STARTER MOTOR
7	35-900169 OIL PRESSURE SWITCH	24	54-500412 KEY
8	44-802202 HUB, P1 X 1	25	42-902168 GASKET, VALVE COVER
9	42-902158 OIL FILTER	26	49-802505 THROTTLE CABLE
10	44-802203 SHEAVE, 4P3V36	27	42-902172 FUEL FILTER
11	56-501613 EXHAUST TUBE		
12	61-950458 ENGINE		NOT SHOWN
13	00-000167 SCREW, 1/4-20 X 6		
14	64-950456 GROUND CABLE, 14"		42-902175 MAGNETO ARMATURE, ENG
15	36-900056 BATTERY		42-902173 SOLENOID, ENGINE
16	56-501571 HOLDER, BATTERY		
16A	47-700007 HEAT SHIELD, BATTERY		
17	56-500188 HOLD-DOWN, BATTERY		

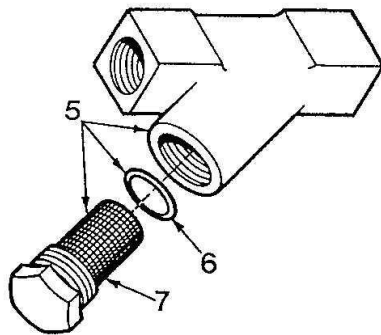
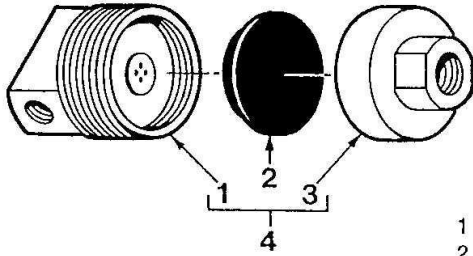


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|----|----------------------------------|----|-------------------------------------|
| 1 | 18-808506 GAUGE, WATER PRESS. | 12 | 12-800041 BARB FITTING, 1/8P X 1/4H |
| 2 | 18-808519 GAUGE, VACUUM | 13 | 41-809003 ELECTRIC FUEL PUMP |
| 3 | 33-900168 TERMINAL BOARD | 14 | 12-800040 ELL, 1/8P X 1/4T |
| 4 | 34-900039 LIGHT, RED | 15 | 13-806008 DISCONNECT, 3/8F |
| 5 | 33-900164 CIRCUIT BRKER, 7.5 AMP | 16 | 13-806001 DISCONNECT, 1/4F |
| 5A | 33-900162 PLATE, RESET | 17 | 19-800075 LUBRICATION CUP |
| 6 | 49-802518 CHOKE, CABLE | 18 | 11-800359 ELBOW, 1-1/2, 45 DEG |
| 7 | 34-900094 LIGHT, GREEN | 19 | 50-501601 PL, COND. OPER. INSTRUCT. |
| 8 | 49-802505 THROTTLE CABLE | 20 | 03-000065 HOSE CLAMP |
| 9 | 33-900163 CIRCUIT BRKER, 20 AMP | 21 | 50-501606 CONTROL PANEL |
| 9A | 33-900162 PLATE, RESET | 22 | 34-903000 HOURMETER |
| 10 | 32-900174 IGNITION SWITCH | 23 | 15-808022 CHEMICAL VALVE |
| 11 | 09-805303 HOSE, 1/4 X 14-1/2 | 24 | 18-808522 FLOWMETER |

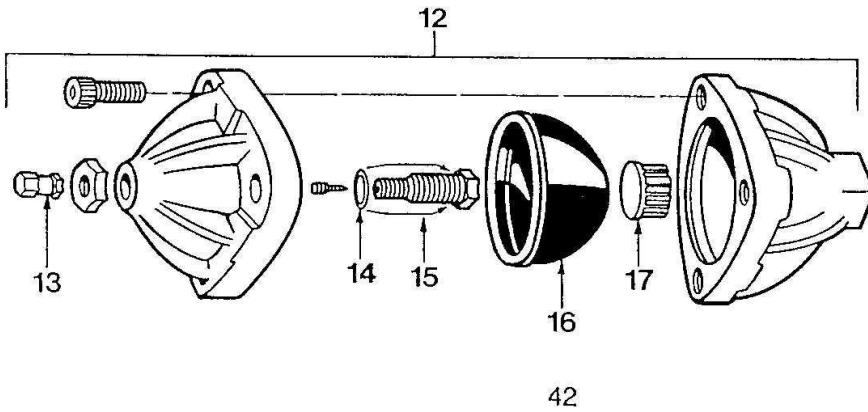
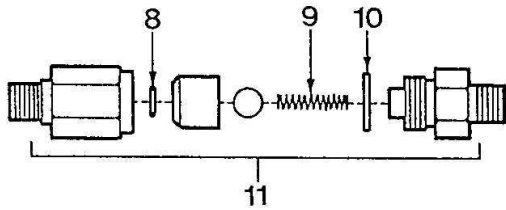
61-950263 WATER PUMP

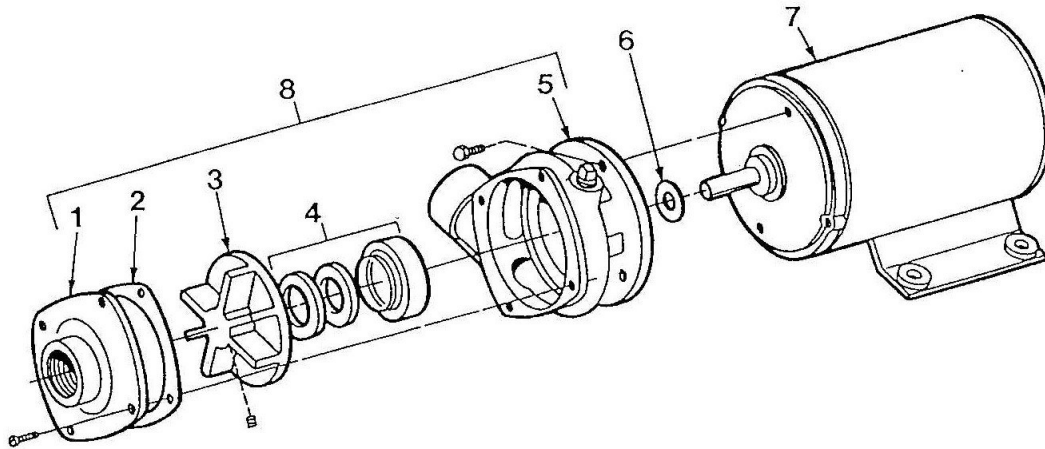
- 1 42-809108 COVER
- 2 00-000210 SCREW, 1/4-20 X 3/4
- 3 42-809101 DIPSTICK
- 4 42-809102 GASKET, DIPSTICK
- 5 42-809197 GASKET, COVER
- 6 42-809198 SEAL, OIL
- 7 42-809199 PLUNGER, LOWER (2200)
- 8 42-809196 KIT, PLUNGER (2200)
- 9 42-809200 NUT, RETAINER (2200)
- 10 42-809201 CUP, RETAINER (2200)
- 11 42-809098 SEAL KIT
- 12 42-809103 CAP, CHECK VALVE
- 13 43-810046 O-RING, CHK VALVE CAP
- 14 42-809104 CHECK VALVE KIT
- 15 00-000208 SCREW, 1/4-20 X 2-3/4
- 16 52-809093 HEAD BODY
- 17 42-809105 PLUNGER KIT (8620)
- 18 42-809202 SPACER (8620)
- 19 42-809203 CUP, RETAINER (8620)
- 20 42-809106 STUD, LOWER PLUNGER (8620)
- 21 12-800029 PLUG, 1/4T
- 22 11-800045 ST. ELBOW, 1/4
- 23 12-800031 ELBOW, 1/4P X 1/4T
- 24 10-805286 OIL DRAIN HOSE
- 25 42-809199 PLUNGER, LOWER (8620)
- 26 42-809204 PLUNGER CONV. KIT (from 8620 to 2200), includes connecting rod, wrist pin, lower plunger (ref. #7), plunger kit (ref # 8), and retainer nut (ref #9).





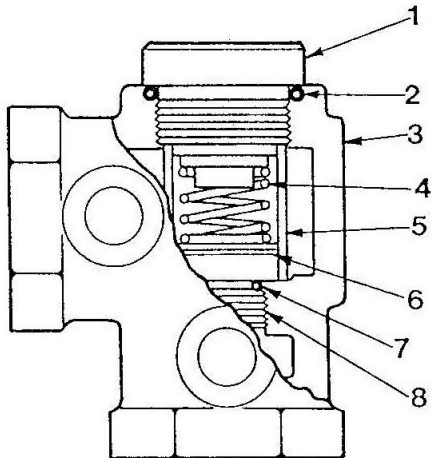
- 1 42-809046 BODY
- 2 42-809047 DIAPHRAGM
- 3 42-809045 COVER
- 4 41-809044 CHEMICAL PUMP
- 5 14-806508 3/8 Y-STRAINER
- 6 43-810002 O-RING
- 7 14-806523 SCREEN
- 8 43-810022 O-RING
- 9 16-808182 SPRING
- 10 16-808181 WASHER
- 11 15-808030 CHEMICAL CHECK VALVE
- 12 41-809016 PULSATION DAMPER
- 13 42-809026 CAP
- 14 43-810012 O-RING
- 15 42-809028 CHECK VALVE
- 16 42-809029 DIAPHRAGM
- 17 42-809030 BAFFLE PLUG





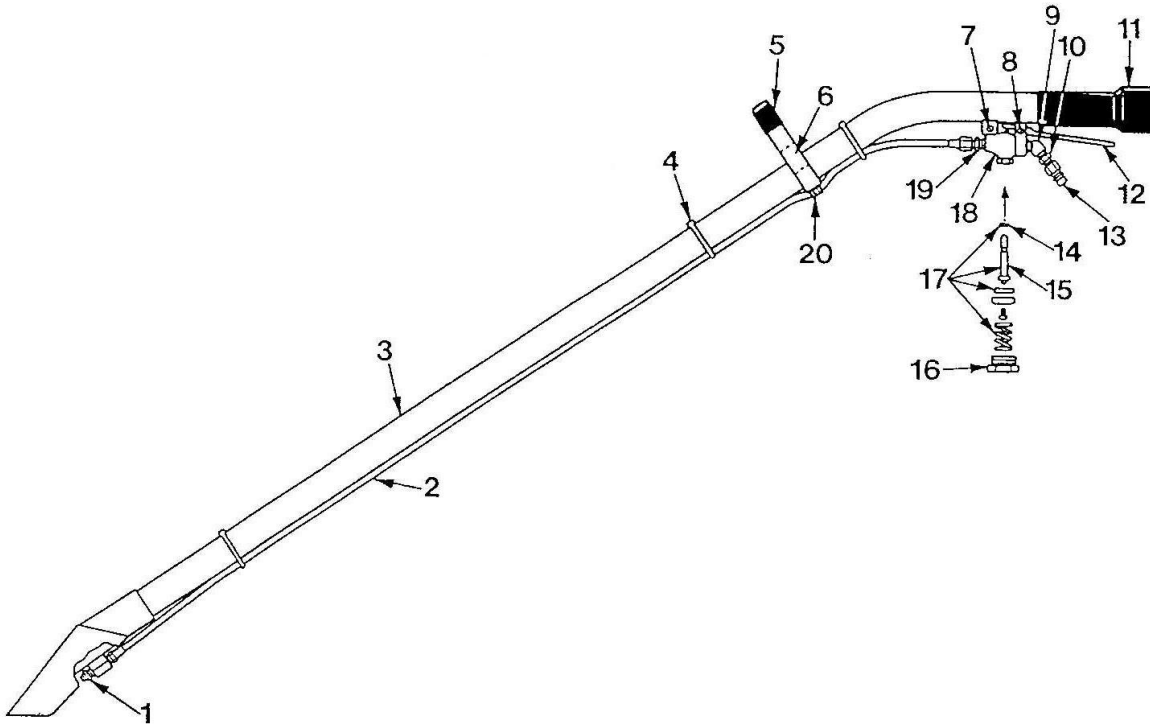
61-950472 WASTE PUMP

- 1 42-809187 COVER
- 2 42-809188 GASKET
- 3 42-809189 IMPELLER
- 4 42-809190 SEAL ASSY
- 5 42-809191 BODY
- 6 42-809175 SLINGER
- 7 42-809192 MOTOR
- 8 42-809193 HEAD ASSEMBLY



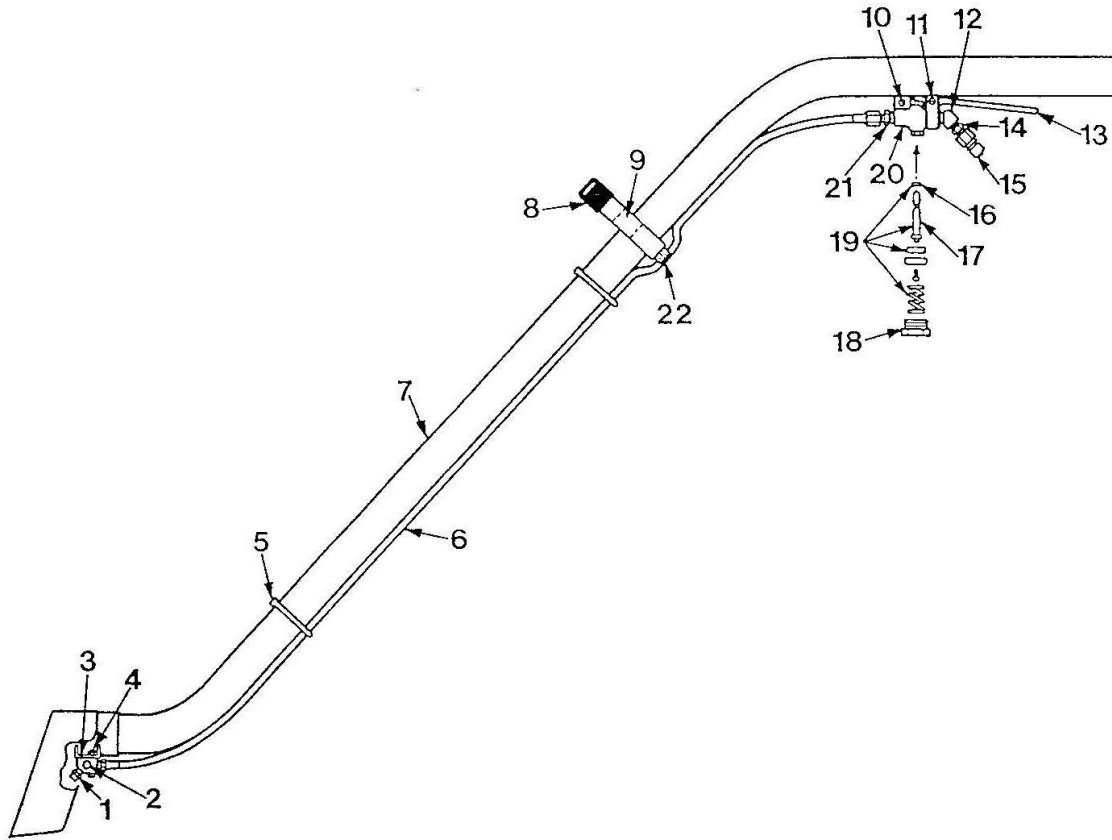
15-808049 1/2" CHECK VALVE

- 1 16-808123 CAP
- 2 43-810007 O-RING
- 3 16-808124 BODY
- 4 16-808191 SPRING
- 5 16-808126 CAGE
- 6 16-808127 DISC
- 7 43-810008 O-RING
- 8 16-808120 SEAT



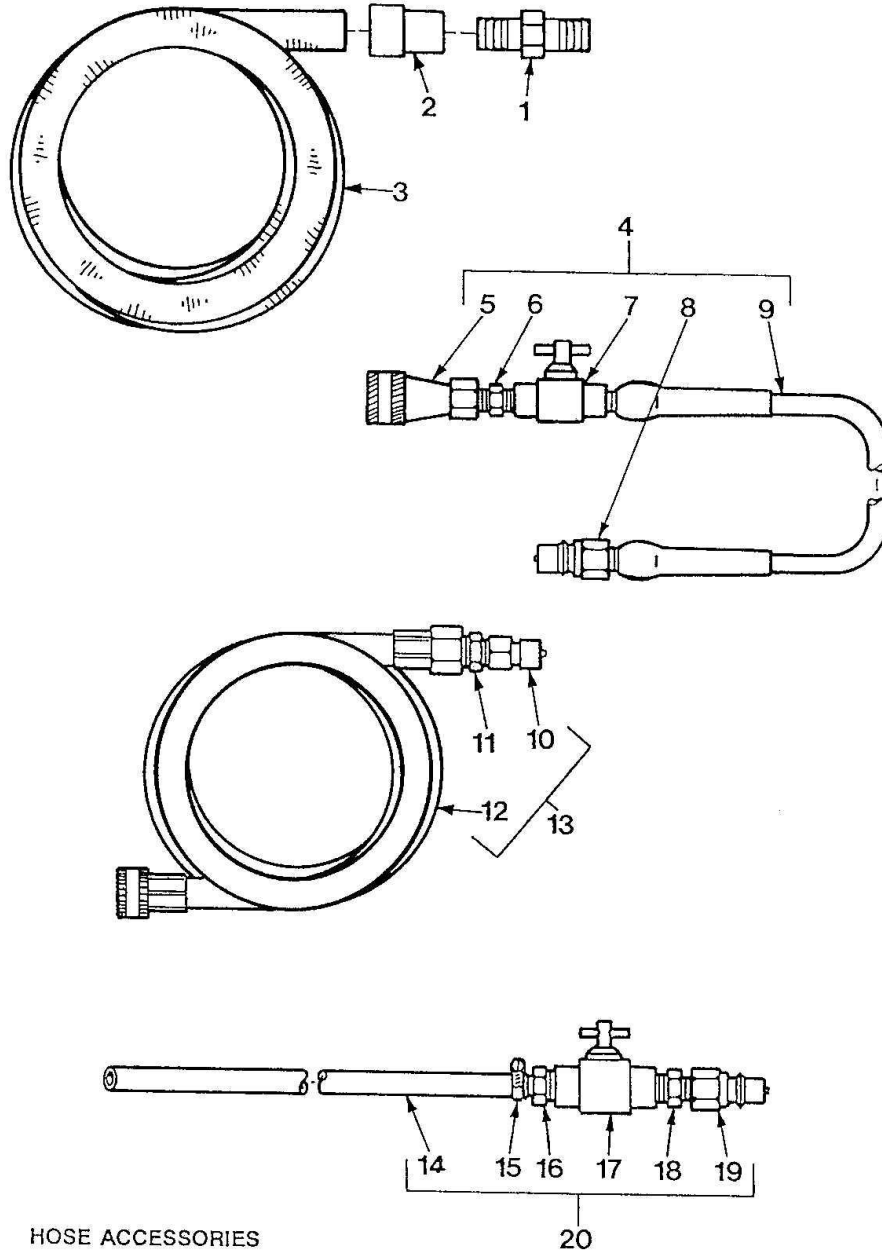
60-950414 SINGLE JET WAND ASSY

1	17-803012 SPRAY TIP, 11003	10	11-800029 HEX NIPPLE, 1/4
2	10-805253 SST HOSE, 3/16 X 49	11	52-501530 GRIP ADAPTOR
3	56-501469 WAND BODY	12	56-500128 LEVER
4	04-000053 CABLE TIE	13	13-806000 DISCONNECT, 1/4M
5	52-501576 HANDLE BODY	14	43-810001 O-RING, VALVE
6	52-501577 HANDLE HOLD DOWN	15	16-808158 STEM, VALVE
7	00-000011 SCREW, 10-32 X 3/4	16	16-808114 CAP, VALVE
7A	01-000019 LOCKNUT, 10-32	17	66-808113 REPAIR KIT, VALVE
8	00-000068 SCREW, 10-32 X 1-1/4	18	15-808005 VALVE
8A	01-000019 LOCKNUT, 10-32	19	12-800060 CONNECTOR, 1/4P 1/4T
9	11-800027 ST. ELBOW, 1/4 45 DEG	20	00-000282 SCREW, 1/4-20 X 1-1/4



60-950415 DUAL JET WAND ASSY

1	17-803002 SPRAY TIP, 9502 SS	11A	01-000019 LOCKNUT, 10-32
2	11-800101 PLUG, 1/8	12	11-800027 ST ELBOW, 1/4 45 DEG
3	52-500160 MANIFOLD	13	56-500128 LEVER
4	00-000042 SCREW, 10-32 X 1"	14	11-800029 HEX NIPPLE, 1/4
4A	01-000019 LOCKNUT, 10-32	15	13-806000 DISCONNECT, 1/4M
5	04-000053 CABLE TIE	16	43-810001 O-RING, VALVE
6	10-805063 SST HOSE, 3/16 X 48-1/2	17	16-808158 STEM, VALVE
7	56-500161 WAND BODY	18	16-808114 CAP, VALVE
8	52-501568 HANDLE BODY	19	66-808113 REPAIR KIT, VALVE
9	52-501569 HANDLE HOLD-DOWN	20	15-808005 VALVE
10	00-000011 SCREW, 10-32 X 3/4	21	12-800060 CONNECTOR, 1/4P X 1/4T
10A	01-000019 LOCKNUT, 10-32	22	00-000282 SCREW, 1/4-20 X 1-1/4
11	00-000068 SCREW, 10-32 X 1-1/4		



HOSE ACCESSORIES

- | | | | |
|----|---|----|--|
| 1 | 12-800078 CONNECTOR | 15 | 03-000065 HOSE CLAMP |
| 2 | 08-805147 CUFF | 16 | 12-800264 BARB FITTING, 3/8P X 3/8H |
| 3 | 10-805060 VAC HOSE, 50' W/CUFFS | 17 | 15-808041 BALL VALVE, 3/8P |
| 4 | 10-805108 HOSE ASSY, 50' W/VALVE | 18 | 11-800151 HEX NIPPLE, 3/8 X 1/4 |
| 5 | 13-806001 DISCONNECT, 1/4F | 19 | 13-806000 DISCONNECT, 1/4M |
| 6 | 11-800029 HEX NIPPLE, 1/4 | 20 | 10-805268 HOSE, CONV. OUTLET |
| 7 | 15-808012 BALL VALVE | | |
| 8 | 13-806000 DISCONNECT, 1/4M | | NOT SHOWN |
| 9 | 10-805077 HOSE ASSY, 1/4 X 50'
WITHOUT DISCONNECTS | 21 | 10-805122 HOSE ASSY, 1/4 X 50'
WITH DISCONNECTS |
| 10 | 13-806009 DISCONNECT, 3/8M | 22 | 65-950078 HOSE REEL |
| 11 | 11-800354 HEX NIPPLE, 1/2 X 3/8 | | |
| 12 | 10-805157 HOSE, 1/2 X 50' | | |
| 13 | 10-805295 HOSE ASSY, 1/2 X 50' | | |
| 14 | 09-805270 RAW HOSE, 3/8 X 36 | | |