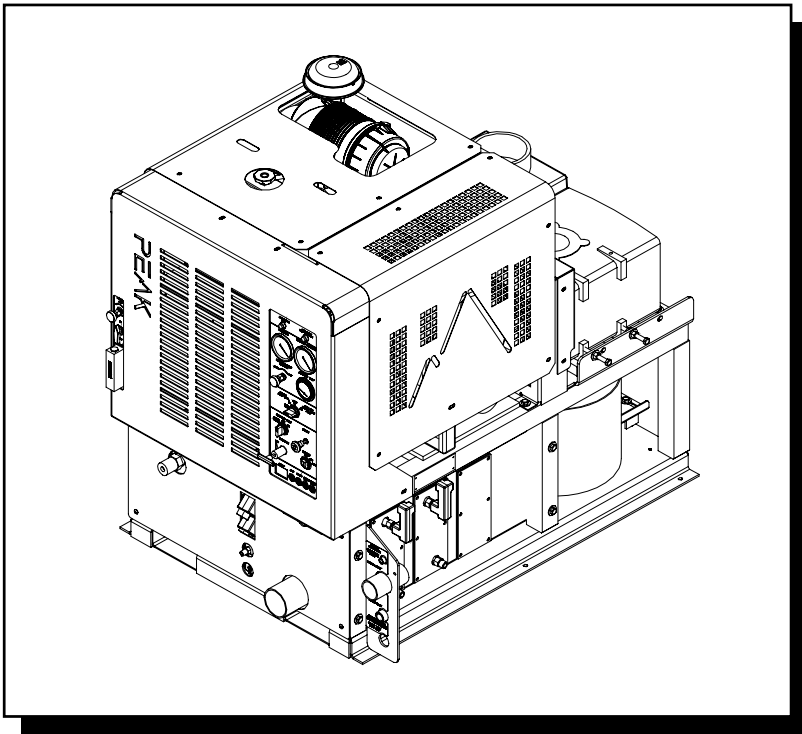


# PEAK

## **PROCHEM**®

Operating Instructions (ENG)



MODELS: **PEAK**

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***Read instructions before operating the machine.***

J

980116  
05/05/04

# MACHINE DATA LOG/OVERVIEW

MODEL _____
DATE OF PURCHASE _____
SERIAL NUMBER _____
SALES REPRESENTATIVE # _____

<b>YOUR DEALER</b>	
NAME:	_____
ADDRESS:	_____
PHONE NUMBER:	_____

**Welcome**...and congratulations on the purchase of your Mobile Cleaning Unit. This instruction manual is a guide for operating and servicing your unit. **Read this manual completely before installing or operating this unit.** This unit offers you personal convenience. All of your instrumentation and controls have been positioned to give you easy access for operation and daily maintenance.

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

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 or parts available. Before attempting any repair, make certain that you are thoroughly familiar with this equipment and are equipped with the proper tools. Any questions pertaining to operating or servicing this unit should be directed to your nearest dealer.

**THIS UNIT MUST BE INSTALLED BY THE DEALER FROM WHOM YOU PURCHASED IT IN ACCORDANCE WITH THE PRESCRIBED INSTALLATION PROCEDURES.**

MAKE CERTAIN THAT THE WARRANTY CARD IS FILLED OUT AT THE TIME OF INSTALLATION AND IS RETURNED TO YOUR DEALER.

PROFESSIONAL CHEMICALS CORPORATION  
325 SOUTH PRICE ROAD  
CHANDLER, ARIZONA 85224

Information in this document is subject to change without notice and does not represent a commitment on the part of Professional Chemicals Corporation.

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## **RECEIVING YOUR UNIT**

### **ACCEPTANCE OF SHIPMENT**

Every part of your 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 damaged, notify the delivering carrier immediately.
2. Check your equipment and packing list. The cleaning unit should arrive equipped with the following items (unless otherwise specified).

***NOTE: Your distributor from whom you purchased this mobile cleaning unit is responsible for the correct installation of this machine. The dealer is also responsible for initial training of your operators and maintenance personnel in the proper operation and maintenance of this unit.***

### **EQUIPMENT LIST:**

1. Console.
2. Waste tank
3. Hose clamps for vacuum hoses.
4. 100 ft. of 2" vacuum hose.
5. 1 vacuum hose connection.
6. 100 ft. of 1/4" high pressure hose with quick connects.
7. 50 ft. water supply hose with quick connect.
8. Installation bolting kit.
9. Installation mounting plates.
10. Operation and service manual for engine, water pump, and vacuum pump.

# HOW TO USE THIS MANUAL

This manual contains the following sections:

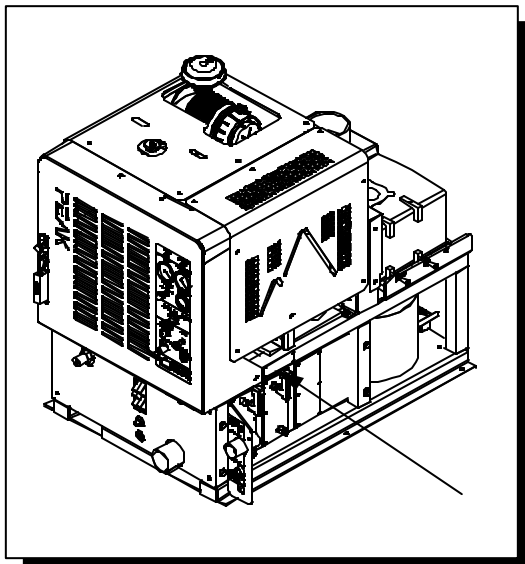
- HOW TO USE THIS MANUAL
- SAFETY
- INSTALLATION REQUIREMENTS
- SYSTEMS
- OPERATIONS
- MAINTENANCE & SERVICE
- PARTS LIST

The HOW TO USE THIS MANUAL section will tell you how to find important information for ordering correct repair parts.

Parts may be ordered from authorized dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the MACHINE DATA box which is filled out during the installation of your machine. The MACHINE DATA box is located on the inside of the front cover of this manual.

MODEL _____
DATE OF PURCHASE _____
SERIAL NUMBER _____
SALES REPRESENTATIVE # _____

The model and serial number of your machine is on the side approximately where shown.



The SAFETY section contains important information regarding hazard or unsafe practices of the machine. Levels of hazards is identified that could result in product or personal injury, or severe injury resulting in death.

The OPERATIONS section is to familiarize the operator with the operation and function of the machine.

The MAINTENANCE section contains preventive maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Engine
- Vacuum Pump
- Water Pump
- Drive Belts, Pulleys & Hubs
- Chemical Pump
- Hoses
- Vac/Exhaust Heat Exchanger
- General Service Adjustments
- Troubleshooting

The PARTS LIST section contains assembled parts illustrations and corresponding parts list. The parts lists include a number of columns of information:

- **REF** – column refers to the reference number on the parts illustration.
- **PART NO.** – column lists the part number for the part.
- **DESCRIPTION** – column is a brief description of the part.
- **SERIAL NO. FROM** – column indicates the first machine the part number is applicable to. When the machine design has changed, this column will indicate serial number of applicable machine. The main illustration shows the most current design of the machine. The boxed illustrations show older designs. If column has an asterisk (\*), call manufacturer for serial number.
- **NOTES** – column for information not noted by the other columns.

**NOTE:** If a service or option kit is installed on your machine, be sure to keep the **KIT INSTRUCTIONS** which came with the kit. It contains replacement parts numbers needed for ordering future parts.

**NOTE:** The 98# on the lower left corner of the front cover is the part number for this manual.

# IMPORTANT SAFETY INSTRUCTIONS

**When using this machine, basic precautions must always be followed, including the following:  
READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE.**

## **WARNING:**

These symbols mean **WARNING** or **CAUTION**. Failure to follow warnings and cautions could result in fatality, personal injury to yourself and/or others, or property damage. Follow these instructions carefully!

## **CAUTION:**

**Read the operator's manual before installing or starting this unit.** Failure to adhere to instructions could result in severe personal injury or could be fatal.

**Operate this unit and equipment only in a well-ventilated area.** Exhaust fumes contain carbon monoxide which is an odorless and deadly poison that can cause severe injury or fatality. **DO NOT** run this unit in an enclosed area. **DO NOT** operate this unit where the exhaust may enter any building doorway, window, vent, or opening of any type.

**Gasoline is extremely flammable and its vapors can explode if ignited.** Store gasoline only in approved containers, in well-ventilated, unoccupied buildings away from sparks or flames. Never carry any gasoline or flammable material in the vehicle. Fumes may accumulate inside the vehicle and ignite, causing an explosion.

**DO NOT** store any type of flammable material in the vehicle.

**This unit must be operated with the vehicle or trailer doors open in order to ensure adequate engine ventilation.**

**DO NOT operate engine if gasoline is spilled.** Avoid creating any ignition until the gasoline has been cleaned up. Never use gasoline as a cleaning agent.

**DO NOT place hands, feet, hair, or clothing near rotating or moving parts.** Avoid any contact with moving parts! Rotating machinery can cause injury or fatality.

**Never operate this unit without belt guards or hoods.** The high speed moving parts, such as belts and pulleys, should be avoided while this unit is running. Severe injury, damage, or fatality may result.

**DO NOT service this unit while it is running.** The high-speed mechanical parts as well as high temperature components may result in severe injury or severed limbs.

**Never touch electrical wires or components while the engine is running.** They can be sources of electrical shock.

**Engine components can get extremely hot from operation.** To prevent severe burns, **DO NOT** touch these areas while the engine is running - or immediately after the engine is turned off.

**DO NOT touch the exhaust system while this unit is running.** Severe burns may result.

**Before servicing this unit, allow it to "cool down."** This will prevent burns from occurring.

**Water under high pressure at high temperature can cause burns, severe personal injury, or fatality. Shut down machine, allow to cool down, and relieve system of all pressure before removing valves, caps, plugs, fittings, filters, and bolts.**

**Always wear hearing protection when unit is running. Always comply with local noise ordinance when operating units.**

**DO NOT leave the vehicle engine running while operating this unit.**

**Dangerous Acid, Explosive Gases!** Batteries contain sulfuric acid. To prevent acid burns, avoid contact with skin, eyes and clothing. Batteries produce explosive hydrogen gas while being charged. To prevent a fire or explosion, charge batteries only in well ventilated areas. Keep sparks, open flames, and other sources of ignition away from the battery at all times. Keep batteries out of the reach of children. Remove all jewelry when servicing batteries.

Before disconnecting the negative (-) ground cable, make sure all switches are OFF. If ON, a spark will occur at the ground cable terminal which could cause an explosion if hydrogen gas or gasoline vapors are present. When disconnecting the battery, **ALWAYS** disconnect the negative (-) terminal **FIRST**.

**DO NOT smoke around the unit.** Gas fumes may accumulate and be ignited. The battery is also extremely flammable. This will prevent possible explosions.

**DO NOT damage the vehicle in any manner during installation.** When routing fuel lines **DO NOT** place the hose in any location where damage may occur to the hose or vehicle. Avoid any contact with moving parts, areas of high temperature, brake lines, fuel lines, muffler, catalytic converter, or sharp objects.

**Use only ProChem supplied fuel installation kits.** Ensure to use the kit specific for the truckmount model and van model being used. When traversing the vehicle floor with fuel lines, always use a bulkhead adapter. This will prevent leakage and ensure that the hose is not punctured by vehicle vibration abrasion.

**DO NOT exceed your vehicle's weight limit.** The console with waste tank and accessories weighs approximately 1200 lbs. Make certain to account for any additional accessories in your weight and balance calculations. Make certain that the vehicle has the correct axle rating. This will prevent unsafe vehicle driving conditions.

**We require high-back seats on all vehicles in which units are to be installed for head and neck protection.** We recommend using a metal partition between the seats and equipment.

**DO NOT operate this unit without the water supply attached and turned on.** The water pump and other vital components may be seriously damaged if this unit is permitted to operate dry without water.

***DO NOT operate this unit without the filter installed in the waste tank.***

**Keep your vehicle work area clean.** Wands, stair tools, and other accessories must be securely fastened before driving the vehicle.

**All high pressure hoses must be rated for 3000 PSI at 250°F.** Thermoplastic hoses do not meet these specifications and should not be used. Severe burns and injury may result if the hoses do not meet these requirements.

**The winterizing loop hose assembly, Part #10-805380, is for winterizing use only.** If used improperly, live steam may escape from this hose, causing it to whip around. Burns or injury may result.

**Make certain that you receive complete training by the distributor from whom you purchased this unit.**

**This unit uses high pressure and temperature. Improper or irresponsible use may result in serious injury.**

**Do not modify this unit in any manner.** Improper modification can cause severe personal injury or fatality.

**CALIFORNIA PROPOSITION 65 WARNING:** Engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Running with out adequate water supply could damage water pump. Ensure always to have an adequate water supply.

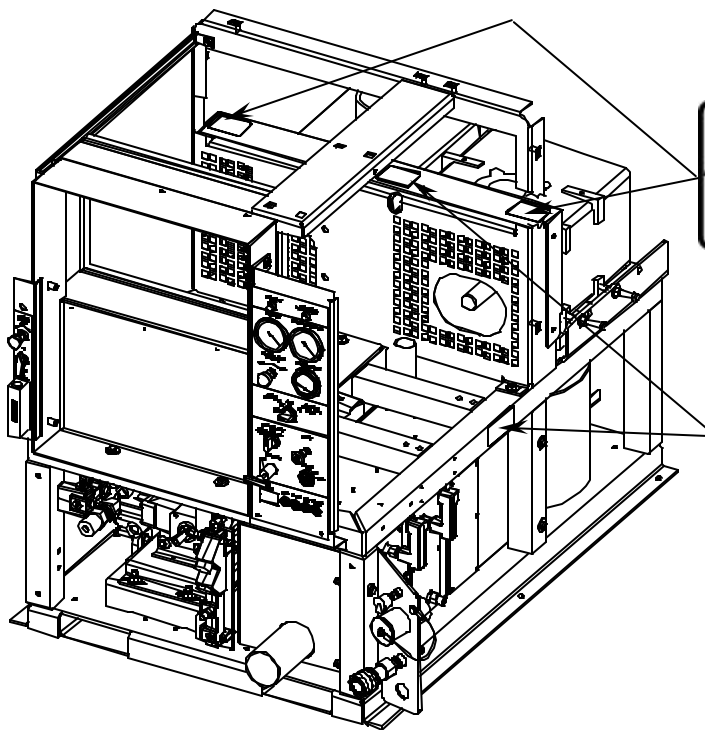
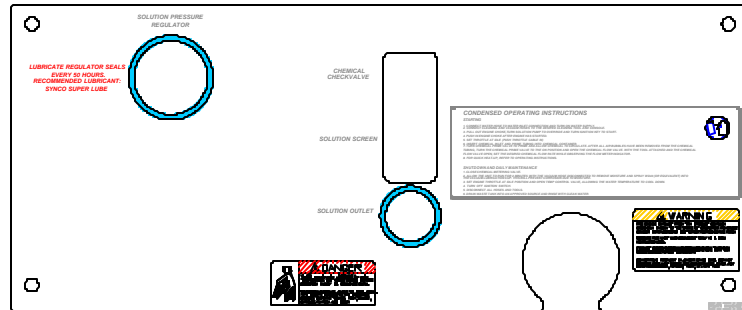


## HAZARD INTENSITY LEVEL

The following **WARNING LABELS** are found on your cleaning unit. These labels point out important **Warnings** and **Cautions** which should be followed at **all** times. Failure to follow warnings and cautions could result in fatality, personal injury to yourself and/or others, or property damage. Follow these instructions carefully! **DO NOT** remove these labels.

NOTE: If at any time the labels become illegible, promptly replace them.

Front panel decal  
With warning labels  
Part # 790631



(2 Warning labels required)  
(1) Top of belt guard  
(1) Top of rear engine panel  
Warning label  
Part # 500769



Caution label  
Part # 500770

**TECHNICAL SPECIFICATIONS**

<b>ITEM</b>	<b>DIMENSION/CAPACITY</b>	
Engine speed	2850 rpm (high speed) Water Pump ON 1200 rpm (idle speed) Water Pump OFF.	
Water pump rpm	1750 rpm	
Vacuum pump rpm	3250 rpm	
Water flow rate	3.5 GPM (maximum)	
Water pump pressure (low pressure)	1000 PSI (maximum)	
Vacuum relief valve	13" Hg	
Waste tank capacity	60 gallons	
Console weight	790 lbs.	
Console weight (with waste tank & waste tank accessories)	990 lbs.	
<b>TORQUE VALUES</b>		
Engine hub	300 inch lbs	25 foot/lbs
Vacuum pump hub	300 inch/lbs	25 foot/lbs
Front engine pulley	216 inch/lbs	18 foot/lbs
Water pump clutch shaft bolt	300 inch/lbs	25 foot/lbs

**JET SIZING:**

Recommended **floor tool** tip sizing not exceed a total of ".045". Using larger jet sizes on your cleaning unit may reduce cleaning temperatures.

**Example:**     **Tri-jet wand uses three 95015 jets** (95° spray angle w/ 015 orifice).  
                     **015 X 3 = 045**

**Upholstery tool jet size:**                         **80015**  
**Stair tool jet size:**                                     **9502**

# OPERATION

## INSTALLATION REQUIREMENTS

**NOTE:** Your distributor from whom you purchased this mobile cleaning unit is responsible for the correct installation of this machine. The dealer is also responsible for initial training of your operators and maintenance personnel in the proper operation and maintenance of this unit.

1. The unit should **NOT** be mounted in any motor vehicle of less than **3/4 ton capacity**.

### CAUTION:

The console with waste tank and accessories must NOT exceed the vehicle's axle weight limit.

2. 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 with any State and Federal vehicle laws must be maintained.
3. The vehicle tires should have a load rating above the combined vehicle and unit weight.
4. We do not recommend using flooring materials that absorb water. This could result in rust and corrosion of the vehicle floor.
5. Padding under rubber floor mats should be removed before installing this unit.
6. We highly recommend using a aluminum drip tray under the console (Part #790552).
7. If using a trailer, the console should be positioned so that it balances properly with respect to the axle. Ten percent (10%) of the overall unit weight should be on the tongue.

**Example:** If loaded trailer weight is 2,000 lbs., tongue weight needs to be a minimum of 200 lbs. to tow properly.

## FUEL REQUIREMENTS

Use **unleaded gasoline ONLY**. **DO NOT** use any gasoline additives. We recommend the use of clean, fresh, unleaded gasoline intended for automotive use. High octane gasoline should **NOT** be used with the engine on this unit.

## ENGINE OIL REQUIREMENTS

Using the proper type and weight of oil in the crankcase is extremely important. So is checking oil daily and changing oil regularly. Failure to use the correct oil, or using dirty oil, causes premature engine wear and failure.

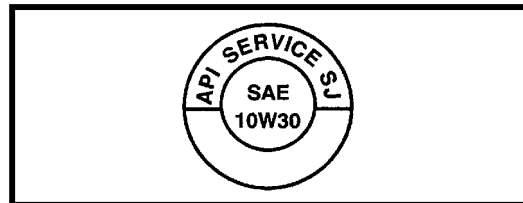
### OIL TYPE

Use high quality detergent oil of API (American Petroleum Institute) service class SG, SH, SJ or higher. Synthetic oils may be used. Select the viscosity based on the air temperature at the time of operation as shown in the following table.

RECOMMENDED SAE VISCOSITY GRADES	
* *	10W-30
* *	Kohler "Command"
5W-20, 5W-30	*
F	-20    0    20    32    40    60    80    100
C	-30    -20    -10    0    10    20    30    40
<p>*Use of synthetic oil having 5W-20 or 5W-30 rating is acceptable up to 4° C (40± F).</p> <p>**Synthetic oils will provide better starting in extreme cold below -23° C (-10° F).</p>	

**NOTE:** Using other than service class SG, SH, SJ or higher oil or extending oil change intervals longer than recommended can cause engine damage.

A logo or symbol on oil containers identifies service class and SAE viscosity grade. See figure below.



**Oil Change Logo**

## SPECIAL ALTITUDE REQUIREMENTS

Operation at higher altitudes may require a special carburetor fuel nozzle. If you operate unit your above 5000 feet, you should order the Kohler high altitude kit Part #48102.

**CHEMICAL REQUIREMENTS**

This cleaning unit, due to its chemical injection pump design, can be used with a variety of water-diluted chemical compounds (either acidic or alkaline), depending on the job to be done. However, to obtain optimum results with this unit, we recommend using the PROCHEM line of chemicals. For information on using the cleaning compounds, refer to the PROCHEM chemical manual.

**WATER REQUIREMENTS**

Hard water deposits will adversely affect the plumbing and heat exchange systems on this unit. The map below will give you an idea of where areas of high water hardness may occur. However, any water supply obtained from a well is almost always hard water and a water softener will be needed to protect your equipment.

**NOTE: Equipment malfunction or component failure caused by hard water scaling is NOT covered under the warranty.**

If you are operating this unit in an area where the unit will be using water in which the hardness exceeds 3-1/2 grains, we highly recommend a suitable water softener be installed. If using a water softener, it must have a five (5) GPM (or greater) flow capacity without any hose constrictions.

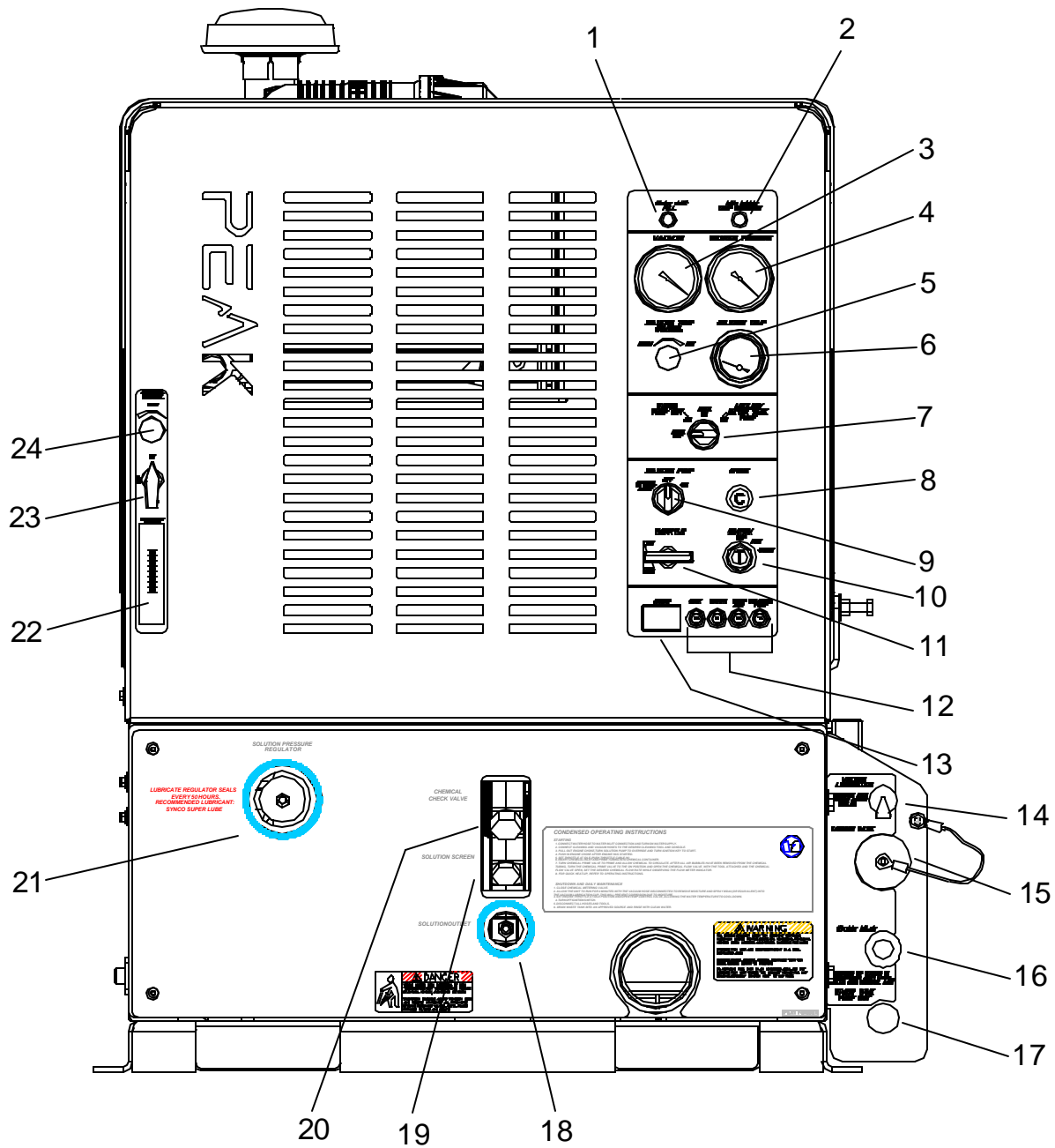
Using a water softener will reduce maintenance and decrease down time caused by hard water scaling. It will also allow cleaning chemicals to be more effective in lower concentrations.

If you require a water softener, PROCHEM has a model to meet your needs. Please contact your nearest distributor for information, price, and availability.

**HARD WATER MAP**



# OPERATION



## 1. WASTE TANK FULL INDICATOR LIGHT

This indicator light is activated when the waste tank is full. When lit the unit will shutdown protecting the equipment from damage. This also indicates that the waste tank must be emptied before the unit can be brought back in service.

**NOTE: Never dispose of waste water in storm drains, water ways or on ground areas. Always dispose of waste in accordance with local state and federal laws.**

## 2. ENGINE HIGH TEMPERATURE SHUTDOWN INDICATOR

This light when activated signals an over heat condition with the engine. When this occurs, troubleshooting is required.

## 3. VACUUM GAUGE

This gauge indicates in inches of mercury how much vacuum the system is producing at any given time.

## 4. SOLUTION PRESSURE GAUGE

This gauge registers the amount of pressure in the system.

## 5. BYPASS VALVE

This valve allow the operator to control the solution temperature by bypassing hot water to the waste tank, for low temperature cleaning such as upholstery. Turning the valve counter clockwise opens the valve. Turning clockwise closes the valve and has the effect of stopping water from bypassing.

## 6. SOLUTION TEMPERATURE GAUGE

This gauge measures the temperature of the cleaning solution as it exits the machine.

## 7. WASTE PUMPOUT AND AUXILIARY WATER PUMP SWITCH

This four-position switch is for activating the waste pumpout device. It also serves to activate the fresh water transfer pump. For turning on pumps, rotate clockwise. For turning off pumps, rotate counter clockwise.

## 8. CHOKE

The choke cable is for restricting air to the carburetor, this enriches the fuel mixture. The primary purpose is for starting in cold temperatures. When the cable is pulled out air is restricted, when pushed in the engine is in run position.

## 9. SOLUTION PUMP SWITCH

This switch serves to energize the magnetic clutch to turn the water pump on or off. Turn clockwise for activating the pump and counter clockwise for deactivating the pump.

## 10. KEY SWITCH

The key switch controls the power for the machine. To turn the machine on, rotate the key clockwise while holding solution pump switch to override position until the starter engages the engine. When machine is running let off the switch and engine will continue to run. To turn power off, rotate key counter clockwise to stop position, engine will then stop.

## 11. THROTTLE

This serves to set the speed of the engine. "T" handle pushed in sets engine to idle. "T" handle pulled out sets engine speed to maximum. "T" handle clockwise to lock in position and counter clockwise to move or change throttle settings.

## 12. CIRCUIT BREAKERS

These serve to protect the circuits from electrical spike and over loads and protects wires from damage and fire.

## 13. HOUR METER

The hour meter records the number of hours the unit has run. This serves as a time recorder for servicing the machine.

## **OPERATION**

### **14. OIL CUP**

The oil cup allows lubricant spray to reach the vacuum blower.

### **15. VACUUM INLET**

The vacuum inlet serve as connecting point for vacuum hoses.

### **16. WATER INLET**

This quick connect allows the water supply hose to be connected to the unit.

### **17. WASTE PUMPOUT (OPTIONAL)**

This auxiliary pump serves to empty the waste collection tank automatically. A float located inside the tank automatically turns off and on when the solution level reaches certain points.

### **18. SOLUTION OUTLET**

The solution outlet is the connecting point for the high pressure cleaning hoses. This outlet has a quick disconnects that allow hoses to be plugged into the unit.

### **19. SOLUTION SCREEN**

The solution screen is located on the front of the machine. The function of this screen is to trap foreign particles from exiting the machine and plugging the orifices of the cleaning tools. This screen is part of the machine maintenance cleaning.

### **20. CHEMICAL CHECK VALVE**

The chemical check valve allows chemicals to enter the system and travel in a singular direction to the wand. The chemical check valve prevents chemicals from traveling up-stream into the solution system of the unit.

### **21. PRESSURE CONTROL REGULATOR**

The pressure regulator sets the pressure of the solution system. This spring loaded valve can be adjusted up or down setting the pressure of the unit by turning the valve clockwise. The pressure is increased or reduced by turning the valve counter clockwise. This valve must be maintained in accordance with this manuals maintenance table.

### **22. FLOW METER**

The flow meter is a gauge to indicate how much liquid chemical is being introduced in the water system. The quantity can be increased by turning the chemical flow knob counter clockwise.

### **23. CHEMICAL PRIME CONTROL VALVE**

This valve allows the chemical to circulate through the chemical system with little or no restriction. It also purges out air that may be trapped in the lines and cavities of the chemical pump. By turning the valve clockwise the injection system is enabled.

### **24. CHEMICAL METERING VALVE**

The chemical metering valve regulates the amount of chemical that is injected into the system. Clockwise rotation of the knob closes the valve. Counter clockwise rotation opens the valve, allowing more chemical to enter the system.

**⚠ WARNING:** Always wear hearing protection and proper personal protection equipment when operating unit.

### WATER PUMPING AND HEAT TRANSFER SYSTEM

Cold water enters the console through the water inlet. When the water box is full the valve will automatically shut off.

Water then flows from the water box, through a strainer, into the water pump where it is pumped to the pressure regulator manifold where the pressure regulator provides and maintains the desired pressure setting.

The pressure regulator manifold includes a nitrogen charged accumulator which helps reduce pressure spikes from the pump.

A certain amount of water is by-passed from the pressure regulator due to over pumping capacity of the water pump. Water that is not called for in the cleaning process is channeled through a heat exchanger box into the first heater core from the front of the unit. This bypass water may circulate several times through the bypass heat exchanger allowing the water to be pre-warmed.

The next stage of heating and water flow is to the helicoil, when water is called for in the cleaning process it flows to the helicoil under pressure. Heat from the engine coolant is exchanged to the cleaning solution through a series of spiraled copper tubing. This allows the engine coolant to travel in a counter rotating direction to the cleaning water during the exchange process creating a very efficient transfer of heat out of the engine and into the cleaning solution.

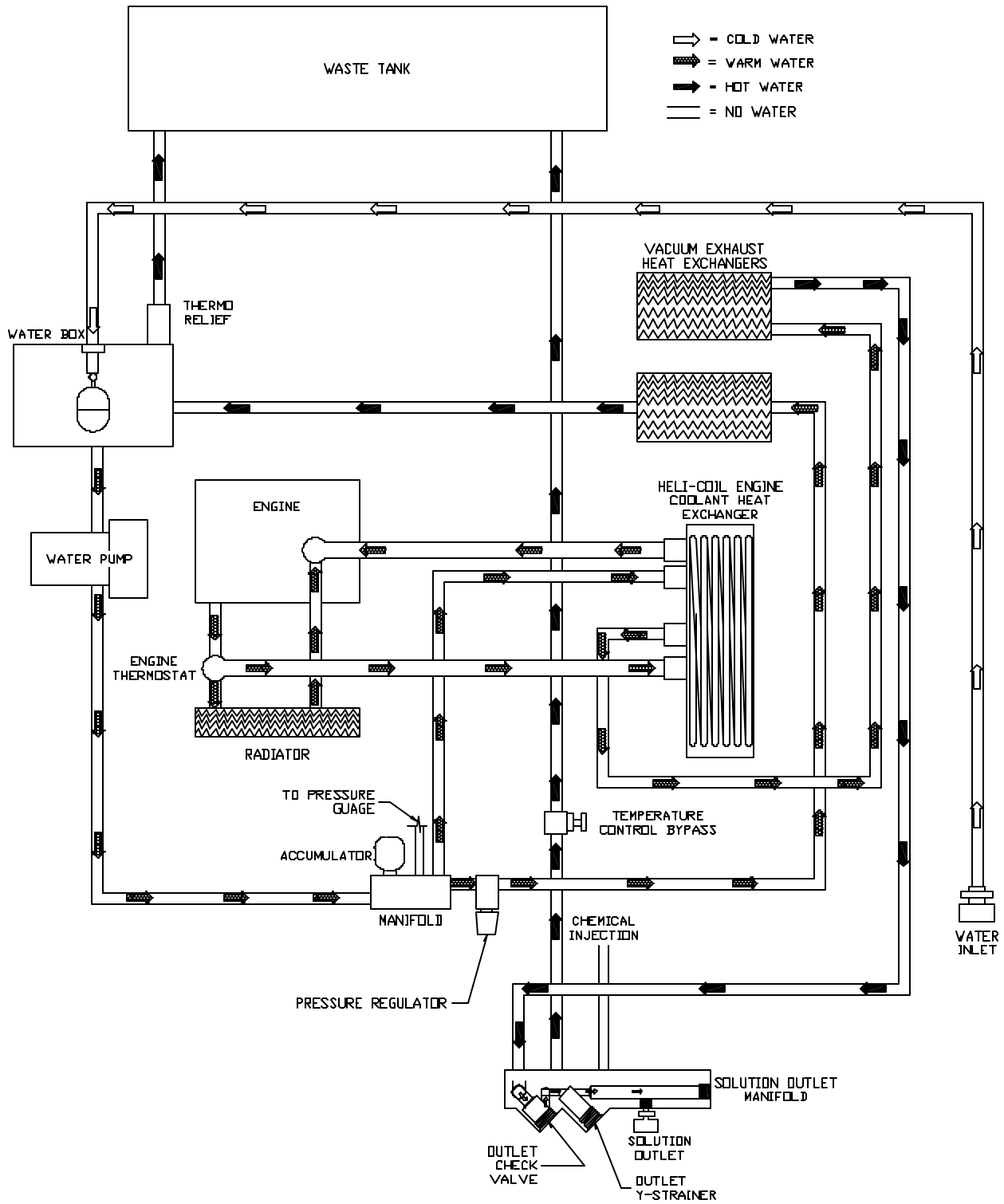
The third stage of plumbing and heat exchange takes place in the 2nd heater core located in the heater box. This is the hottest point of the gases coming from the vacuum pump and the engine. These hot gases are forced through heater core #2 creating the third stage of heat transfer to the cleaning solution.

Finally, the hot solution passes to the outlet manifold where cleaning chemicals are injected from the chemical pulse pump. This manifold serves as a temperature sensing point and a connecting point for the high-pressure hoses. Also a check valve is located in this outlet manifold prohibiting chemicals from backing up into the system.

The cleaning solution then passes through high-pressure hoses and is distributed by the cleaning tool to a surface that is being cleaned, completing the water pumping and heating cycle of the cleaning unit.



# OPERATION



**WATER PUMPING AND HEAT TRANSFER SYSTEM**

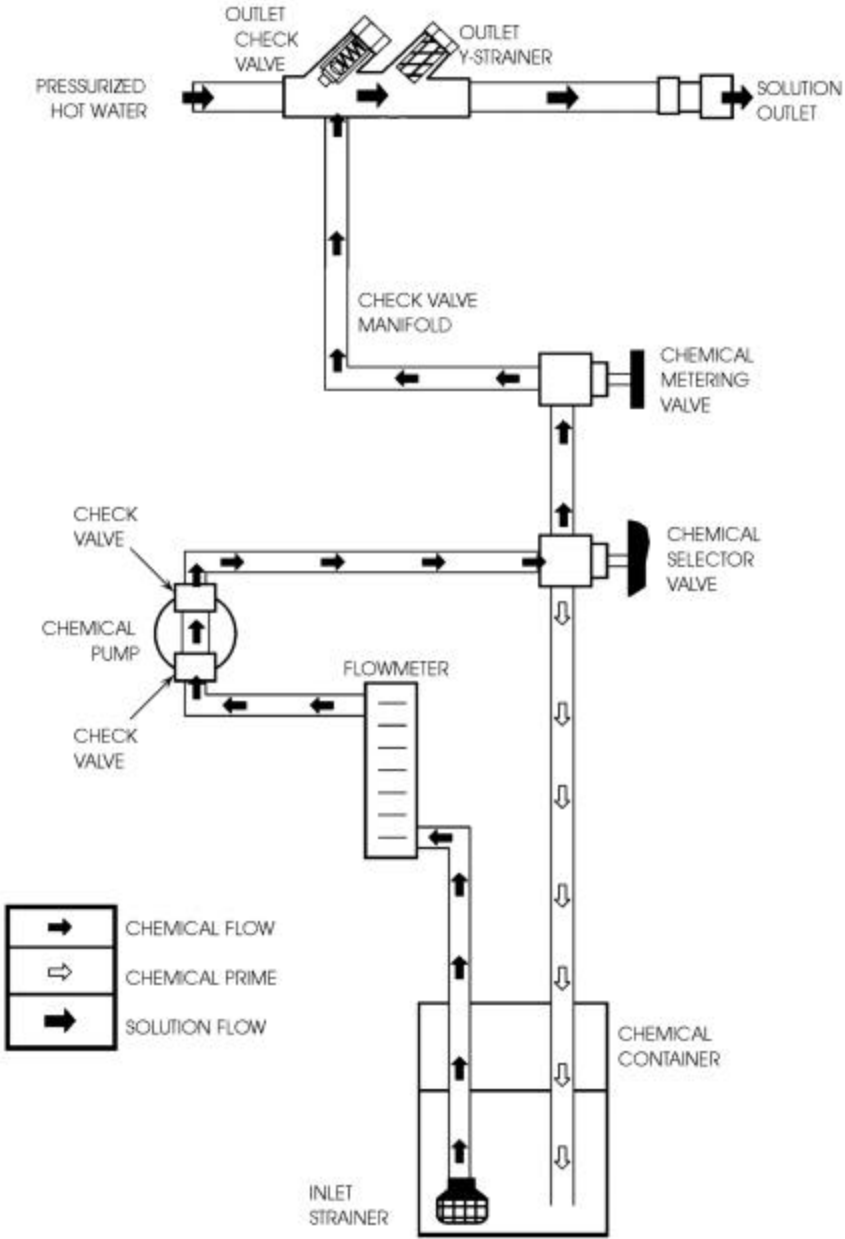
**CHEMICAL INJECTION SYSTEM**

The chemical injection system is unique in that it utilizes the pressure spikes generated by the high-pressure water pump to move chemical into the main pressure stream. The high pressure spikes move the diaphragm in the chemical pulse pump forcing small amounts of liquid chemical to be moved in a single direction of flow with the aid of two check valves.

The chemical is picked up from the container and fed through the flow meter to the chemical pulse pump where it is pressurized.

After reaching the chemical pulse pump the chemicals can either go into a bypass loop to purge air from the system. The chemical can then be directed by the chemical selector valve to the metering valve. The metering valve creates an orifice allowing the correct amount of chemical to enter the outlet manifold. The outlet manifold is complete with a check valve that will not allow the chemicals to travel upstream into the plumbing system of the unit.

The chemicals are then mixed with hot pressurized water that make up a solution for cleaning application.



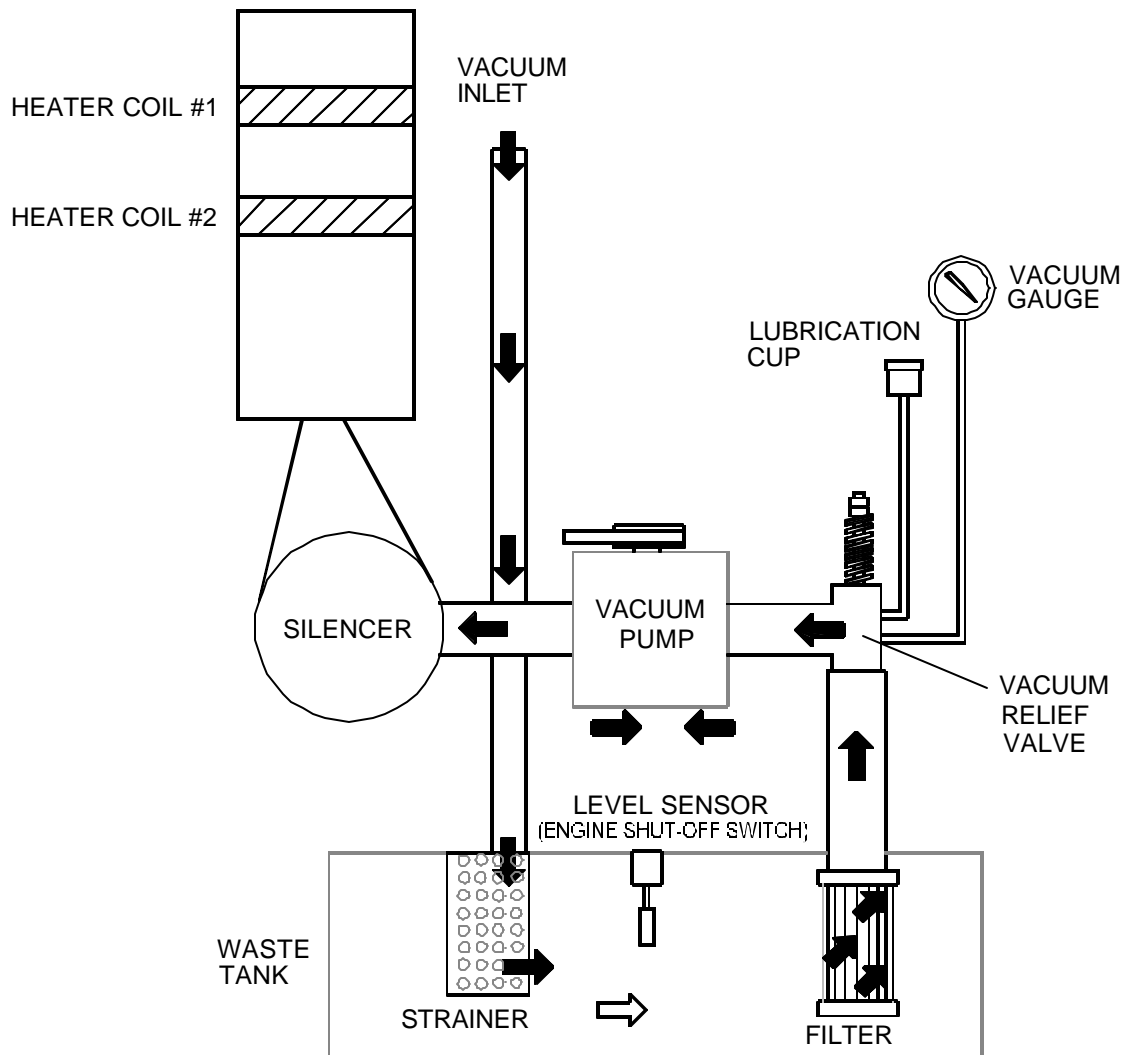
# OPERATION

## VACUUM SYSTEM

The engine turning an air pump generates vacuum. The air is channeled in one side of the vacuum pump, compressed and discharged on the opposite side, creating airflow.

The movement of air is used to do the work necessary for the extraction process. A vacuum nozzle applied to the carpet surface removes moisture, dirt and spent chemicals. These elements are conveyed back to a separating tank utilizing hoses and the force of air. Particles of moisture and dirt are separated in the vacuum tank using a series of changes in direction and velocity. The air is then filtered and rushes into the vacuum pump.

The vacuum pump compresses and heats the incoming air. The hot discharged air is forced downstream into a silencer for noise abatement. After exiting the silencer, this hot air is mixed with hot air and gases from the engine. This mixture of hot air and gases are then forced through 3 radiators serving as heat collectors. Heat from the engine and vacuum pump is then transferred into the plumbing system raising the water temperature for better cleaning.



## PRE-RUN INSPECTION

*NOTE: Operation of this unit is simple. However, only trained personnel should proceed.*

### **WARNING:**

Operate this unit and equipment only in a well-ventilated area. Exhaust fumes contain carbon monoxide which is an odorless and deadly poison that can cause severe injury or fatality. **DO NOT** operate this unit where the exhaust may enter any building doorway, window, vent, or opening of any type.

## CHECK FOR ADEQUATE FUEL

Check the fuel tank to be certain there is adequate fuel to complete the job. This unit uses approximately .95 to 2.1 gallons of fuel per hour, depending on the speed setting.

## REMOVE TOOLS FROM VEHICLE

Remove any **tools** or **hoses** from the van which you will require.

## WATER SUPPLY CONNECTION

***NOTE:** Before connecting your water hose to the supply faucet, flush out the faucet until the water is free of any debris. Flush out any debris which may be in your water inlet hose.*

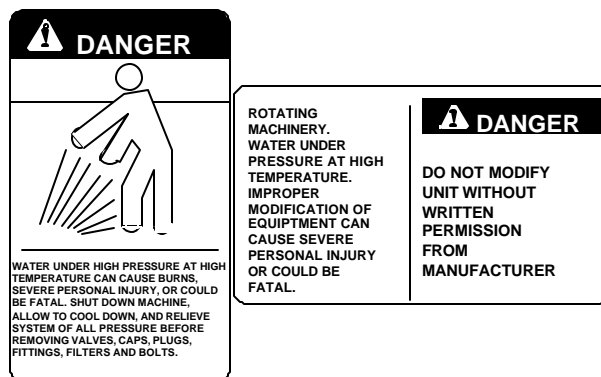
1. Connect the **water supply hose** to the **water inlet** quick-connect at the left front of the console. Connect the hose to the water supply faucet.

***NOTE:** Never use your waste pump outlet hose as a water inlet hose. Use only clean hoses for water inlet.*

2. Turn the **water supply faucet** on. The water will fill the **water box**.

## HIGH PRESSURE HOSE

Before starting the unit, connect the **pressure hose** to the **outlet connection** at the front of the unit. Connect the **cleaning tool** to the **pressure hose**.



## VACUUM HOSE

Connect the **vacuum hose** to the **vacuum inlet** connection at the front of the unit. Connect the other end of the **vacuum hose** to the **cleaning tool**.

## FILTERS

Ensure all filters on machine and in waste tank are free of debris.

## OPERATION

### PRIMING THE CHEMICAL PUMP

1. Connect water hose to water inlet connection and turn on water supply.
2. Connect cleaning and vacuum hoses to the desired cleaning tool and console.
3. Insert chemical inlet and prime tubing into chemical container.
4. Pull out engine choke, turn solution pump switch to override, and turn ignition key to start.
5. Push in engine choke after engine has started.
6. Set throttle to idle speed.
7. Fill chemical container and inspect chemical filter.
8. Turn chemical prime valve to prime and allow chemical to circulate. After all air bubbles have been removed from chemical tubing, turn the valve to the horizontal (off) position and open the chemical metering valve, triggering the solution flow on the cleaning tool. Set the desired chemical flow rate while observing the flow meter indicator.
9. Set throttle to maximum position with vacuum port blocked off for quick unit heat up.

### WASTE PUMP (OPTIONAL)

1. 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.
2. Turn the pump-out switch on the control panel to the ON position. The waste pump will operate automatically throughout the cleaning operation.

We recommend that you use a 3/4" I.D. water hose as a waste pump outlet hose. DO NOT use a hose smaller than 5/8" I.D.

NEVER use your automatic waste pump outlet hose as a water inlet hose.

 **WARNING:** NEVER dispose of waste in storm drains, waterways, or on ground areas. Always dispose of waste in accordance with Local, State, and Federal laws.

Once you have completed steps 1 through 8, proceed with the cleaning operation. Your unit should be in the correct throttle position for your cleaning operation or extracting. A float switch located inside the waste tank will automatically shut down the unit when it reaches its full capacity. When this occurs, empty the waste tank before continuing.

### CLEANING

Observe the following guidelines, while cleaning:

1. Before proceeding make sure the nozzles are functioning properly.
  - a. 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 nozzles.
  - b. If the nozzles are not showing a full spray pattern, adjust nozzles for proper pattern, clean, or replace nozzles, if required.
2. 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, apply chemical in both push and pull strokes. Always finish up an area with a vacuum stroke.
3. When cleaning, keep the working opening (mouth) flat on the surface being cleaned. Keep the wand moving when the valve is open.
4. The unit will automatically shut-down when the waste tank is full. This will prevent water being drawn into the vacuum pump. If shut-down occurs, empty the waste tank before proceeding.

## UPHOLSTERY CLEANING

Upholstery tool, part #78513

1. Set temperature as desired and slow down the engine speed to minimize excess heat.
2. Use one (1) "80015" spray tip in tool.

## SHUTDOWN AND DAILY MAINTENANCE

1. Close chemical metering valve.
2. Allow the unit to run for 2 minutes with the vacuum hose disconnected to remove moisture. Spray WD40 (or equivalent) into the vacuum lubrication cup. This will prevent corrosion due to moisture.
3. Set engine throttle at idle position and allow the water temperature to cool down, unitizing the bypass valve in the open position to bleed off residual hot water left in the system.
4. Turn off ignition switch.
5. Disconnect all hoses and tools.
6. Drain waste tank and rinse with clean water.

## DE-FLOODING OPERATIONS

De-flooding operations involve removal of water from carpet and flooring. This differs from normal cleaning operations in that no water or solution is required. An automatic waste pump-out is highly recommended for all de-flooding operations due to the large amount of water removal often required.

1. Start unit.
2. Set pressure regulator at 100 psi.
3. Shut off water pump.
4. Begin de-flooding operations.
5. Under almost all conditions, the unit will sufficiently cool itself. If you find yourself operating in extreme heat, crack the bypass valve slightly to provide additional cooling.

## FREEZING PROTECTION



**If the unit is exposed to freezing weather the water in the unit may freeze, causing SERIOUS DAMAGE to the unit. To avoid this, the following is recommended during the cold weather season.**

When the unit is not in use, always park it in a heated building.

While in operation, avoid long shutdowns as the unit provides heat while running. Shut it down just prior to leaving for the next job.

If a heated building is not available, we recommend that you winterize the unit with anti-freeze. At present, it is only possible to winterize units, which do not have an auxiliary water tank. Units with auxiliary water tanks must be stored in a heated building when not in use.

# OPERATION

## WINTERIZING YOUR UNIT

1. Shut off the water supply. Disconnect the **water inlet hose** from the front of your console.
2. Connect all **high pressure hoses and tools** that may have water in them.
3. Start the unit and turn water pump on. Open the tool valve until water pressure drops and water stops flowing.
4. Fill the water box with approximately two gallons of 100% glycol base anti-freeze.
5. Turn the **solution pump override switch** to the override position and start the unit. Turn the **solution pump switch ON**.
6. Open the tool valve until anti-freeze begins to come out of the tool. Recover **ALL** anti-freeze that comes out of the tools into an approved container. We strongly recommend that you recycle and re-use the anti-freeze.

Repeat this procedure with all the remaining tools. After all tools and pressure hoses have been filled with anti-freeze, disconnect and store them.

7. Turn the **solution pump switch OFF**. Attach the **winterizing loop hose** with attachment, Part #10-805380, to the solution outlet connection and the water inlet connection. Turn the **solution pump switch ON**.

Allow the unit to run for approximately 3 minutes with the winterizing loop hose attached.

8. Prime the chemical system with 50/50 anti-freeze/water mix. Insert the chemical inlet and prime discharge tubes into the anti-freeze container. Turn the chemical valve to PRIME until anti-freeze begins to flow out of the prime hose.
9. Now turn the chemical valve and flow simulator valves to the open position, making certain that the flow meter indicates flow and that all anti-freeze drains out of the chemical hose into an approved container, after 30 seconds, turn off both valves.

### REMOVING ANTI-FREEZE FROM THE UNIT

1. Connect one end of the **winterizing loop hose** to the solution outlet connection. Place the other end of the loop hose, without the attachment, into an approved container.
2. Start the unit. Allow the anti-freeze to flow into the container until flow stops.
3. Fill the water box with fresh water and repeat step #2.
4. Connect the **water inlet hose** to the water inlet connection on the console. Turn the water supply on.
5. Connect all **solution hoses and any tools** which require purging of anti-freeze to the solution outlet connection(s).
6. Open the tool valves and drain the anti-freeze into an approved container until the flow is clear and all anti-freeze is purged from the tools and hoses.

7. Place the chemical prime hose into the approved container. Submerge the chemical inlet hose in water. Turn the **chemical valve** to the PRIME position until clear water comes through the prime hose, and then remove the prime hose from the container.

Turn the **chemical valve** to the ON (CHEMICAL) position. This will allow water to flow into the other side of the system.

Once all of the anti-freeze is removed, the unit is ready to use.

Eventually, the anti-freeze in your storage container will become diluted with water. If the anti-freeze level drops below 50% of the total, dispose of it and start with fresh 100% anti-freeze.

### **WARNING:**

**When disposing of used anti-freeze, observe local laws and regulations. Do not drain onto the ground or into storm drainage systems.**



# MAINTENANCE

## SERVICE SCHEDULE

<b>Engine</b>	Daily	Check engine oil level. *** Fill to proper level
<b>Engine</b>	Daily	Check coolant level in overflow bottle
<b>Vacuum Pump</b>	Daily	Spray WD-40 in lubrication cup at front of console for 5 sec.
<b>Water Pump</b>	Daily	Check oil level.** Fill to proper level
<b>Solution Inlet Tube Strainer</b>	Daily	Check strainer for blockage, remove any debris
<b>Vacuum Inlet Filter (In Waste Tank)</b>	Daily	Clean filter, inspect, replace if damaged
<b>Vacuum Hoses</b>	Daily	Wash out with clean water
<b>Automatic Waste Pump</b>	Daily	Inspect and remove any debris or sediment
<b>Chemical Filter</b>	Daily	Inspect daily
<b>Vacuum Pump</b>	Weekly*	Check oil level. Fill to proper level
<b>Water Box Float Valve</b>	Weekly	Check for proper seating and shut-off
<b>Water Pump Inlet Filter</b>	Weekly*	Check for debris and clean
<b>Battery</b>	Weekly*	Check for proper fluid level. Fill with distilled water only
<b>Solution Outlet Y-Strainer</b>	Weekly*	Inspect and remove any debris or blockage
<b>Pressure Regulator</b>	50 hrs	Lubricate o-rings
<b>Pressure Regulator</b>	50 hrs	Lubricate plug behind spring
<b>High Pressure Hoses</b>	100 hrs	Inspect for damage or impending damage
<b>Engine</b>	100 hrs	Change engine oil***
<b>Engine</b>	100 hrs	Change oil filter***
<b>Engine</b>	100 hrs	Check fan belt tightness
<b>Battery</b>	100 hrs*	Clean battery terminals
<b>Float Valve Seal</b>	200 hrs.	Replace seal
<b>Engine</b>	200 hrs	Service air cleaner elements*
<b>Engine</b>	200 hrs	Check radiator hoses and clamp tightness
<b>Fuel Pump</b>	200 hrs	Check hose connections
<b>Engine</b>	200 hrs	Check spark plugs for carbon deposits and proper gap
<b>Chemical Valves</b>	200 hrs	Inspect and/or adjust packing nuts

# MAINTENANCE

## SERVICE SCHEDULE

<b>Vacuum Exhaust Heat Exchanger</b>	500 hrs	Inspect cores and remove debris.
<b>Water Pump</b>	500 hrs	Change oil**
<b>Pulley Set Screws &amp; Hub Cap Screws, Water Pump Clutch Shaft Bolt</b>	500 hrs	Check for proper torque valves. Re-torque, if required****
<b>Drive Pulley</b>	500 hrs	Inspect, clean and check for pulley groove wear****
<b>Drive Pulley</b>	500 hrs	Check pulley alignment****
<b>Drive Belts</b>	500 hrs	Inspect and clean****
<b>Drive Belts</b>	500 hrs	Check belt tension****
<b>Chemical Pump &amp; Check Valves</b>	500 hrs	Replace diaphragm and check valves.
<b>Vacuum Lubrication Lines</b>	500 hrs	Check for line obstructions. Replace tubing if cracked or damaged
<b>Engine</b>	500 hrs	Replace in-line fuel filter on engine.
<b>Heater Core</b>	500 hrs	Clean and inspect.
<b>Engine</b>	1000 hrs	Replace spark plugs.
<b>Check Valve (Solution Outlet)</b>	1000 hrs	Inspect, clean, and repair, if needed.
<b>Vacuum Pump</b>	1500 hrs	Drain, flush, and replace oil *****
<b>Waste Tank Shut-off Float Switch</b>	Monthly	Check for debris hindering movement
<b>Engine</b>	Yearly	Flush radiator and change engine coolant.
<b>Engine</b>	Yearly*	Replace air cleaner element.
<b>Nitrogen Accumulator</b>	Yearly*	Replace Accumulator.
<b>Waste Tank Filters/Strainers</b>	Yearly	Check for damage and blockage. Replace if needed.
<b>Engine</b>	2 years	Replace radiator hoses and hose clamps.
<b>Engine</b>	3 years	Replace ignition wires.

\* Or as often as required

\*\* Change water pump crankcase oil after the first 50 hours

\*\*\* Change engine crankcase oil and filter after the first 50 hours

\*\*\*\* Perform drive belt, pulley and hub maintenance after the first 25 hours of operation, and then again at 100 hours

\*\*\*\*\* If using AEON PD synthetic lubricant, 4000 hours or every 2 years, whichever comes first

# **MAINTENANCE**

## **KEY CHECKPOINTS**

*Note: Initiation of a planned preventative maintenance program will assure that your unit has optimum performance, a long operating life, and a minimal amount of "down" time.*

### **ENGINE COOLANT SYSTEM (RADIATOR) MAINTENANCE**

Your engine radiator coolant system is an important part of the power plant operation. In addition, this heat exchange system is used to provide heat for cleaning operations is also highly dependent on the engine coolant system. Follow the recommended coolant system maintenance in the Maintenance Schedule in this manual and your Kohler engine owner's manual. Refer any additional questions to your dealer.

### **EXTERNAL FUEL PUMP MAINTENANCE**

The power plant for unit receives fuel from the main gas tank of your van/truck. An external fuel pump that provides this fuel is located on the underside of the van/truck. Loose fittings and hose connections will cause your unit to perform poorly. Follow the recommended fuel pump maintenance in the Maintenance Schedule in this manual. Refer any additional questions to your dealer.

### **CHEMICAL SUPPLY SYSTEM MAINTENANCE**

The chemical supply system pulls chemicals from your chemical bottle utilizing a pump that works off the water pump pulsing. Any clogged filters or loose connections will result in a chemical supply system malfunction or a malfunction at the cleaning tool. Maintenance of the solution outlet check valve and strainer are vital to effective cleaning operation and minimal unit downtime. Additionally, the hoses related to supplying water and chemical to the outlet manifold are under high pressures and experience thermal expansion and contraction. Periodic inspections of these hoses for tears, cracks, and failing connectors are necessary to avoid unwanted leaks. To keep your chemical system functioning properly, follow the chemical pump and solution outlet maintenance in the Maintenance Schedule in this manual. Refer any additional questions to your dealer.

### **HEAT EXCHANGER SYSTEM MAINTENANCE**

The heat exchange system in your unit transfers energy between the unwanted heat of the power plant and the solution supply system of the unit. The heat transfer of this system is highly dependent on the surface area contact in the heat exchanger cores located in the heat exchanger box. This surface area amount is adversely minimized when the supplied water is not softened to recommended levels. Hard water will result in scaling on the inside walls of the heat exchanger tubes. It is recommended that you use a dealer approved water softener to avoid premature heat exchanger core failure. Contact your local dealer for advice on the water hardness levels in your area.

Additionally, the heat exchanger tubes are very sensitive to freezing conditions. As the water freezes during cold conditions, it expands in the heat exchanger tubes and causes damage. Often the tubes are cracked and require the replacement of the heat exchanger core. Refer to the Freeze Protection instructions section in this manual. Refer any additional questions to your dealer.

### **VACUUM PUMP MAINTENANCE**

(Refer to manufacturer's manual (P/N 980129) for specific maintenance instructions)

The total function of the unit is based around the performance of the vacuum pump. Heat transfer used to raise the temperature of the solution is gained from the air drawn by the vacuum pump and solution is removed from the carpet with the vacuum suction of the vacuum pump. General maintenance actions for the vacuum pump as listed in this manual are vital to prolonged vacuum pump operations. Daily lubrication of the pump is required to avoid seizure of the system. Also, waste tank filters and strainers must be maintained to prevent unwanted debris from entering the vacuum pump.

### **WARNING:**

**DO NOT** service this unit while it is running. The high-speed mechanical parts as well as high temperature components may result in severe injury, severed limbs, or fatality.

**NOTE:** Use the hour meter as a guide for coordinating the maintenance schedule.

### ENGINE

(Refer to manufacturer's manual (P/N 980128) for specific maintenance instructions)

1. Check the engine oil level **daily**, when in use. Make certain that proper oil level is maintained. **NEVER** overfill.
2. Change the break-in oil after the first **50 hours** of operation. Thereafter, change oil every **100 hours** of operation. USE ONLY KOHLER BRAND OIL FILTERS (PN 34412). USING ANY OTHER TYPE OIL FILTER WILL VOID YOUR ENGINE WARRANTY.

**Oil Recommendation.** See "ENGINE OIL REQUIREMENTS" in Operations section.

**NOTE:** Using less than service class SF or SG oil or extending oil change intervals longer than recommended can cause engine damage.

3. Re-torque the manifold and exhaust tube nuts, cylinder head bolts, and carburetor attaching nuts after the **first 200 hours** of use.
4. Check the spark plugs every **200 hours**. Clean if necessary. Replace the spark plugs every **1000 hours**. **NOTE:** Never sandblast spark plugs. Spark plugs should be cleaned by scraping or wire brushing.
5. Clean the air cleaner element every **200 hours**. Replace the element every **2400 hours**
6. Check the engine idle RPM every **200 hours** and adjust, if necessary. **NEVER** adjust engine RPM without a tachometer. Refer to Kohler Engine Operation and Service Manual.
7. Check the coolant level in the radiator overflow container **daily**. If no coolant is seen, remove the cap and add coolant. Change the coolant with a 70:30 coolant to water ratio every **1000 hours**. 70:30 mixture guards against corrosion.
8. Replace the in-line gas filter **yearly**.

**NOTE:** For additional engine service information, obtain a "Kohler Repair Manual" from any authorized Kohler Service Center. If service or repair is required, contact an authorized Kohler Service Center. You will need to provide the serial number of the engine.

# MAINTENANCE

## VACUUM PUMP

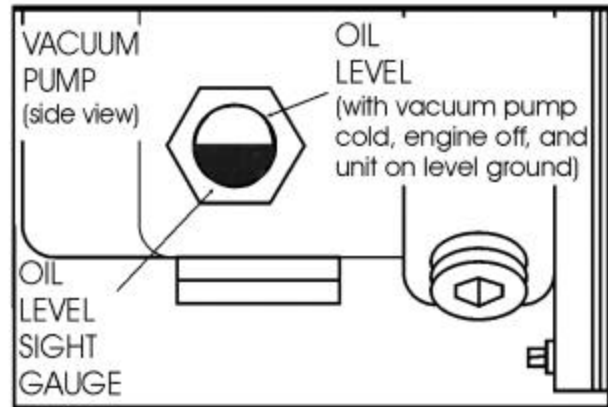
Refer to the Vacuum Pump Operation and Service Manual (P/N 980129) for specific instructions.

**Lubrication:** We recommend that you use AEON PD Synthetic Blower Lubricant in both ends of the vacuum pump for all operating temperatures. AEON PD is formulated especially for positive displacement blower service to provide maximum blower protection at any temperature. One filling of AEON PD will last a many times longer than a premium mineral oil.

**NOTE: AEON PD (Part# 05-008039) is the oil which PROCHEM puts in the vacuum pump at the factory. Topping off or adding petroleum oil to synthetic oil is NOT recommended.**

1. 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. Use the illustration as a guide when adding oil.
2. 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.

First run the unit at least **1 minute** to remove any moisture from the vacuum pump. Next, fill the lubrication cup with WD-40, or a similar lubricant, for **5 seconds** while the unit is running and the vacuum inlets are sealed. Do this at the end of **each working day**.

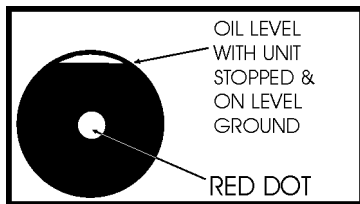


3. Drain, flush and replace oil **every 1500 hours or yearly, whichever comes first**. Change oil more frequently if inspection so indicates. With AEON PD synthetic lubricant, perform the oil change maintenance **every 4500 hours or every 2 years, whichever comes first**.
4. Vacuum pump lubrication is vital to performance of our pump. Failure to follow the maintenance schedule in the "Maintenance Schedule" can lead to permanent damage to your blower.

## WATER PUMP

Refer to the Water Pump Operation and Service Manual for specific instructions (P/N 67-945621).

1. Check the crankcase oil level **daily** to assure the proper level. Use the illustration as a guide when checking the oil level. If the level has dropped, check for the source of leakage and repair.
2. Use the provided dipstick. Remove red filler cap and insert dipstick. Oil level should be between marks on the dipstick or use a mirror and refer to the illustration.



3. Change the crankcase oil with Cat Pump Crankcase Oil, Part #05-008016, after the **first 50 hours** of operation. Drain and refill the crankcase oil with Cat Pump Crankcase Oil **every 500 hours** thereafter.
4. Other Cat approved oil equivalents are: Mobil DTE 16, Amoco Rykow 68, and Shell Tellus T68.

## WATER PUMP CLUTCH

### ⚠ CAUTION:

After removing or replacing water pump clutch, make certain that bolt is re-torqued to the proper value.

Torque Value		
Component	Inch pounds	Foot pounds
Water pump shaft bolt	300	25

## VACUUM INLET FILTER (IN WASTE TANK)

1. The vacuum filter in the waste tank should be removed and cleaned **daily**. If this is done, the filter will last for a long period of time.

## VACUUM RELIEF VALVE

While the unit is running at full RPM, block the air flow at the vacuum inlet connection and read the vacuum gauge. If adjustment is required, shut the unit down and adjust the vacuum relief valve locking nut tension. Start your unit and read the vacuum gauge. Repeat this process until the relief valve opens at 13" Hg.

## VACUUM PUMP DRIVE BELTS

To tighten the vacuum pump belts:

1. Loosen the four screws which hold the vacuum pump mount in place.
2. Loosen the 6 nuts at the vacuum muffler outlet to heat exchanger box and loosen the bolt at the back of the machine connecting the muffler bracket to the frame.
3. Turn the adjusting bolts until the proper belt tension is achieved (1/2" deflection in the center of the belt, halfway between the pulleys).
4. Retighten all bolts previously loosened at the vacuum muffler.

**NOTE: When adjusting belt tension, make certain that the engine shaft and vacuum pump shaft remain parallel, and the belt tension is equal throughout the belt width.**

3. After adjusting, re-tighten the four screws which hold the vacuum pump mount in position. Check belt alignment with straight-edge.

### ⚠ CAUTION:

**Make certain that when you re-torque these screws, that you use a clockwise pattern and continue until proper torque is achieved.**

Torque Value		
Component	Inch/lbs	Foot/lbs
Rear Engine Hub	300	25
Vacuum Pump Hub	300	25
Front Engine Pulley	216	18

4. Check for pulley groove wear, clean belts and pulley grooves, check for worn belts, proper belt tension, and pulley alignment after the **first 25 hours** and then again at **100 hours**. Check for belt ride in the groove.

## MAINTENANCE

### WATER PUMP DRIVE BELT

To tighten the water pump belt:

1. Loosen the nuts which hold the water pump mount to base.
2. Adjust the position of the belt tension adjusting bolt until the proper belt tension is achieved. (1/2" deflection in the center of the belt, halfway between the pulleys).
3. While checking the alignment, tighten the nuts which hold the water pump mount to base.

### FLOAT VALVE (WATER BOX)

The float valve should only be adjusted if the water box is overflowing or the water level in the box is lower than 5-1/2".

1. If the box is overflowing, remove, and check the float valve for debris or damage.

**NOTE: If the float ball has any water inside it must be replaced.**

### CAUTION:

When replacing float ball, **DO NOT** over-tighten, as the rod can puncture the ball. Make sure to tighten the nuts on the rod.

2. Disassemble the valve and check the piston and seat for damage, replace if needed. See the "Illustrated Parts Listing" for a parts break-down.

### WASTE TANK STRAINER BASKET

The strainer basket located inside the waste tank should be removed and cleaned whenever it is full of debris. This should be done on at the end of each job.

### WASTE TANK FLOAT VALVE

The float valve in the waste tank shuts the unit down once the waste tank becomes full. Debris can collect around the hinge of the float valve. Check the float valve for debris at least once a month.

### Y-STRAINER (OUTLET)

Inspect the Y-strainer **after the first week** of running the unit by unscrewing the screen and remove any accumulated debris. Inspect the strainer again at **2 and 4 weeks**.

The Y-strainer should then be inspected **every month**. However, if the Y-strainer has a frequent build-up of debris it should be inspected and cleaned more often.

### CHECK VALVE (OUTLET)

Inspect the check valve when rebuilding the chemical pump or as needed. Remove and disassemble the check valve. Check the Teflon seat for debris or abnormal wear. Clean or replace seat if needed.

**NOTE:** Improper seating of the check valve poppet, damaged spring, or o-rings will cause poor operation of the chemical system.

For the procedure, see the "General Service Adjustments" section in this manual for details.

### CHEMICAL PUMP

Rebuild the chemical pump **every 500 hours**. This involves changing the diaphragm and check valves.

For the procedure, see the "Chemical Pump" section in this manual for details.

**NOTE: Inspect chemical filter daily.**

### CHEMICAL AND HEAT BYPASS VALVES

Examine the packing nut on the chemical selector valve, heat bypass valve, and chemical metering valve **every 200 hours**. Keeping these valve packings properly adjusted will eliminate possible leakage from the valve stems and add to overall valve life.

For the procedure, see the "General Service Adjustments" section in this manual for details.

## NITROGEN ACCUMULATOR

The nitrogen accumulator is pressurized to 250 PSI and must be replaced periodically. The accumulator cannot be repaired or recharged. We recommend replacement every 1000 hours of use.

## PRESSURE REGULATOR

Lubricate the o-rings **every 50 hours**. Use o-ring lubricant Part #05-008035.

For the procedure, see the "General Service Adjustments" section in this manual for details.

## VACUUM HOSES

To assure maximum hose life, we recommend that the hoses be washed out with clean water at the end of each **working day**.

## HIGH PRESSURE HOSES

Inspect your high pressure hoses for wear after the **first 100 hours** of use. Inspect **every 25 hours thereafter**. If hoses show any signs of damage or impending rupture, **replace the hose**.



**DO NOT attempt to repair high pressure hoses! Repairing high pressure hoses may result in severe burns and serious injury!**

***All high pressure hoses must be rated for 3000 PSI at 250°F. Thermoplastic hoses do not meet these specifications and should not be used. Severe burns and injury may result if the hoses do not meet these requirements.***

## OPTIONAL WASTE PUMP-OUT

**At the end of each work day**, make certain that you remove any debris or sediment which may be inside the waste pump by pumping fresh water through the pump.

## ENGINE COOLANT REPLACEMENT

Annually the coolant in the Prochem machine should be replaced. This coolant is an integral part of the heating system and needs to be maintained as any other working part of the system. We recommend that this procedure be accomplished by the following steps.

### DRAINING COOLANT:

1. Reference Kohler Manual for specific coolant draining instructions. Drains are located at the bottom of the radiator and on the engine block next to the oil filter.

***NOTE: Be sure that used coolant is collected in a proper container and disposed of in accordance with local laws.***

2. After draining is complete, close both the radiator and heli-coil petcocks. Draining is complete.

### REPLACING COOLANT:

1. Fill radiator with 70/30 anti-freeze water mix.
2. Start unit and run on first notch.
3. As the unit warms up, maintain a full radiator with a 70/30 mix.
4. Open petcock slightly on heli-coil to allow any trapped air to escape. When coolant runs out of heli-coil, close petcock.
5. Fill radiator with 70/30 coolant mix.
6. Re-install radiator cap.
7. Shutdown unit.

Check radiator overflow bottle. Add coolant to proper "cold" level.



## MAINTENANCE

### SERVICE GENERAL ADJUSTMENTS



**USE EXTREME CAUTION** while servicing while machine is running. The high-speed mechanical parts as well as high temperature components may result in severe injury, severed limbs, or fatality.

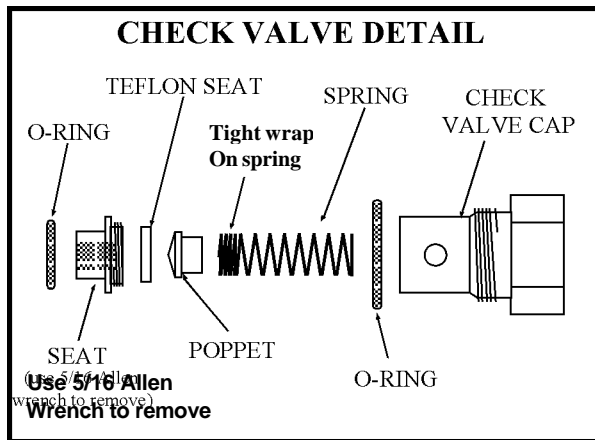
### ENGINE SPEED

This unit uses a factory installed Kohler engine governor. The engine speed is adjusted using the "T" handle throttle control. Pushed in the engine is at idle speed (1200 rpm). With throttle control pulled out, engine operates at maximum rpm (2800). By turning "T" handle clockwise, throttle can be locked at any engine speed between idle and maximum speed.

### CHECK VALVE (SOLUTION OUTLET)

Inspect the check valve whenever doing service on the chemical pump or if flow problems occur in the chemical system:

1. Remove the check valve. Be sure the small o-ring for the seat comes out with the check valve.
2. Remove the seat, using a 5/16" Allen wrench.
3. Check the Teflon seat for debris or wear. Clean or replace Teflon seat if needed.
4. Clean the poppet and spring, inspect for wear or damage, and replace as needed.
5. Re-assemble the check valve. Start the seat by hand, tighten using a 5/16" Allen wrench. **DO NOT** over-tighten seat.



**NOTE: Improper seating of the check valve poppet, damaged spring or o-rings will cause poor operation of the chemical system.**

6. Lubricate the o-rings with o-ring lubricant Part #05-008035 and reinstall.

### WATER BOX

1. Check inlet strainer for debris and blockage. A blocked strainer could damage the water pump if water flow is restricted.
2. Inspect water box float valve for freedom of movement and water leaking past valve.

### CHEMICAL PUMP

The only repairs which the chemical pump may require is the replacement of the diaphragm or check valves. To replace the diaphragm, unscrew the cover from the body. When replacing the diaphragm, lubricate the outer edges of the diaphragm with o-ring lubricant Part #05-008035 and reassemble. To replace the check valves, unscrew the check valve caps. Replace the check valves and reassemble, using new o-rings.

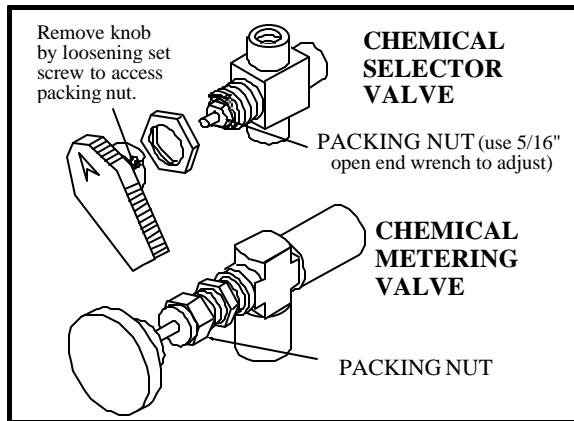
**DO NOT** attempt to re-use o-rings once the check valves have been removed. See the "Illustrated Parts Listing" for a parts break-down on the chemical pump.

### DRIVE BELTS FOR WATER PUMP AND VACUUM PUMP

Use only exact replacement for system drive belts. Use only exact manufacturer and models for replacements

## PACKING NUT ADJUSTMENT FOR CHEMICAL METERING AND CHEMICAL SELECTOR VALVES

Examine the packing nut on the metering and selector valves for proper tension every **200 hours**. When turning the knob, there should be a small amount of resistance. If not, slightly tighten the packing nut. **DO NOT** over tighten. Keeping the valve packings properly adjusted will eliminate possible leakage from the valve stem and add to overall valve life.



## PRESSURE REGULATOR

The pressure regulator serves to maintain water pressure at a preset point and to bypass this water back to the water box.

To adjust:

1. With your unit running, close the cleaning tool. Check the pressure gauge. Open the tool valve. We recommend setting the pressure regulator so that the pressure gauge reads 450 PSI with the tool valve **open**.

When the tool valve is opened, there is an approximate drop of 50 PSI in pressure. **If there is a pressure drop greater than 100 PSI, it may be necessary to lubricate the o-ring in the pressure regulator.**

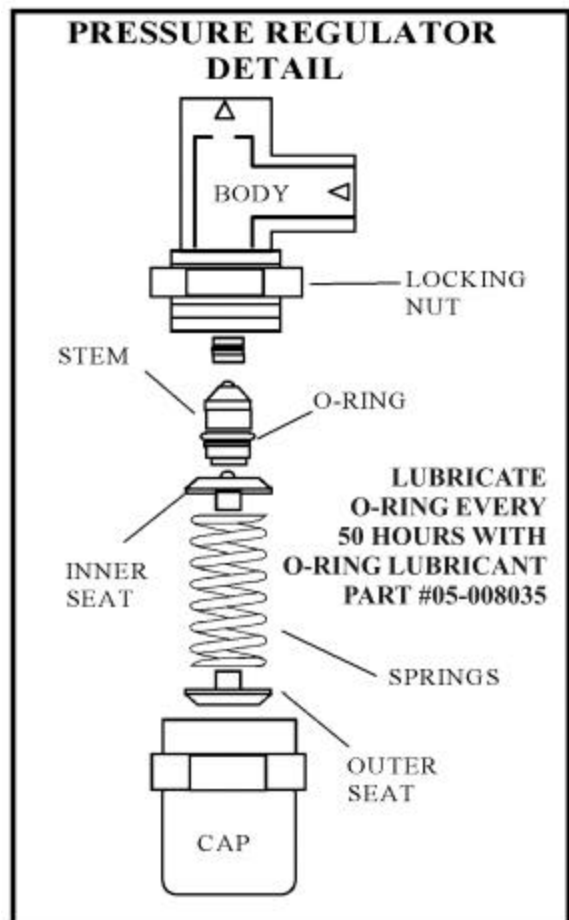
2. If the pressure regulator requires adjustment, loosen the locking nut, then turn the adjusting body (cap) (while observing the pressure gauge on the control panel) until the desired pressure is obtained. Retighten the locking nut.

### **⚠ WARNING:**

**DO NOT** loosen the adjusting body (cap) all the way (counterclockwise) or remove it while the unit is running.

We recommend that you lubricate the pressure regulator o-ring every **50 hours**, or whenever required. If you do not, the stem may become seized due to inadequate lubrication. If this occurs:

- a) Shutdown the unit.
- b) Relieve all pressure from the water system.
- c) Remove the cap from the pressure regulator and remove the stem with long nose pliers.
- d) Clean and lubricate stem.
- e) Reassemble pressure regulator.



## MAINTENANCE

PROBLEM	CAUSE	SOLUTION
Loss of water pump pressure.  With the cleaning tool open, the water pressure gauge reads below the normal operating pressure.	Water supply is turned off or the float valve is stuck or improperly adjusted.	Turn the water supply on or up. Check for kinks in the water supply hose. Examine the float valve and adjust or replace.
	Water pump inlet supply line is plugged or drawing air.	Examine the water inlet filter inside the water box. Remove accumulated debris and replace if required. Check for suction leaks and loose clamps or fittings. Tighten any loose fittings or clamps. Replace any ruptured hose(s).
	Improper engine speed	Using a tachometer, check the engine speed. Full throttle engine speed is 2800 RPM. Idle engine speed is 1200 RPM. Refer to the "engine speed" section for instructions on how to re-adjust.
	Pressure regulator o-rings are dry.	Lubricate o-rings, using o-ring lubricant Part #05-008035.
	Pressure regulator has worn o-rings	Check o-rings. If necessary, replace.
	Pressure regulator is dirty, stuck open, or improperly adjusted.	Clean or repair regulator. Adjust to working pressure. Lubricate o-rings, using o-ring lubricant Part #05-008035.
	Low pump volume. (Measure the amount of water being returned to the water box from the pressure regulator. It should fill a gallon container about every 17 seconds).	Examine the check valves, plunger cups, and cylinder head on the water pump. Repair, whenever required (refer to the water pump service manual).
	Defective water pressure gauge.	Replace gauge
	Orifice (spray nozzle) in the cleaning tool is worn, defective, or wrong size.	Replace Nozzle or change nozzle size.
	Debris clogging water lines or water inlet disconnect.	Clean or replace as needed.
Loss of solution volume at cleaning tool orifice.  Water gauge reads normal.	Belts loose or broken	Re-tension or replace as needed.
	Loss of pump prime	Manually prime water pump.
	Plugged orifice and/or screen in the cleaning tool.	Unplug or replace orifice and/or screen
	Internal block between the pressure regulator manifold and the outlet Y-strainer, or the Y-strainer screen is clogged	Inspect all lines, remove accumulated debris which is blocking proper flow. Replace any defective hoses. Remove, inspect, and clean the Y-strainer screen. De-scale unit and install a water softener, if necessary.
	Outlet check valve is plugged	Examine the check valve, remove any debris
	Defective quick-connect on one or more of the high pressure hoses.	Replace defective quick-connect(s) on high pressure hoses(s).
	Cleaning tool valve is malfunctioning.	Repair or replace valve.
Hose inner lining is constricted.	Remove restriction or replace hose.	
	Air leak in chemical supply line, priming valve or metering valve.	Check for air leaks. Replace faulty parts.

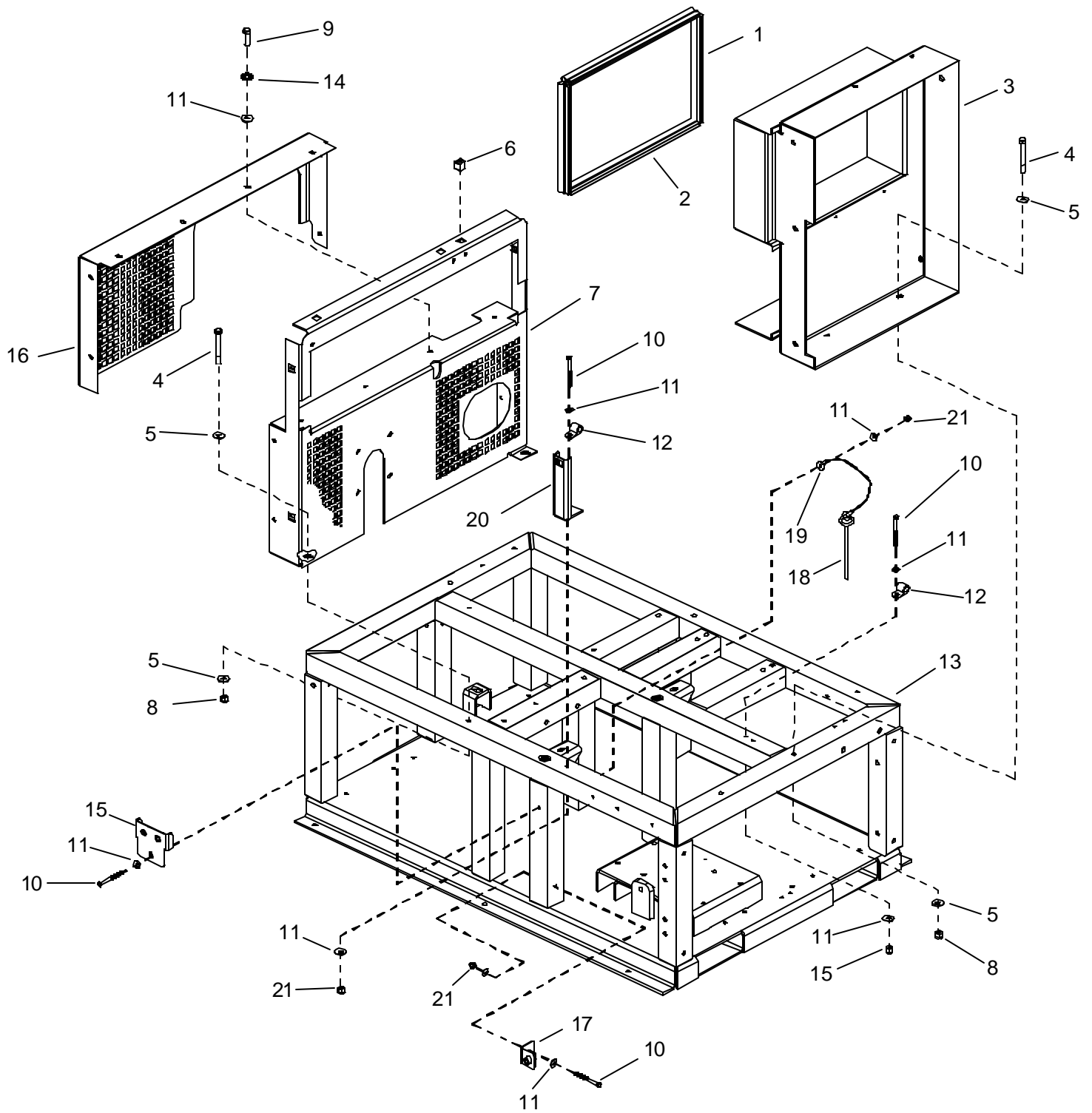
<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
<p>Loss of vacuum</p> <p>While cleaning, the vacuum is not up to specification. Engine RPM is normal.</p>	Vacuum gauge is giving an improper reading.	Examine the tubing between the vacuum relief valve and the vacuum gauge and remove any blockage.
	Vacuum hose(s) is damaged, causing a suction leak.	Inspect hose(s), repair or replace.
	Waste tank gaskets not sealing properly, not positioned properly	Inspect the gasket. Repair seal or replace Re-position lid(s).
	Plugged vacuum hose or vacuum plumbing between vacuum inlet and strainer basket.	Unplug vacuum hose or inlet plumbing.
	Waste tank filter or strainer basket is plugged.	Clean or replace filter. Clean strainer basket.
	Loose vacuum pump drive belts.	Tighten the drive belts
	Waste tank drain valve is damaged or left open, causing a vacuum leak.	Drain the waste tank. Close drain valve, if open. Remove the dump valve and, after inspecting, replace the defective components.
	Vacuum relief valve requires adjustment or has a vacuum leak due to damaged diaphragm.	Re-adjust the vacuum relief valve. If the vacuum does not increase, remove and inspect the relief valve diaphragm. If damaged, replace
	Vacuum exhaust heat exchangers are plugged with lint.	Remove and clean.
	Vacuum pump is worn out.	Replace the vacuum pump.
<p>Excessive Vacuum</p>	Improper throttle adjustment.	Adjust throttle to set desired vacuum pressure.
	Vacuum obstruction	Inspect hoses for obstructions.
	Vacuum relief valve requires adjustment.	Readjust the vacuum relief valve.
<p>Loss of chemical</p> <p>With the cleaning tool valve open, no chemical</p>	Chemical pump is improperly primed.	Refer to chemical pump priming instructions.
	The strainer at the inlet end of the chemical inlet line is clogged	Unclog the strainer. If damaged, replace.
	Suction leak in the inlet line leading into the chemical pump.	Inspect inlet lines and flow meter for air leaks or damage and replace, if required.
	Chemical pump check valve(s) is clogged	Remove any debris from the chemical check valve(s). Replace chemical check valve(s) or seals, if necessary.
	Chemical prime/on-off valve or chemical metering valve is defective.	Replace valve(s).
	Chemical pump diaphragm is ruptured.	Disassemble the chemical pump and replace the damaged diaphragm.
	Defective cylinder in the water pump.	Measure the pump volume. If the pump volume is less than normal, refer to "Loss of Pump Volume" in the Troubleshooting section in this manual.

## MAINTENANCE

PROBLEM	CAUSE	SOLUTION
Chemical flow meter indicates flow with the tool valve closed	External leak in chemical piping	Tighten fittings. Re-apply thread sealant where required. If any fittings are damaged, replace.
	Outlet check valve is full of debris or damaged, not allowing it to close properly	Close the chemical valve on the instrument panel. If the flow meter does not indicate flow, remove debris or replace check valve, if necessary.
	Chemical pump diaphragm is ruptured	Close the chemical valve on the instrument panel. If the flow meter still indicates flow, replace the chemical pump diaphragm.
	Internal leak in chemical valve causing continual flow through prime tube returning to container.	Tighten valve packing nut (see "General Service Adjustments" section in this manual). Replace valve, if necessary.
Water pump does not engage	Solution pump circuit breaker has been tripped	Check the solution pump circuit breaker on the control panel. Press the circuit breaker reset button.
	Defective electrical connection in the console wiring or defective switch.	Examine switch, electrical connections, and wiring. Repair any defective connections. If there is power going to the switch but not going out, replace the defective switch.
	Water pump has not been activated	Turn solution pump switch to on.
	Defective water pump clutch. NOTE: The clutch may be manually set by inserting two 1/4-20 x 1/2 bolts. Line up the holes on the clutch and insert the bolts. To disengage the pump, remove the bolts.	If there is power in the switch, but not power at the clutch, replace the defective wire. If there is power at the clutch, replace the defective switch.
	Loose or broken water pump belts.	Tighten or replace belts.
Engine will not start  The engine does not turn over	Main circuit breaker on the control panel has been tripped.	After inspecting the unit to determine the cause of the tripped circuit breaker, press the reset button.
	Loose or corroded battery.	Clean, tighten, or replace the battery terminals.
	Dead battery.	Recharge or replace battery.
	Defective ignition switch.	Test ignition switch for power going into the switch. If there is power going in but NO power going out, replace the switch.
	Defective starter motor.	Test the starter motor. If necessary replace.
	Vacuum pump seized.	Refer to Gardner Denver Service & Repair Manual.
Starter turns over engine, but will not start	Waste tank is full.	Empty the waste tank.
	Engine temperature has exceeded 255°F, triggering the high temperature switch to shut the unit down.	Determine the cause of overheating before restarting the unit. See "Excessive Heating" in the "Troubleshooting" section of this manual.
	Defective fuel pump.	Replace the fuel pump.
	Loose or broken wires leading to waste tank float switch.	Repair or replace any broken electrical connections.
	Defective float switch in the waste tank.	Check switch for proper operation, replace as necessary.
	Oil pressure switch (located on engine), fuel shut-off solenoid (located on engine), high temperature switch (located on engine).	Test these components. If any are defective, replace. Consult the Kohler Engine Operation and Maintenance Manual.

PROBLEM	CAUSE	SOLUTION
Starter turns over engine, but will not start	Engine is malfunctioning	Refer to Kohler Engine Operation and Maintenance Manual.
Engine stops running While doing normal cleaning, the engine stops running	Engine is out of gasoline	Add gasoline to the fuel tank.
	Waste tank is full	Empty waste tank.
	Main or engine circuit breaker on the control panel has been tripped.	After inspecting the unit to determine the cause of the tripped circuit breaker, press the reset button.
	Engine coolant temperture has exceeded 240°F, triggering the high temperature switch to shut the unit down.	Determine the cause of the overheating before restarting the unit. Refer to the Kohler Engine Operation and Maintenance Manual.
	Defective fuel pump.	Replace fuel pump.
	Defective float switch inside the waste tank.	Check switch for proper operaton. Replace as necessary.
	Defective 240°F engine coolant high-temperature shudown switch.	Test switch. If necessary, replace.
	Oil pressure gauge on engine has shut down, due to insufficient oil pressure.	Refer to the Kohler Engine Operation and Maintenance Manual. <b>DO NOT</b> restart the engine until the cause is determined and corrected.
	No ignition in the engine or engine is malfunctioning.	Refer to the Kohler Engine Operation and Maintenance Manual.
Excessive heating	Flow restriction caused by hard water scaling.	Descale unit, repair or replace damaged plumbing components as necessary. Install water softener.
	Not enough water flow.	Check jet size of tool.
Heat exchanger leaks  <b>NOTE:</b> The heat exchanger will produce water condensation discharge at times during normal operation. <b>DO NOT</b> confuse this with a leak.	Engine/vacuum exhaust heat exchangers are damaged from frozen water.	Inspect heat exchangers for leaks. Visually inspect for damage. Pressure check after removing from the unit. (Maximum test pressure 1200 PSI).
Loss of temperature  The heat output of the unit is LESS than normal.	Temperature relief valve on water box is stuck open.	Clean temperature relief valve and test. Replace, if necessary.
Automatic waste pump is malfunctioning or not operating normally  <b>NOTE:</b> When replacing either the pump or float switch, use new electrical connectors and heat shrink. Inspect connection for watertight seal.	Defective waste pump float switch.	Replace float switch.
	Broken diaphragm.	Replace diaphragm.
	Weak battery.	Charge or replace battery if needed. Check charging station.
	Pump-out circuit breaker on control panel has been tripped.	After inspecting waste pump to determine the cause of the tripped circuit breaker, press the reset button.

# FRAME

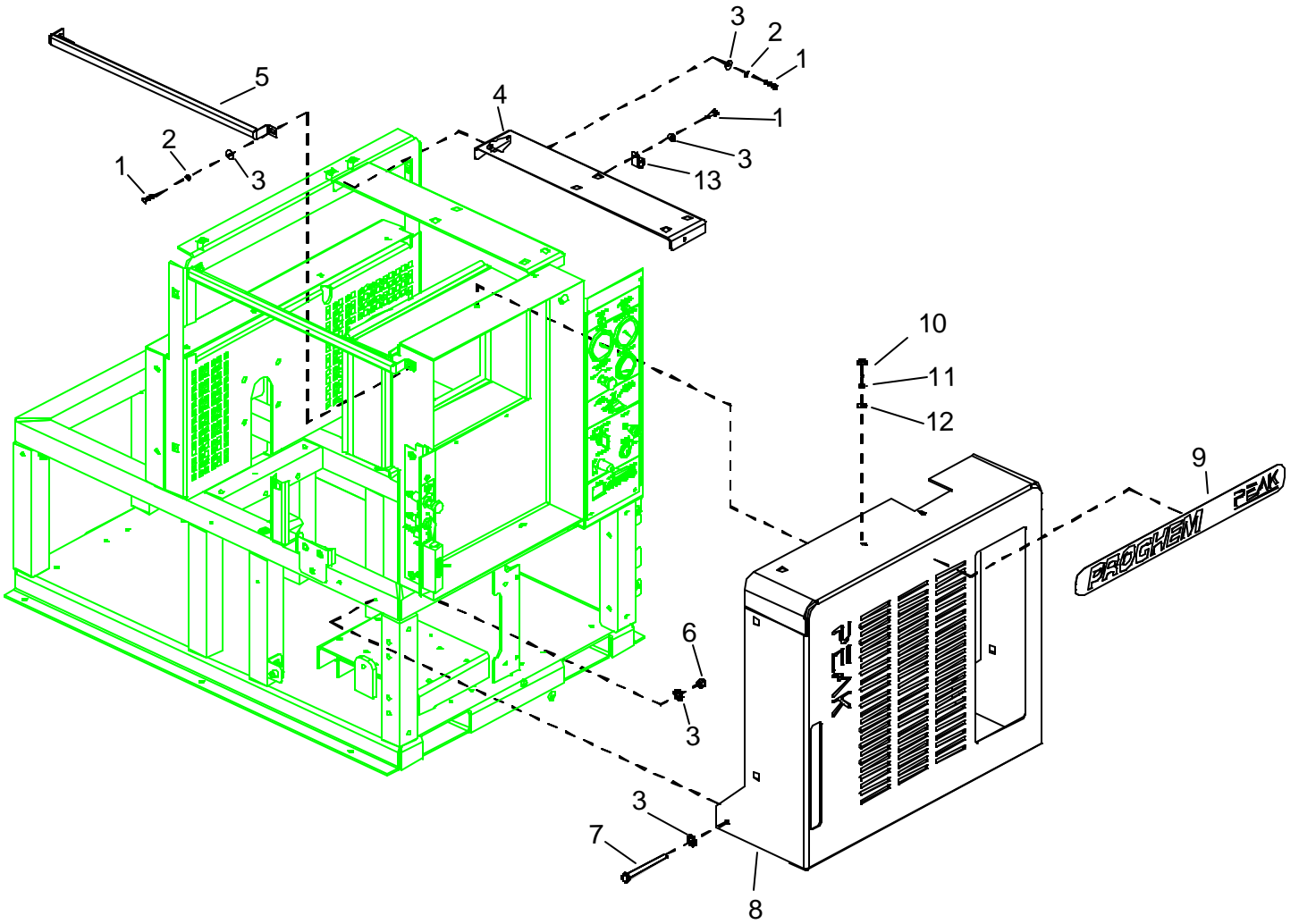


**FRAME**

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	790635	2	TRIM, SEAL 5/8" BULB, 1.5		
2	790634	2	TRIM, SEAL 5/8" BULB, 16		
3	61410	1	ASSY, CONTROL PNL MTG		
4	70069	4	SCR, 3/8-16 X 3 HHCS GR5		
5	87171	8	WASHER, 3/8 FLAT		
6	01-000259	7	RECPT SNAPIN 1/4 TURNFAST		
7	790393	1	PNL, REAR ENGINE MTG		
8	57119	4	NUT, 3/8-16 HEX NYLOCK		
9	00-000078	8	SCR, 1/4-20 X 1" HXHD BRD8		
10	00-000286	4	SCR, CAP 1/4-20 X 2.75 HXHD		
11	02-000066	15	FLATWASHER, 1/4		
12	80887	2	CLAMP, 7/8 DIA "P" CUSHIONED		
13	790099	1	ASSY, FRAME		
14	87162	8	WASHER, 1/4 SPLIT LOCK		
15	790573	1	BRKT, FUEL LINE W/RETURN		
16	790010	1	PNL, BELT GUARD, REAR		
17	790437	1	BRKT, 1/8 ALUM COUPLER		
18	790487	1	DIPSTICK, CAT PUMP OIL 5CP		
19	64-950383	1	CABLE, RETAIN VAC PLG 800		
20	790135	1	BRKT, LEFT HOOD		
21	57047	2	NUT, 1/4-20 HEX NYLOCK		



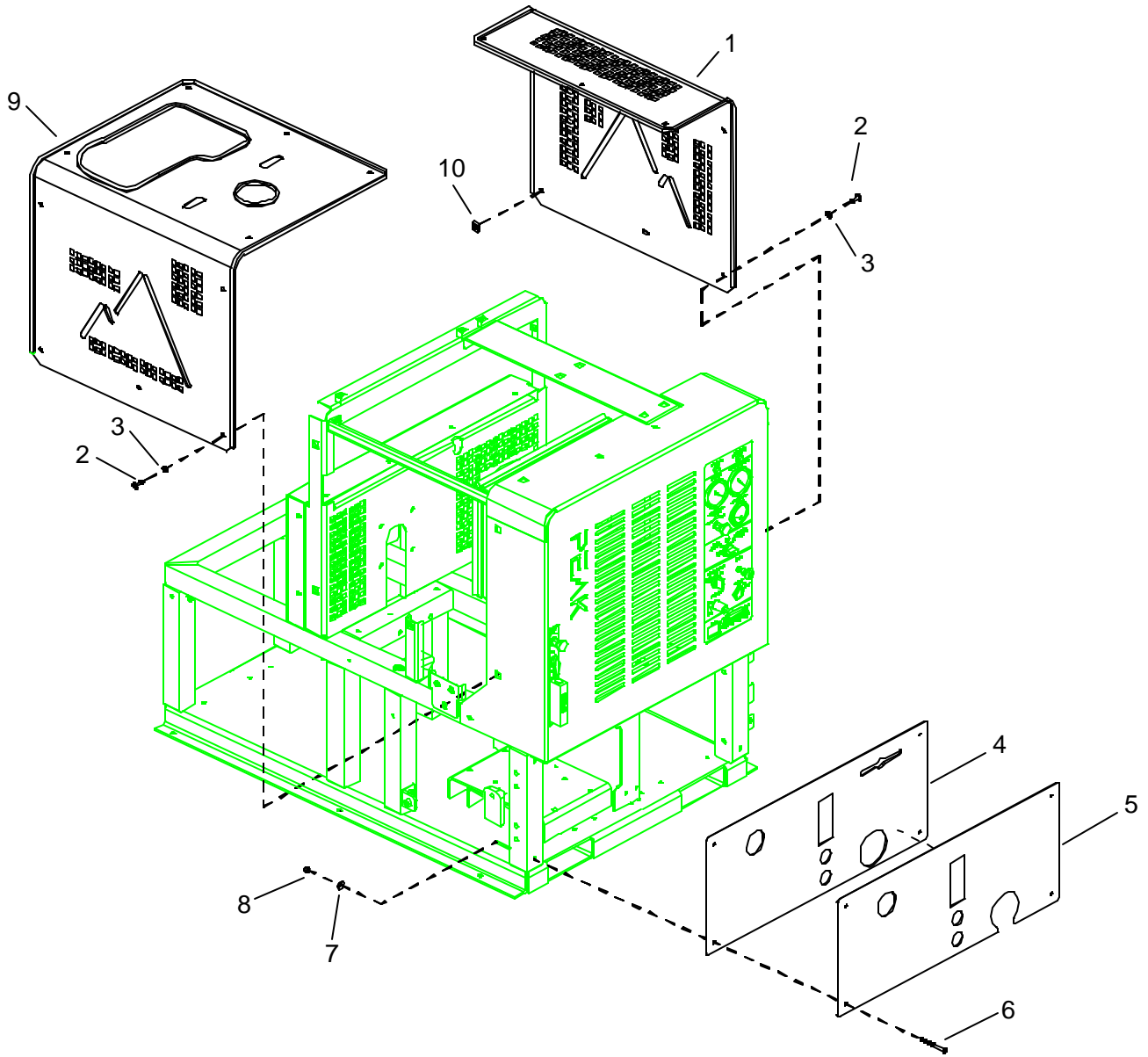
# FRAME



**FRAME**

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	00-000078	5	SCR, 1/4-20 X 1" HXHD GRD8		
2	87162	4	WASHER, 1/4 SPLIT LOCK		
3	02-000066	8	FLATWASHER, 1/4		
4	790637	1	PNL, LFT HD SUP		
5	61413	1	PNL, FRAME SUPPORT		
6	57047	2	NUT, 1/4-20 HEX NYLOCK		
7	00-000286	2	SCR, CAP 1/4-20 X 2.75 HXHD		
8	61403	1	PNL, FRNT HD PEAK, PC		
9	500784	1	LABEL, MAIN		
10	70597	2	SCR, 1/4-20 X 3/4 PPHMS BLK		
11	87151	2	WASHER, 1/4 SPLIT LOCK BLK		
12	87142	2	WASHER, .344 X .69 X .066 FLAT PLT		
13	80887	1	CLAMP, 7/8 DIA "P" CUSHIONED		

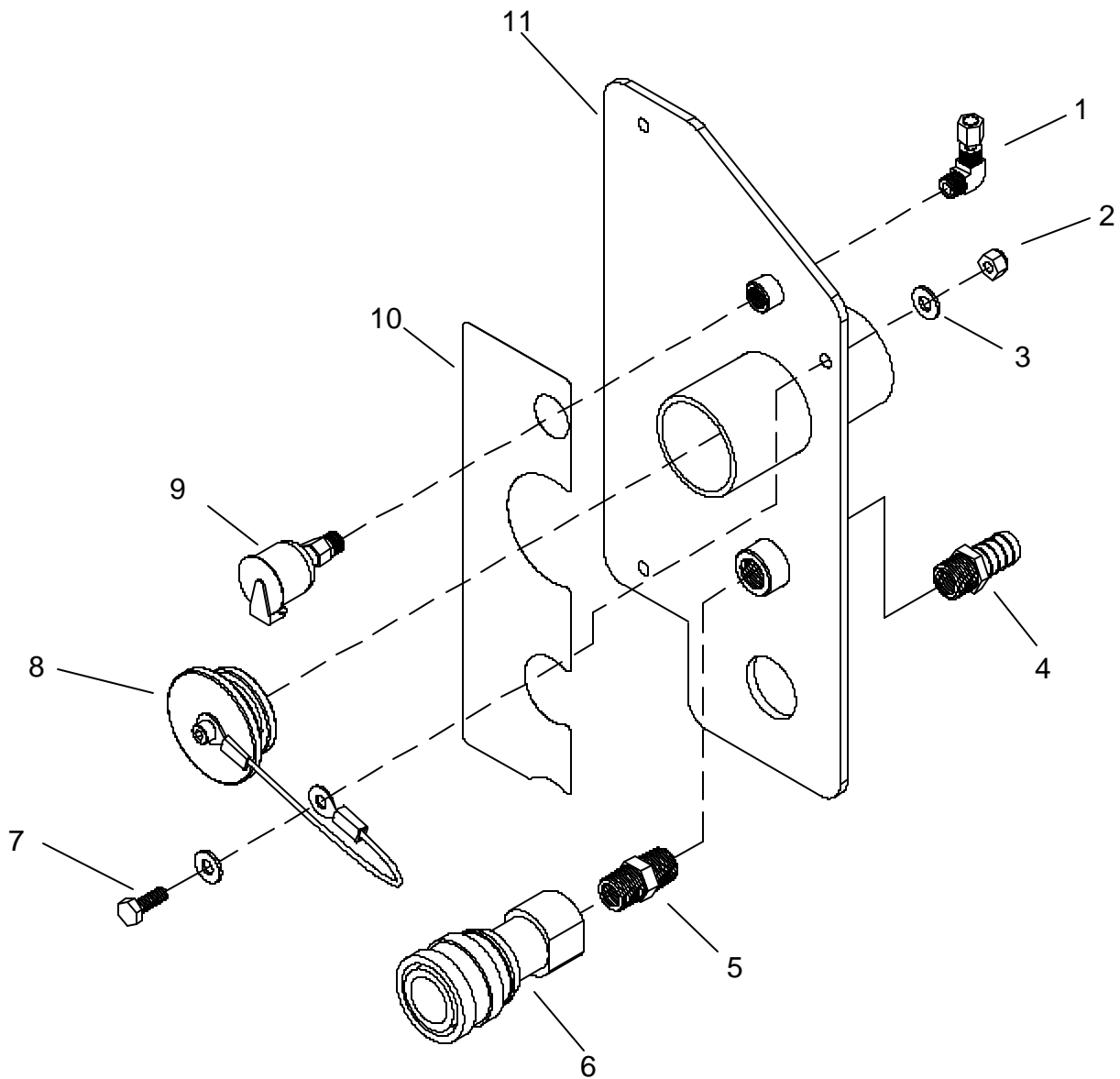
# FRAME



**FRAME**

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	61445	1	PANEL ASM, LT HD PEAK		INCLUDES 2,3,10
2	70802	18	STUD, 1/4 TURN FAST		
3	02-000268	18	SPLIT RING, RETAIN, 1/4 TRUN		
4	790409	1	PANEL, LOWER FRONT LP		
5	790631	1	LABEL, LWR FR PNL		
6	790465	4	SCR, 1/4-20 X 2.75 BHCS BLK		
7	02-000066	4	FLATWASHER, 1/4		
8	57047	4	NUT, 1/4-20 HEX NYLOCK		
9	61444	1	PANEL ASM, RT HD PEAK		INCLUDES 2,3,10
10	61395	1	PAD, 1/4 TURN FAST, .188 THK		

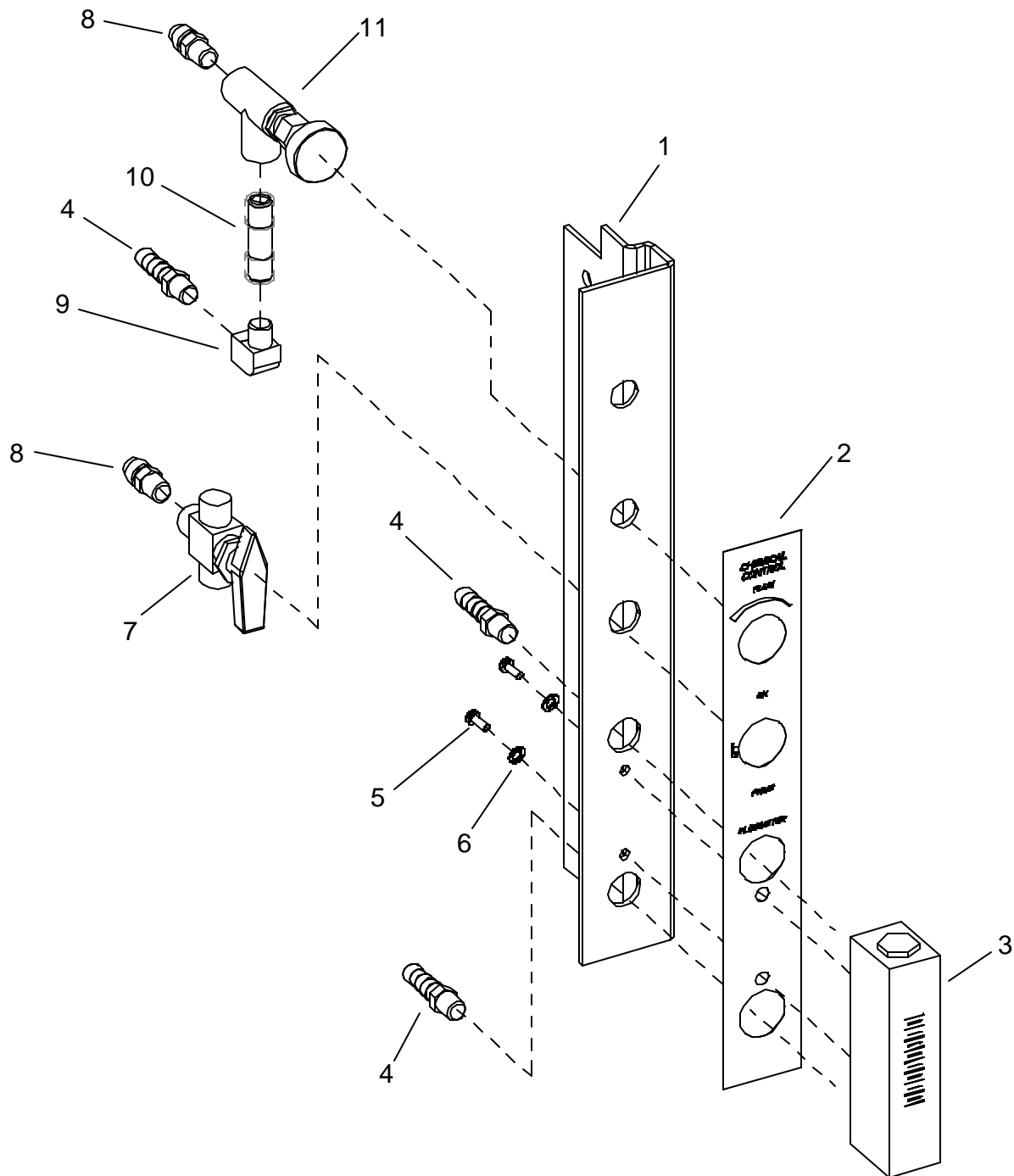
# SIDE PANEL



**SIDE PANEL**

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	12-800099	1	ELL, 1/8P C 1/4 POLY BR		
2	57047	1	NUT, 1/4-20 HEX NYLOCK		
3	02-000066	2	FLATWASHER, 1/4		
4	12-800269	1	FTTG, BRB 1/2P X 5/8H BR		
5	11-800102	1	NIP, 1/2 X 3/8 HEX BR		
6	13-806008	1	DSC, 3/8F X 3/8FP		
7	00-000078	1	SCR, 1/4-20 X 1" HXHD GRD8		
8	66-945236	1	KIT, VAC INL PLG		
9	19-800075	1	CUP, OIL FILL 1/8P		
10	790599	1	LABEL, WTR & VAC INLET BRKT		
11	790596	1	ASSY, WTR & VAC INLET BRKT		

# CHEMICAL CONTROL PANEL



## CHEMICAL CONTROL PANEL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	61397	1	PNL, CHEM CNTRL		
2	500771	1	LBL, CHEM CNTRL		
3	18-808513	1	FLOWMETER 1/8FP		
4	12-800093	3	FTTG, BRB 1/8P X 5/16H		
5	70162	2	SCR, 10-32 X 3/8 PPHMS SS		
6	87165	2	WASHER, #10 SPLIT LOCK		
7	15-808022	1	VALVE, 3-WAY BALL 1/8FP		
8	12-800065	2	CONN, 1/8P X 1/4T		
9	11-800014	1	ELL, STREEL 1/8 BR		
10	56032	1	NIPPLE, 1/8 CLOSE		
11	15-808106	1	VALVE, METER 1/8FP		

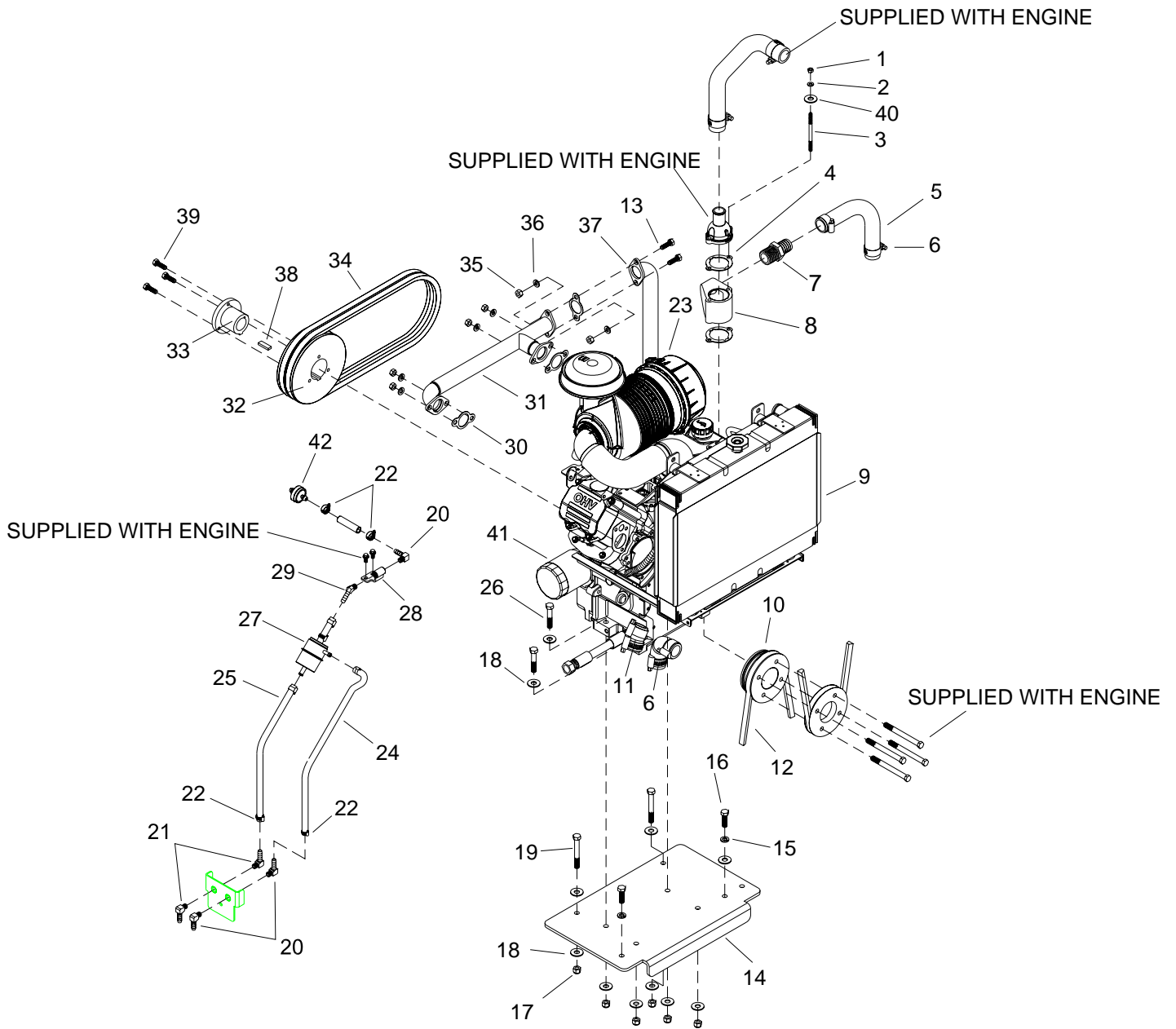




## CONTROL PANEL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	61411	1	PNL, INS CONTROL		
2	500772	1	LBL, INSTRUMEN CNTRL		
3	51387	2	LIGHT, WARNING, IDEC AP2M		
4	36225	1	GAUGE, 0-1500 PSI		
5	36227	1	GAUGE, VACUUM 30" HG		
6	36229	1	GAUGE, TEMP, DATCON		
7	730202	1	SWITCH, 4-WAY		
8	61-950739	1	ASSY, OIL/ W OVRRD SW P		
9	54092	1	METER, 0-60 VDC HOUR		
10	73811	2	STANDOFF, 3-32 X 1/2 HEX NYL		
11	140654	1	BRKR, CIRCUIT, 25A		
12	140624	2	BRKR, CIRCUIT, 15A		
13	32-900174	1	KEYSWITCH		
14	12-800040	1	ELL, 1/8P X 1/4T BR		
15	15-808106	1	VALVE, METER 1/8FP		
16	12-800065	1	CONN, 1/8P X 1/4T		
17	12-800101	1	ELL, 1/4FP X 1/4 POLY BR		
18	12-800035	1	ELL, 1/4FP X 1/4T BR		
19	49-802518	1	CABLE, CHOKE		
20	49-802505	1	CABLE, THROTTLE		
21	140634	1	BREAKER, 20AMP THERMAL CIRCUIT		
22	140702	1	BRKT, WIKA MOUNTING		

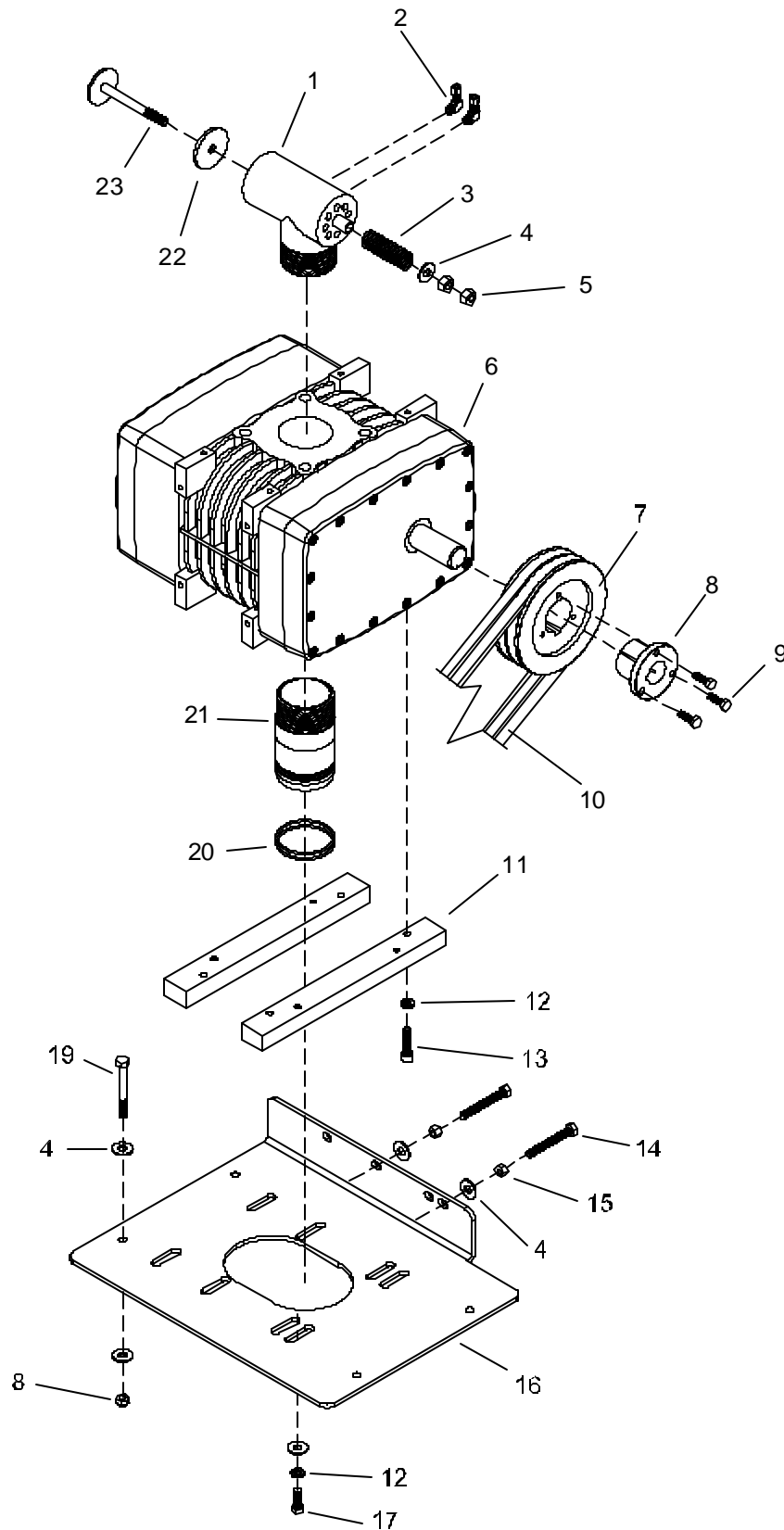
# ENGINE



# ENGINE

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	57053	2	NUT, M6 HEX ZINC PLATED		
2	87085	2	WASHER, M6 SPLIT LOCK DIN127B		
3	790614	2	STUD. 6MM X 95MM		
4	790622	2	GSKT, THERM, KHLR, 25HP		
5	790594	1	HOSE, THERM ADPT TO HELICOIL		
6	03-000248	6	CLAMP, HOSE #16 1-1/2 MIN 1-3/4		
7	12-800367	1	FTG, BRB 1P X 1H BR		
8	790581	1	ADAPTER, THERMOSTAT TOP AEGIS		
9	790532	1	ENG, 25 HP KOHLER, AEGIS		
10	790584	1	PULLEY, AEGIS WTR PMP		
11	39696	1	HOSE		
12	44-802217	1	BELT, AX43 GOODYEAR MATCH		
13	70305	2	SCR, 5/16-18 X 3/4 HHCS		
14	790396	1	PLT, ENG MTG		
15	87163	2	WASHER, 3/8 SPLIT LOCK		
16	70377	2	SCR, 3/8-16 X 1.25 HHCS SS		
17	57119	6	NUT, 3/8-16 HEX NYLOCK		
18	87171	20	WASHER, 3/8 FLAT		
19	70069	2	SCR, 3/8-16 X 3 HHCS GR5		
20	790606	3	EL, 90 DEG 1/8NPT X 1/4HB		
21	790605	2	EL, 90 DEG 1/8 X 5/16HB		
22	03-000065	7	CLAMP, HOSE #4 SST		
23	34413	1	FILTER, AIR, KOHLER AEGIS		PRIMARY & SECONDARY FILTER
24	790611	1	HOSE, FUEL 1/4 X 16.5"		
25	790609	1	HOSE, FUEL 5/16 X 13"		
26	70385	4	SCR, 3/8-16 X 2.0 HHCS GR5 PLT		
27	14-806574	1	FUEL FILTER		
28	790593	1	ASSY, FUEL LINE BRKT		
29	790612	1	HOSEBARB, 1/8MPT X 5/16H 45 BR		
30	790626	3	GSKT, EXHST, KHLR 25HP		
31	790540	1	MNFLD, ENG EXH, KOHLER		
32	44-802245	1	PULL, 2TB58		
33	44-802214	1	HUB, P1X1-1/8		
34	44-802307	2	BELT, BX42 GOODYEAR MATCH		
35	57031	2	NUT, 5/16-18 HEX		
36	87083	2	WASHER, 5/16 SPLIT LOCK PLTD		
37	790535	1	TUBE, EXH ENG TO VAC BOX		
38	48052	1	KEY, 1/4 X 1/4 X 2 1/2		
39	00-000340	3	SCR, MACH 5/16-18 X 1" GR8		
40	87056	2	WASHER, M6 FLAT		
41	34412	1	FILTER, OIL KOHLER AEGIS		
-	34417	1	FUSE, 30 AMP, ENG, AEGIS		NOT SHOWN

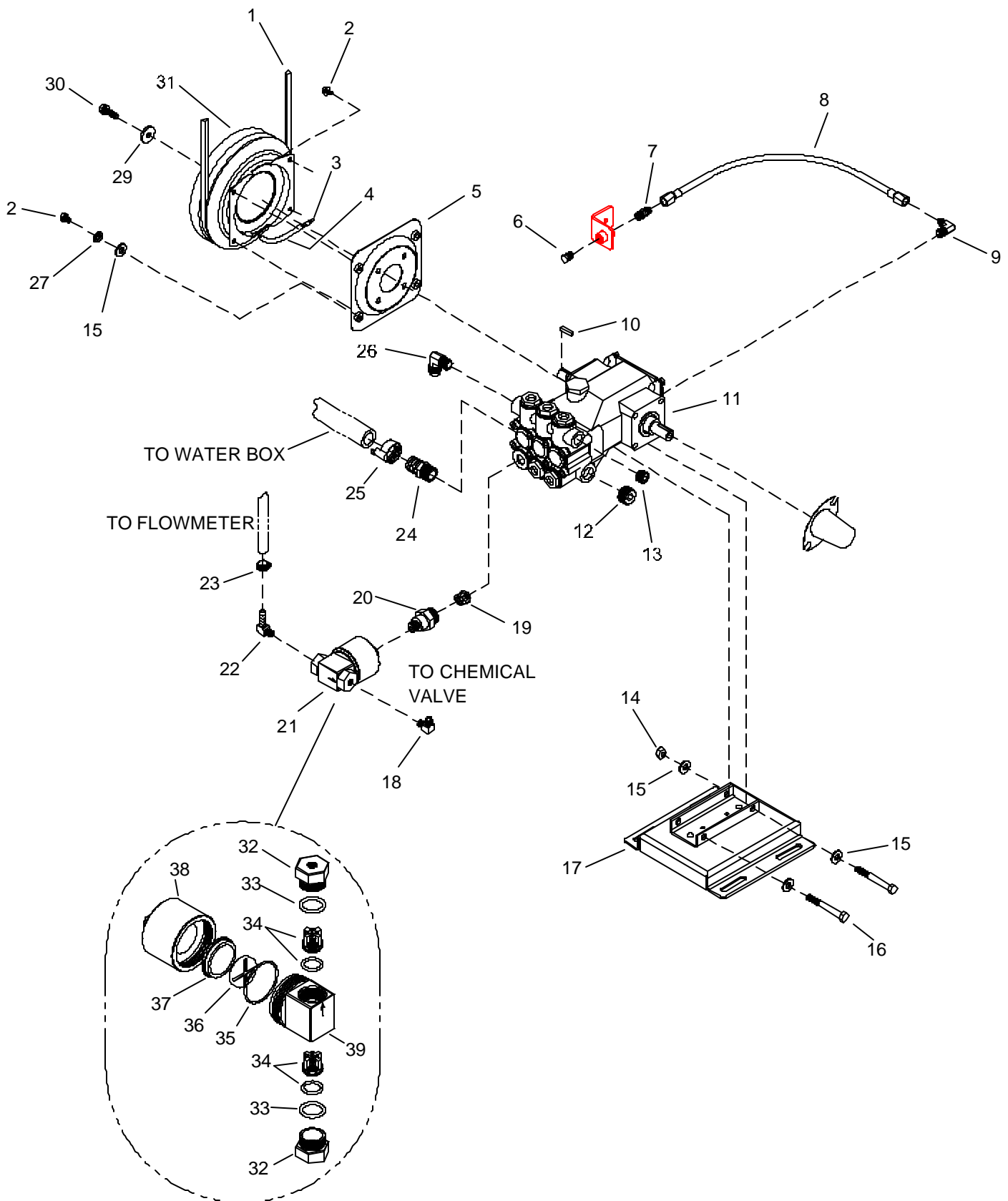
# VACUUM BLOWER



# VACUUM BLOWER

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	52-501573	1	ELL, VAC REL VLV		
2	12-800099	2	ELL, 1/8P X 1/4 POLY BR		
3	04-000091	1	SPRING, VAC REL VLV		
4	87171	7	WASHER, 3/8 FLAT		
5	57114	2	NUT, 7/16-14 HEX		
6	140618	1	BLWR, 3FLW, 4M, TI406		
7	790585	1	PULL, VAC PMP, 4M TRI		
8	790444	1	HUB, P1 X 1-1/4		
9	00-000340	3	SCR, MACH 5/16-18 X 1" GR8		
10	44-802307	2	BELT, BX42 GOODYEAR MATCH		
11	790443	2	SPACER, BLOWER		
12	87163	8	WASHER, 3/8 SPLIT LOCK		
13	790467	4	SCR, 3/8-16 X 1.25 SHCS PLTD		
14	00-000336	2	SCR, CAP 3/8-16 X 3 ALL THD		
15	57111	2	NUT, 3/8-16 HEX		
16	790442	1	PLT, BLOWER ADJUSTING		
17	70377	4	SCR, 3/8-16 X 1.25 HHCS SS		
18	57119	4	NUT, 3/8-16 HEX NYLOCK		
19	70069	4	SCR, 3/8-16 X 3 HHCS GR5		
20	790571	2	O-RING, 2.75 X 2.938 OD VITON		
21	790572	1	NIPPLE, VAC OUTL 4M TRIFLOW		
22	43-807074	1	DIAPHRAM, VAC REL VLV		
23	56-501615	1	STEM, VAC REL VLV #4 VAC		

# WATER PUMP

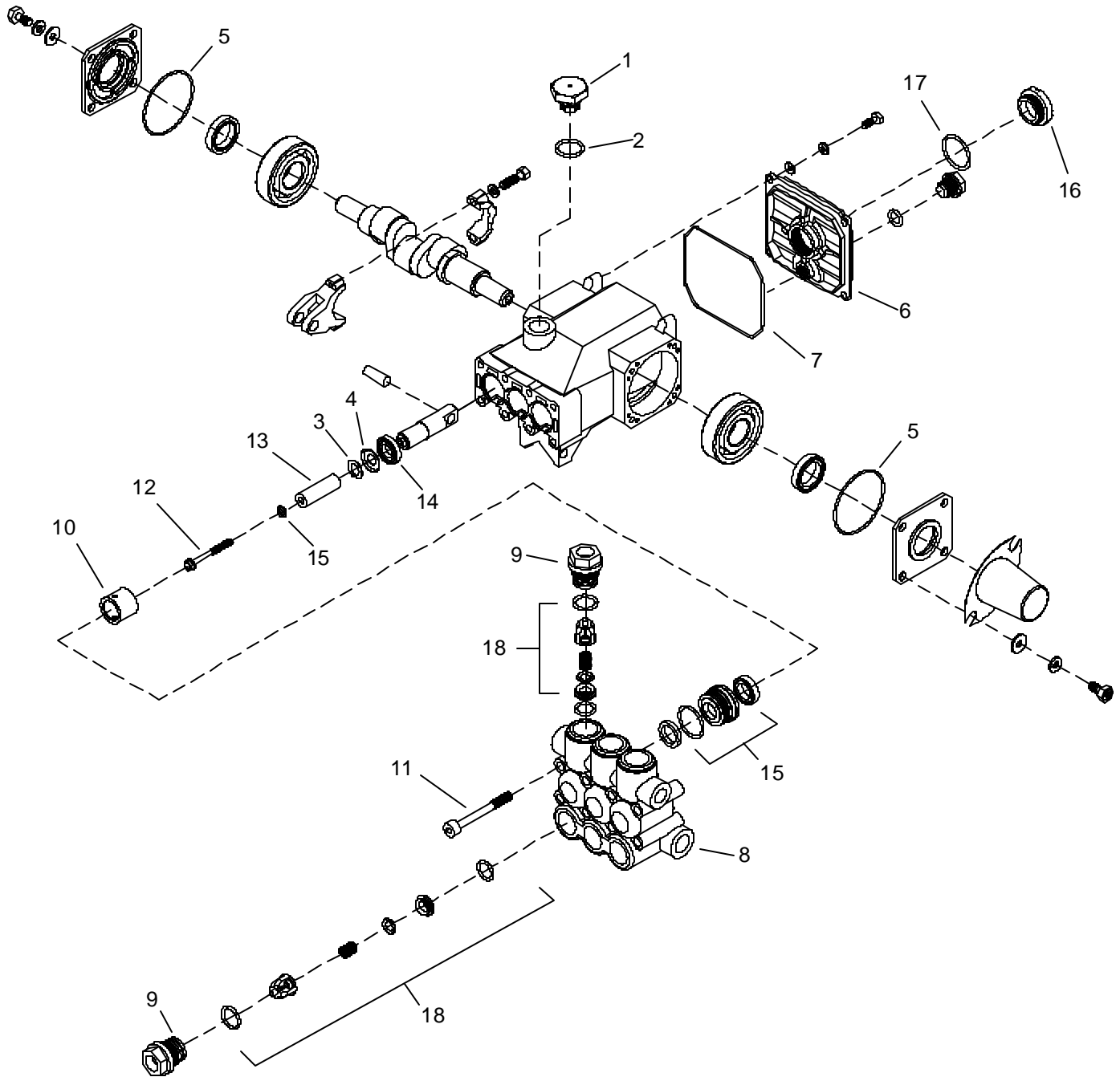


# WATER PUMP

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	44-802217	1	BELT, AZ43 GOODYEAR MATCH		
2	140645	8	BLT, 1/4-20 X 3/8 SER FLNG		
3	31-900185	1	CONN, BULLET M (.156)		
4	51372	1	LOOM, 1/4 HIGH TEMP, 10"		
5	790610	1	BRKT, CLTCH, WTR PMP, 3CP CAT		
6	11-800101	1	PLUG, 1/8P		
7	12-800065	1	CONN, 1/8P X 1/4T		
8	10-805131	1	HOSE, 3/16 X 20-1/2		
9	12-800031	1	EL, 1/4P X 1/4T BR		
10	48099	1	KEY, .20 X .20 X 1.45, 3CP CAT		
11	790559	1	PMP, WTR, 3CP, 3.6GPM		
12	11-800069	1	PLUG, 1/2 SOCHD BR		
13	11-800224	1	PLUG, 3/8 SOCHD BR		
14	57113	2	NUT, 5/16-18 HEX NYLOCK		
15	02-000143	6	WASHER, 5/16 FLAT PLTD		
16	70601	2	SCR, 5/16-18 X 2.75 HHCS GR5		
17	790544	1	ASSY, PMP ADJ BRKT		
18	12-800040	11	ELL, 1/8P X 1/4T BR		
19	52-809123	1	RETAIN, VALVE SPRING		
20	52-809125	1	ADPT, CAT CHEM PMP		
21	41-809158	1	PMP, CHEM TM (O-RING) SS		
22	790605	1	EL, 90 DEG 1/8 X 5/16 HB		
23	03-000065	1	CLAMP, HOSE #4 SST		
24	12-800278	1	FTTG, BRB 1/2P X 3/4H BR		
25	03-000113	2	CLAMP, HOSE #12 SST		
26	12-800225	1	ELL, 3/8 X 1/2T BR		
27	87083	4	WASHER, 5/16 SPLIT LOCK PLTD		
28	OPEN	-	-		
29	87240	1	WSHR, .328 ID X 1.00 OD X .119 ZNC		
30	140644	1	BLT, 5/16-18 X 1, SOC, ZNC		
31	790613	1	CLUTCH, ELE, WTR PMP CAT 3CP		
32	16-808237	2	CAP, CHK VALVE CHM. PUMP		
33	43-810079	2	O-RING, 7/8 ID X 1-1/16OD		
34	42-809265	2	CHECK VALVE, CHEM PUMP		
35	43-810105	1	O-RING, 1-5/8OD X 1-3/4 OD/40D VITON		
36	42-809264	1	DISK, CHEM PUMP		
37	42-809047	1	DIAPHRAGM, CHEM PUMP		
38	52-502053	1	CVR, CHEM PUMP		
39	52-502052	1	BDY, CHEM PMP		



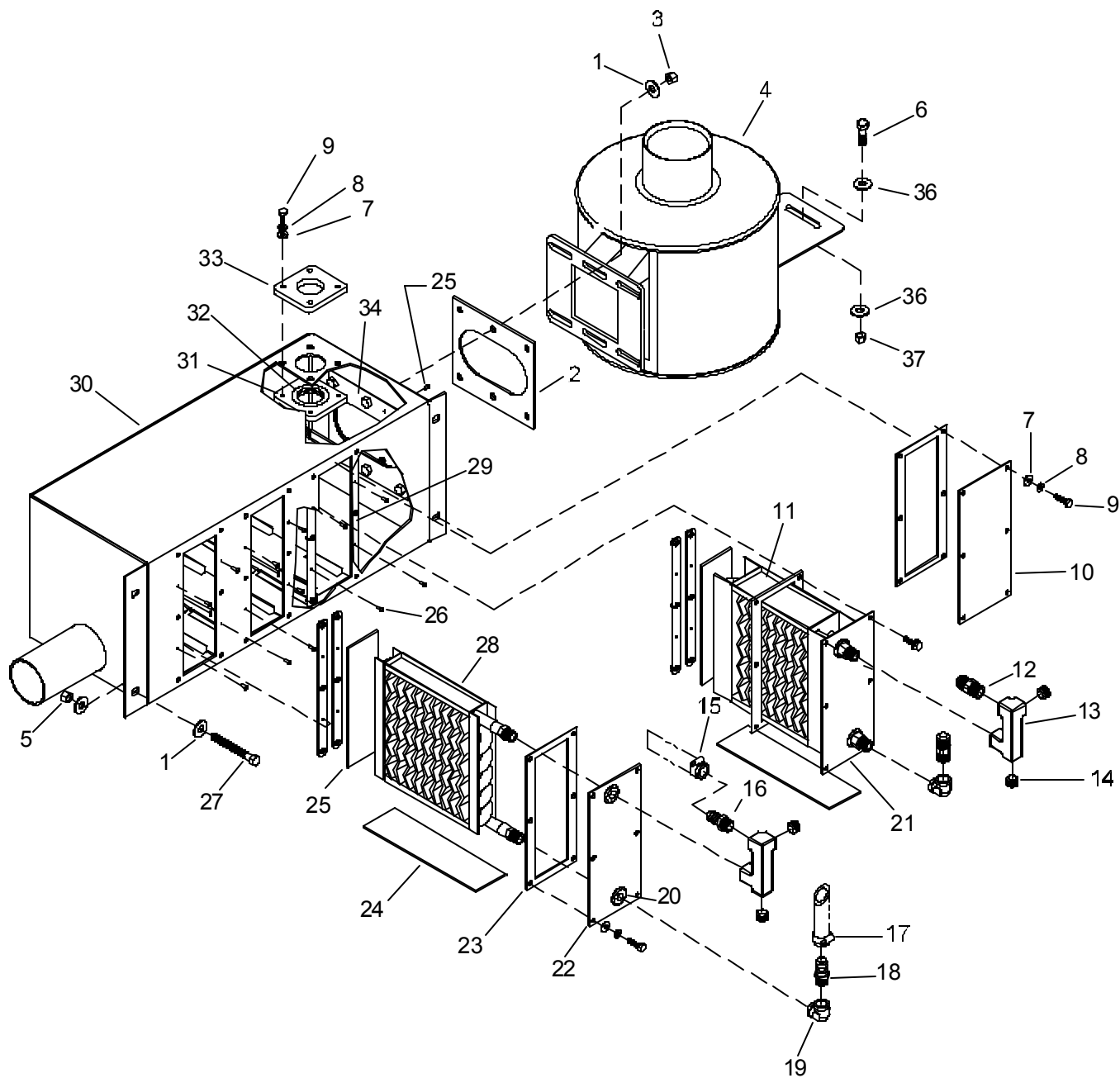
# WATER PUMP



## WATER PUMP

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	42-809238	1	CAP, OIL FILLER		
2	42-809239	1	O-RING, OIL FILL CAP		
3	42-809249	1	WASHER, KEYHOLE M18		
4	42-809381	1	SLINGER, BARRIER		
5	42-809394	2	O-RING, BEARING CVR		
6	42-809401	1	COVER, CRANKCASE		
7	42-809402	1	O-RING, CRANK CVR		
8	42-809403	1	MANIFOLD, HEAD		
9	42-809404	2	PLUG, VALVE		
10	42-809405	1	RETAINER, SEAL		
11	42-809406	1	BOLT, NMFLD HD M8 X 65		
12	42-809507	1	RETAINER, PNLGR W/STUD		
13	42-809408	1	PLUNGER		
14	42-809409	1	SEAL, OIL CRANKCASE		
15	42-809410	1	KIT, SEAL		ORDER 1 EACH
16	42-902380	1	GAUGE, OIL LEVEL		
17	43-807063	1	GASKET, OIL GAUGE		
18	66-950441	-	KIT, VLV CAT 3CP1140, 33258		ORDER 1 EACH TO REPLACE ALL VALVES

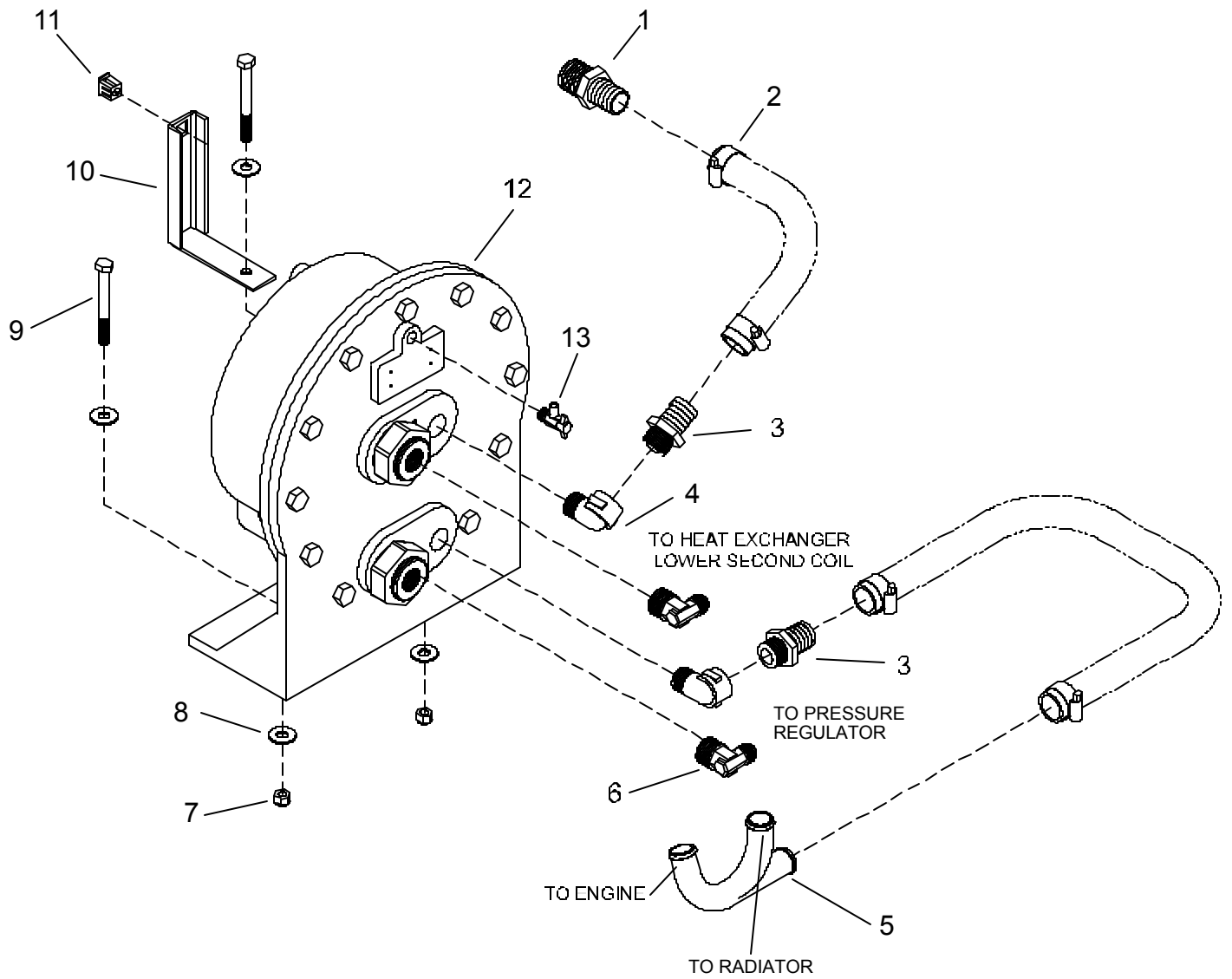
# VAC/HEAT EXCHANGER WITH SILENCER



## VAC/HEAT EXCHANGER WITH SILENCER

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	87171	15	WASHER, 3/8 FLAT		
2	790039	1	GSKET, VAC HE BOX TO MUFFLER		
3	57119	6	NUT, 3/8-16 HEX NYLOCK		
4	790616	1	VAC MUFFLER		
5	70377	1	SCR, 3/8-16 X 1.25 HHCS SS		
6	70325	1	SCR, 5/16-18 X 1.25 HHCS GR5PLT		
7	02-000066	22	FLATWASHER, 1/4		
8	87162	22	WASHER, 1/4 SPLIT LOCK PLTD		
9	00-000078	22	SCR, 1/4-20 X 1" HXHD GRD8		
10	790578	1	PLT, BLNK CVR VAC HE		
11	790388	1	ASSEMBLY, HEATER CORE SS		
12	12-800282	2	CONN, 3/8P X 1/2T BR		
13	790038	2	MANIFOLD, HEATER CORE		
14	11-800224	4	PLUG, 3/8 SOCHD BR		
15	03-000111	1	CLMP, HOSE #10 9/16 MIN		
16	12-800161	1	FTTG, BRB 3/8P X 1/2H BR		
17	03-000246	1	CLAMP, HOSE #8 SST		
18	12-800345	1	FTTG, BRB 3/8P X 5/8H BR		
19	11-800276	2	ELL, 3/8 BR		
20	36238	1	GROM, 1/2IDX1-14OD 1/8G 5/16W		
21	620023	1	PLT, HEATER CORE CVR, STL		
22	620024	1	PLT, HEATER CORE CVR FRONT, STL		
23	790050	3	GASKET, VAC HE CVR		
24	790343	2	PAD, BTM VAC HTR CORE		
25	790423	2	PAD, REAR VAC HTR CORE		
26	00-000064	14	RIV, 1/8 X 3/8 ALUM		
27	70069	4	SCR, 3/8-16 X 3 HHCS GR5		
28	790505	1	CORE, HTR COPPER		INCLUDES 20 & 22
29	790051	6	PLT, NUT-VAC HE HSG		
30	790064	1	HSG, VAC HE		
31	790329	1	PLT, LOWER EXHAUST		
32	790330	1	SEAL, CONICAL EXHAUST		
33	790328	1	PLT, UPPER EXHAUST		
34	790121	1	PLT, VAC MUFFLER MTG		
35	790039	1	GSKT, VAC HE BOX TO MUFFLER		
36	02-000143	2	WASHER, 5/16 FLAT PLTD		
37	57113	1	NUT, 5/16-18 HEX NYLOCK		

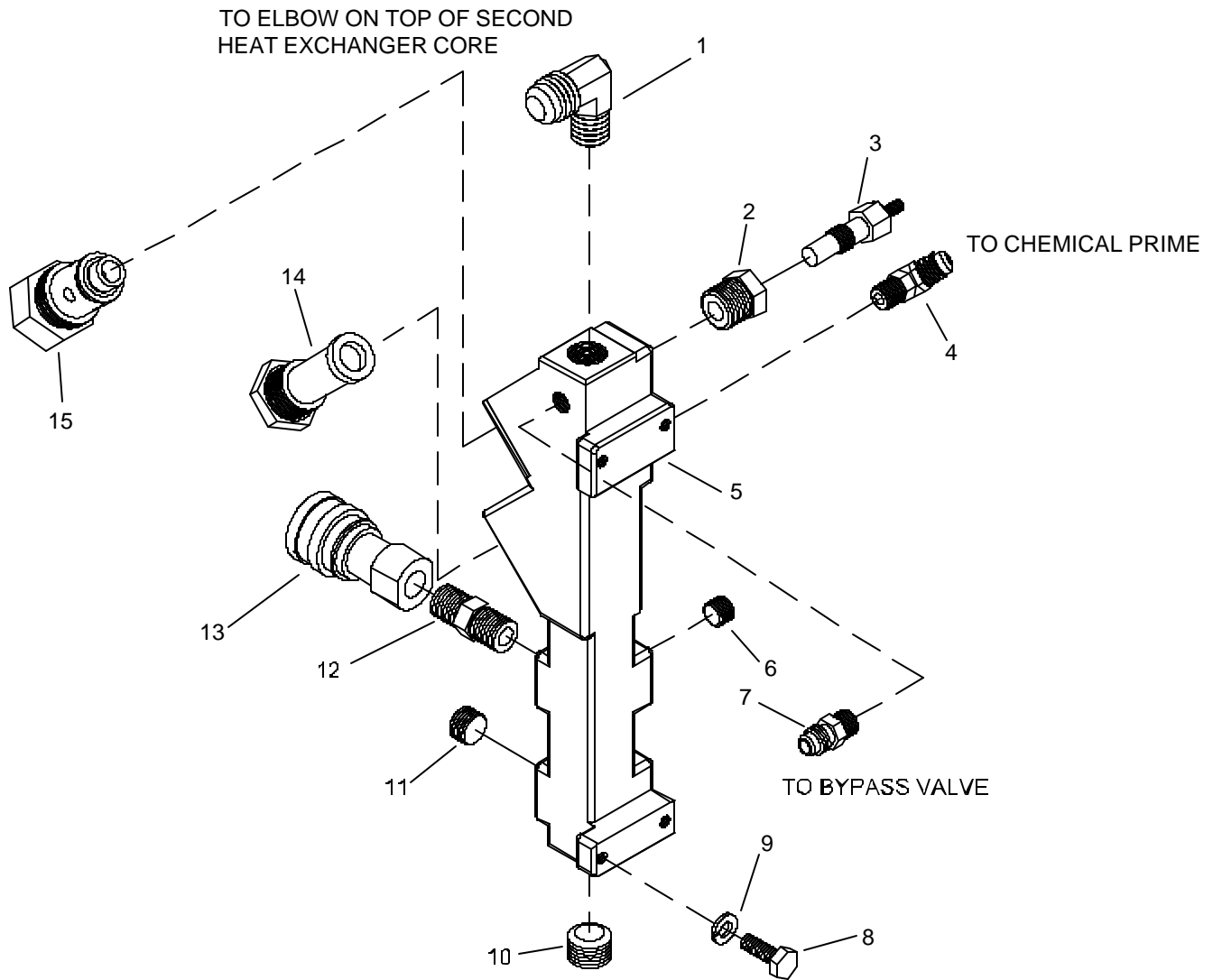
# HELL-COIL HEAT EXCHANGER



## HELI-COIL HEAT EXCHANGER

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	12-800367	2	FTTG, BRB 1P X 1H BR		
2	03-000248	4	CLMP, HOSE #16 1-1/2 MIN 1-3/4		
3	12-800361	2	FTTG, BRB 3/4P X 1H BR		
4	11-800401	2	ELL, 3/4 ST BR		
5	790556	1	FITTING, LOWER RAD HOSE Y		
6	12-800326	2	ELL, 3/4P X 1/2T BR		
7	57119	2	NUT, 3/8-16 HEX NYLOCK		
8	87171	4	WASHER, 3/8 FLAT		
9	70554	2	SCR, 3/8-16 X 3.5 HHCS GR5 PLTD		
10	790445	1	BRKT, RIGHT HOOD MTG		
11	01-000259	1	RECPT, SNAPIN 1/4 TURNFAST		
12	57-520073	1	HE, HELI-COIL		
13	15-808073	1	COCK, DRN 1/4P X 1/4 HOSE ELL		

# SOLUTION MANIFOLD

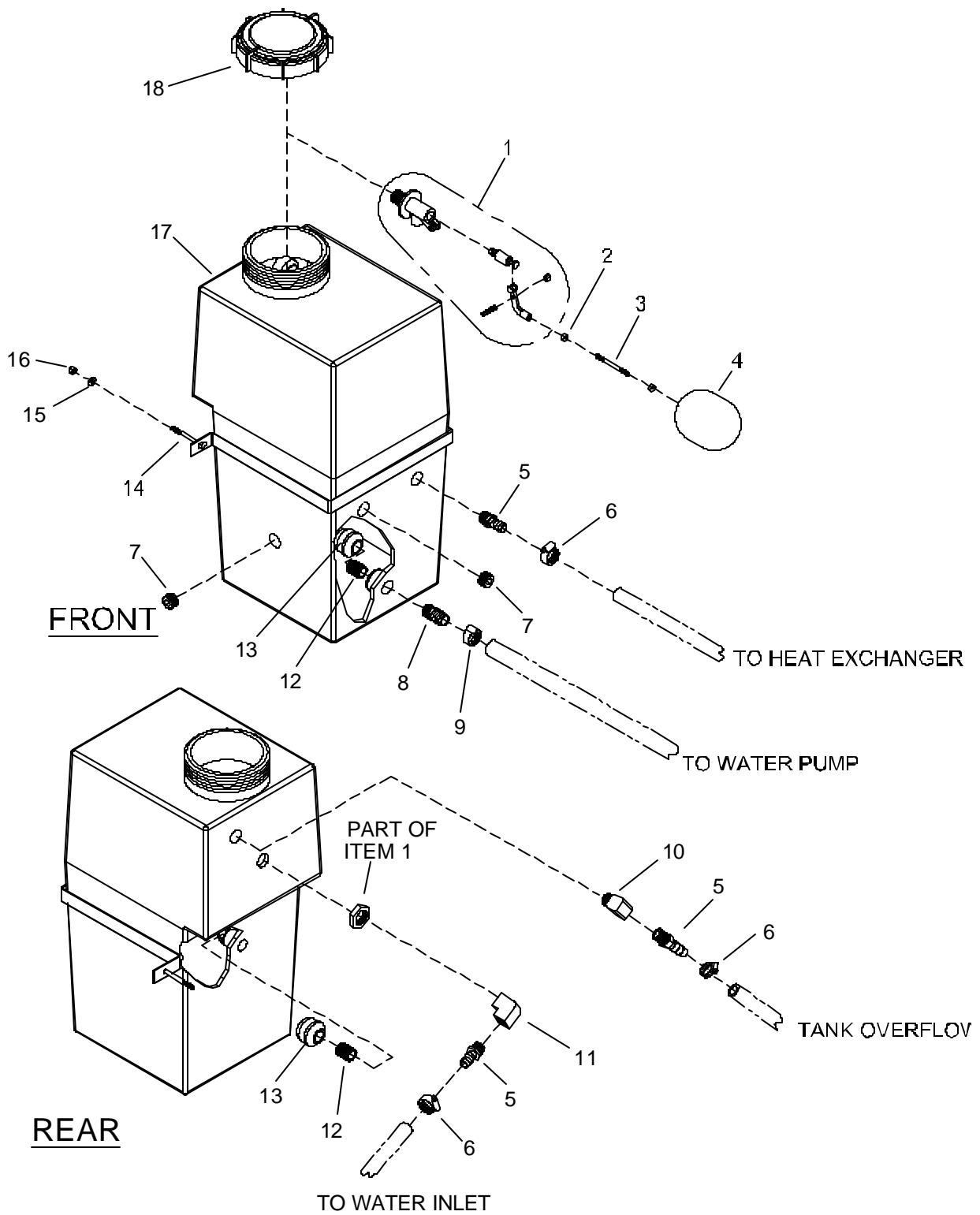


## SOLUTION MANIFOLD

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	12-800225	1	ELL, 3/8P X 1/2T BR		
2	11-800118	1	BUSH, 3/8 X 1/8 BR		
3	34-903019	1	SENDER, TEMP 140-320 DEG		
4	12-800261	1	ELL, 1/8P X 1/4T 45 DEG		
5	790324	1	MANIFOLD, SOLUTION		
6	11-800206	1	PLG, 1/8 SOCHD BR		
7	12-800065	1	CONN, 1/8P X 1/4T		
8	70270	4	SR, 1/4-20 X 3/4 HHCS PLTD		
9	87162	4	WASHER, 1/4 SPLIT LOCK		
10	11-800224	1	PLUG, 3/8 SOCHD BR		
11	11-800345	1	PLG, 1/4 SOCHD BRASS		
12	56015	1	NIPPLE, 1/4 HEX		
13	22015	1	COUPLER, 1/4 QD		
14	14-806549	1	SCREEEN, CHECK VALVE		
15	15-808094	1	VALVE, CHECK		



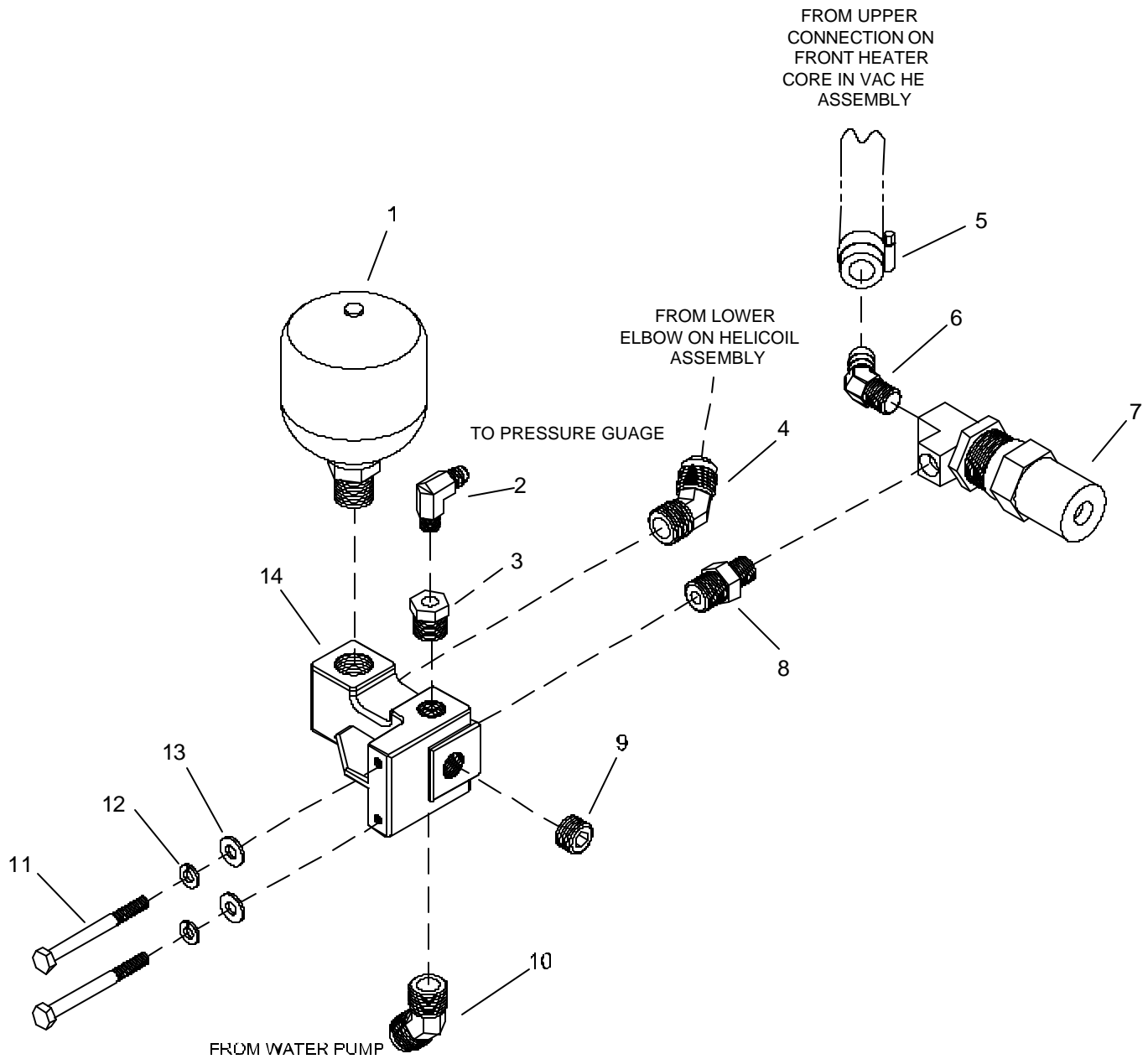
# WATER BOX



# WATER BOX

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	15-808110	1	VALVE, FLOAT		
2	57006	2	NUT, 1/4-20 HEX		
3	790411	1	ROD, FLOAT (1/4-20 X 4") SS		
4	19-807014	1	BALL, FLOAT		
5	12-800269	3	FTTG, BRB 1/2P X 5/8H BR		
6	03-000246	6	CLAMP, HOSE #8 SST		
7	11-800069	2	PLUG, 1/2 SOCHD BR		
8	12-800278	1	FTTG, BRB 1/2P X 3/4H BR		
9	03-000113	2	CLAMP, HOSE #12 SST		
10	11-800041	1	ELL, STREET 1/2 BR		
11	11-800361	1	ELL, 1/2 BR		
12	11-800300	1	NIP, 1/2 X CL		
13	14-806540	1	STRAINER, SUC END 1/2FP		
14	00-000268	2	SCR, CAP 1/4-20 X 2.75 HXHD		
15	02-000066	2	FLATWASHER, 1/4		
16	57047	2	NUT, 1/4-20 HEX NYLOCK		
17	75436	1	TANK, WATER BOX		
18	11-800432	1	CAP, WATER BOX		

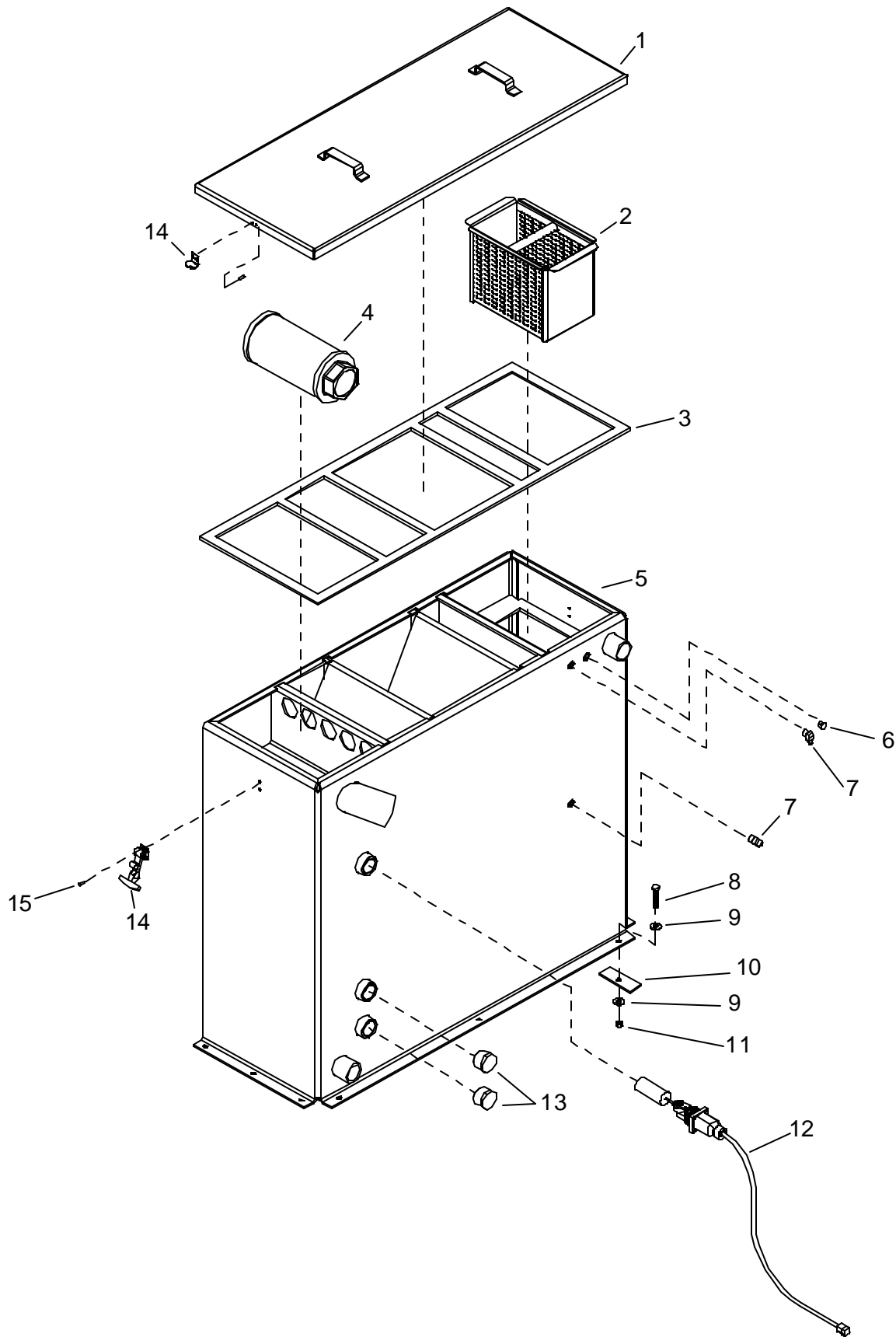
# PRESSURE REGULATOR



## PRESSURE REGULATOR

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	790106	1	ACCUMULATOR, 250 PSI CAT 6026		
2	12-800040	1	ELL, 1/8P X 1/4T BR		
3	11-800118	1	BUSH, 3/8 X 1/8 BR		
4	12-800347	1	ELL, 3/8P X 1/2T 45 DEG BR		
5	03-000246	2	CLAMP, HOSE #8 SST		
6	790601	1	HOSEBARB, 1/4MPT X 1/2H 45 BR		
7	15-808081	1	REG, PRES W/O INNER SPRING		
8	11-800151	1	NIP, 3/8 X 1/4 HX BR		
9	11-800224	1	PLUG, 3/8 SOCHD BR		
10	12-800347	1	ELL, 3/8P X 1/2T 45 DEG BR		
11	00-000286	2	SCR, CAP 1/4-20 X 2.75 HXHD		
12	87162	2	WASHER, 1/4 SPLIT LOCK PLTD		
13	02-000066	2	FLATWASHER, 1/4		
14	790382	1	MNFLD, PRESS		

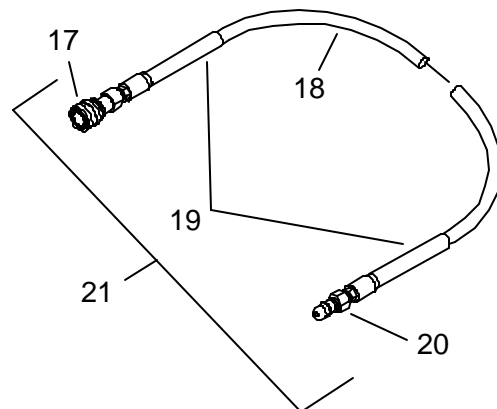
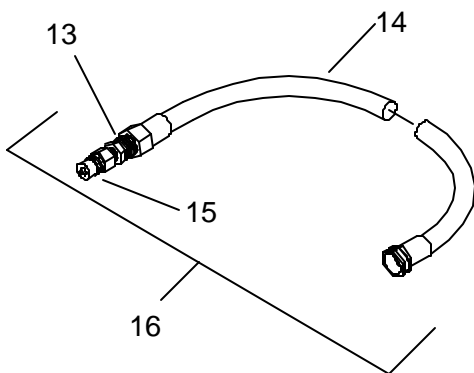
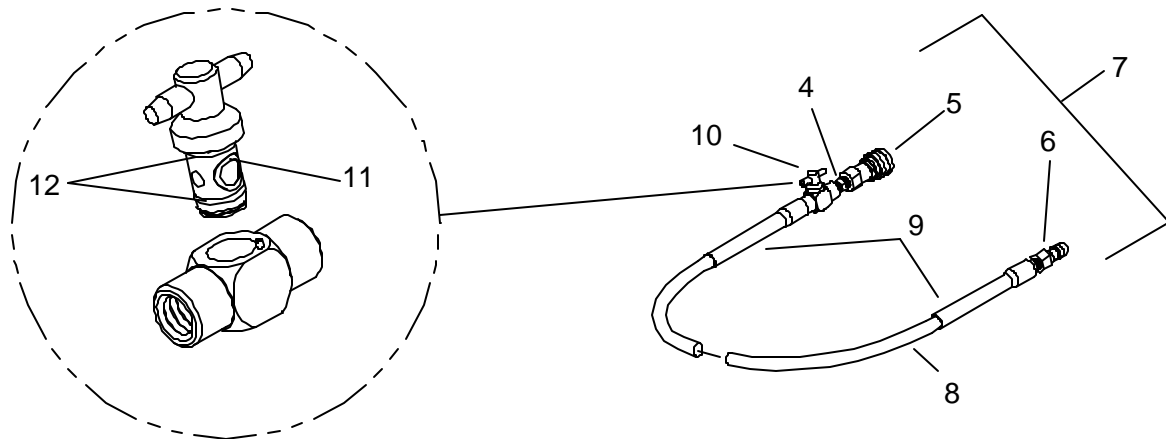
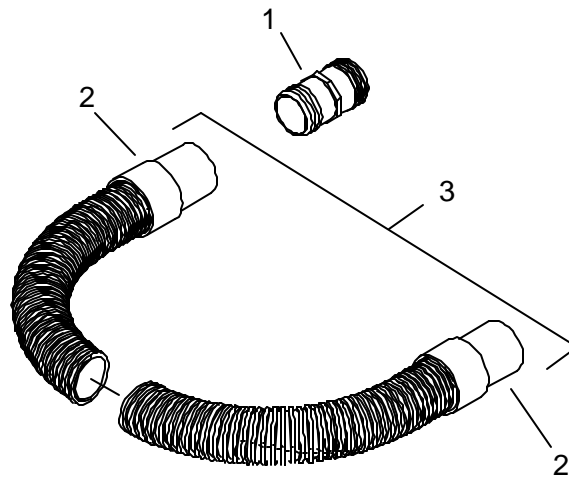
# WASTE TANK



# WASTE TANK

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	56-501788	1	LID, WST TNK		
2	56-501793	1	STRAINER BOWL		
3	790620	1	GSKT, PEAK WASTE TANK		
4	14-806518	1	STRAINER, WST TANK 2-1/2"		
5	790588	1	TNK, WST 60G PEAK, PC		
6	11-800102	1	NIP, 3/8 HX BR		
7	12-800031	1	ELL, 1/4P X 1/4T BR		
8	00-000072	12	SCR, 3/8-16 X 2" HXHD		
9	87171	24	WASHER, 3/8 FLAT		
10	62986	12	PLATE, TRUCKMOUNT SHIPPING		
11	57119	12	NUT, 3/8-16 HEX NYLOCK		
12	61-950621	1	ASSY, LVL SENS SHTOF SW		
13	11-800402	2	PLUG, 1-1/4 HXHD PVC		
14	46-802510	2	LATCH, DRAW 2-7/8 SST		
15	67006	4	RIVET, 3/16 OD X 5/8 AL		

# HOSE ACCESSORIES

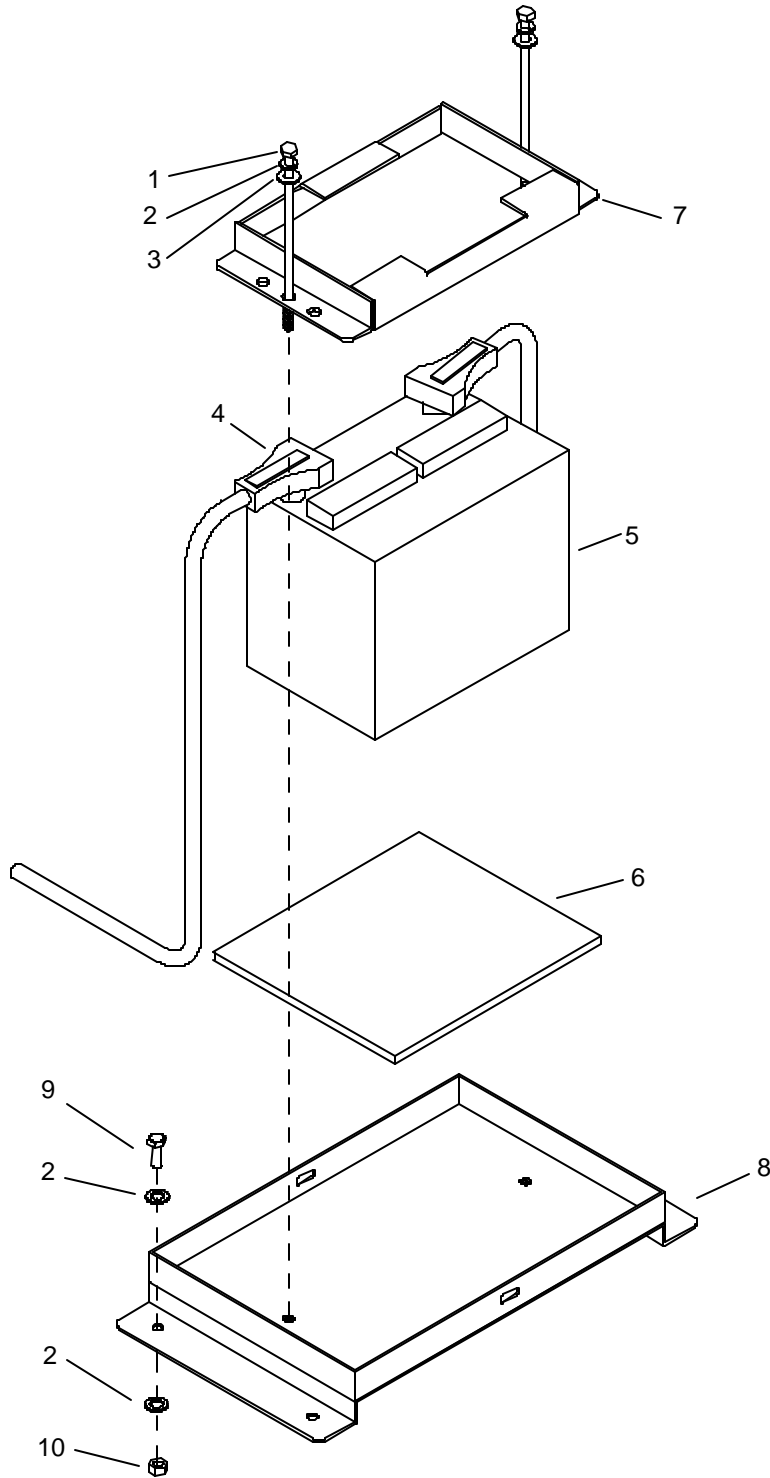


## HOSE ACCESSORIES

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	12-800078	1	FITTING, BRB 2H BS PVC		
2	08-805147	2	CUFF, 2"		
3	10-805060	1	HOSE, VAC 2"X50' W/ CUFFS & HOSE		
4	56015	1	NIPPLE, 1/4 HEX		
5	22015	1	COUPLER, 1/4 QD		
6	56012	1	NIPPLE, 1/4 FPT QD		
7	10-805108	1	HOSE, HP 1/4 X 50FT W/QD & VLVE		
8	10-805077	1	HOSE, HP 1/4 X 50'		
9	08-805155	2	GUARD, HOSE VINYL		
10	15-808012	1	VALVE, BALL 1/4FP		
11	43-810014	2	O-RING, 7/32ID X 11/32OD		
12	43-810019	2	O-RING, 3/8 ID X 1/2 OD		
13	11-800354	1	NIP, 1/2 X 3/8 HEX BR		
14	10-805157	1	HOSE, WATER 1/2 X 50'		
15	13-806009	1	DISCONNECT 3/8M X 3/8FP		
16	10-805295	1	HOSE, WATER 1/2 X 50'		
17	22015	1	COUPLER, 1/4 QD		
18	10-805077	1	HOSE, HP 1/4 X 50'		
19	08-805155	2	GUARD, HOSE VINYL		
20	56012	1	NIPPLE, 1/4 FPT QD		
21	10-805122	1	HOSE, HP 1/4 X 50FT W/QD		



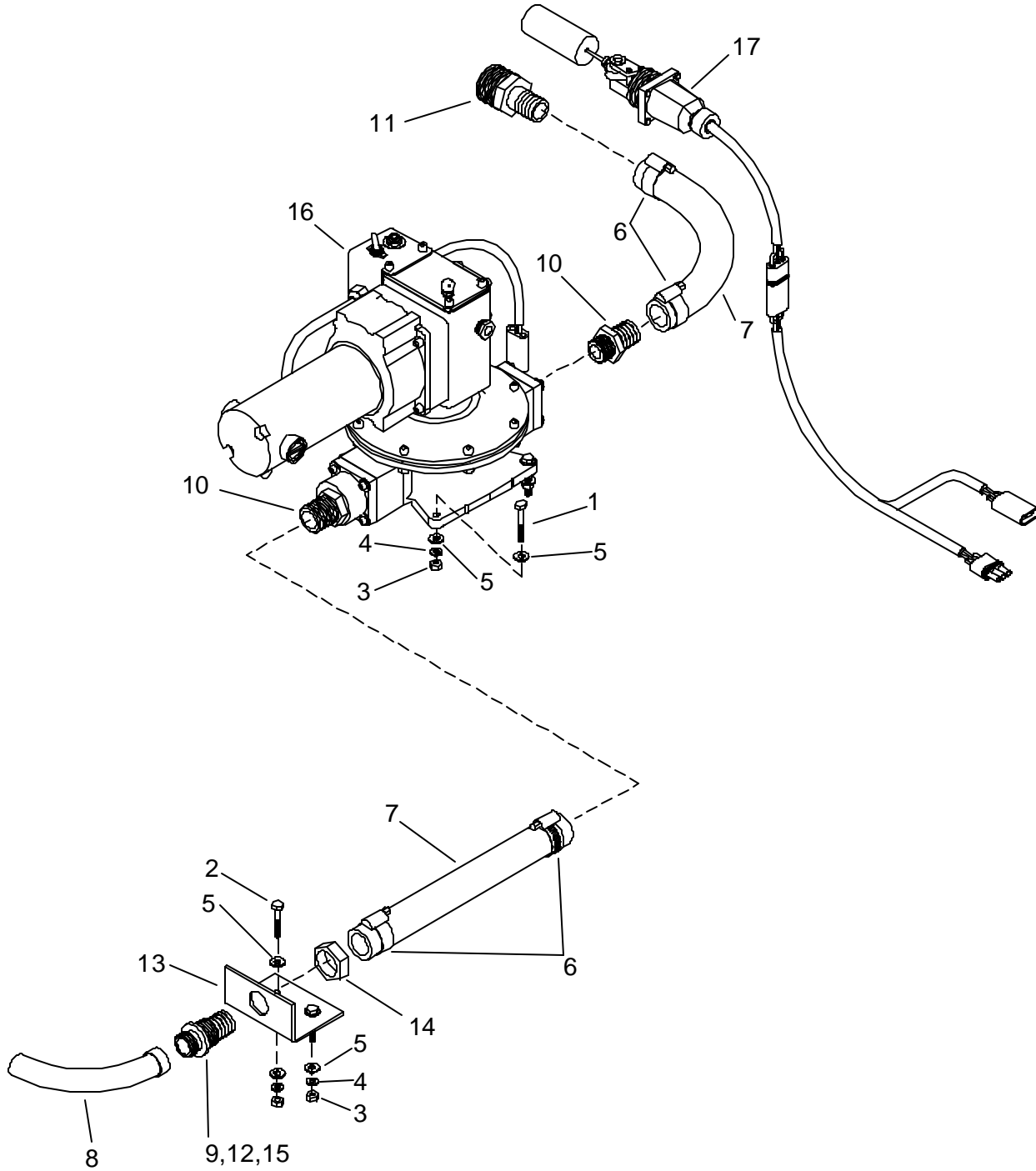
# BATTERY-FLOOR MOUNT



## BATTERY-FLOOR MOUNT

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	00-000167	2	SCR, 1/4-20 X 6" HXHD		
2	87162	2	WASHER, 1/4 SPLIT LOCK		
3	02-000066	10	FLATWASHER, 1/4		
4	31-900179	1	COVER, BATTERY TERMINAL		
5	36-900056	1	BATTERY		
6	47-700007	1	SHIELD, BAT MT HT		
7	56-500188	1	COVER, BATTERY		
8	56-502049	1	TRAY, BAT FLOOR MT		
9	00-000132	4	SCR, 1/4-20 X 1-1/2 HXHD		
10	57006	4	NUT, 1/4-20 HEX		

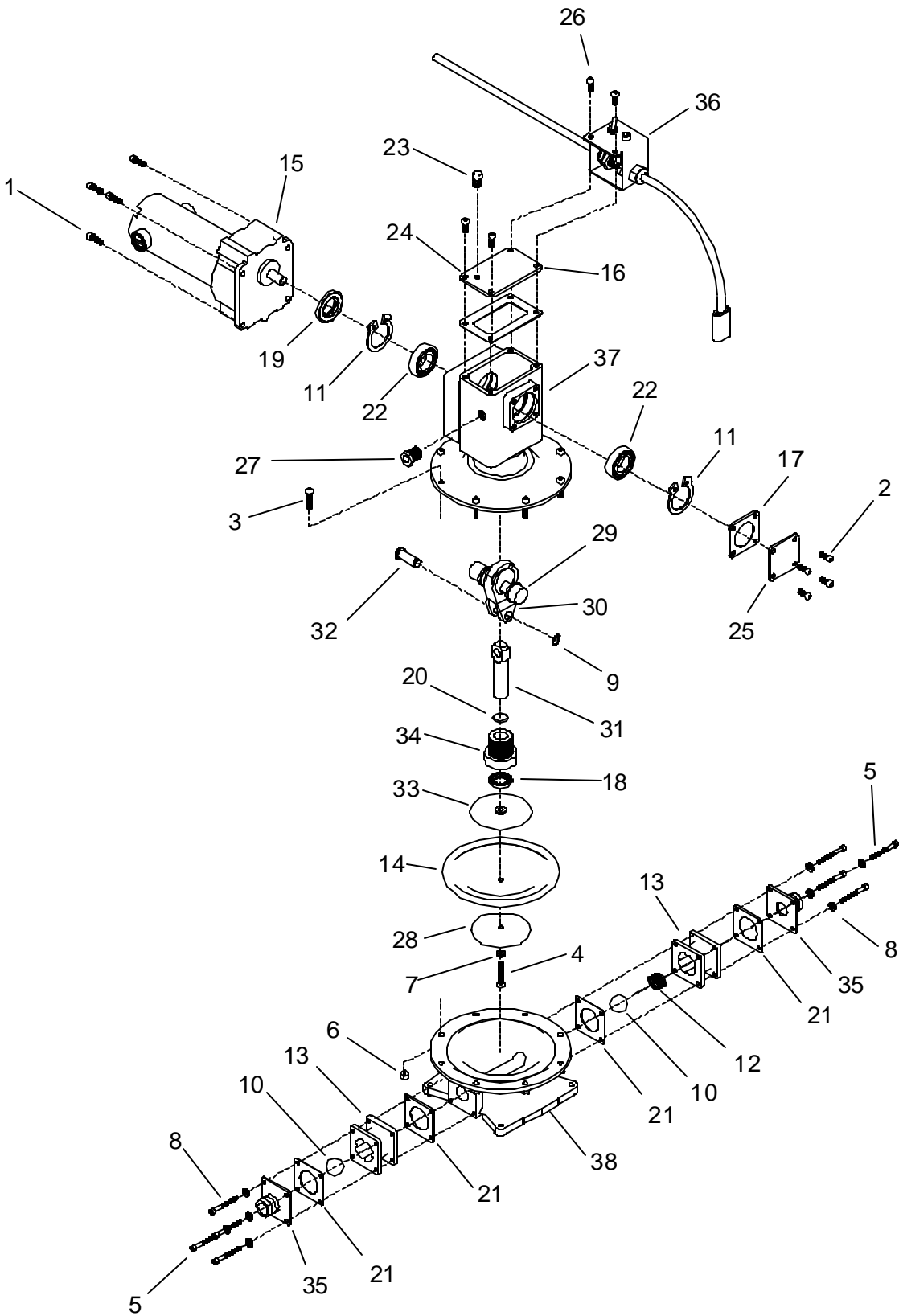
# AUTOMATIC PUMPOUT-OPTIONAL



## AUTOMATIC PUMPOUT-OPTIONAL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	70105	4	SCR, M4 X 60 PH		
2	00-000132	2	SCR, 1/4-20 X 1/ 1/2 HXHD		
3	57006	4	NUT, 1/4-20 HEX		
4	87162	4	WASHER, 1/4 SPLIT LOCK PLTD		
5	02-000066	4	FLATWASHER, 1/4		
6	03-000176	4	CLAMP, HOSE #16		
7	09-805591	1	HOSE, WASTE PUMP 1" X 8'		
8	10-805484	1	HOSE, GARDEN 3/4 X 75'		
9	12-800052	1	CAP, HOSE 3/4 BR		
10	12-800367	1	FTTG, BRB 1PX1H BR		
11	12-800444	1	FTTG, 1-1/4P X 1" H BR		
12	43-807008	1	WASHER, HOSE 5/8 ID 1" OD		
13	50-502055	1	BRKT, CTR HOOD FR		
14	52-000123	1	NUT, 1-3/16-12 UN HXHD		
15	52-501993	1	CONN, HOSE WATER OUTL		
16	61-951306	1	PUMP, HD AUTO		
17	61-951319	1	ASSY, LVL SENS SHUT OFF SW		

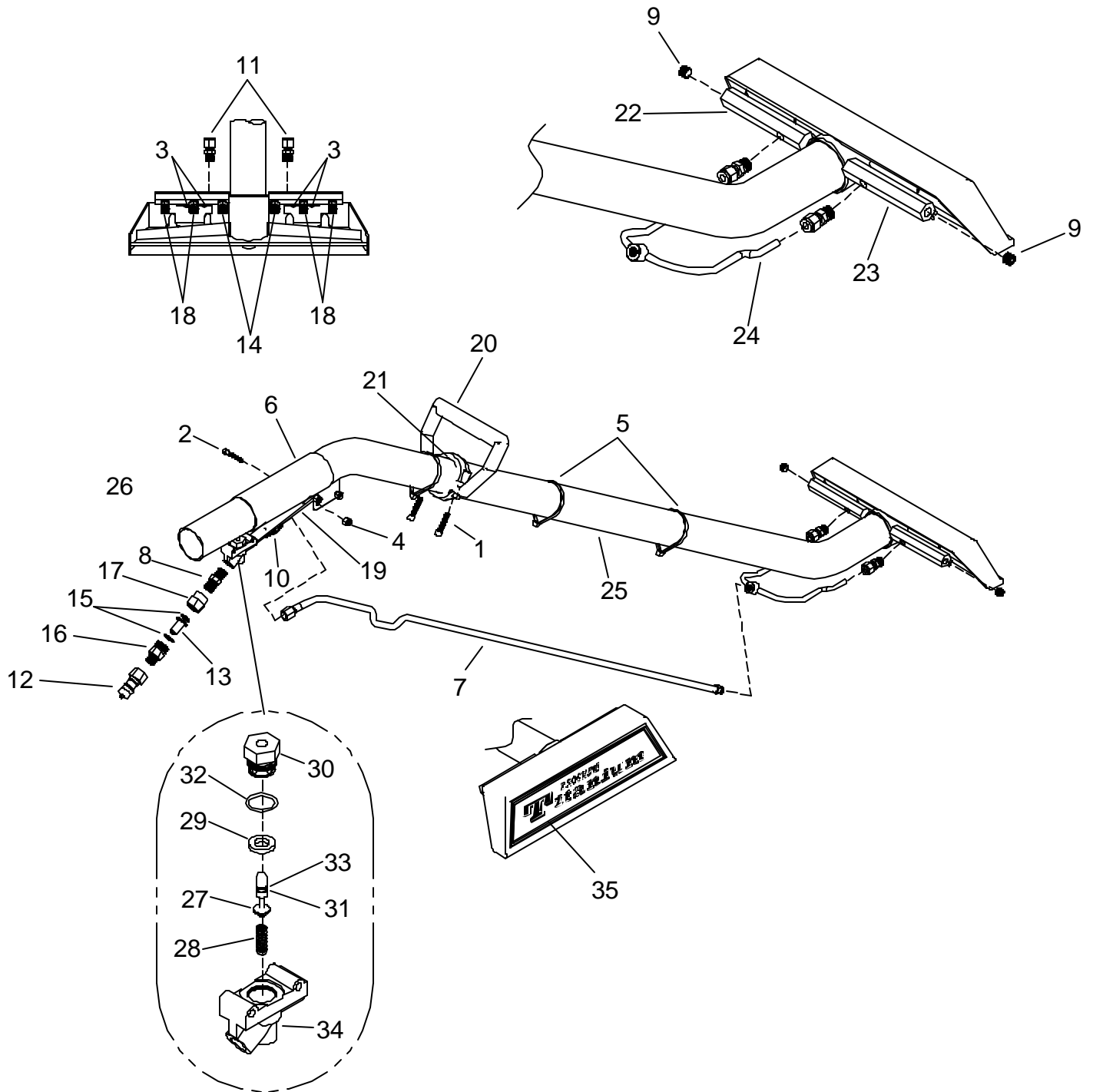
# AUTOMATIC PUMPOUT-OPTIONAL



## AUTOMATIC PUMPOUT-OPTIONAL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	00-000210	4	SCR, 1/4-20 X 3/4 SOCHD		
2	00-000311	4	SCR, 1/4-20 X 1/2 SHCS SS		
3	00-000312	8	SCR, CAP 1/4 X 1 SOCHD		
4	00-000399	1	SCR, CAP 1/4 X 1 3/8 SOC		
5	00-000241	8	SCR, CAP 10-32 X 2 SOCHD SS		
6	57245	8	NUT, 1/4-20 HEX NYLOCK SS		
7	87162	1	WASHER, 1/4 SPLIT LOCK		
8	87165	8	WASHER, #10 SPLIT LOCK		
9	04-000312	1	RING, RETAIN EXT 1/2		
10	04-000334	2	BALL, NYL ID		
11	04-000335	2	RING, SNAP 1-7/8D		
12	04-000342	1	SPRING, PUMP-OUT BALL PRESS		
13	52-501822	2	INL, HOSE CONN WST TNK		
14	16-808241	1	DIAPH, WST TNK PMP-OUT		
15	40-902151	1	MOTOR, 1/8HP 12V		
16	43-807117	1	GSKT, CVR TOP PMPOUT		
17	43-807118	1	GSKT, CVR SD PMPOUT		
18	43-810091	1	SEAL, PUMPOUT SHFT		
19	43-810100	1	SEAL PUMPOUT CAM		
20	43-810101	1	O-RING, 800/1000 .072		
21	43-807116	2	GSKT, IN/OUTLT WST TNK-PM		
22	45-801927	4	BRG, SHFT PUMP-OUT		
23	49-876301	1	VENT, UPR SHFT BRNG HSG		
24	50-502025	1	PL, CVR TOP PUMP-OUT		
25	50-502026	1	PL, CVR SD PUMP-OUT		
26	00-000311	2	SCR, 1/4-20 X 1/2 SHCS SS		
27	11-800504	1	GA, FLOW SIGHT 3/8 NPT		
28	52-501828	1	BTM, PLNGR WST TNK PMP-OUT		
29	52-501829	1	SHT, 3/4" STROKE WST TNK		
30	52-501914	1	RD, CONNECT WST PMP-OUT		
31	52-501915	1	GUIDE, PLNGR WST PUMP-OUT		
32	52-501921	1	PIN, WRIST PUMP-OUT		
33	52-501934	1	TOP, PLNGR PUMP-OUT		
34	52-501950	1	BUSH, THREADED		
35	52-501822	2	INL, HOSE CONN WST TNK		
36	56-502428	1	BRKT, PMP-OUT SW/CCT BRKR		
37	52-501821	1	TOP, WST TNK PUMP-OUT		
38	52-501820	1	BASE, WST TANK PMP-OUT		

# WAND-TITANIUM SIX JET-OPTIONAL

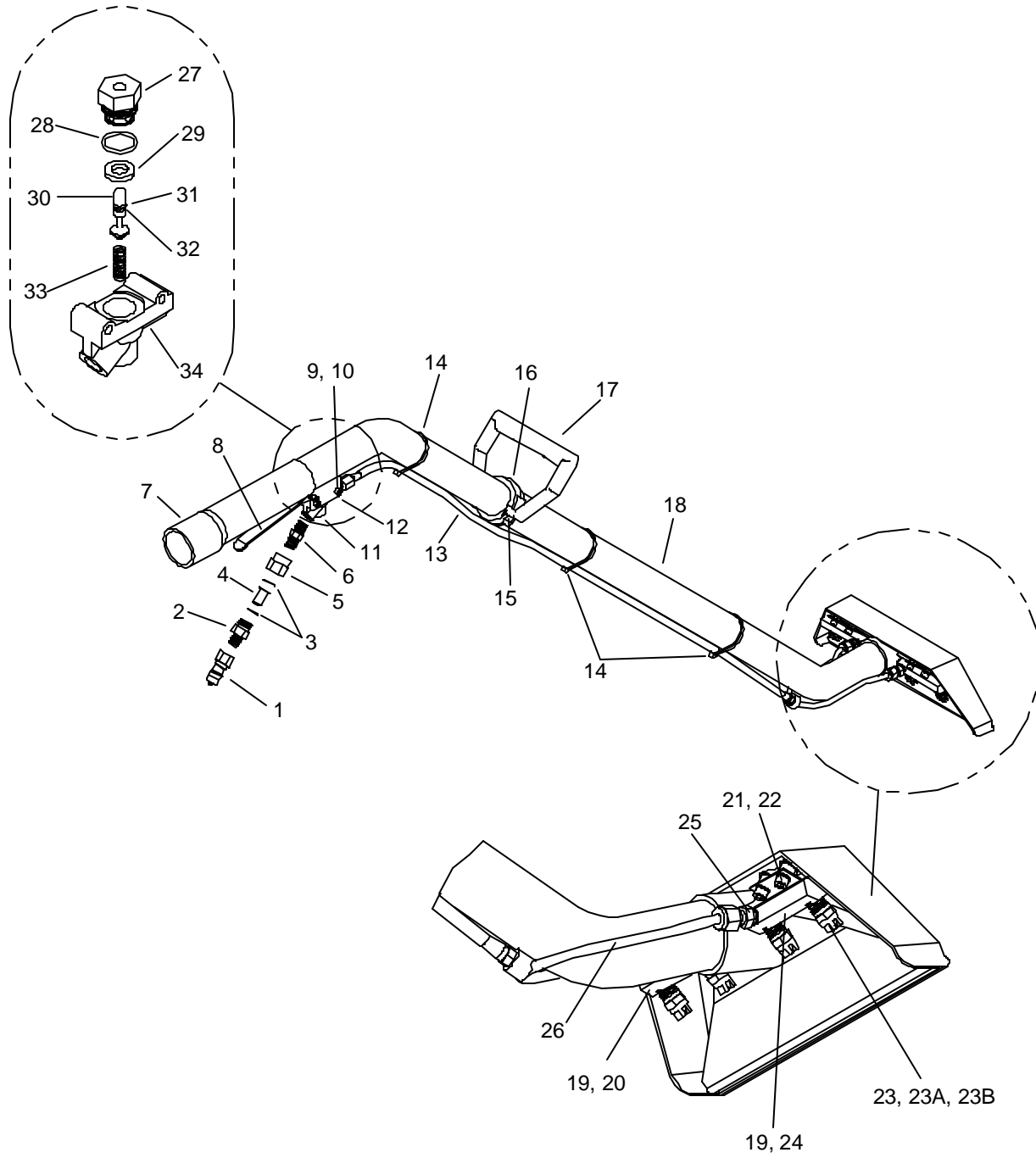


## WAND-TITANIUM SIX JET-OPTIONAL

REF	PART NO.	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	00-000282	SCR, CAP 1/4-20 X 1 1/4 SOC		
2	00-000317	SCR, CAP 10-32 X 1 1/4 SOCH		
3	70228	SCR, 10-32 X 1/4 PPHMS SS		
4	57090	NUT, 10-32 HEX NYLOCK SS		
5	04-000093	TIE, CABLE 13"		
6	09-805603	HOSE, INT VAC 4-1/2 X 48		
7	10-805504	HOSE, 3/16 X 44-1/2		
8	56015	NIPPLE, 1/4 HEX		
9	11-800206	PLUG, 1/8 SOCHD BR		
10	12-800060	CONN, 1/4P X 1/4T BR		
11	12-800322	CONN, 1/8P X 1/4T COMP BR		
12	56012	NIPPLE, 1/4 FPT QD		
13	14-806512	STRAINER, JET 50 MESH		
14	17-803018	TIP, SPRAY 9501 X 1/8P SST		
15	17-803006	WASHER, NYLON		
16	17-803010	CONN, 1/4P X 11/16-16M		
17	17-803036	CONN, 1/4FP X 11/16-16F BR		
18	17-803078	TIP, SPRAY 8001 SST 1/8 VJET		
19	52-501619	TRIGGER, WD VALVE		
20	52-502008BK	BODY, WD HDL, 2" TB, BK		
21	52-502009	HOLD DN-WD HDL 2" TUBE		
22	52-502057	MANFOLD, LEFT		
23	52-502058	MANIFOLD, RIGHT		
24	56-502548	ASSY, MNFLD S-BEND		
25	56-502534	WD & HD TITANIUM		
26	61-950496	ASSY, EXTRACTOR VALVE		
27	16-808189	STEM, EXTRACTOR VALVE		
28	16-808190	SPRING, EXTRACTOR VALVE		
29	16-808228	SEAT, EXTRACTOR VALVE		
30	16-808229	HLDR, VLV STEM-EXTRACTOR VL		
31	43-810062	O-RING, .114 ID .254OD		
32	43-810063	O-RING, .551ID .691OD		
33	43-810064	BACK-UP, .250DIA		
34	52-501590	BDY, EXTRACTOR VLV		
35	48-941462	DEC, WD HD TITANIUM		
-	48-941296	BLB, INSPECTION QC (PINK)		



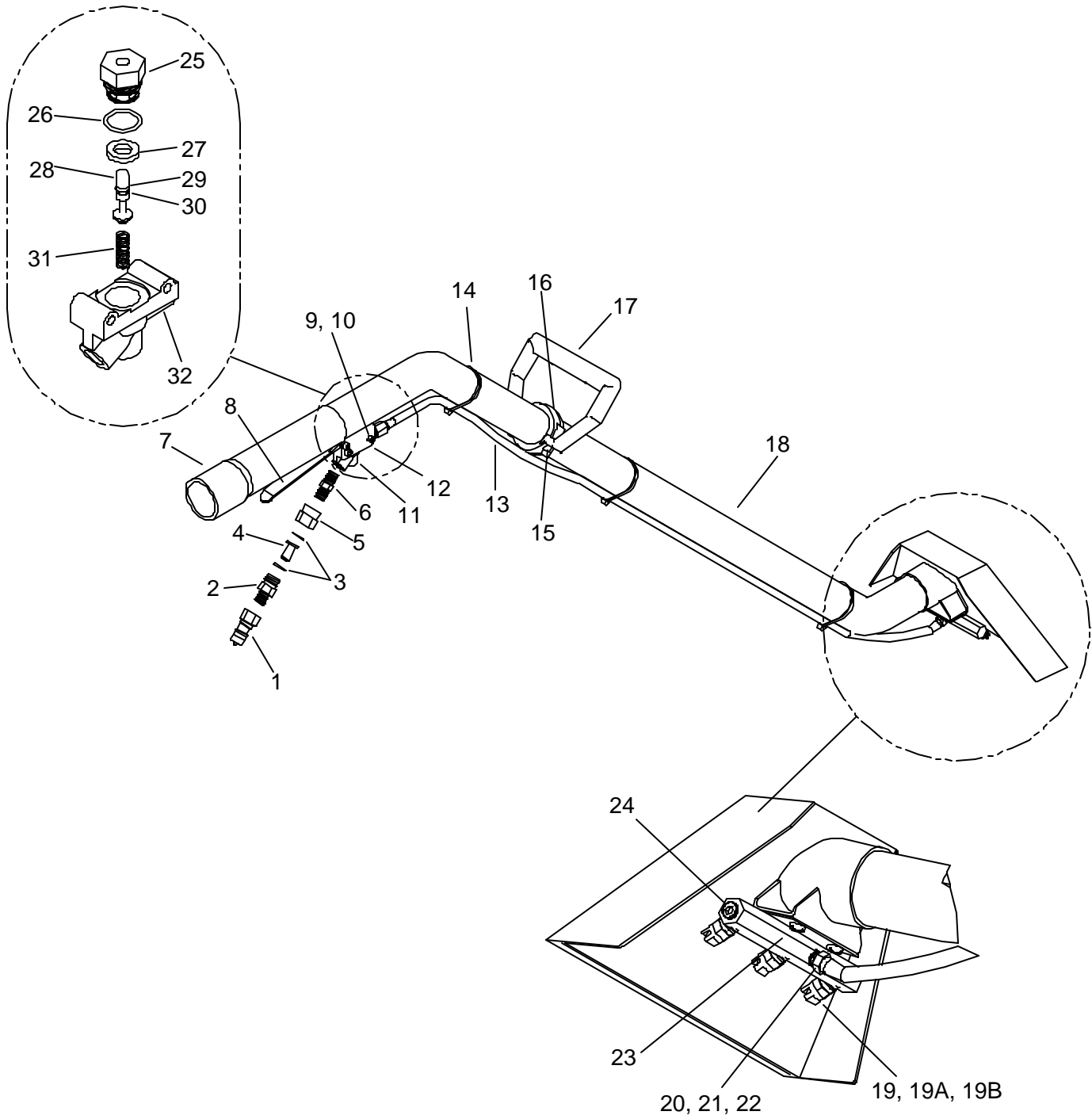
# WAND-QUAD JET-OPTIONAL



## WAND-QUAD JET-OPTIONAL

REF	PART NO.	DESCRIPTION	SERIAL NO. FROM	NOTES:
-	89238	WAND, TM, QJW (95015) PC		COMPLETE
-	89239	WAND, TM, QJW (9502) PC		COMPLETE
-	89237	WAND, TM QJW (9501) PC		COMPLETE
-	89235	WAND, TM, QJW, (9501) NO DECAL		COMPLETE
1	56012	NIPPLE, 1/4 FPT QD		
2	17-503010	CONN, 1/4P X 11/16-16M		
3	17-803006	WASHER, NYLON		
4	14-806512	STRAINER, JET 50 MESH		
5	17-803036	CONN, 1/4FP,11/16-16R BR		
6	56015	NIPPLE, 1/4 HEX		
7	09-805359	SLEEVE, WD HDL 9.5		
8	52-501619	TRIGGER, WD VLV		
9	00-000317	SCR, CAP 10-32X 1-1/4 SOCH		
10	57090	NUT, 10-32 HEX NYLOCK SS		
11	61-950496	ASSY, EXTRCTR VLV		
12	12-800060	CONN, 1/4P X 1/4T BR		
13	10-805387	HOSE, 3/16 X 43-1/2 (1/8P X 1/4)		
14	04-000053	TIE, CABLE 8" WHT		
15	00-000282	SCR, CAP 1/4-20 X 1-1/4 SOC		
16	52-501569	HOLD DOWN, WD HDL		
17	52-501568	BODY, WD HDL		
18	56-501940	WAND & HEAD, CAST SST		
19	11-800206	PLUG, 1/8 SOCHD BR		
20	56-501966	ASSY, L S-BEND MNFLD		
21	00-000347	SCR, CAP 10-24 X1/4 SOCHD		
22	87165	WASHER, #10 SPLIT LOCK		
23	17-803001	TIP, SPRY 95015X1/8P SST		89238
23A	17-803002	TIP, SPRY 9502X1/8P SST		89239
23B	17-803018	TIP, SPRY 9501X1/8P SST		89237 89235 (NO DECAL)
24	56-501986	ASSY, RT S-BEND MNFLD		
25	12-800322	CONN, 1/8PX1/4T COMP BR		
26	56-501967	ASSY, S-BEND MNFLD		
27	16-808229	HOLDER, VLV STEM-EXTRCTR VL		
28	43-810063	O-RING, .551 ID .691 OD		
29	16-808228	SEAT, EXTRCTR VLV		
30	16-808189	STEM, EXTRCTR VLV		
31	43-810064	BACK-UP, .250 DIA		
32	43-810062	O-RING, .144 ID .254 OD		
33	16-808190	SPRING, EXTRCTR VLV		
34	52-501590	BODY, EXTRCTR VLV		
-	48-941186	DECAL, WD HD (CAST SS)		NOT SHOWN
-	66-808169	KIT, REP-WD VLV		NOT SHOWN INCLUDES PARTS 27-29 & 31-33

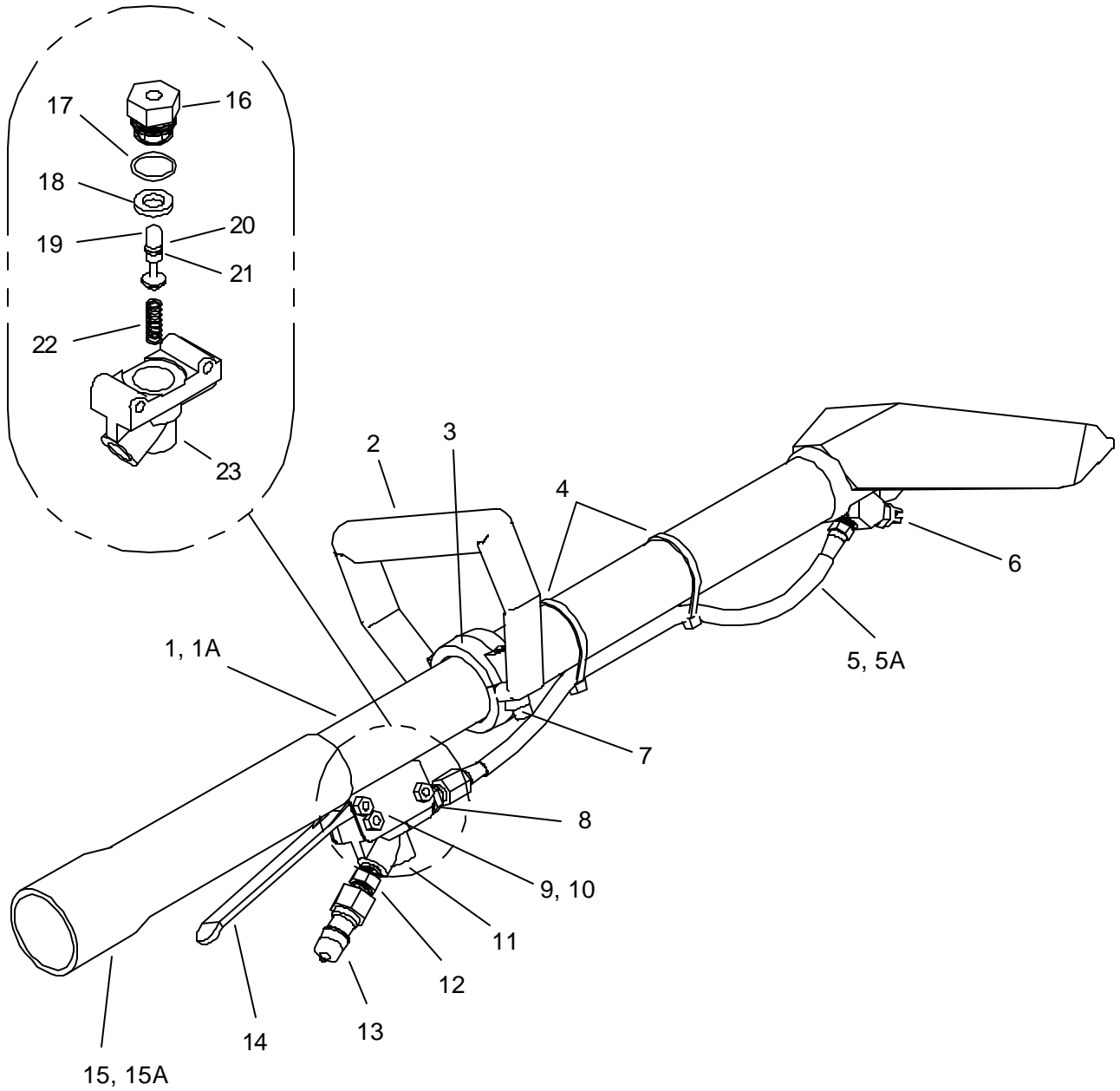
# WAND- TRI JET- OPTIONAL



## WAND- TRI JET-OPTIONAL

REF	PART NO.	DESCRIPTION	SERIAL NO. FROM	NOTES:
-	89233	WAND, TJW (9502) PC		COMPLETE
-	89232	WAND, TJW, (95015) CUBXL		COMPLETE
-	89234	WAND, TJW, (9503) PC		COMPLETE
1	56012	NIPPLE, 1/4 FPT QD		
2	17-503010	CONN, 1/4P X 11/16-16M		
3	17-803006	WASHER, NYLON		
4	14-806512	STRAINER, JET 50MESH		
5	17-803036	CONN, 1/4FP,11/16-16R BR		
6	56015	NIPPLE, 1/4 HEX		
7	09-805359	SLEEVE, WD HDL 9.5		
8	52-501619	TRIGGER, WD VLV		
9	00-000317	SCR, CAP 10-32X 1-1/4 SOCH		
10	57090	NUT, 10-32 HEX NYLOCK SS		
11	61-950496	ASSY, EXTRCTR VLV		
12	12-800060	CONN, 1/4P X 1/4T BR		
13	10-805253	HOSE, 3/16X49 (1/8P X 1/4FT)		
14	04-000053	TIE, CABLE 8" WHT		
15	00-000282	SCR, CAP 1/4-20 X 1-1/4 SOC		
16	52-501569	HOLD DOWN, WD HDL		
17	52-501568	BODY, WD HDL		
18	56-501712	WAND & HEAD, TRI-JET WD		
19	17-803002	TIP, SPRY 9502X1/8P SST		89233
19A	17-803001	TIP, SPRY 9501X1/8P SST		89232
19B	17-803046	TIP, SPRY 9503X1/8P SST		89234
20	70162	SCR, 10-32 X 3/8 PPHMS SS		
21	87165	WASHER, #10 SPLIT LOCK		
22	57014	NUT, 10-32 HEX SS		
23	56-501739	MANIFOLD, WD TRI-JET		
24	11-800206	PLUG, 1/8 SOCHD BR		
25	16-808229	HOLDER, VLV STEM-EXTRCTR VL		
26	43-810063	O-RING, .551 ID .691 OD		
27	16-808228	SEAT, EXTRCTR VLV		
28	16-808189	STEM, EXTRCTR VLV		
29	43-810064	BACK-UP, .250DIA		
30	43-810062	O-RING, .114ID .254OD		
31	16-808190	SPRING, EXTRCTR VLV		
32	52-501590	BODY, EXTRCTR VLV		
-	48-941166	DECAL, WD HD		NOT SHOWN
-	66-808169	KIT, REP-WD VLV		NOT SHOWN INCLUDES PARTS 25-27 & 29-31

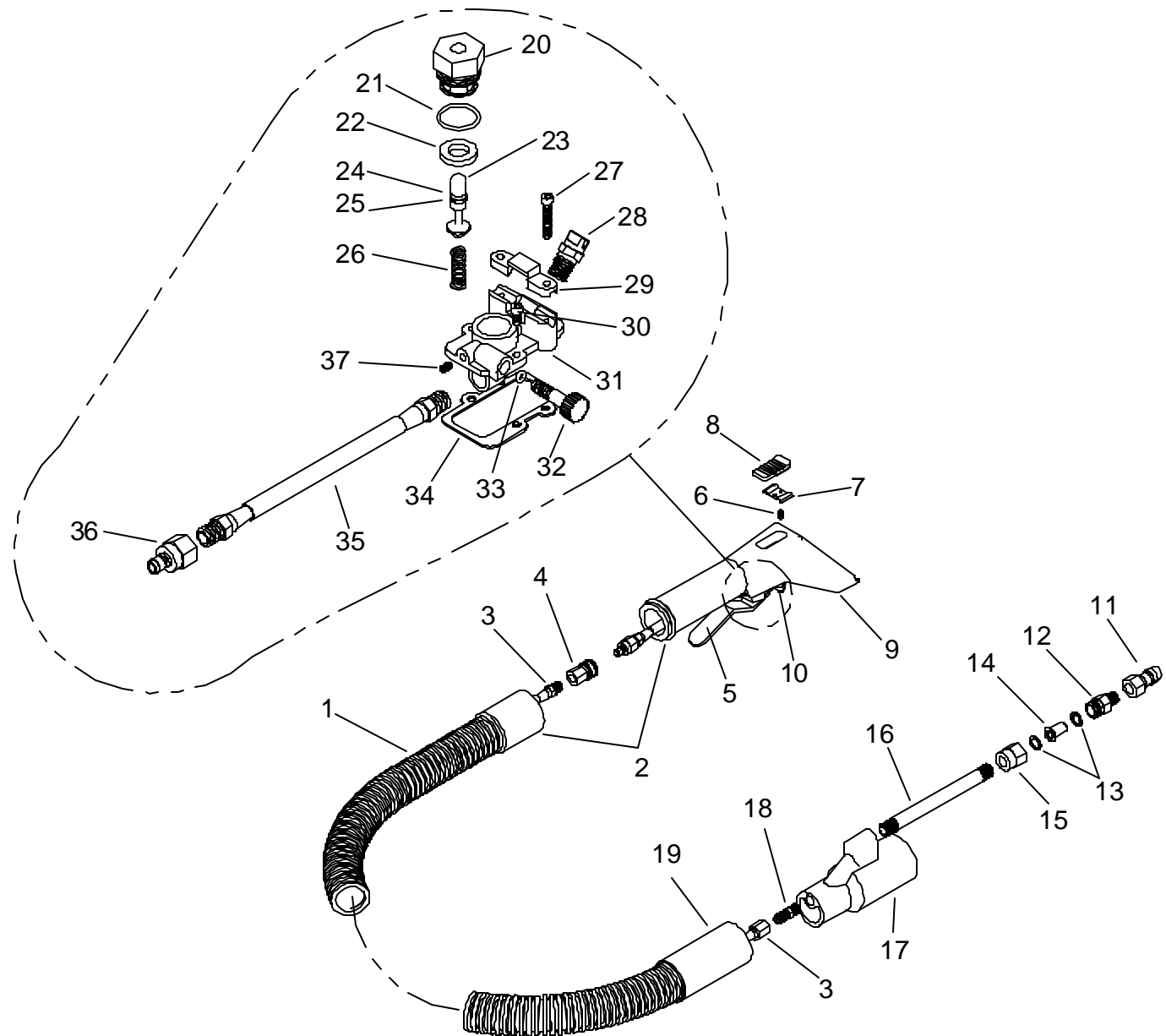
# STAIR TOOL-OPTIONAL



## STAIR TOOL-OPTIONAL

REF	PART NO.	DESCRIPTION	SERIAL NO. FROM	NOTES:
-	78519	TL, STAIR, LNG, TM DJ (80015)		COMPLETE
-	78521	TL, STAIR, SHT, TM (80015)		COMPLETE
1A	56-501715	WAND & HEAD, STAIR TL		
1B	56-501907	WAND & HEAD, SHRT STAIR TL		
2	52-501576	BODY, WD HDL PORT		
3	52-501577	HOLD DOWN, WD HDL PORT		
4	04-000053	TIE, CABLE 8" WHT		
5A	10-805330	HOSE, 3/16X13-3/4 (1/8PX1/4)		
5B	10-805397	HOSE, 3/16X7-1/2 (1/8P X 1/4F)		
6	17-803002	TIP, SPRY 9502X1/8P SST		
7	00-000282	SCR, CAP 1/4-20 X 1-1/4 SOC		
8	12-800060	CONN, 1/4P X 1/4T BR		
9	00-000317	SCR, CAP 10-32X1-1/4 SOCH		
10	57090	NUT, 10-32 HEX NYLOCK SS		
11	61-950496	ASSY, EXTRCTR VLV		
12	56015	NIPPLE, 1/4 HEX		
13	56012	NIPPLE, 1/4 FPT QD		
14	52-501619	TRIGGER, WD VLV		
15A	09-805359	SLEEVE, WD HDL 9.5		
15B	09-805504	SLEEVE, STAIR TL HDL 7-1/8		
16	16-808229	HOLDER, VLV STEM-EXTRCTR VL		
17	43-810063	O-RING, .551 ID .691 OD		
18	16-808228	SEAT, EXTRCTR VLV		
19	16-808189	STEM, EXTRCTR VLV		
20	43-810064	BACK-UP, .250DIA		
21	43-810062	O-RING, .114 ID .254 OD		
22	16-808190	SPRING, EXTRCTR VLV		
23	52-501590	BODY, EXTRCTR VLV		
-	48-941163	DECAL, STAIR TL		NOT SHOWN
-	66-808169	KIT, REP-WD VLV		NOT SHOWN INCLUDES PARTS 16-19 & 20-22

# UPHOLSTERY TOOL-OPTIONAL

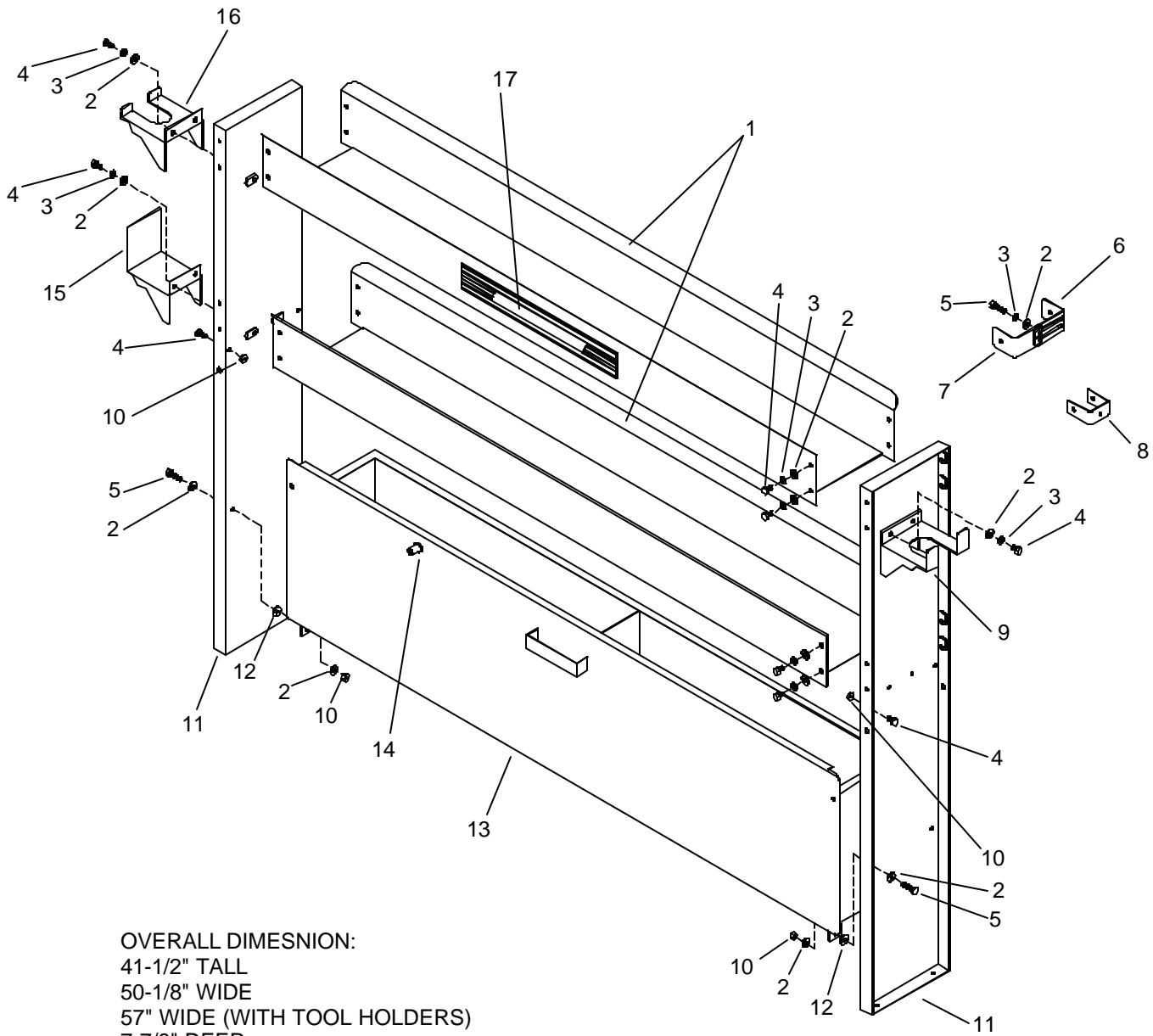


## UPHOLSTERY TOOL-OPTIONAL

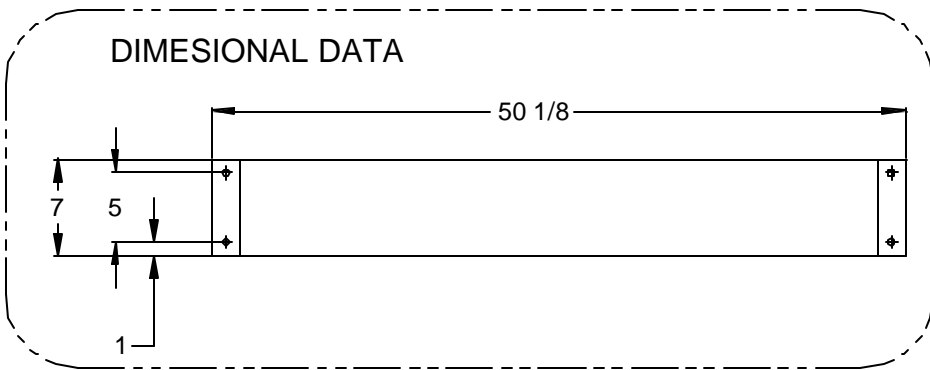
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
-	78513	1	TL, UPHOLST, PC (80015)		COMPLETE
1	09-805131	2	HOSE, VAC 1-1/4X10' BLU		
2	08-805243	1	CUFF, SWIV 1-1/4HX1-1/4T		
3	10-805347	1	HOSE, 3/16X119-1/2 (1/8PX1/4FT)		
4	13-806023	1	DSC, 1/8FC1/8FP SST		
5	58-500639	1	UPHOLSTERY TL TRIGGER		
6	00-000310	1	SCR, CAP 4-40 X7/32 SHCS SS		
7	04-000282	1	SPRING, VAC ADJ BUTT		
8	52-501624	1	BUTTON, VAC ADJ		
9	52-501842	1	TOOL, UPHOLSTERY		
10	61-950570	1	ASSY, UPHLST TL VLV		INCLUDES PARTS 20-26, 28, & 31- 37
11	560012	1	NIPPLE, 1/4 NPT QD		
12	17-803010	1	CONN, 1/4P X 11/16-16M		
13	17-803006	1	WASHER, NYLON		
14	14-806512	1	STRAIRNER, JET 50MESH		
15	17-803036	1	CONN, 1/4FPX11/16-16F BR		
16	11-800404	1	NIP, 1/4X5 SST		
17	52-501585	1	COUPLER, UPHLST TL		
18	12-800065	1	CONN, 1/8P X 1/4T		
19	08-805138	1	CUFF, 1 1/4H X 1 1/2T GRY		
20	16-808229	1	HOLDER, VLV STEM-EXTRCTR VL		
21	43-810063	1	O-RING, .551 ID .691 OD		
22	16-808228	1	SEAT, EXTRCTR VLV		
23	16-808189	1	STEM, EXTRCTR VLV		
24	43-810064	1	BACK-UP, 250DIA		
25	43-810062	1	O-RING, .144 ID .254 OD		
26	16-808190	1	SPRING, EXTRCTR VLV		
27	00-000306	2	SCR, 6-32 X 1 SCHD SS		
28	17-803033	1	TIP, SPRY 80015X1/8P SST		
29	58-500638	1	CSTG, TRIGGER CLMP		
30	00-000307	2	SCR, CAP 6-32X3/8 SOCHD		
31	52-501623	1	VALVE, UPHLST TL		
32	52-501626	1	VALVE, ADJ-UPHLST TL VLV		
33	43-810016	1	O-RING, 5/32IDX9/32OD VIT		
34	43-807513	1	GASKET, UPHLST TL VLV		
35	10-805348	1	HOSE, 3/16X6-1/2 (1/8P BS)		
36	13-806030	1	DSC, 1/8MX1/8FP SST		
37	00-000408	1	SCR, SET 3-32 X 1/4 SOCHD		
-	48-941164	1	DECAL, UPHLST TL		NOT SHOWN
-	66-808169	1	KIT, REPAIR-WAND VLV		NOT SHOWN INCLUDES PARTS 20-22 & 24-26



# SHELF ASSEMBLY-OPTIONAL



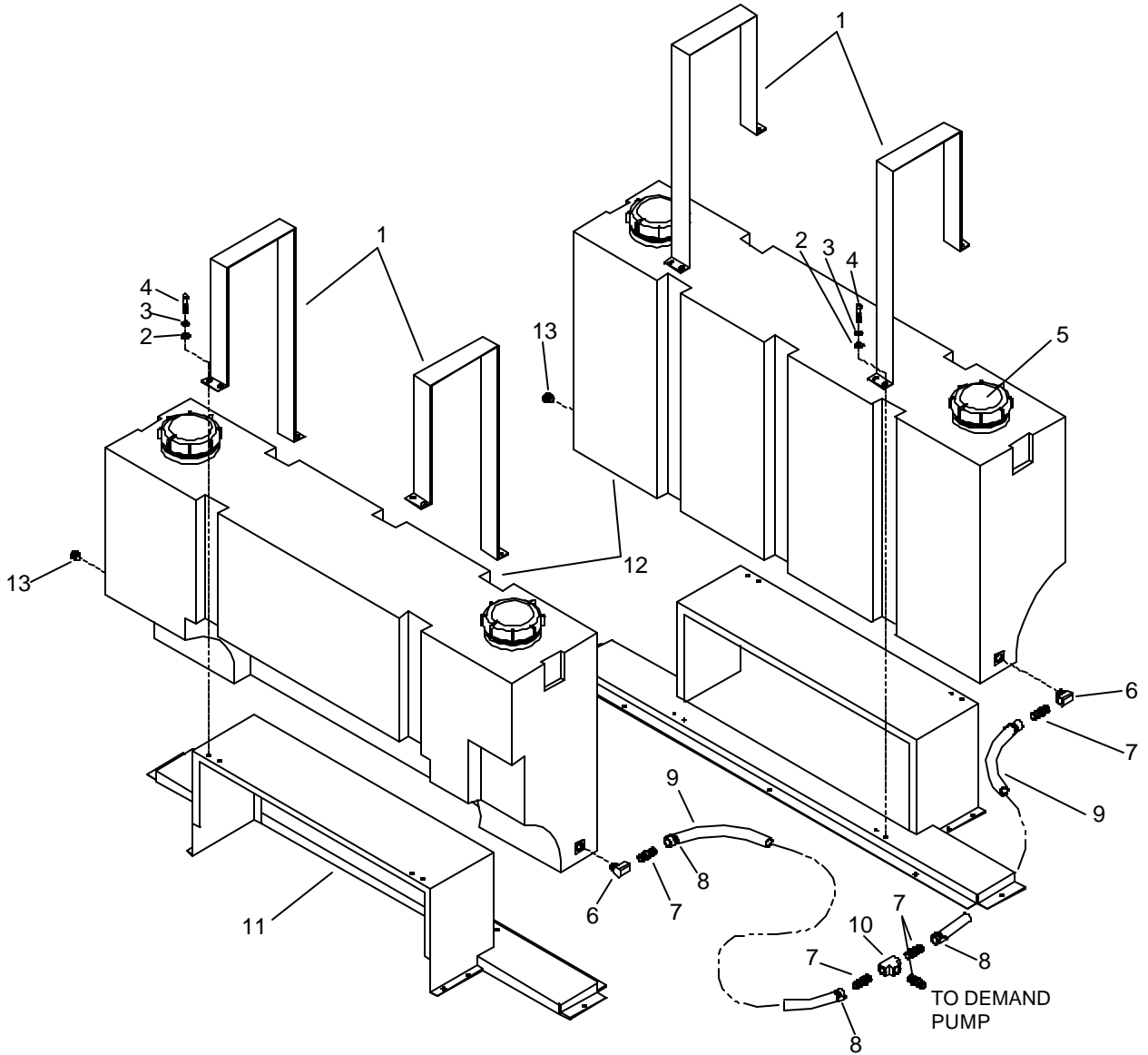
OVERALL DIMENSION:  
 41-1/2" TALL  
 50-1/8" WIDE  
 57" WIDE (WITH TOOL HOLDERS)  
 7-7/8" DEEP



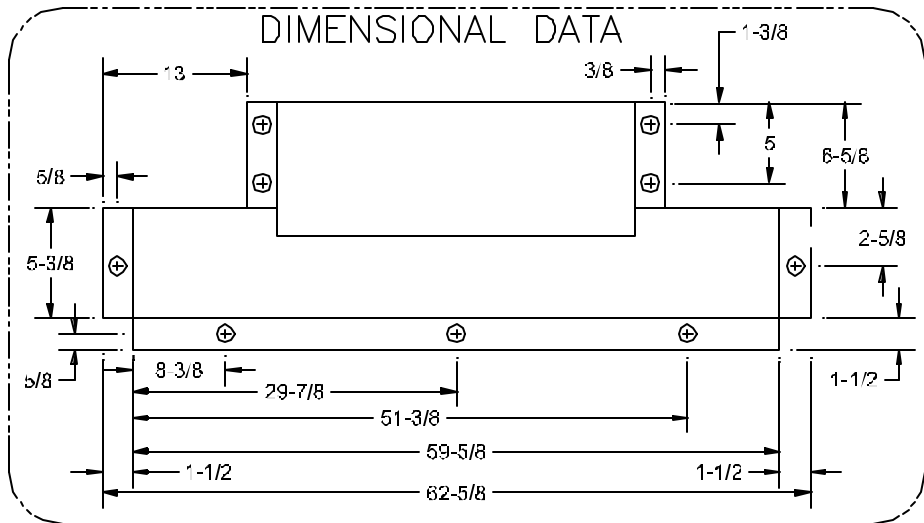
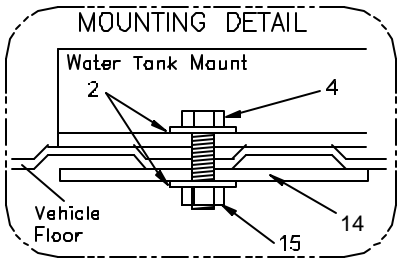
## SHELF ASSEMBLY-OPTIONAL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
-	65-950392	1	VAN STORAGE UNIT		COMPLETE
1	56-501921	1	SHELF, LWR		
2	02-000066	20	FLATWASHER, 1/4		
3	87162	20	WASHER, 1/4 SPLIT LOCK		
4	70721	16	SHOULDER BOLT, 182 OD X 2.25 L		
5	70270	4	SCR, 1/4-20 X 3/4 HHCS PLTD		
6	50-501840	1	BRKT, ADJUST MTG SLOT		
7	56-502067	1	BRKT, ADJUST MTF HLDR		
8	56-501942	1	BRKT, SHELF MOUNTING		
9	50-501753	1	HOLDER, STAIR TOOL		
10	01-000105	4	LOCK NUT, 1/4-20 HXHD		
11	56-501922	2	PANEL, SHLF END		
12	50-501749	2	WASHER, NYLON		
13	56-501920	1	DRAWER, SHELF GRAY		
14	46-802506	1	LATCH, ADJ GRIP		
15	50-501755	1	HOLDER, UP TO HOSE		
16	50-501754	1	HOLDER, UPHST TL		
17	48-941152	1	DECAL, PROCHEM		
-	66-945424	1	KIT, ADJ BRKT.		INCLUDES PARTS 6,7 & MOUNTING HARDWARE

# WATER TANK, DUAL WITH DEMAND PUMP-OPTIONAL



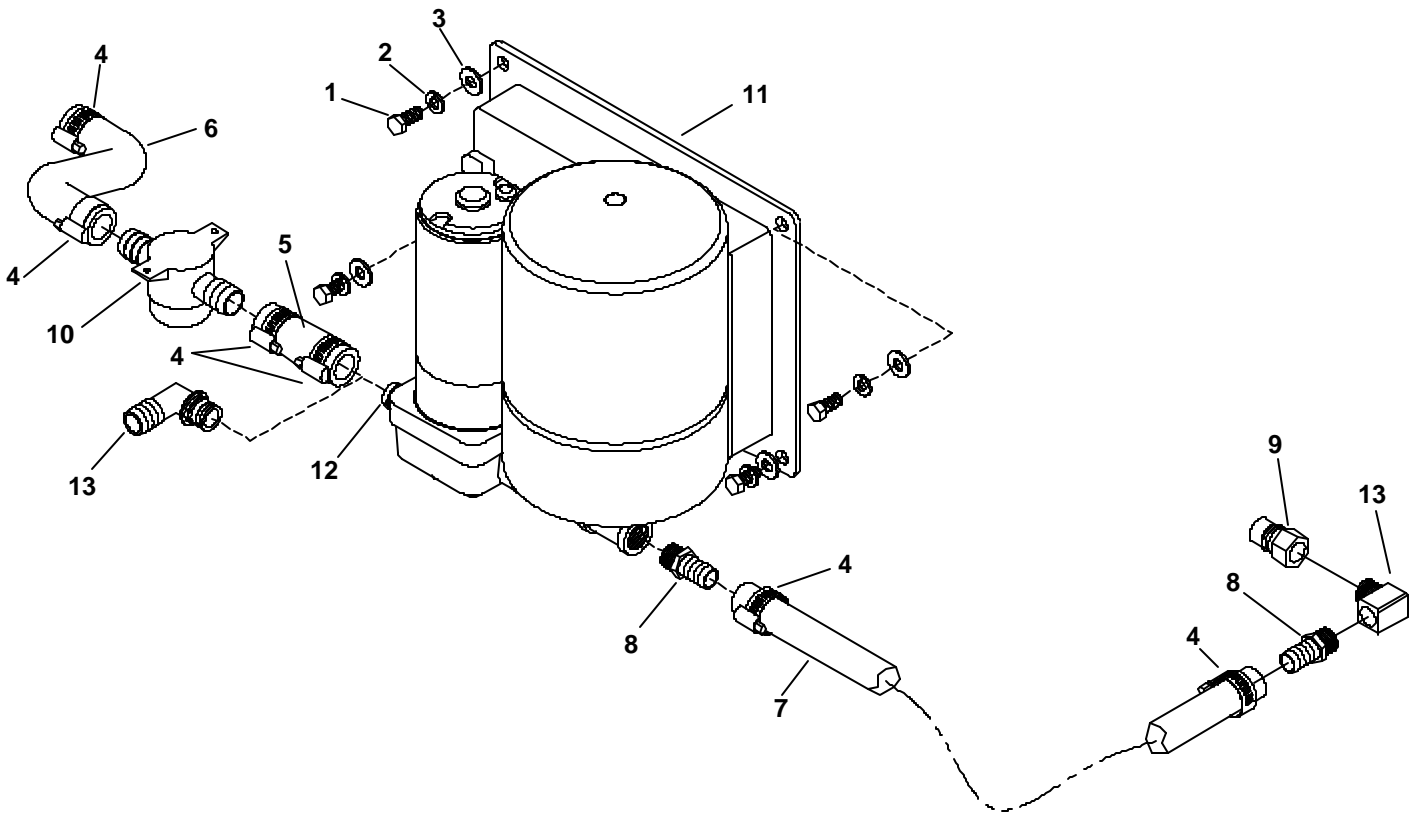
OVERALL DIMENSION:  
 32-1/2" TALL  
 62-5/8" WIDE  
 15-1/2" DEEP



## WATER TANK, DUAL WITH DEMAND PUMP-OPTIONAL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
-	66-945260	-	TANK, DUAL SADDLE W/DMD PUMP		COMPLETE
-	66-945265	-	SINGLE SADDLE TANK W/DMND PMP		COMPLETE
1	50-501774	4	HOLD DOWN, SADDLE TANK GRAY		
2	87171	16	WASHER, 3/8 FLAT		
3	87163	16	WASHER 3/8 SPLIT LOCK		
4	00-000072	16	SCR, 3/8-16 X 2' HXHD		
5	11-800432	4	CAP, WATER BOX		
6	11-800041	2	ELL, STREET 1/2 BR		
7	12-800278	4	FTTG, BRB 1/2P X 3/4H BR		
8	03-000113	4	CLAMP, HOSE #12 SST		
9	09-805456	1	HOSE, WTR 3/4 X 96"		
10	11-800085	1	TEE, 1/2 BRASS		
11	56-502000	2	ASSY, BASE SADDLE TANK GRAY		
12	58-500661	2	MOLDING, WATER TANK		
13	11-800168	2	PLUG, 1/2 BRASS HXHD		
14	50-500511	1	PLATE, INSTALL MT		
15	57119	9	NUT, 3/8-16 HEX NYLOCK		
-	41458	1	SHLR, CHEM, 10-GAL JUG		NOT SHOWN

# WATER TANK-DEMAND PUMP-OPTIONAL

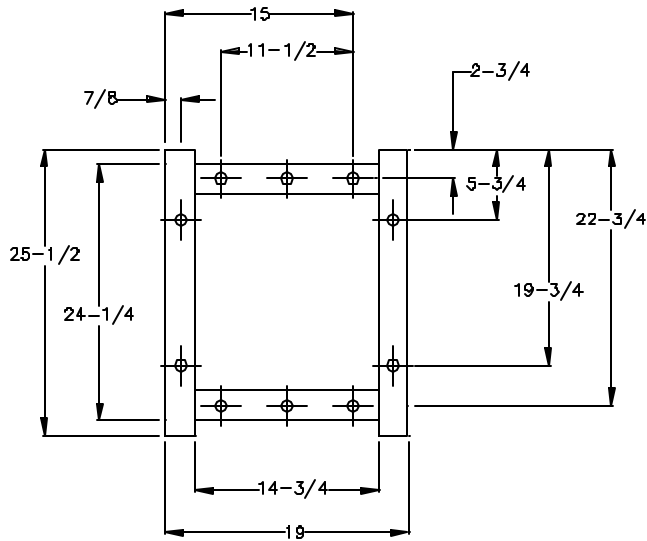
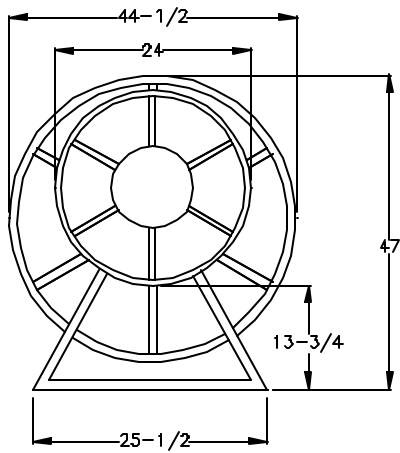


## WATER TANK - DEMAND PUMP-OPTIONAL

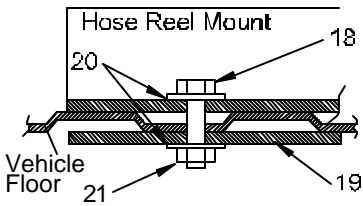
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	70305	4	SCR, 5/16-18 X 3/4 HHCS GR5 PL TDL		
2	87083	4	WASHER, 5/16 SPLIT LOCK PLTD		
3	02-000143	4	WASHER, 5/16 FLAT		
4	03-000113	6	CLAMP, HOSE #12 SST		
5	09-805278	1	HOSE, WATER 3/4 X 3"		
6	09-805357	1	HOSE, WATER .75 X 5.5		
7	09-805446	1	HOSE, WATER 5/8 X 55		
8	12-800345	1	FTTG, BRB 3/8P X 5/8H BR		
9	13-806009	1	DISCONNECT, 3/8M X 3/8FP		
10	14-806553	1	FILTER, DEMAND PUMP		
11	41-905049	1	PUMP, WATER BOOSTER FLOJET 2		
12	20381-022	1	KIT, PORT		
13	11-800275	1	ELBOW, ST 3/8 BR		

# HOSE REEL-OPTIONAL

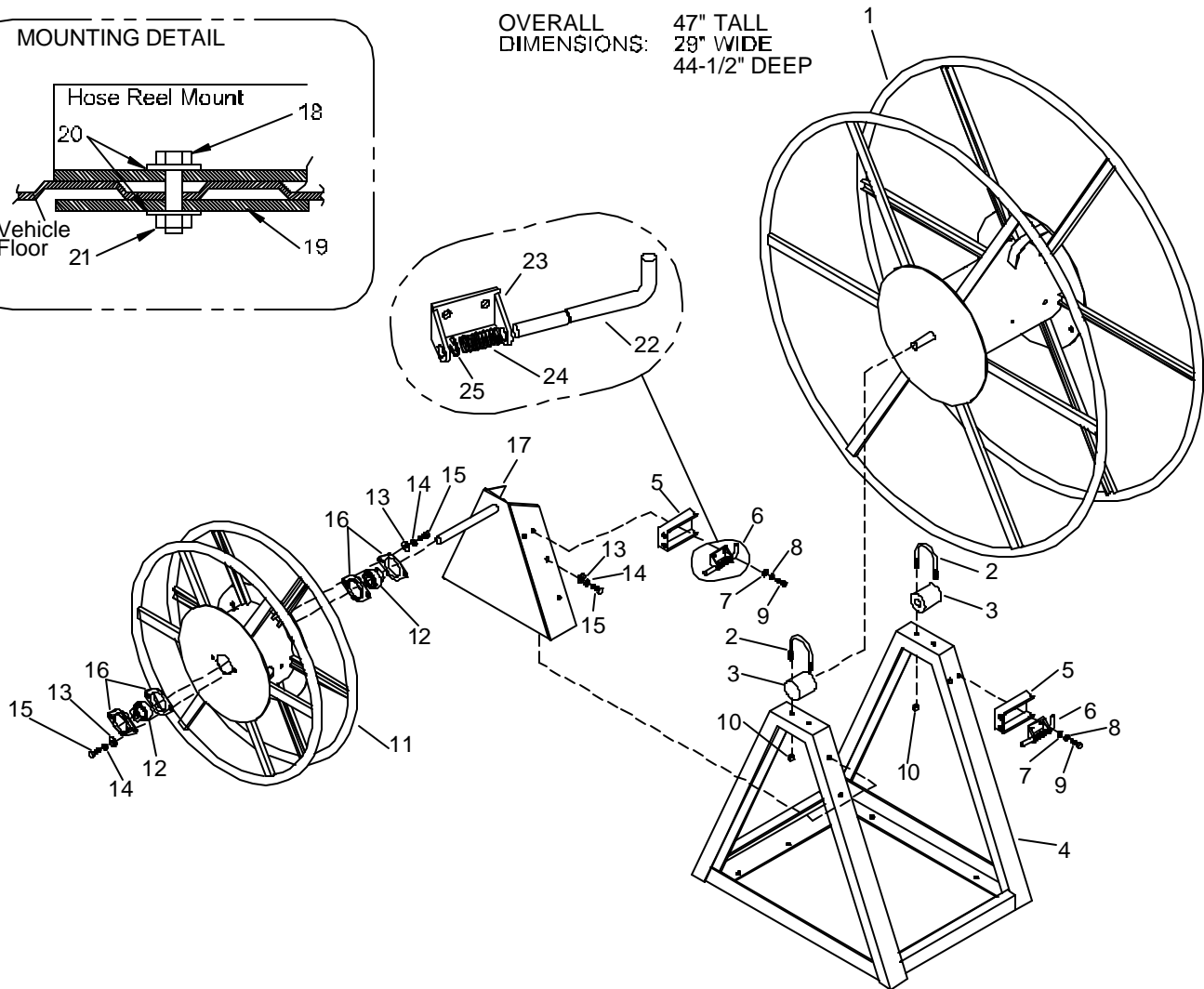
## DIMENSIONAL DATA



## MOUNTING DETAIL



OVERALL DIMENSIONS:  
47" TALL  
29" WIDE  
44-1/2" DEEP

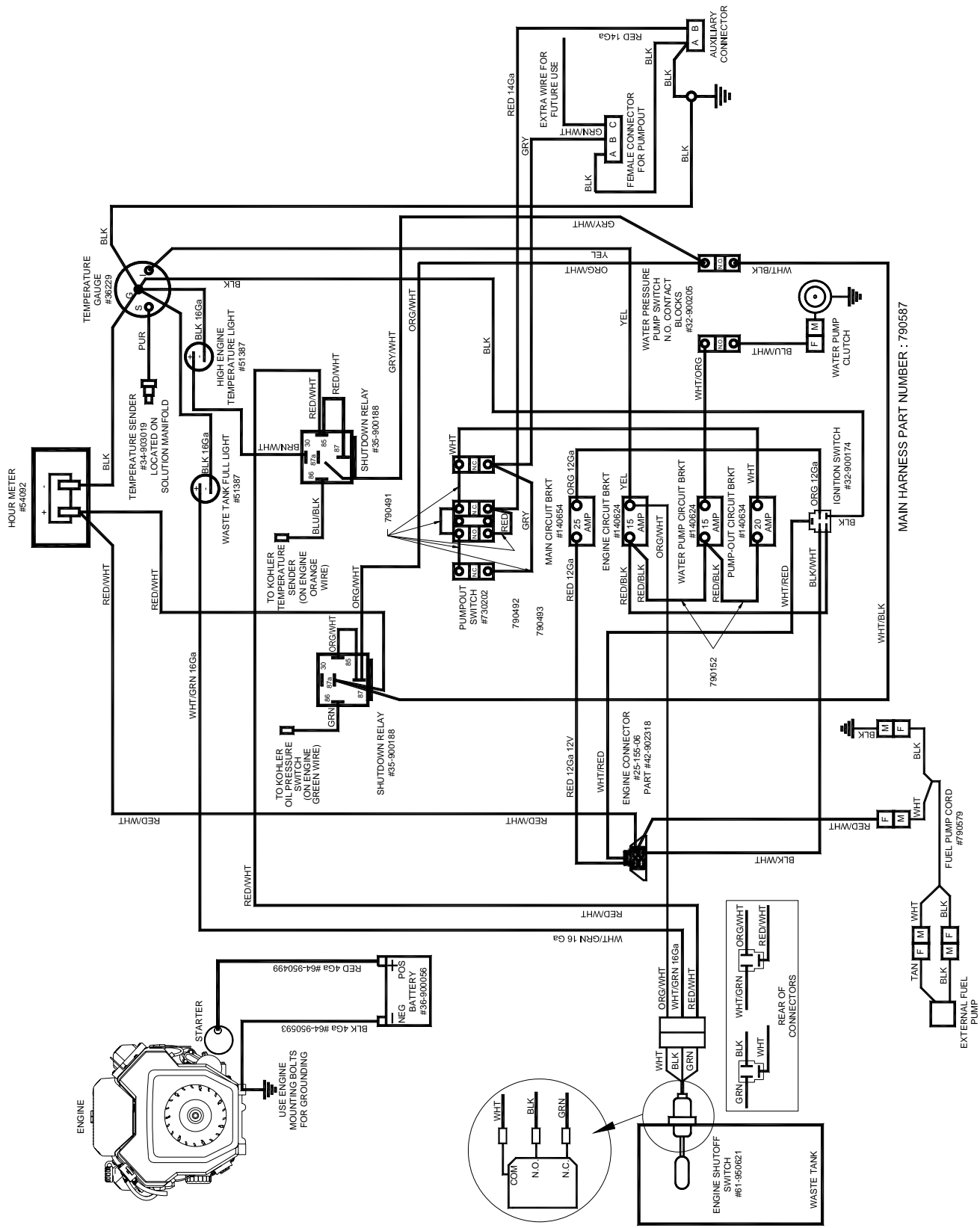


## HOSE REEL-OPTIONAL

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	56-501962	1	REEL, VACUUM HOSE GRAY		
2	03-000124	2	CLAMP, MFLR 1-3/4		
3	52-501685	2	BUSHING, HOSE REEL		
4	56-501960	1	BASE, HOSE RL (250')		
5	56-502207	1	BRKT, LOCKOUT HOSE REEL		
6	61-950854	1	LATCH ASSEMBLY		
7	02-000066	2	FLATWASHER, 1/4		
8	87162	2	WASHER, 1/4 SLPIT LOCK		
9	70270	2	SCR, 1/4-20 X 3/4 HHCS PLTD		
10	57031	2	NUT, 5/16-18 HEX		
11	56-501968	1	REEL, HP HOSE GRAY		
12	45-802138	2	BEARING HOSE REEL		
13	02-000143	4	FLATWASHER, 5/16		
14	87083	4	WASHER, 5/16 SPLIT LOCK PLTD		
15	70302	4	SCR, 5/16-18 X 1" HHCSGR5PLT		
16	44-802122	4	FLANGE, 47MST		
17	56-501961	1	BODY, HP HOSE GRAY		
18	00-000072	10	SCR, 3/8-16 X 2" HXHD		
19	50-500511	1	PLATE, INSTALL MT		
20	87171	10	WASHER, 3/8 FLAT		
21	57119	10	NUT, 3/8-16 HEX NYLOCK		
22	55-501789	1	PIN, LOCK HOSE REEL		
23	50-501812	1	BRKT, HOSE REEL LOCK		
24	04-000302	1	SPRING, LOCK-LOCK PIN ASSY		
25	04-000303	1	CLIP, RETAINER-LOCK PIN ASSY		

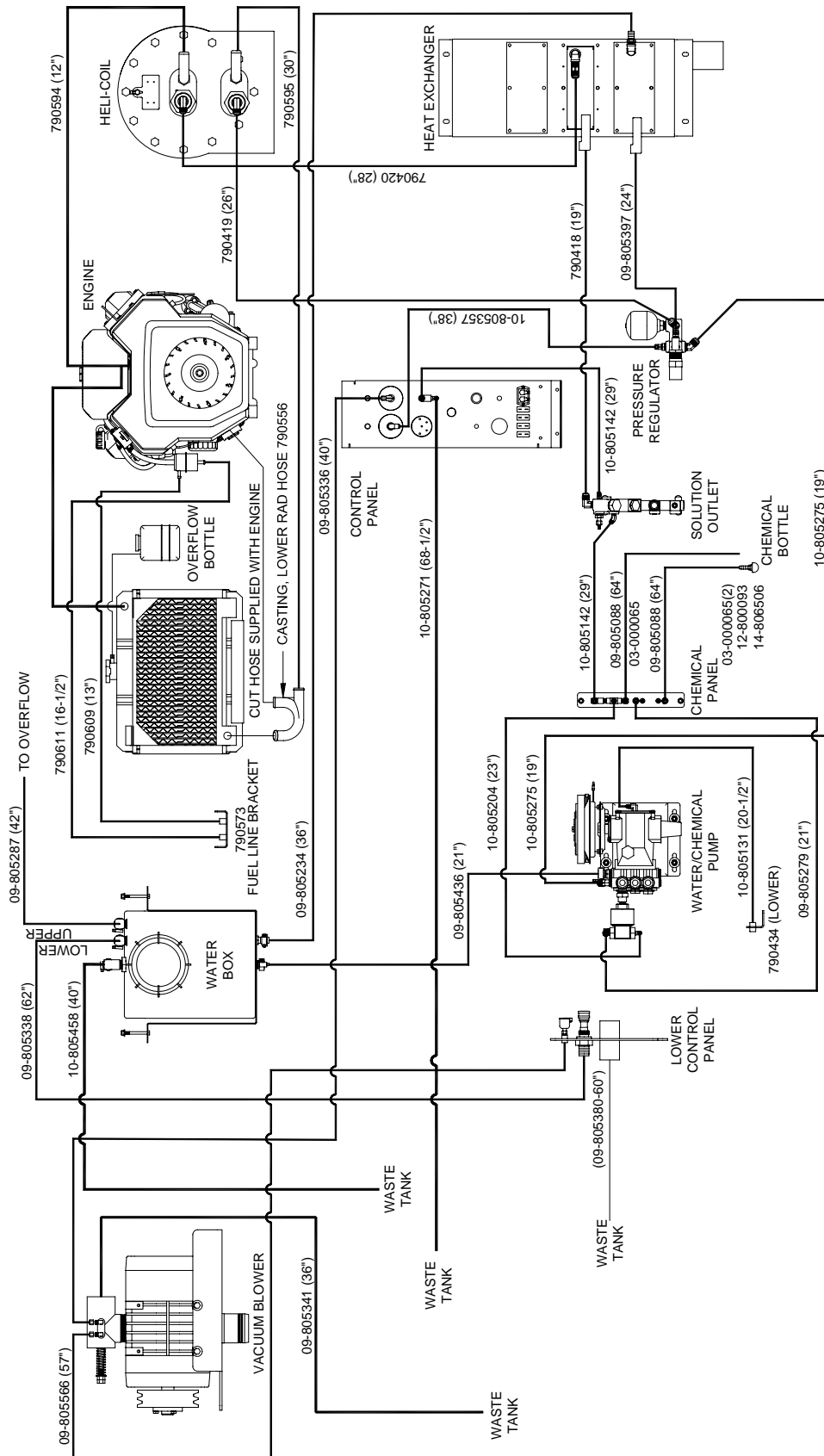


# WIRING DIAGRAM



MAIN HARNESS PART NUMBER : 790587

# HOSE DIAGRAM



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## New Truck Mount Machine Warranty

### Limited Warranty

*PROCHEM* warrants new machines against defects in material and workmanship under normal use and service to the original purchaser. Any statutory implied warranties, including any warranty of merchantability or fitness for a particular purpose, are expressly limited to the duration of this written warranty. *PROCHEM* will not be liable for any other damages, including but not limited to indirect or special consequential damages arising out of or in connection with the furnishing, performance, use or inability to use the machine. This remedy shall be the exclusive remedy of the buyer. The warranty period is subject to the conditions stated below.

Any local or distant transportation, related service labor, normal maintenance, and diagnostic calls are not included.

Parts replaced or repaired under this warranty are guaranteed for the remainder of the original warranty period or 90 days.

Component	Coverage Responsibility	Length of Warranty
Gasoline Engine*	<b>Engine Dependant: Briggs &amp; Stratton – 1-800-233-3723 Nissan – Contact Customer Care Kohler – 1-800-655-4356</b>	1 year
Vacuum Pump	<b>Gardner Denver – 1-800-982-3009</b>	18 months
Heat Exchanger	PROCHEM	1 year
Water Pump	PROCHEM	2 years
Waste Pump	PROCHEM	1 year
Wands(except shut off valve and jets)	PROCHEM	1 year
Waste and Water Tanks	PROCHEM	1 year
Pressure Regulator	PROCHEM	1 year
All other component not excluded	PROCHEM	1 year
Battery*	<b>Pro-rated through battery manufacturer's local dealer. 800-423-6569</b>	1 year

\* When applicable

#### Product exceptions and Exclusions:

- Normal wear items and maintenance items including but not limited to disposable filters, any fluids, electrical components, belts, pulleys, bearings, fittings, hoses, o-rings, seals, gaskets, diaphragms, engine tune up components, wand shut off valve, and jets are covered, **parts only**, for 90 days.
- **NOTE:** Engine warranty is administered through the engine manufacturer and must be repaired at an authorized service center.

#### This Warranty Shall Not Apply To:

1. Any product that has been subject to abuse, misuse, neglect or unauthorized alteration (including the use of incompatible or corrosive chemicals or overloading of capacity).
2. Products that have experienced shipping or freight damage.
3. Repairs necessary to correct any failure due to improper pre-delivery service and inspection by the selling dealer.
4. Time for cleaning units in preparation for repair.
5. Any repairs resulting from poor initial service work or improper diagnosis.
6. Any design alterations performed by an organization not authorized or specified by *PROCHEM*.
7. A unit which is improperly repaired.
8. Damage due to hard water scaling.
9. Exposure to freezing temperature conditions.
10. Electrical components exposed to moisture.

The warranty commences on the purchase date by the original end user from an authorized *PROCHEM* agent, subject to proof of purchase. **The warranty is non transferable and is intended for the original purchaser only.** The Machine Registration Card must be completed and returned within 10 day of the time of purchase. If proof of purchase cannot be identified, the warranty start date is 90 days after the date of sale to an authorized *PROCHEM* distributor.

If difficulty develops during the warranty period, contact the authorized *PROCHEM* agent from whom the product was purchased. *PROCHEM* may elect to require the return of components to validate a claim. Any defective part to be returned must be shipped **freight prepaid** to an authorized *PROCHEM* Distributor/Service Center or to the *PROCHEM* factory.

**Use Of Parts Not Approved By *PROCHEM* Will Void All Warranties.**

*PROCHEM* reserves the right to change its warranty policy without notice

*PROCHEM*. ? a Castle Rock Industries company ? 1351 W. Stanford Ave. ? (303) 762-1800 ? 800-444-7654 ? FAX (303) 865-2800