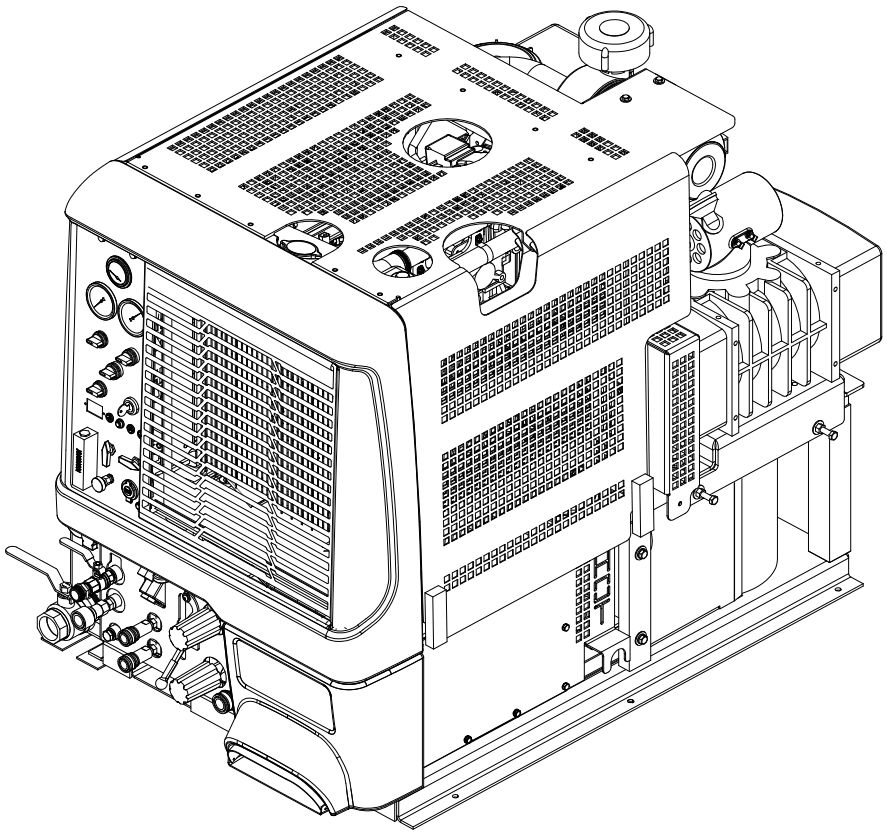
Everest PROCHEM®

Operating instructions (ENG)



MODELS:

EVEREST 650
HIGH PRESSURE
1.001-145.0

EVEREST 650
LOW PRESSURE
1.001-146.0

Read these instructions before using the machine.

86352170-H
03/26/12

Model: _____

Date of Purchase: _____

Serial Number: _____

Dealer: _____

Address: _____

Phone Number: _____

Sales Representative: _____

Overview

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.

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

Warranty Registration

Thank you for purchasing a Prochem product. Warranty registration is quick and easy. Your registration will allow us to serve you better over the lifetime of the product.

To register your product go to :
www.prochem.com/WarrantyRegistration.aspx
For customer assistance:
1-800-776-2436

PROCHEM

Maintenance

Parts

Options

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 common carrier immediately.
2. Check your equipment and packing list. The cleaning unit should arrive equipped with the following items (unless otherwise specified) and any optional accessories which were ordered.

NOTE: Do not modify unit without written permission from manufacturer.

Equipment List:

1. Console.
2. Waste tank.
3. Fuel Pump Assembly, Power and Regulator Cord.
4. Filter box.
5. 150 ft. of 2" vacuum hose.
6. 2 vacuum hose connectors.
7. 150 ft. of 1/4” solution pressure hose with quick connects.
8. 50 ft. water supply hose with quick connect.
9. Installation bolting kit.
10. Installation mounting plates.
11. Operation and service manuals for engine, solution pump, and vacuum pump.
12. Hose clamps for vacuum hoses.

This manual contains the following sections:

- How To Use This Manual
- Safety
- Installation
- 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: _____

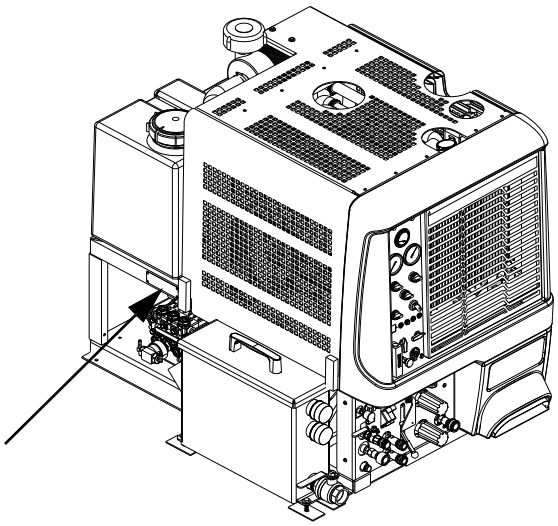
Dealer: _____

Address: _____

Phone 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 hazardous or unsafe practices for this machine. Levels of hazards are identified that could result in product damage, personal injury, or severe injury resulting in death.

The INSTALLATION section contains information on how to properly install the unit in your vehicle.

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
- Solution Pump
- Drive Belts, Pulleys & Hub
- 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.
- PRV NO. - Reference No.
- DESCRIPTION - column is a brief description of the part.
- SERIAL NO. FROM - If this column has an (*) and a Reference number, see the SERIAL NUMBERS page in the back of your manual. If column has two asterisk (**), call manufacturer for serial number. The serial number indicates the first machine the part number is applicable to. The main illustration shows the most current design of the machine. When a boxed illustration is shown, it displays the older design.
- 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 part number for this manual is in the lower left corner of the cover page.

IMPORTANT SAFETY INSTRUCTIONS

When using this machine, basic precaution must always be followed, including the following:

READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE.

⚠WARNING:

⚠CAUTION:

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!

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 all vehicle cargo area or trailer rear doors open in order to ensure adequate engine ventilation.

DO NOT operate engine if gasoline is spilled. Avoid creating any ignition source 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 heat guards. 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.

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.

DO NOT cut or splice any of the vehicle fuel lines during fuel line installation. This may result in fuel leaks and potentially dangerous conditions. There is no fuel solenoid shut off on this unit. Use only the provided fuel hose for fuel lines. 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 empty 100 gallon waste tank and accessories weighs approximately 1300 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, to 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 solution pump and other vital components may be seriously damaged if this unit is permitted to operate dry without water. Running with out adequate water supply could damage solution pump. Ensure always to have an adequate water supply.

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. Pressure wash hoses must be rated at 4000 PSI.

The winterizing loop hose assembly, 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.

The following symbols are used throughout this guide as indicated in their descriptions:

Hazard Intensity Level

There are three levels of hazard intensity identified by signal words - **WARNING** and **CAUTION** and **FOR SAFETY**. The level of hazard intensity is determined by the following definitions:

⚠WARNING:

WARNING - Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠CAUTION:

CAUTION - Hazards or unsafe practices which could result in minor personal injury or product or property damage.

FOR SAFETY: To Identify actions which must be followed for safe operation of equipment.
Report machine damage or faulty operation immediately. Do not use the machine if it is not in proper operating condition. Following is information that signals some potentially dangerous conditions to the operator or the equipment. Read this information carefully. Know when these conditions can exist. Locate all safety devices on the machine. Please take the necessary steps to train the machine operating personnel.

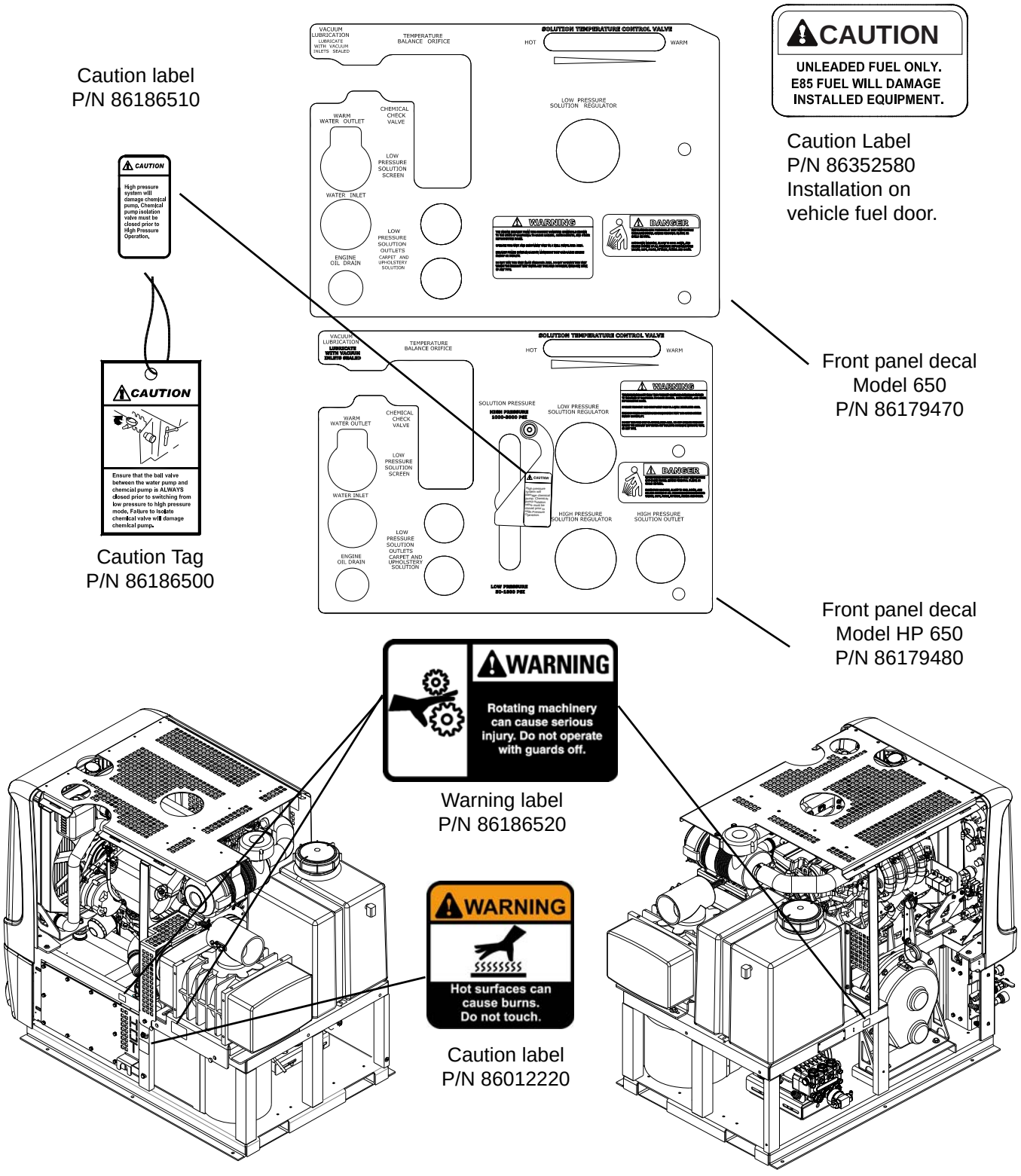
FOR SAFETY:
DO NOT OPERATE MACHINE:
Unless Trained and Authorized.
Unless Operation Guide is Read and understood.
In Flammable or Explosive areas.
In areas with possible falling objects.

WHEN SERVICING MACHINE:
Avoid moving parts. Do not wear loose clothing; jackets, shirts, or sleeves when working on the machine. Use Prochem approved replacement parts.

Safety Labels

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.



Dealer Responsibility

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

Vehicle Requirements

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

⚠ CAUTION:

DO NOT exceed the vehicle's axle weight limit. Include the console, full tanks, accessories, and operators in calculations.

2. If mounting in a trailer, make certain that trailer is rated for the total weight of 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 drip tray under console (Part #86055040).
7. If using a trailer, console should be positioned so that it balances properly with respect to axle. Ten percent (10%) of the overall unit weight should be on tongue.

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

Lifting Unit Onto Vehicle

Since the console weighs approximately 1150 lbs., we recommend using a forklift to lift unit onto vehicle. Position forks under unit from front and make CERTAIN that forks are spread to insert into frame slots.

Positioning Unit In Vehicle

Because vehicles vary in size and openings, individuals have their own preference as to where they want their units installed. We strongly recommend a side door installation for this and DO NOT recommend a rear door installation.

1. Enough space should be provided to assure adequate engine ventilation and room for service and maintenance.
2. The unit with waste tank and accessories must NOT exceed vehicle's axle weight limit. An empty 100 gallon waste tank and console weighs 1300 lbs.
3. DO NOT position the console closer than 12" from bottom of driver and passenger seats.

NOTE: For individuals who wish to make an engineering layout prior to positioning unit, refer to "Dimensional Data" illustrations for waste tank and console dimensions.

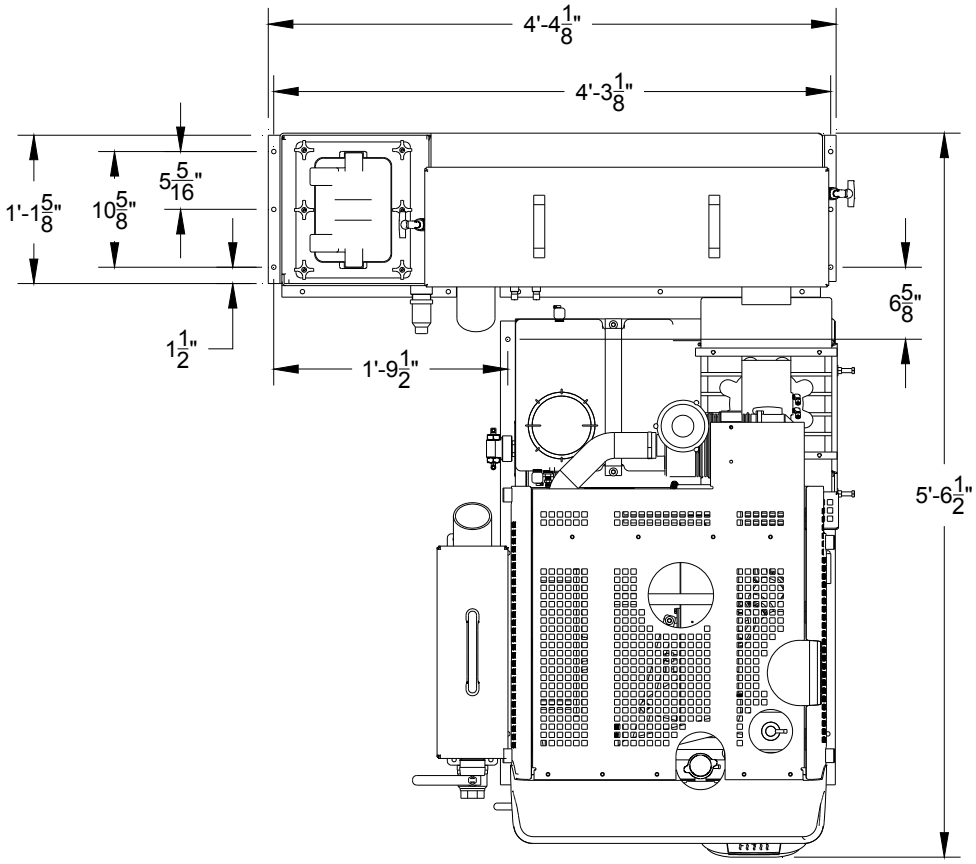
Bolting Down Unit And Waste Tank

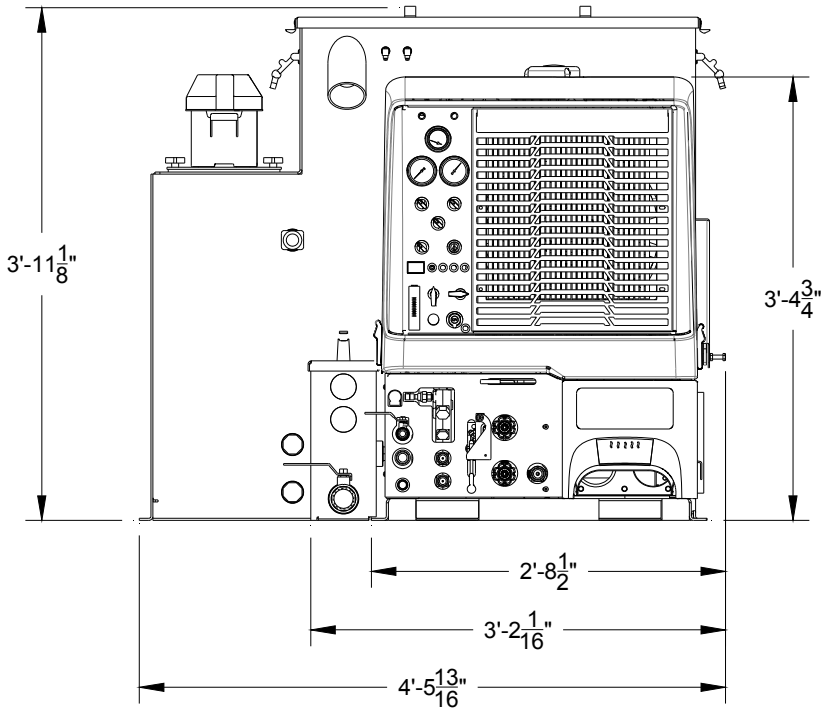
When positioning waste tank with respect to console, hook up the vacuum hose from blower to waste tank. This will ensure that waste tank is positioned correctly. Proceed once unit and waste tank are positioned in vehicle in desired location.

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

1. Using console and waste tank mounting holes as a template, drill six 13/32" diameter holes for mounting console and six more 13/32" diameter holes for mounting waste tank.
2. Using installation hardware kit:
   a. Insert six 3/8-16 x 2" hex head cap screws with flat washers through mounting holes in console, and six 3/8-16 x 2" hex head cap screws with flat washers through mounting holes in waste tank.
   b. Install mounting plates underneath vehicle floor.
   c. Screw 3/8-16 hex head locknuts on mounting screws and tighten them until console and waste tank are firmly secured to vehicle floor.

Layout with 100 Gallon Waste Tank





Waste Tank To Console Connection

NOTE: Before connecting any hoses to the waste tank, make certain the hose clamps are on each hose.

1. Connect the section of 4.5" I.D. internal vac hose to the 4.5” diameter vac outlet tube on the waste tank and to the vacuum pump relief valve on the console. It may be necessary to cut this hose to fit. Tighten the hose clamps.
2. Connect the 2” I.D. waste removal hose to the 2” diameter tube at the bottom of the waste tank. Connect other end to 2” tube on the Pre-Filter Box. Tighten the hose clamps.
3. Connect the 3/16 blue hose from the water box temperature relief valve to the 1/4 fitting (pointed downward) on the waste tank that does not have a spray jet installed inside the tank.
4. Connect the console engine shut-off cord to the waste tank level sensor cord.
5. Connect the 3/16 blue hose from the Flow Setup Valve to the other 1/4 fitting (pointed downward) on the waste tank that has a spray jet installed inside the tank.

Fuel Pump Assembly Installation

⚠WARNING:

Before drilling the fuel line holes in the vehicle floor, make certain that when drilling you will not do any damage to the fuel tank(s), fuel lines, brake lines, heat shields, or any other vital component which might affect the operation or safety of the vehicle.

⚠WARNING:

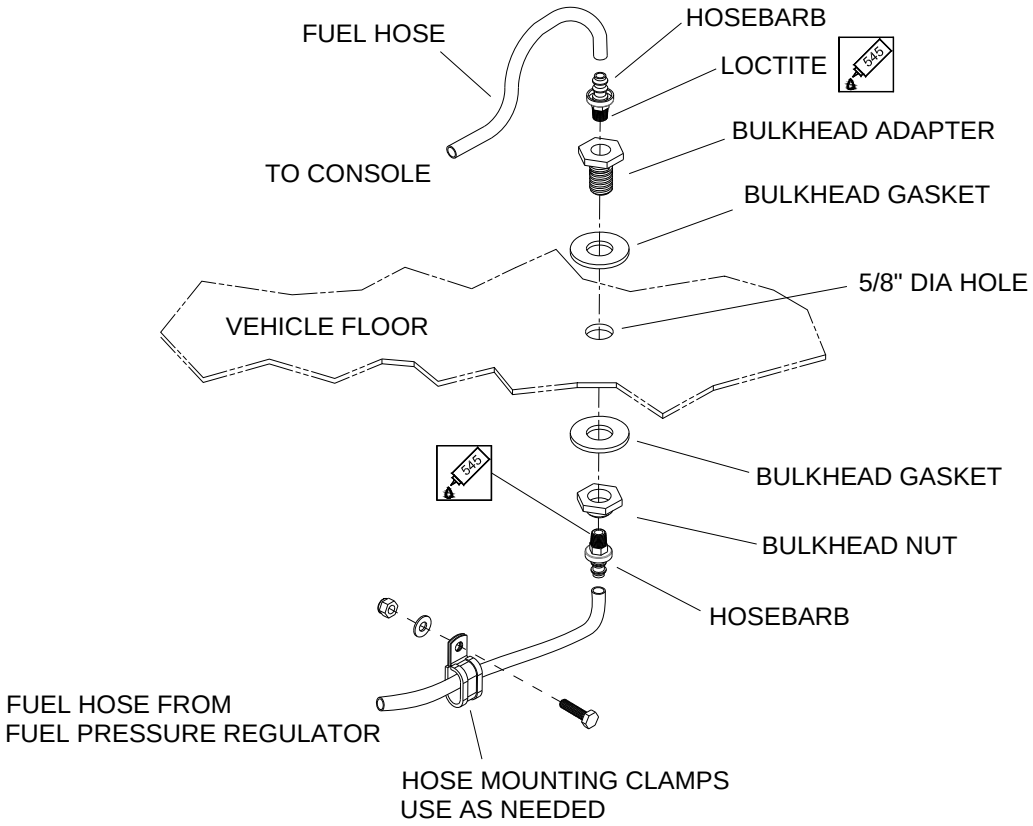
Do not mount this assembly, any hoses or components near the catalytic converter, exhaust, or any areas of high temperature. Avoid any contact with moving parts, areas of high temperature, brake lines, fuel lines, muffler, catalytic converter, or sharp objects.

1. Determine the mounting location of the fuel system assembly. **Mount bottom of box parallel to the ground and side perpendicular**. Ensure that the power cord length will support the mounting location. Mount the pump as low as possible while still being protected by the frame from road hazards. The pump end with the electrical connections is the discharge end. Additional mounting holes are provided to allow for different mounting options.
2. Cut a 6" piece of 5/16 fuel hose and connect from the outlet side of the fuel filter to the inlet side of the fuel pump. Use supplied hose clamps and fasten securely.

   NOTE: On the high-pressure pump supplied with the EFI unit, add 2-3 drops of lubricating oil to the inlet side of the fuel pump to protect the pump during initial startup.
3. Prior to drilling, check to ensure that the cord length will support the location of the hole. Drill a 5/8" hole in the vehicle floor for routing the fuel pump power cord to the truckmount console and install the hole grommet. Drill a 1-3/8" hole in the vehicle floor for routing the electronic fuel pressure regulator cord to the truckmount console.
4. Do not connect the power cords to the truckmount console wiring harness until installation is complete.

Van Bulkhead Installation

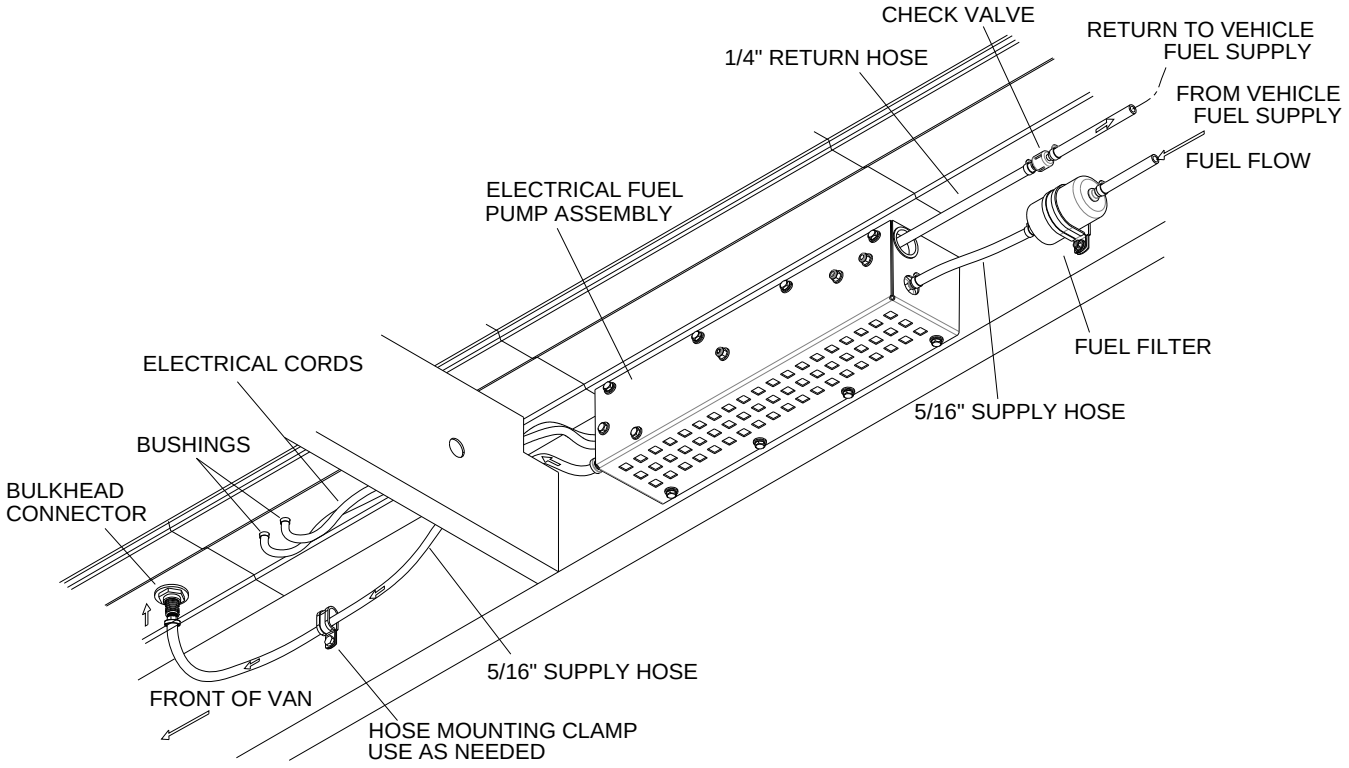
1. Select a location on the vehicle floor to drill the hole for the bulkhead adapter. This location should be situated in a position that eliminates the possibility of fuel line contact by either the operator(s) or accessories during the working hours or maintenance periods. Make certain that the supplied hoses will reach the location and work with the configuration you choose.
2. Drill a 5/8" (.625) diameter hole through the vehicle floor at the installation point chosen for the bulkhead.
3. Install the 1/8 NPT bulkhead adapter by inserting the adapter and tightening the nut on the opposite side of the van floor.
4. Install (1) 1/8P x 5/16 push-on hosebarb fitting on to the bulkhead (inside van).
5. Attach the 5/16" fuel hose from the console to the hosebarb fitting on the bulkhead. DO NOT USE HOSE CLAMPS AT THIS CONNECTION.



Fuel Supply & Return Line Installation (Underneath Van)

1. Spray the inside of the supplied 90 degree plastic barbed fitting with water displacing lubricant. Push plastic fitting onto the return tube on filler neck adapter tube until fitting securely snaps into place.
2. Measure and cut a length of 5/16" fuel hose and connect to the plastic barbed fitting on the return tube of the filler neck adapter tube. Connect other end of hose to 1/4 x 5/16 brass hose adapter and attach adapter to 1/4" fuel hose from electronic fuel pressure regulator. Fasten securely using supplied hose clamps.
3. Install (1) 1/8P x 5/16 push-on hosebarb fitting on to the bulkhead adapter.
4. Measure and cut a length of 5/16" fuel hose and connect between the outlet side of the electronic fuel pressure regulator and the 1/8P x 5/16 push-on hosebarb fitting at the bulkhead. DO NOT USE HOSE CLAMPS AT THIS CONNECTION.

NOTE: Fuel tap kit installation instructions are found with appropriate fuel tap kit. Refer to Fuel Tap Kit Information Sheet (86349940)



Battery Connection

⚠WARNING:

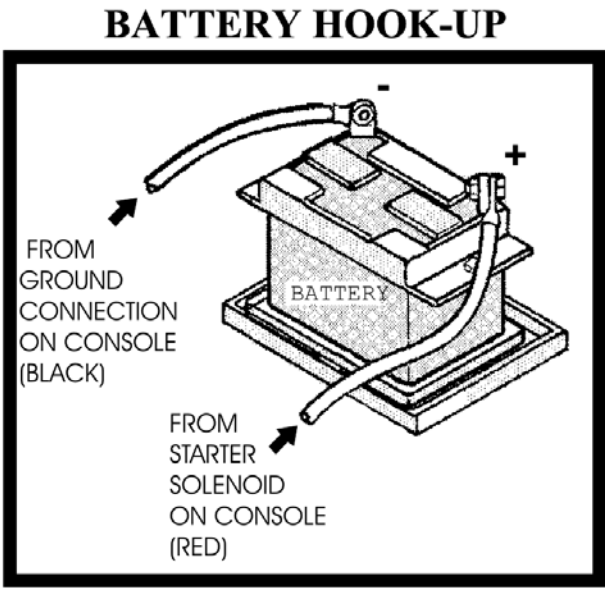
Dangerous Acid, Explosive Gases! Batteries contain sulfuric acid. To prevent acid burns, avoid contact with skin, eyes, and clothing.

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.

1. Attach the red positive (+) battery cable from the console starter solenoid to the positive (+) terminal on the battery and tighten the holding nut.

2. Next, attach the black negative (-) battery cable from the console ground to the negative (-) terminal on the battery and tighten the holding nut.



Electrical Wiring

Ensure all electrical wiring and battery cables are free from contact with any metal edge. Engine vibration could cause metal edge to cut wiring and possibly result in a fire. Be aware of where battery cables are run.

Fire Extinguisher

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

Technical Specifications

Item	Dimension / Capacity
Engine speed	2200 rpm (high speed) 900 rpm (idle speed)
Solution pump rpm	1357 rpm
Vacuum pump rpm	3125 rpm
Water flow rate	5 GPM (maximum)
Solution pump pressure (low pressure)	1200 PSI (maximum)
Solution pump pressure (high pressure) (Optional)	3000 PSI (maximum)
Vacuum relief valve	13" Hg
Waste tank capacity	100 gallons
Console weight (Model 650 & HP 650)	1150 lbs
Console weight (with waste tank & waste tank accessories) (Model 650 & HP 650)	1300 lbs
Torque Values	
Engine pulley	360 inch lbs 30 foot/lbs
Vacuum pump hub	300 inch/lbs 25 foot/lbs

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. This unit is not compatible with E-85 fuel.

Engine Oil Requirements

Use high quality detergent oil of at least API (American Petroleum Institute) service class SH. NOTE: Using less than service class SH oil or extending oil change intervals longer than recommended can cause engine damage. The recommended SAE viscosity grade is 10W-40 or 15W-40 for regular oil. It is recommended that a good quality synthetic oil be used after the first 25 hour break-in period to extend the service interval to 150 hours. Oils rated for high mileage engines have been shown to help keep internal engine components clean and keep seals and other rubber components pliable, increasing service life. Synthetic oils of the following viscosities are recommended: 10W-30, 10W-40, 15W-50 and 20W-50. Higher viscosity oils should be used in high temperature operating conditions and lower viscosity oils should be used in cooler temperature operating conditions.

Water Requirements

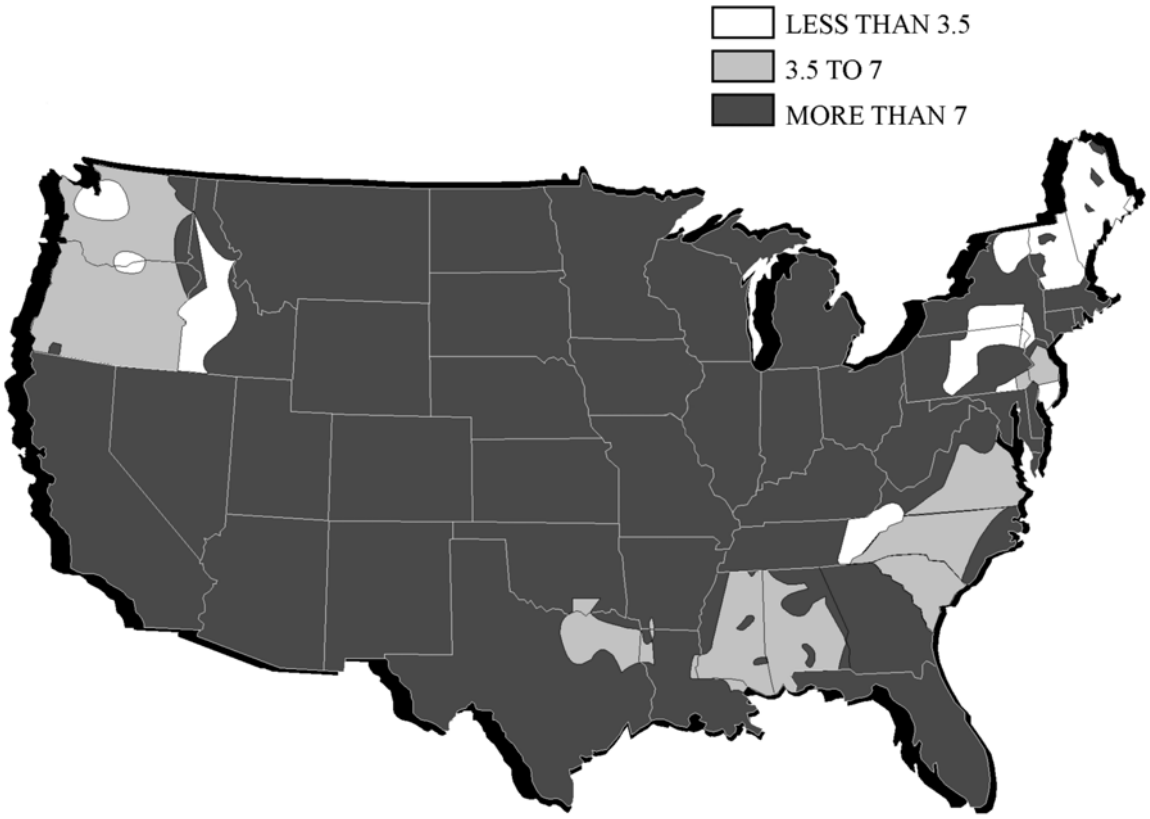
Hard water deposits will adversely affect the plumbing and heat exchange systems on this unit. The map below will give you an idea of where areas of high water hardness may occur. However, any water supply obtained from a well is almost always hard water and a water softener will be needed to protect 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, your dealer has a model to meet your needs. Please contact your nearest distributor for information, price, and availability.



Chemical Requirements

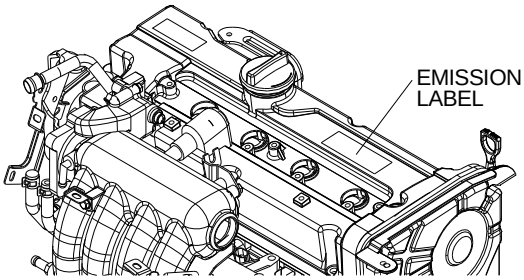
This cleaning unit, due to its chemical injection pump design, can be used with a variety of water-diluted chemical compounds (either acidic or alkaline), depending on the job to be done. However, to obtain optimum results with this unit, we recommend using the PROCHEM line of chemicals. For information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

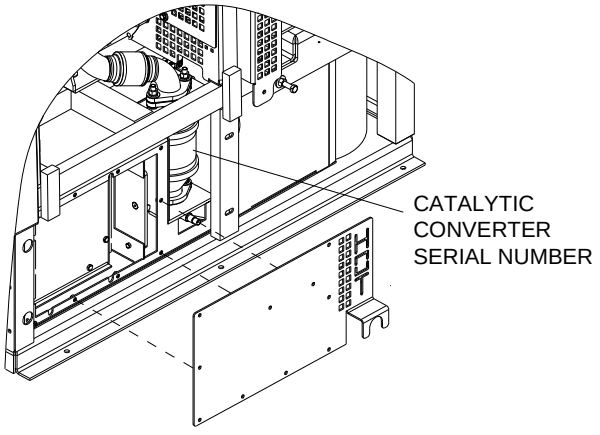
Electronic Fuel Injection System

This unit is equipped with the latest port fuel Electronic Fuel Injection (EFI) technology. The EFI technology provides more effective fuel distribution and improved power management through the use of an electronic "brain" called the electronic control unit (ECU). The ECU also provides improved engine emissions through more effective combustion of the fuel/air mixture. The fuel system, engine set up, and exhaust system are systems approved by the Environmental Protection Agency (EPA). Any alteration or modification to the system must receive approval from the EPA.

Emission Control Information

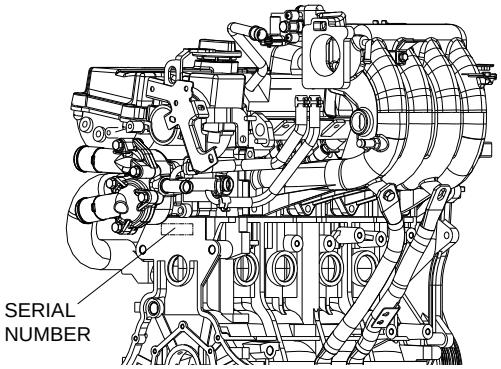
The Zenith Power Products (ZPP) Emission control labels are located on the valve cover of the engine near the oil fill cap, and on the side of the catalytic converter. The catallytic converter is located behind the heat shield cover.





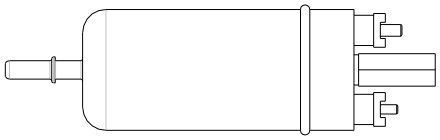
Date Stamp Location

When referring to an engine for assistance from your dealer, Prochem, or ZPP please identify your engine by the serial # and date code stamped on the surface on the back of the engine block, approximately where indicated.



Fuel Pump And Filter

Your Everest console was shipped to the dealer with a specific fuel pump and fuel filter. Ensure that ONLY these items are used in the installation of your unit. The system is much more sensitive to unwanted material in the fuel stream. Contamination of the fuel stream may clog the injectors and adversely affect performance. Please be sure to adhere to the filter maintenance schedule located in the Operations Section of this manual.



FUEL PUMP

FUEL FILTER

Trouble Codes

A feature of the ZPP 416 ECM is that DTC's (Diagnostic Trouble Codes) can be displayed to a technician to indicate what historic faults are present without requiring the use of a personal computer. The DTC's can be flashed over the MIL output while the RS232 serial receive input (PC RX) is grounded. This input may be grounded at the diagnostic connector (pin A-brown/white wire). This connector is located behind the intake manifold near the front cylinder. Once the ECM recognizes that the user is requesting flash codes, ignition key on-engine off, it will flash or blink a leader code (111) x 3 times in a row. If the machine has been shut down due to a full waste tank you will also observe flash code 552 (DTC1552) and 554 (DTC1554). After the leader code has been flashed for 3 times, the first flash code in the active faults category will be flashed at the same rate. This will repeat depending on the number of faults retained in memory. Once all faults have been flashed the leader flash code (111) will be repeated. The codes are retained in memory. Once any issue is resolved and the machine started-run-stopped for 3 times without a fault detected the light will go out on the 4th start. If an issue has not been resolved the light will remain on and another code stored in history.

History faults will clear automatically after 20 start-run-stop cycles if the fault has not been detected.

#	DTC/ Pcode	Fault Description	CAN SPN	CAN FMI	Turns on MIL?	MIL Flash Code
		Leader/Trailer Code				111
1	P0016	CRANK or CAM could not synchronize during start	636	8	Yes	216
2	P0091	Fuel Pressure low voltage	94	4	Yes	291
3	P0092	Fuel Pressure high voltage	94	3	Yes	292
4	P0107	MAP Signal open or shorted to ground	106	4	Yes	127
5	P0108	MAP signal shorted high	106	16	Yes	128
6	P0112	IAT signal Low/Shorted to GND	105	4	Yes	112
7	P0113	IAT signal High/Open	105	3	Yes	113
8	P0116	ECT higher than warning threshold	110	15	Yes	116
9	P0117	ECT Sensor Low/Shorted Input	110	4	Yes	117
10	P0118	ECT Sensor High/Open Input	110	3	Yes	118
11	P0121	TPS1 voltage lower than TPS2 voltage	51	1	Yes	121
12	P0122	Throttle Position Signal 1 low voltage	51	4	Yes	122
13	P0123	Throttle Position Signal 1 high voltage	51	3	Yes	123
14	P0134	Pre-Cat O2 Signal No Activity	724	10	Yes	134
15	P0154	Post-Cat O2 Signal No Activity	520208	10	Yes	154
16	P0171	Gasoline bank 1 A/F is lean (adaptive learn)	520200	0	Yes	171
17	P0172	Gasoline bank 1 A/F is rich (adaptive learn)	520200	1	Yes	172
18	P0182	Gasoline Fuel Temp Low Voltage	174	4	Yes	182
19	P0183	Gasoline Fuel Temp High Voltage	174	3	Yes	183
22	P0217	ECT higher than engine shutdown threshold	110	0	Yes	217
23	P0219	Engine Over speed Condition	515	15	Yes	219
24	P0221	TPS1 voltage higher than TPS2 voltage	51	0	Yes	221
25	P0222	Throttle Position Signal 2 low voltage	520251	4	Yes	222

#	DTC/ Pcode	Fault Description	CAN SPN	CAN FMI	Turns on MIL?	MIL Flash Code
26	P0223	Throttle Position Signal 2 high voltage	520251	3	Yes	223
27	P0261	Injector 1 Low/Open	651	5	Yes	261
28	P0262	Injector 1 High/Short	651	6	Yes	262
29	P0264	Injector 2 Low/Open	652	5	Yes	264
30	P0265	Injector 2 High/Short	652	6	Yes	265
31	P0267	Injector 3 Low/Open	653	5	Yes	267
32	P0268	Injector 3 High/Short	653	6	Yes	268
33	P0270	Injector 4 Low/Open	654	5	Yes	269
34	P0271	Injector 4 High/Short	654	6	Yes	271
35	P0326	Knock signal excessive or erratic	731	2	Yes	326
36	P0327	Knock signal open or not present	731	4	Yes	327
37	P0336	CRANK signal noise	636	2	Yes	336
38	P0337	No CRANK signal	636	4	Yes	337
39	P0341	CAM signal noise	723	2	Yes	341
40	P0342	No CAM signal	723	4	Yes	342
41	P0420	Catalyst inactive on gasoline	520211	10	Yes	421
42	P0524	Engine Oil Pressure Too Low	100	1	Yes	524
43	P0562	Battery Voltage Low	168	17	Yes	562
44	P0563	Battery Voltage High	168	15	Yes	563
45	P0601	Microprocessor failure - FLASH	628	13	Yes	621
46	P0604	Microprocessor failure - RAM	630	12	Yes	624
47	P0606	Microprocessor failure - COP	629	31	Yes	626
48	P0615	Starter relay coil open	1321	5	Yes	615
49	P0616	Starter relay control short to GND	1321	4	Yes	616
50	P0617	Starter relay coil short to 12V	1321	3	Yes	617
51	P0642	5V Reference #1 voltage low	1079	4	Yes	642
52	P0643	5V reference #1 voltage high	1079	3	Yes	643
53	P0650	Malfunction Indicator Lamp open	1213	5	Yes	651
54	P0652	5V Reference #2 voltage low	1080	4	Yes	652
55	P0653	5V Reference #2 voltage high	1080	3	Yes	653
56	P0685	Power relay coil open	1485	5	Yes	685
57	P0686	Power relay short to GND	1485	4	Yes	686
58	P0687	Power relay short to 12V	1485	3	Yes	687

#	DTC/ Pcode	Fault Description	CAN SPN	CAN FMI	Turns on MIL?	MIL Flash Code
63	P1155	Closed-loop gasoline bank 1 A/F is too lean	520204	0	Yes	155
64	P1156	Closed-loop gasoline bank 1 A/F is too rich	520204	1	Yes	156
86	P1551	Aux Digital Input 1 High (Float Switch Voltage High)	-	-	Yes	1551
87	P1552	AUX DIGITAL INPUT 1 low voltage-force idle-waste tank full.	520222	3	Yes	552
88	P1553	Aux Digital Input 2 High (Float Switch Voltage High Engine Shut Down) 1553	-	-	Yes	1553
89	P1554	AUX DIGITAL INPUT 2 low voltage-after 15 seconds-engine shut-down-waste tank full	520223	4	Yes	554
94	P1612	Watchdog processor blocked outputs (RTI 1)	629	31	Yes	712
95	P1613	Microprocessor failure - RTI 2	P0629	P0031	Yes	713
96	P1614	Microprocessor failure - RTI 3	P0629	P0031	Yes	714
97	P1615	Microprocessor failure - A/D	P0629	P0031	Yes	715
98	P1616	Microprocessor failure - Interrupt	P0629	P0031	Yes	716
99	P1644	MIL control short to GND	P1213	P0004	No	644
100	P1645	MIL control short to 12V	P1213	P0003	No	645
101	P2111	Unable to reach Lower TPS	P0051	P0007	Yes	211
102	P2112	Unable to reach higher TPS	P0051	P0007	Yes	212
110	P2300	Ignition coil A low current	P1268	P0005	Yes	411
111	P2301	Ignition coil A high current	P1268	P0006	Yes	412
112	P2303	Ignition coil B low current	P1269	P0005	Yes	421
113	P2304	Ignition coil B high current	P1269	P0006	Yes	422

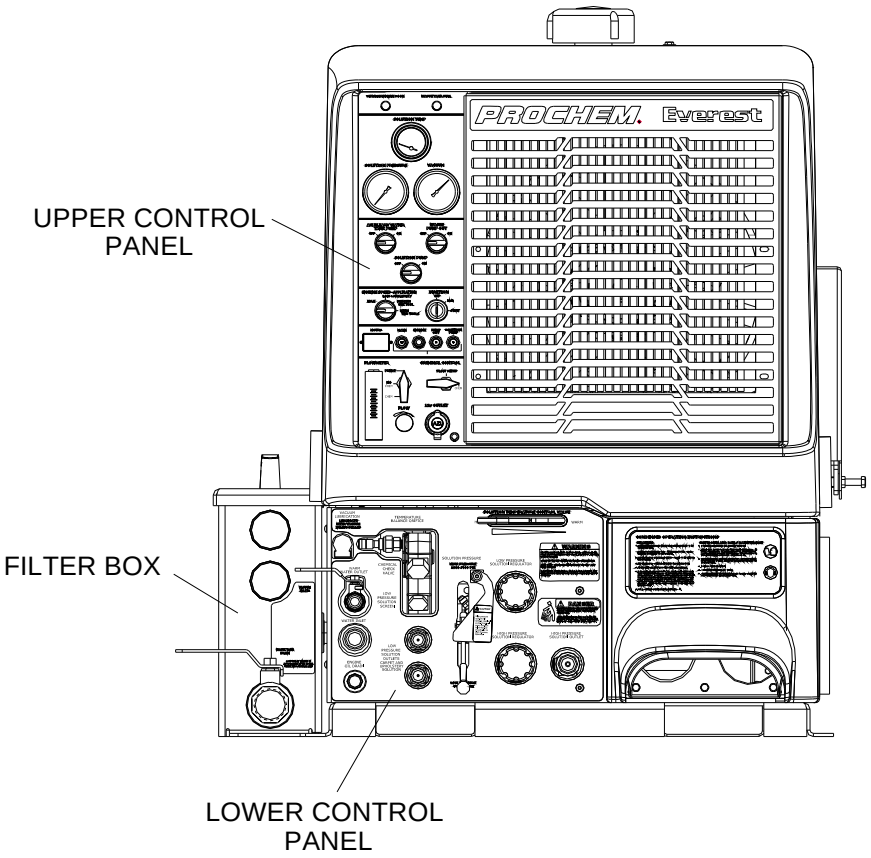
OBD = On Board diagnostics (Nomenclature)

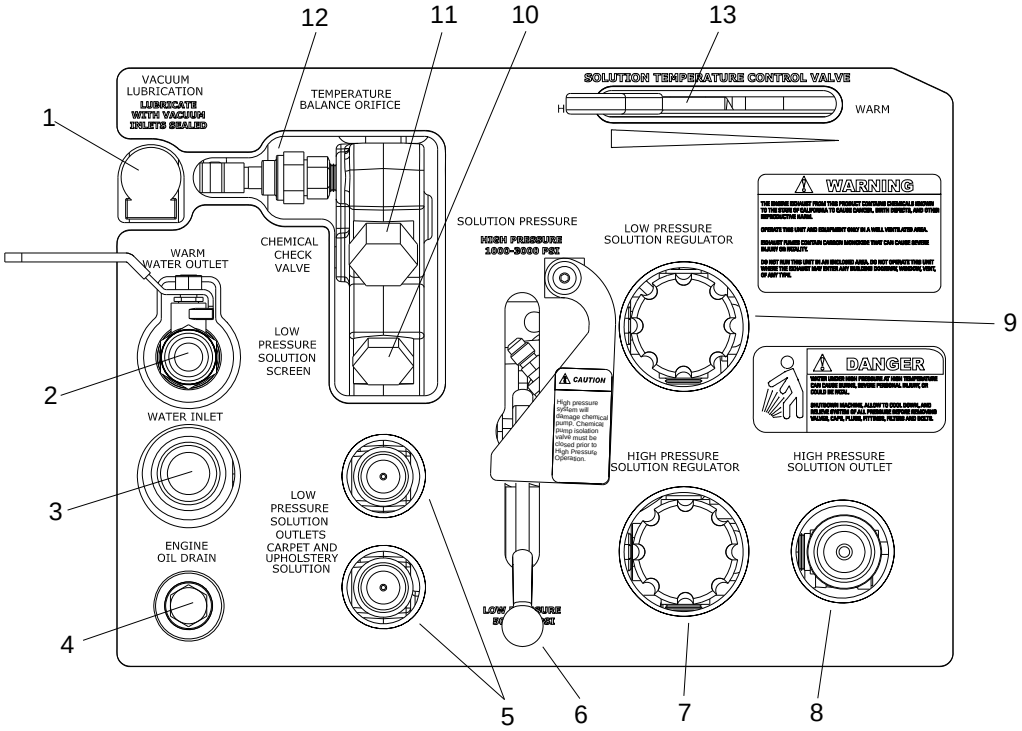
DTC = Diagnostic Trouble Code
MIL = Malfunction Indicator Light
TPS1 = Throttle Position Sensor
EGO = Exhaust Gas Oxygen
ECT = Engine Coolant Temperature
CAM = Cam Sensor Input
CAN = Controller Ares Network
CPS = Crank Position Sensor
MAP = Manifold Absolute Pressure
Pcode= Powertrain Code

Zenith Distributor Locations

o ITAL ENGINE COMPANY (09046) 97 CYPRESS ST. SW REYNOLDSBURG, OHIO 43068	**OH, IN, KY, WV, PA (WESTERN)** PHONE: 740/964-0089
o CULLUM & BROWN, INC. (09045) 1607 WABASH WICHITA, KS 67214	**KS, MO** PHONE: 316/262-5156 800/362-3222
o DIESEL ELECTRIC SERVICE & SUPPLY (09116) 652 W. 1700 SOUTH SALT LAKE CITY, UT 84104	**UT** PHONE: 801/972-1836
o POWER EQUIPMENT COMPANY (09117) 15225 INDUSTRIAL RD. OMAHA, NE 68144	**NE, IA** PHONE: 402/330-5100
o ENGINE WORKS, INC. (09178) 1345 PARAMOUNT PKWY. BATAVIA, IL 60510	**IL** PHONE: 630/879-7977 800-832-7217
o FRONTIER EQUIPMENT, LTD. (09185) 8029 RIVER WAY DELTA, BC CANADA V4G IL3	**BC, AB** PHONE: 604/946-5531
o GULF ENGINE & EQUIPMENT (09229) 2306 ENGINEERS RD. BELLE CHASSE, LA 70037	**LA, MS** PHONE: 504/393-1701
o HAMILTON ENGINE SALES, INC. (09287) 5540 N. E. COLUMBIA BLVD. PORTLAND, OR 97218	**WA, OR, AK** PHONE: 503/288-6714 800/437-3644
o H. G. MAKELIM COMPANY (09480) 219 SHAW RD. SOUTH SAN FRANCISCO, CA 94080	**CA** PHONE: 650/873-4757
o LOFTIN EQUIPMENT COMPANY, INC. (09490) 12TH NORTH 45TH AVE. PHOENIX, AZ 85043	**AZ** PHONE: 602/272-9466
o M.G. BRYAN EQUIPMENT COMPANY (09503) 4834 READING ST. DALLAS, TX 75247	**TX, OK** PHONE: 214/631-9787
o NORPRO ISUZU ENGINES, INC. (09505) 385 TOWN ST. HADDAM, CT 06423	**CT, MA, VT, NH, ME, RI** PHONE: 860/873-0100
o SOUTHEAST SERVICE & SUPPLY (09698) 1721-E OAKBROOK DR. NORCROSS, GA 30093	**GA** PHONE: 770/448-4251 800/241-4595
o TOTAL POWER LTD 6670 EXCEISIOR COURT MISSISSAUGA, ON CANADA L5T 2J2	**ON** PHONE: 905/670-1535

Components





LOWER CONTROL PANEL

Lower Control Panel

1. Lubrication Cup

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

2. Warm Water Outlet

The warm water outlet allows the cleaning technician to drain warm water from the water box for mixing chemical.

3. Water Inlet

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

4. Engine Oil Drain

The engine oil drain plug is removed to allow the engine oil to be drained.

5. Solution Outlets

The solution outlets are the connecting point for the high pressure solution hoses. These outlets are quick disconnects that allow hoses to be plugged into the unit.

6. Pressure System Valve (Option)

This lever when in the up position actuates the high-pressure system and regulator. When in the down position the low pressure cleaning system and regulator are actuated.

7. High Pressure Solution Regulator (HP Only)

The high pressure regulator sets the pressure of the pressure washing circuit. This spring loaded valve can be adjusted up or down. The pressure is increased by turning the valve clockwise, or reduced by turning the valve counterclockwise. (This valve must be maintained in accordance with this manuals maintenance table.)

8. High Pressure Solution Outlet (Option)

The high-pressure solution outlet is the connecting point for the high-pressure washing hose. This outlet is a quick disconnect that allows the pressure washing hose to be plugged into the unit.

9. Low Pressure Solution Regulator

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

10. 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.

11. 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 upstream into the solution system of the unit.

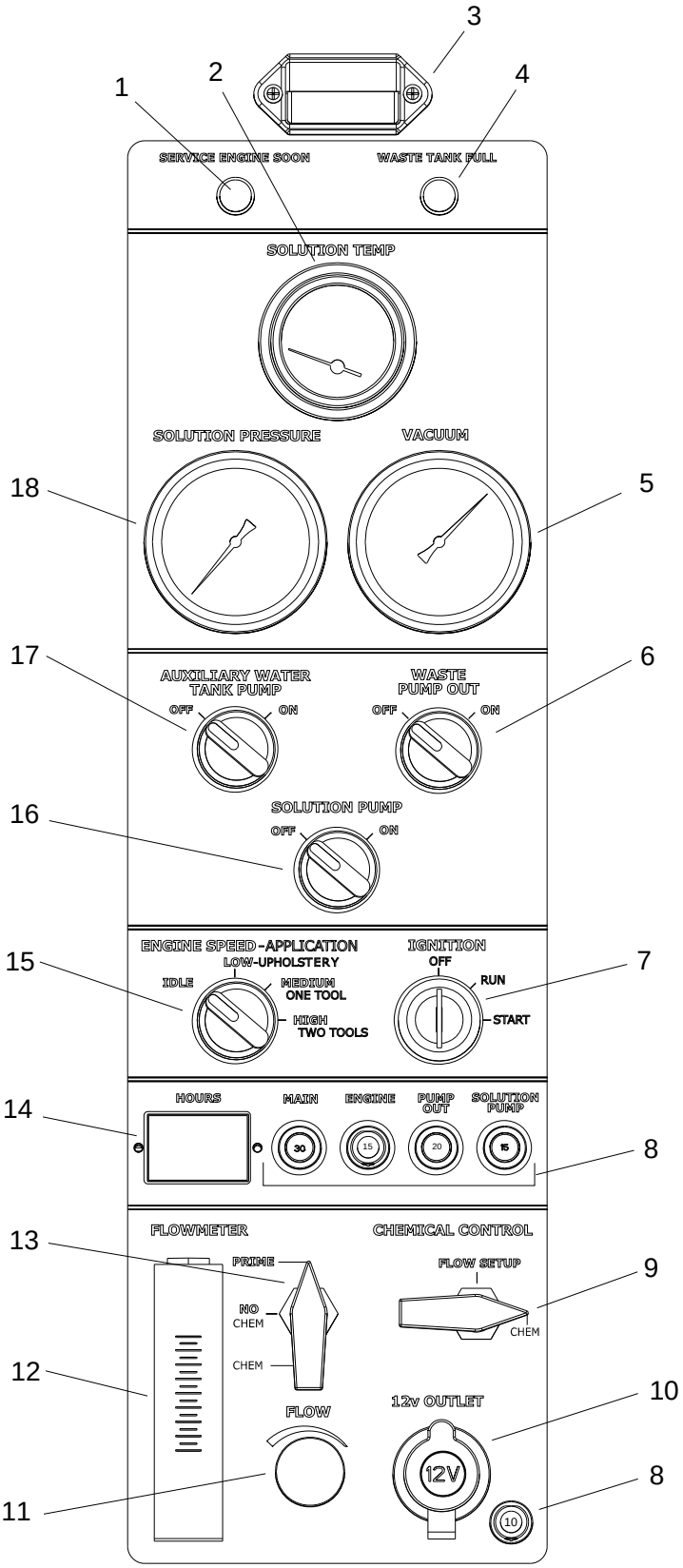
12. Temperature Balance Orifice

The temperature balance orifice helps to balance and stabilize the solution temperature within the system.

13. Solution Temperature Control Lever

This lever directs hot engine and blower exhaust gases through or around the heat exchangers.

Upper Control Panel



Upper Control Panel

1. Service Engine Soon (Amber)

This light, when flashing, signals a problem with the unit. When this occurs, troubleshooting is required.

2. Solution Temperature Gauge

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

3. Panel Light

This light is useful if the machine is used in a poorly lit area or night use. It is helpful in reading the instruments and gauges.

4. Waste Tank Full Indicator Light (Red)

This indicator light is activated when the waste tank is full. This unit is equipped with a slow down feature. This feature will help to protect the engine from damage by causing a slow down for 15 seconds prior to shutting down the engine. When this indicator light is on, it indicates that the waste tank must be emptied before the unit can be brought back into service.

NOTE: Never dispose of wastewater in storm drains, waterways or on ground areas. Always dispose of waste in accordance with local state and federal law.

5. Vacuum Gauge

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

6. Waste Pumpout

This switch actuates the optional waste pumpout.

7. Ignition Switch

The ignition switch controls the power for the machine. To turn the machine on, rotate the key clockwise 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.

8. Circuit Breakers

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

9. Flow Setup Valve

This valve allows solution to move through the machine and chemical to be injected simulating the cleaning process. This allows the operator to set the chemical flow level without connecting tools to the machine. It is also useful in troubleshooting.

10. 12 Volt Outlet

The 12 volt outlet is used for accessories such as auxiliary lighting.

11. 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.

12. 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 metering valve knob counter clockwise.

13. Chemical Selector 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 counter clockwise the injection system is enabled.

14. Hour Meter

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

15. Engine Speed Control

This serves to set the engine speed and operating parameters. The 'Low', 'Medium' and 'High' settings are set for upholstery cleaning, single wand cleaning, and dual wand cleaning respectively.

16. Solution Pump Switch

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

17. Auxiliary Water Tank Pump Switch

The Auxiliary Water Tank Pump Switch is used to actuate an optional fresh water demand pump

18. Solution Pressure Gauge

This gauge registers the amount of pressure in the system.

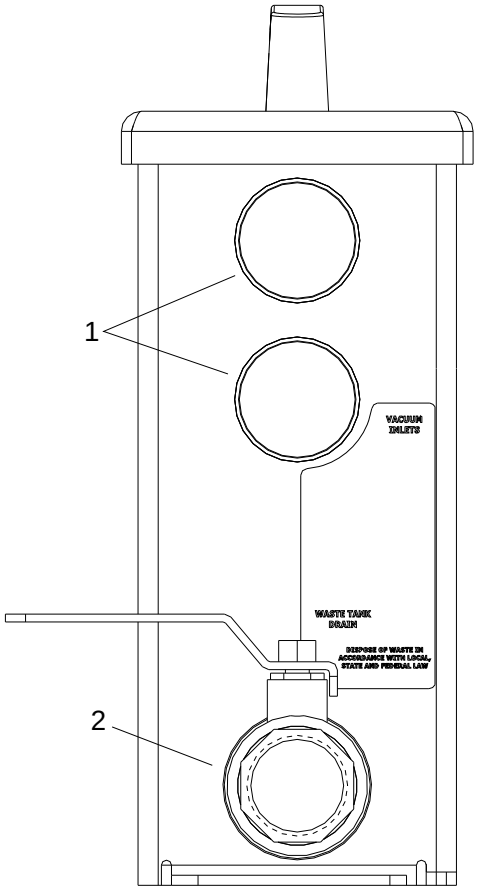
Filter Box

1. Vacuum Inlets

The vacuum inlets serve as the connecting point for vacuum hoses.

2. Waste Tank Drain

This allows the waste tank to be emptied. Must be closed for operation.



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 the strainer, into the solution pump. The water is pumped to the pressure regulator manifold, which provides and maintains the desired pressure setting.

A certain amount of water is by-passed from the pressure regulator due to over pumping capacity of the solution pump. Water that is not called for in the cleaning process is channeled through a copper heater core in the front of the heat exchanger box. This bypass water circulates several times through the heater core, pre-warming the water.

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 water through a series of coiled 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 water.

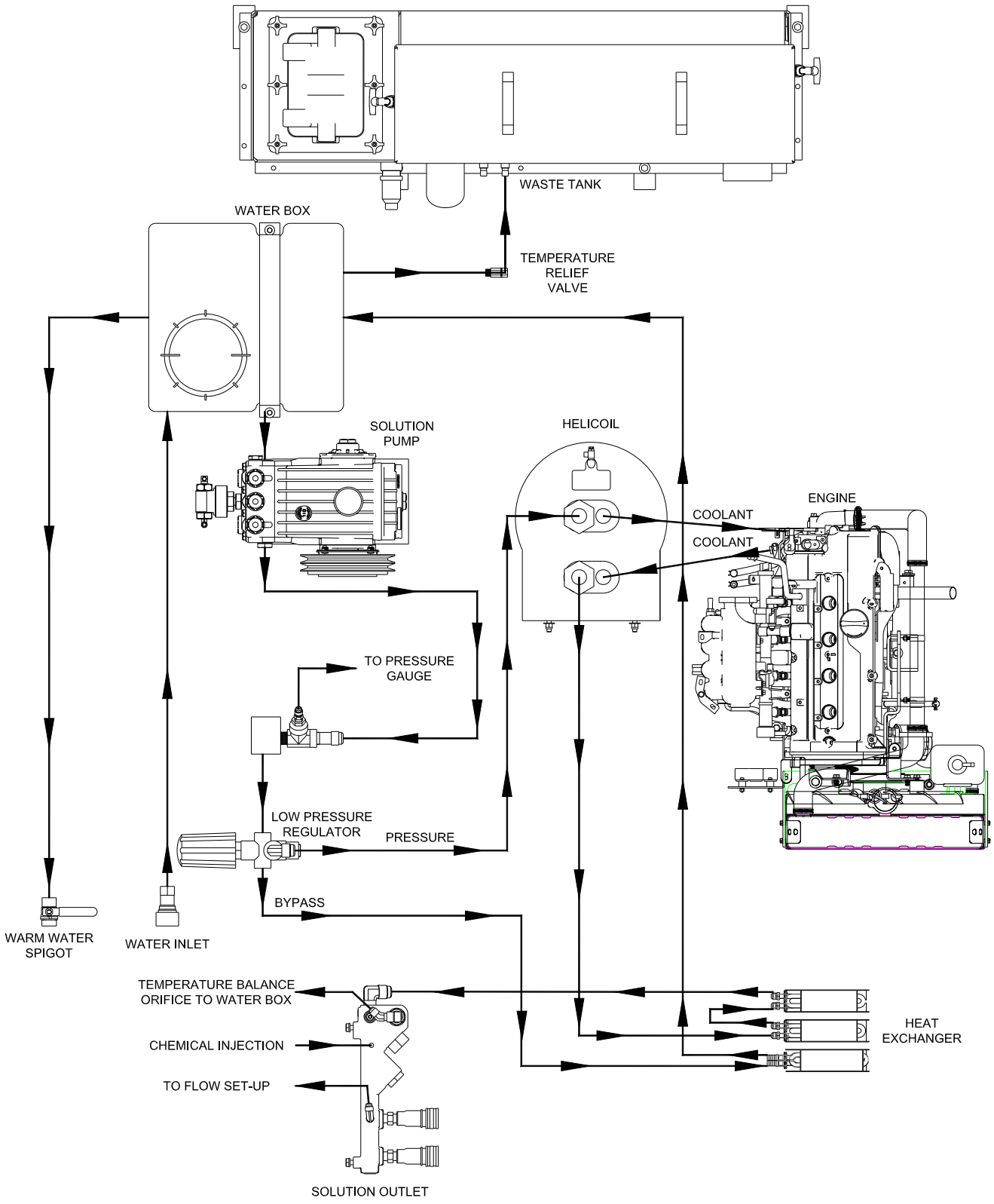
The third stage of plumbing and heat exchange takes place in the 2nd and 3rd heater cores located in the heat exchanger box. This is the hottest point of the gases coming from the vac pump and the engine exhaust. These hot gases are forced through the heater cores creating the third stage of heat transfer to the cleaning water.

Finally, the hot cleaning water passes to the solution 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 solution hoses. Also a check valve is located in this outlet manifold prohibiting chemicals from backing up into the system.

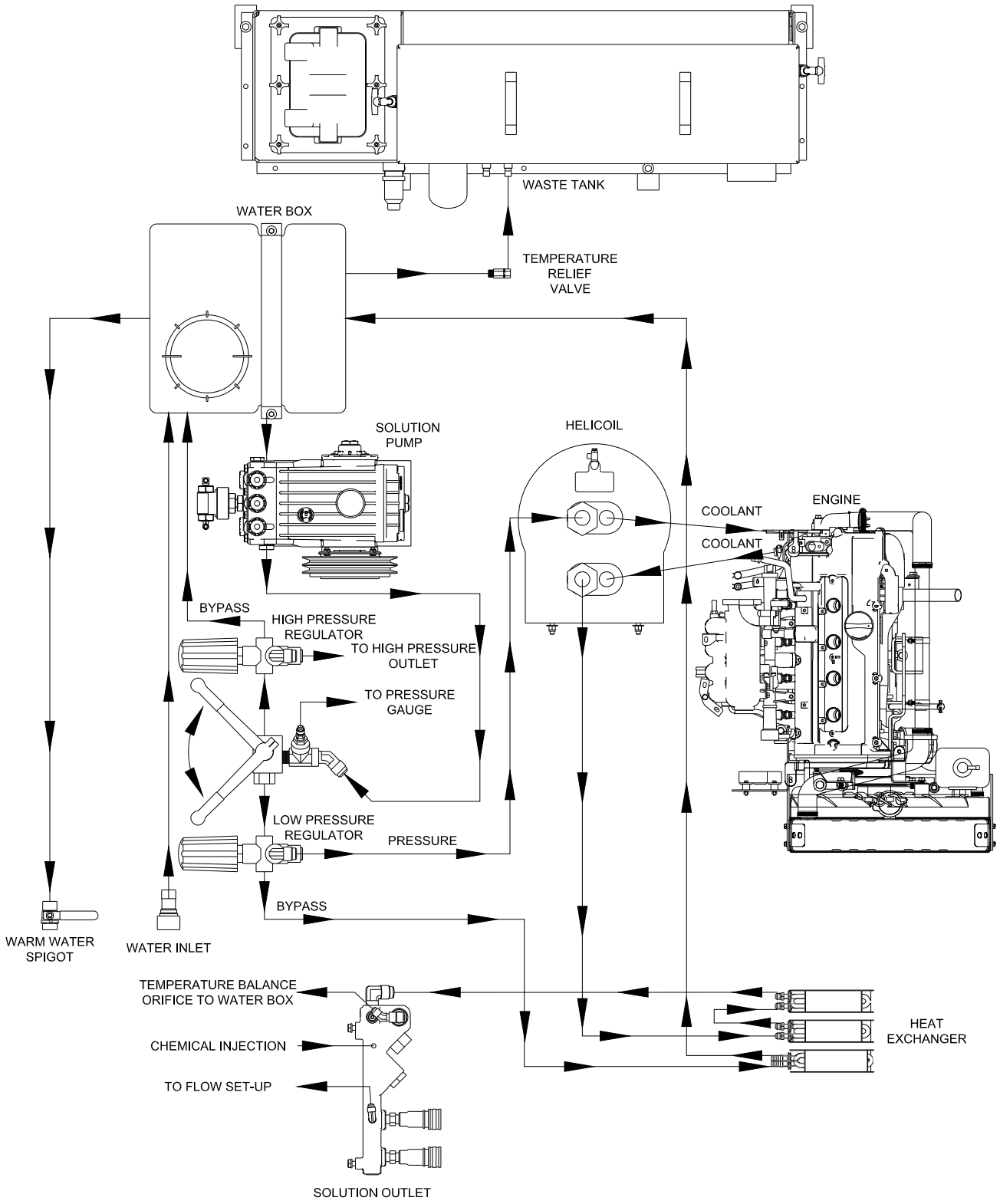
The cleaning solution then passes through high pressure solution hoses and is distributed by the cleaning tool to a surface that is being cleaned, completing the water pumping and heating cycle of the cleaning unit.

In the optional high-pressure model, water is routed directly to the high-pressure outlet through the regulator when the solution pressure lever is in the up position.

WATER FLOW DIAGRAM LOW PRESSURE



WATER FLOW DIAGRAM W/HIGH PRESSURE OPTION



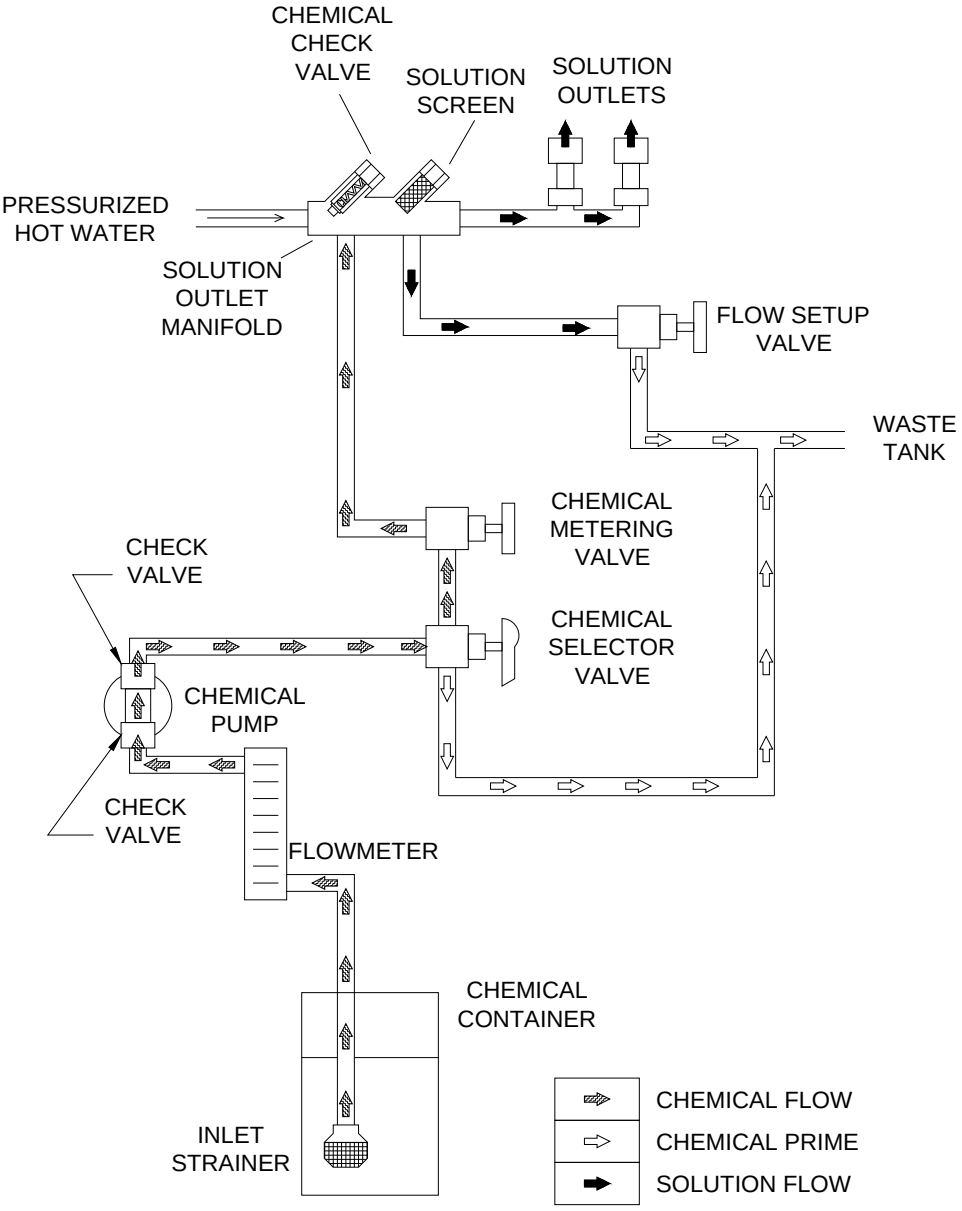
Chemical Injection System

The chemical injection system is unique in that it utilizes the pressure spikes generated by the high-pressure solution pump to move chemical into the main solution 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 drawn from the container, and through the flow meter, which indicates rate of flow. The chemical then moves to the chemical pulse pump where it is pressurized.

The chemicals flow to the chemical selector valve, which can turn off the chemical flow or when set to "Prime" sends it into the waste tank to purge air from the system, or when "CHEM" the chemical can be directed to the metering valve. The metering valve controls the amount of chemical that enters the solution outlet manifold.

The manifold assembly's check valve will not allow the chemicals to travel upstream into the plumbing system of the unit. The chemicals are mixed there with hot pressurized water that makes a cleaning solution. The flow setup valve is set to "Setup" while adjusting the chemical mix. This causes incorrectly mixed solution to safely drain to the waste tank until the manifold has the correct solution mix. Setting to "CHEM" lets the solution flow to the outlets for cleaning.



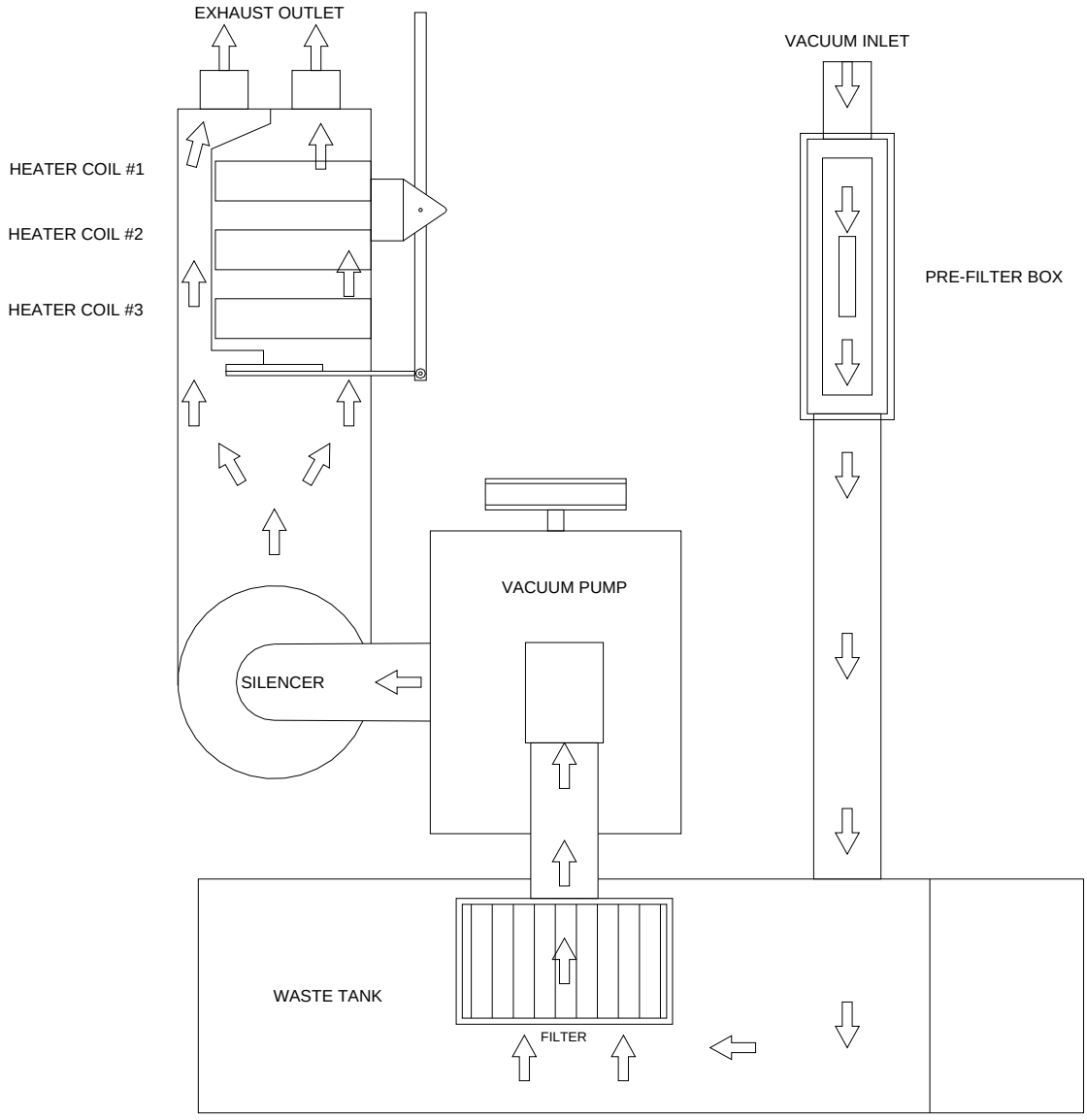
Vacuum System

The engine turning a vacuum pump that 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 cleaning 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 down stream into a silencer for noise abatement. After exiting the silencer, this hot air is mixed with hot gases from the engine exhaust. 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.

VACUUM SYSTEMS



Pre-run Inspection / Setup

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 1.00 to 1.50 gallons of fuel per hour, depending on the speed setting and vacuum load.

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 that may be in your water inlet hose.

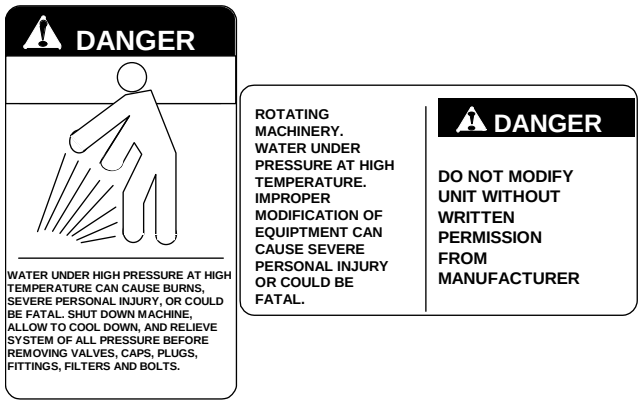
1. Connect the water supply hose to the water inlet quick-connect at the left front of the console. Connect the hose to the water supply faucet.

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 Solution Hose

Before starting the unit, connect the high-pressure solution 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 Filter Box. 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.

Priming The Chemical Pump

1. Fill chemical container and inspect chemical strainer.
2. Insert chemical inlet tube into chemical container.
3. Turn ignition key to start.
4. Set throttle to low speed.
5. Turn solution pump on.
6. Turn Chemical valve to prime and allow chemical to circulate. After all air bubbles have been removed from chemical tube, turn the valve to the Chem position.
7. Turn chemical flow setup valve to setup position. Use the chemical metering valve to set the chemical flow to the desired flow rate while observing the flow meter indicator. Turn the chemical flow setup valve to Chem position.
8. Set throttle to maximum position for quick unit heat up.

Once you have completed priming the chemical pump, proceed with the cleaning operation. Your unit should be in the correct throttle position for your cleaning operation or extracting.

⚠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.

Waste Pumpout (Optional)

1. If your unit is equipped with an automatic waste pump, connect one end of a garden hose to the pump-out connection 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.

Cleaning

Observe the following guidelines, while cleaning:

1. Before proceeding make sure the spray tips 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 all of the cleaning spray tips.
   b. If the spray tips are not showing a full spray pattern, adjust for proper pattern, clean, or replace spray tips, if required.
2. Normally chemical is applied on the push stoke of the wand, and cleaning and vacuuming is done on the pull stroke. For heavily soiled carpets the wand may be used in a scrubbing manner, applying chemical in both 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.

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. If shutdown occurs due to foam created by chemicals used, add Prochem defoamer.

Upholstery Cleaning

Upholstery tool (See Options Section)

1. Set engine speed control to "Low/Upholstery" setting to minimize excess heat.
2. Set temperature control lever to desired position.

Shutdown And Daily Maintenance

1. Turn chemical selector valve to “NO CHEM”.
2. Allow the unit to run for 2 minutes with the vacuum hose disconnected to remove moisture. Spray water-displacing lubricant into the vacuum lubrication cup. This will prevent corrosion due to moisture.
3. Set engine speed control to idle position and allow the water temperature to cool down, utilizing the simulator 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.
7. Clean the filter box.

High Pressure (3000 Psi) System Operation (Optional)

⚠ CAUTION:

The high-pressure water system can produce water pressures in excess of 3000psi. Water at these pressures will cause severe injury. DO NOT direct any discharges at persons. If contact with a person does occur and penetration of the skin does seem possible, contact medical personnel immediately. This machine is to be used by trained cleaning professionals only. Ensure all operators are trained in the operation of this equipment. Keep cleaning area clear of all persons and objects.

Ensure that proper Personal Protective Equipment (PPE) is used during the operation of this equipment. Failure to use proper PPE could result in injury. Ensure required ventilation and/or breathing apparatuses are used with a chemical injection system. Check with your chemical vendor for proper safety requirements.

Prochem also recommends the use of Prochem high-pressure spray wands. Prochem offers a dual barrel wand. Contact your Prochem dealer for recommendations in your particular application.

The operation of the high-pressure system also requires a high-pressure hose capable of handling the increased pressure loads of the high-pressure system. NEVER use your low-pressure system hoses with the high-pressure system. Prochem offers a special high pressure hose rated for pressure washer activities. Only use Prochem approved hoses and fittings. Ensure that your hoses and fittings are rated for your operational pressures.

Operation

The "HP" units are equipped with a solution pump and water delivery system that can support pressure-washing operations up to 5 gallons per minute at 3000 PSI. This system is normally used for high-pressure washing and hard surface cleaning.

1. Move the temperature control lever from the "hot" position to the "warm" position.
2. Allow water temperature to cool to below 160 deg F.
3. Close ball valve located between the chemical pump and the water pump.

⚠ CAUTION:

Failure to close this valve will result in severe damage to the chemical pump diaphragms.

4. Connect HP hose to either a pressure wash gun or hard surface cleaning tool for high pressure cleaning. Connect other end of hose to high-pressure solution outlet.
5. Move the pressure selection valve from the "low pressure" position to the "high pressure" position.
6. Adjust high-pressure regulator to desired operational pressure.

High Pressure Shutdown & Return To Low Pressure System

1. Turn off solution pump and release pressure.
2. Bleed off excessive pressure build-up by operating pressure washer gun for 5 seconds.
3. Move solution selector control valve from "High Pressure" operations to "Low Pressure" operation.
4. Squeeze pressure washer gun trigger again to remove any residual pressure
5. Disconnect high pressure gun and hose from high pressure disconnect.
6. Open ball valve, located between the chemical pump and solution pump.
7. Operate under normal low-pressure instruction or follow normal shutdown procedures.

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. Move the solution temperature control lever from the "hot" position to the "warm" position.
2. Ensure that the solution pump switch is in the off position.
3. Operate with all side and rear cargo doors open.

Freezing Protection

⚠CAUTION:

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.

Winterizing Your Unit

1. Shut off the water supply. Disconnect the water inlet hose from the front of your console.
2. Connect all solution pressure hoses and tools that may have water in them.
3. Start the unit and turn solution pump on. Open the tool valve until water pressure drops.
4. Turn solution pump off.
5. Fill the water box with approximately two gallons of 100% glycol base anti-freeze.
6. Turn the solution pump on.
7. 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 re-cycle 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.
8. Turn the solution pump switch OFF. Attach the winterizing loop hose with attachment (P/N 86260700) to the bottom 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.
9. Prime the chemical system with 50/50 anti-freeze/water mix. Insert the chemical inlet tube into the anti-freeze container. Turn the chemical valve to PRIME until anti-freeze is visible in flow meter.
10. Turn the chemical valve and Flow Setup Valve to the “CHEM” position. Make certain that the flow meter indicates flow and that all anti-freeze drains out of the chemical tube into an approved container. After 30 seconds, turn off both valves.

High Pressure (Optional)

Close ball valve between chemical pump and solution pump. Move pressure system valve to high-pressure position and key tool until antifreeze is visible. Recover all anti-freeze into an approved container. We strongly recommend that you recycle and re-use the anti-freeze.

After completing these procedures, shut the unit down. The unit is now winterized.

Removing Anti-freeze From The Unit

1. Connect the water inlet hose to the water inlet connection on the console. Turn the water supply on.
2. Start the unit and turn on solution pump.
3. Connect all solution hoses and any tools that require purging of anti-freeze to the solution outlet connection(s).
4. 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.
5. Submerge the chemical inlet tube in water. Turn the chemical valve to the PRIME position until clear water is observed in the Flow meter.
6. Turn the chemical valve to the Run position and turn Flow meter valve to vertical position. This will allow water to flow into the other side of the system.

High Pressure (Optional)

Close ball valve between chemical pump and solution pump. Move pressure system valve to high-pressure position. Open the tool valve and drain the antifreeze into an approved container until the flow is clear and all anti-freeze is purged from the tool and hose.

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.

Service Schedule

Engine	Daily	Check engine oil level. *** Fill to proper level
Engine	Daily	Check coolant level in overflow bottle
Vacuum Pump	Daily	Spray water displacing lubricant in lubrication cup at front of console for 5 sec.
Solution Pump	Daily	Check oil level. ** Fill to proper level
Pre Filter and Filter In Waste Tank	Daily	Clean filter, inspect, replace if damaged
Vacuum Hoses	Daily	Wash out with clean water
Automatic Waste Pump	Daily	Inspect and remove any debris or sediment
Chemical Inlet Tube Strainer	Daily	Check strainer for blockage, remove any debris
Vacuum Pump	Weekly	Check oil level. Fill to proper level
Water Box Float Valve	Weekly	Check for proper seating and shut-off
Solution Pump Inlet Strainer	Weekly*	Check for debris and clean
Temperature Balance Orifice	Weekly	Remove, clean and check screen
Battery	Weekly*	Check for proper fluid level. Fill with distilled water only
Solution Outlet Screen	Bi-Weekly*	Inspect and remove any debris or blockage
High Pressure Hoses	100 hrs	Inspect for damage or impending damage
Pressure Regulators	50 hrs	Lubricate o-rings
Engine	100 hrs	Change engine oil and filter (regular oil)***
Engine	150 hrs	Change engine oil and filter (synthetic oil)***
Engine	100 hrs	Check fan belt tightness
Battery	100 hrs*	Clean battery terminals
Chemical Pump & Check Valves	1000 hrs	Replace diaphragm, plastic disc and check valves.
Float Valve Seal	200 hrs	Replace seal
All Belts	200 hrs	Inspect for damage - cracking and wear
Engine	200 hrs	Check radiator hoses and clamp tightness
Fuel Pump	200 hrs	Check hose connections and wire connections
Chemical Valves	200 hrs	Inspect and/or adjust packing nuts
Engine	250 hrs	Service air cleaner elements*

Service Schedule

Vacuum	50 hrs	Retighten belts
Vacuum	100 hrs	Check belt tension
Heat Exchanger Box	500 hrs	Inspect & clean door guides (as needed)
Solution Pump	500 hrs	Change oil**
Pulley Set Screws & Hub Cap Screws	500 hrs	Check for proper torque values. Re-torque, if required****
Drive Pulley	500 hrs	Inspect, clean and check for pulley groove wear****
Drive Pulley	500 hrs	Check pulley alignment****
Drive Belts	500 hrs	Replace
Drive Belts	500 hrs	Check belt tension****
PCV Valve/hoses	750 hrs	Inspect
Check Valve (Solution Outlet)	1000 hrs	Inspect, clean, and repair, if needed.
Vacuum Exhaust Heat Exchanger	1000 hrs	Inspect cores and remove debris.
Vacuum Pump	1500 hrs	Drain, flush, and replace oil *****
Fuel Filter	1500 hrs	Replace
Engine	2500 hrs	Replace spark plugs.
Engine	Yearly*	Replace air cleaner elements.
Waste Tank Filters/Strainers	Yearly	Check for damage and blockage. Replace if needed.
Engine	2 years	Flush radiator and change engine coolant.
Engine	2 years	Replace radiator hoses and hose clamps.
Engine	2 years	Replace timing belt. ******
Engine	5 years	Replace ignition wires.

* Or as often as required

** Change solution pump crankcase oil after the first 50 hours

***Change engine crankcase oil and filter after the first 25 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, 1500 hours or every 2 years, whichever comes first.

****** Replace after 2 years or 2000 hours, whichever comes first.

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)

Your engine radiator coolant system is an important part of the power plant operation. In addition, the heat exchange system which 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 ZPP416 engine owner's manual. Refer any additional questions to your dealer.

External Fuel Pump

The power plant for your unit receives fuel from the main fuel 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

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 screen 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

The heat exchange system in your unit transfers energy between the heat of the engine exhaust and the blower discharge air, to the solution supply system. 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 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

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 pre-filter box strainers must be maintained to prevent unwanted debris from entering the vacuum pump.

Engine

⚠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.

1. Check the engine oil level daily. Make certain that proper oil level is maintained. NEVER overfill.
2. Change the break-in oil and filter after the first 25 hours of operation. Thereafter, change oil and filter every 100 hours of operation (regular oil) or 150 hours of operation (synthetic oil). Use only approved ZPP416 filters.

Oil Recommendation. Use high-quality detergent oil of at least API (American Petroleum Institute) service class SH. The recommended SAE viscosity grades are 10W-40 or 15W-40 for regular oil. Recommended viscosity grades for synthetic oil are 10W-30, 10W-40, 15W-50 and 20W-50.

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

Engine oil capacity is approximately 3.5 quarts (3.3Liters) including filter.

3. Check the air cleaner element every 250 hours. Replace the element annually.
4. 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 50/50 coolant to water ratio every 1000 hours or 2 years.
5. Replace the in-line fuel filter under the vehicle every 1500 hours.

NOTE: For additional engine service information, obtain a "ZPP416" service manual from any authorized Zenith Power Products Service Center. If service or repair is required, contact an authorized Zenith Power Products Service Center. You will need to provide the serial number of the engine.

Vacuum Pump

Refer to the Vacuum Pump Operation and Service Manual 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 several times longer than a premium mineral oil.

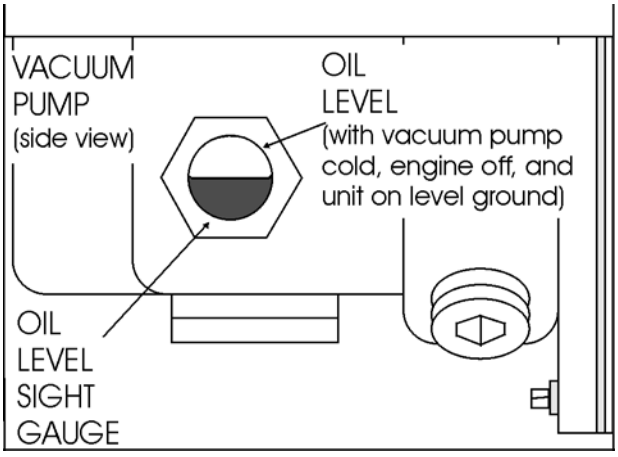
NOTE: AEON PD is the oil that PROCHEM puts in the vacuum pump at the factory. Topping off or adding petroleum oil to synthetic oil is NOT recommended.

If not using AEON PD synthetic blower lubricant, use oils with rust, oxidation inhibitors and anti-foam additives.

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.

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.

2. Run the unit at least 1 minute to remove any moisture from the vacuum pump.
3. Fill the lubrication cup with water displacing lubricant, for 5 seconds while the unit is running and the vacuum inlets are sealed. Do this at the end of each working day.



4. 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.

Vacuum pump oil capacities are as follows:

Shaft end = 1.25 pints

Gear end = 2.0 pints

5. Vacuum pump lubrication is vital to performance of the pump. Failure to follow the maintenance schedule can lead to permanent damage to your blower.

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

1. While the unit is running at full RPM, block the airflow 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 repeat above procedure. 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 bolts that hold the adjusting plate to the frame and the 2 bolts at the back of the belt guard.
2. Turn the adjusting bolts until the proper belt tension is achieved (1/4" deflection in the center of the belt, halfway between the pulleys).
3. Retighten all bolts previously loosened.

   NOTE: When adjusting belt tension, make certain that the engine shaft and vacuum pump shaft remain parallel, and the belt tension is equal on both belts.

4. Check belt alignment with straightedge.

⚠CAUTION:

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

TORQUE VALUES		
COMPONENT	INCH/LBS	FOOT/LBS
Engine pulley	360	30
Vacuum pump hub	300	25

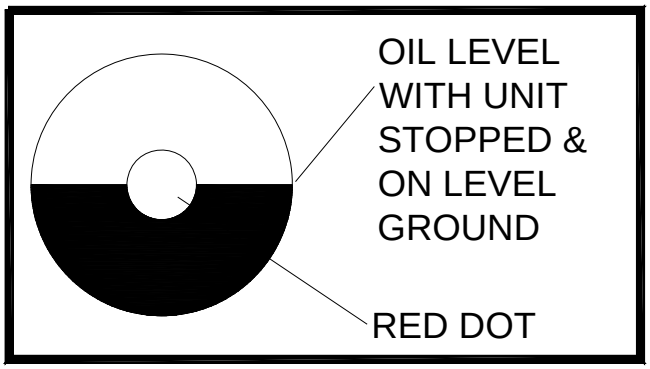
5. Check for pulley groove wear, clean belts and pulley grooves, check for worn belts, proper belt tension, and pulley alignment after the first 25 hours and then again at 100 hours.

   Check for belt ride in the groove.

Solution Pump

Refer to the Solution Pump Operation and Service Manual for specific instructions.

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. Remove yellow filler cap with attached dipstick. Oil level should be between marks on the dipstick or use the sight glass located on the non-shaft side of the pump.



3. Change the crankcase oil with GP Pump Crankcase Oil, after the first 50 hours of operation. Drain and refill the crankcase oil with General Pump Crankcase Oil every 500 hours thereafter.

Oil capacity is 40.6 ounces.

Solution Pump Drive Belt

To tighten the solution pump belt:

1. Loosen the bolts which hold the solution 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 bolts which hold the solution pump mount to base.

Solution Pump Clutch

⚠ CAUTION:

After removing or replacing solution pump clutch, make certain that set screws are tight.

Float Valve (Water Box)

1. Check the float valve weekly for proper operation. If overfilling is a problem, check the plunger for a proper seal. Replace tip on plunger if needed.

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

⚠ CAUTION:

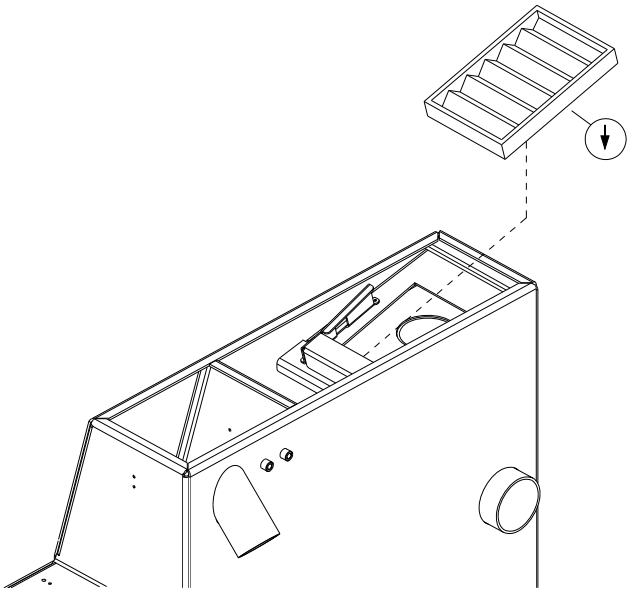
When replacing float ball, DO NOT over- tighten, as the rod can puncture the ball. Make sure to tighten the nuts on the rod.

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.

Pre-filter Strainer

The strainer basket located inside the pre-filter box should be removed and cleaned whenever it is full of debris. This should be done at the end of each job.

To remove any water remaining in the pre-filter, run unit at medium or high speed for 10 seconds with strainer removed and box top open.



Waste Tank Vacuum Inlet Filter

The Vacuum Inlet Filter located inside the waste tank should be removed, cleaned and inspected at the beginning of each day. When replacing in tank ensure that flow indicating arrow is pointing down.

Solution Screen (Outlet)

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

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

Temperature Balance Orifice

Weekly maintenance of the temperature balance orifice is required for proper machine operation.

1. Drain water box below half full.
2. Unscrew nozzle cap from the connector body.
3. Remove the adapter, orifice plate, and strainer.
4. Clean any debris from the strainer and orifice plate.
5. Reassemble as shown in Parts Section - Solution Outlet.

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, plastic disk, and check valves.

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

NOTE: Inspect chemical inlet tube strainer daily.

Pressure Regulator

Lubricate the o-rings every 100 hours. Use o-ring lubricant.

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 Solution Hoses

Inspect your high pressure solution 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.

⚠WARNING:

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

All high pressure solution 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. Pressure wash hoses must be rated at 4000 PSI.

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

The coolant should be replaced every 2 years. 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. Add 5/16" hose onto the radiator drain petcock. Turn counter clockwise to open and drain coolant.

⚠CAUTION:

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 the radiator petcock.

Replacing Coolant:

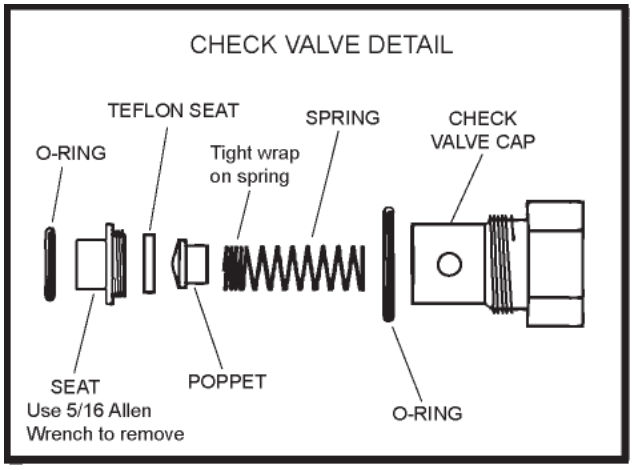
1. Fill radiator with 50/50 anti-freeze water mix.
2. Start unit and run on low speed.
3. As the unit warms up, maintain a full radiator with a 50/50 mix.
4. Open petcock slightly on helicoil to allow any trapped air to escape. When coolant runs out of helicoil, close petcock.
5. Top off radiator with 50/50 coolant mix.
6. Re-install radiator cap.
7. Shutdown unit.
8. Check radiator overflow bottle. Add coolant to proper "cold" level.

General Service Adjustments

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 and reinstall.

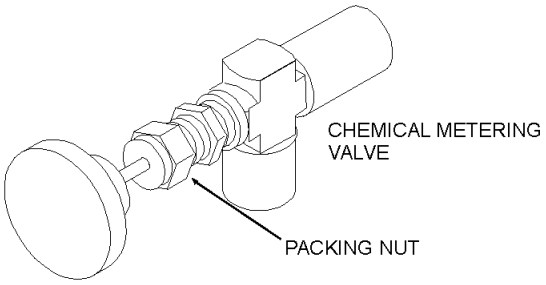
Chemical Pump

The only repairs that the chemical pump may require are the replacement of the diaphragm, plastic disk or check valves. To replace the diaphragm and plastic disk, disconnect hoses and unscrew the cover from the body. When replacing the diaphragm, lubricate the outer edges of the diaphragm with o-ring lubricant and reassemble. To replace the check valves, unscrew the check valve caps. Replace the check valves and reassemble, using new lubricated 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 breakdown on the chemical pump.

Packing Nut Adjustment For Chemical Valves

Examine the packing nut on all chemical 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 stems and add to overall valve life.



Pressure Regulators

The pressure regulators serve to maintain water pressure at a preset point and to bypass water back to the water box.

Low Pressure Regulator

To adjust:

1. With your unit running, tool valve open and solution pump on, check the pressure gauge. We recommend setting the pressure regulator so that the pressure gauge reads 450 PSI with the tool valve closed.

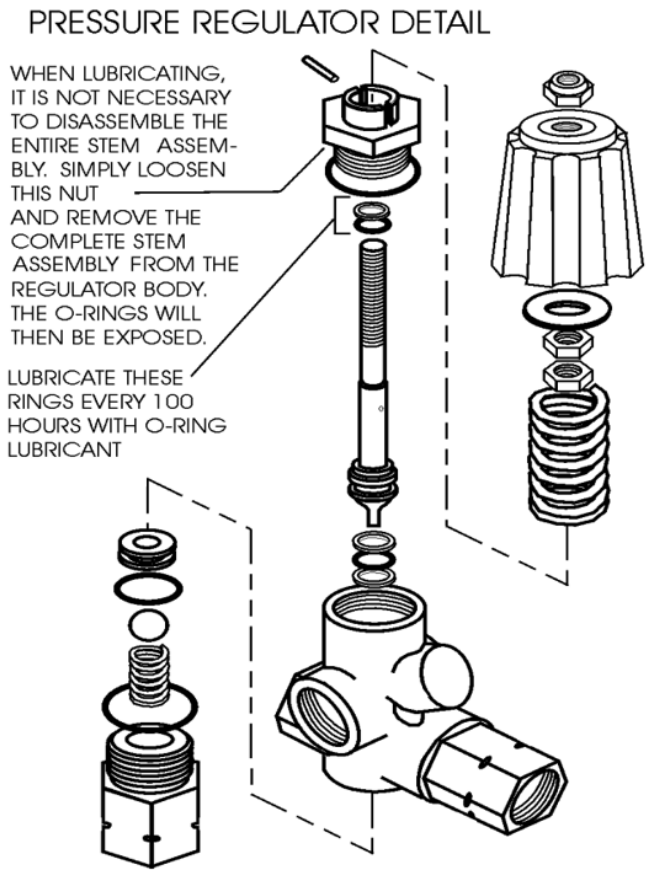
   When the tool valve is opened, there is an approximate drop of 100 PSI in pressure. If there is a pressure drop greater than 100 PSI, it may be necessary to lubricate the o-rings in the pressure regulator.

2. If the pressure regulator requires adjustment, turn the adjusting knob (while observing the pressure gauge on the control panel) until the desired pressure is obtained.

High Pressure Regulator (Optional)

To adjust:

Set the high-pressure regulator to desired pressure, up to 3000 PSI. Adjust as necessary to meet your cleaning needs.



Troubleshooting

Problem	Cause	Solution
Loss of solution pump pressure. With the cleaning tool open, the solution 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.
	solution pump inlet supply line is plugged or drawing air.	Examine the water inlet strainer 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 2200 RPM. Idle engine speed is 900 RPM.
	Pressure regulator o-rings are dry.	Lubricate o-rings, using o-ring lubricant
	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
	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) at high speed.	Examine the check valves, plunger cups, and cylinder head on the solution pump. Repair, whenever required (refer to the solution pump service manual).
	Defective solution 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.
	Belts loose or broken	Re-tension or replace as needed.
	Loss of pump prime	Manually prime solution pump
Loss of solution volume at cleaning tool orifice. solution gauge reads normal.	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 solution manifold, or the solution screen is clogged.	Inspect all lines, remove accumulated debris which is blocking proper flow. Replace any defective hoses. Remove, inspect, and clean the solution 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 hose(s).
	Cleaning tool valve is malfunctioning.	Repair or replace valve.
	Hose inner lining is constricted.	Remove restriction or replace hose.

Troubleshooting

Problem	Cause	Solution
Loss of vacuum While cleaning, the vacuum is not up to specification. Engine RPM is normal.	Waste tank filter or pre-filter basket is plugged.	Clean or replace filter. Clean strainer basket.
	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) damaged, causing a suction leak.	Inspect hose(s), repair or replace.
	Pre-filter or Waste tank gaskets not sealing properly, not positioned properly.	Inspect the gaskets. Repair or replace as necessary. Re-position lid(s).
	Plugged vacuum hose or vacuum plumbing between pre-filter box and waste tank.	Unplug vacuum hose or inlet plumbing.
	Loose vacuum pump drive belts.	Tighten the drive belts
	Waste tank drain valve is damaged or left open, causing a vacuum leak.	Close drain valve, if open. Remove the drain 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.	Remove and clean.
	Vacuum pump is worn out.	Replace the vacuum pump.
Loss of chemical With the cleaning tool valve open, no chemical	Chemical pump is improperly primed.	Refer to chemical pump priming instructions.
	The strainer at the inlet end of the chemical inlet tube is clogged.	Unclog the strainer. If damaged, replace.
	Suction leak in the inlet tube leading into the chemical pump.	Inspect inlet tube and flow meter for damage and replace, if required.
	Chemical pump check valve(s) is clogged or defective.	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 and plastic disk.
	Defective cylinder in the solution 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.
	HP model, chemical pump, ball valve is closed.	Open valve.
	Hose is kinked or damaged.	Inspect and/or replace hoses
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 control 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 control panel. If the flow meter still indicates flow, replace the chemical pump diaphragm and plastic disk.
	Internal leak in chemical valve causing continual flow through prime tube returning to waste tank.	Tighten valve packing nut (see "General Service Adjustments" section in this manual). Replace valve, if necessary.
	Flow setup valve open.	Close valve.

Troubleshooting

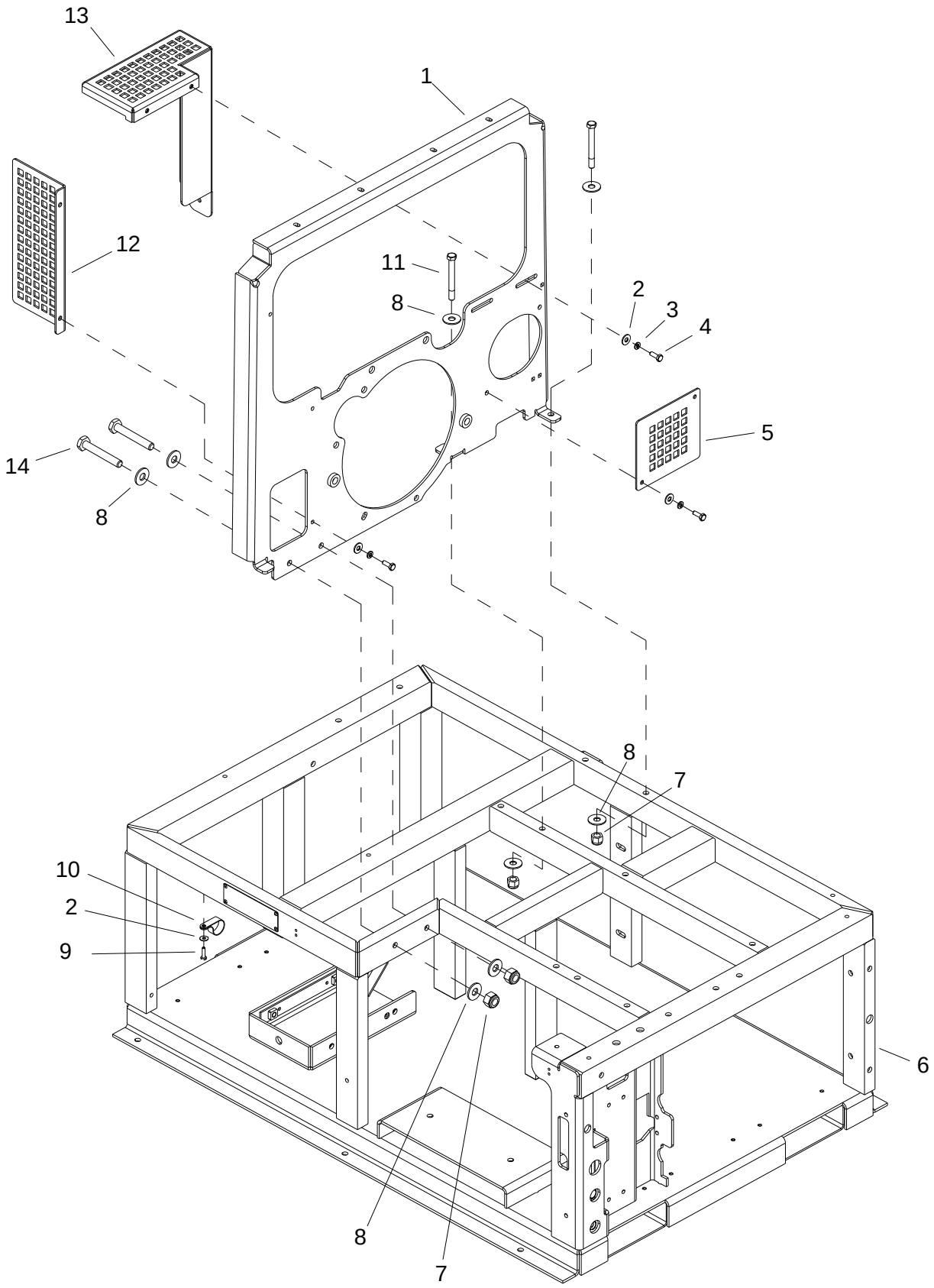
Problem	Cause	Solution
Solution pump does not engage	Solution pump has not been activated	Turn solution pump switch to on.
	Solution pump circuit breaker has been tripped	Check the solution pump circuit breaker on the control panel. Press the circuit breaker reset button.
	Defective electrical connection 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.
	Defective solution pump clutch.	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 solution 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, or dealer.
Starter turns over engine, but will not start	Defective fuel pump.	Replace the fuel pump.
	Out of fuel.	Add fuel.
	Engine is malfunctioning	Refer to ZZP416 Engine Operation and Maintenance Manual.
	Waste tank is full.	Empty the waste tank.
While doing normal cleaning, the engine stops running	Engine is out of fuel.	Add fuel 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 temperature has exceeded 230°F, triggering the high temperature switch to shut the unit down.	Determine the cause of the overheating before restarting the unit. Refer to the ZZP416 Engine Operation and Maintenance Manual.
	Defective fuel pump.	Replace fuel pump.
	Defective float switch inside the waste tank.	Check switch for proper operation. Replace as necessary.
	Defective 230°F engine coolant high-temperature shutdown switch.	Test switch. If necessary, replace.
	Oil pressure switch on engine has shut down, due to insufficient oil pressure.	Refer to the ZZP416 Engine Operation and Maintenance Manual. DO NOT restart the engine until the cause is determined and corrected.
	No ignition in the engine or engine is malfunctioning.	Refer to the ZPP416 Engine Operation and Maintenance Manual.

Troubleshooting

Problem	Cause	Solution
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. *NOTE: The exhaust heat exchanger will produce water condensation discharge at times during normal operation. DO NOT 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.
	Defective temperature gauge.	Test gauge and sensor. Replace failed component.
	Bypass orifice missing	Replace orifice
	Temperature control lever improperly set	Adjust lever
Automatic waste pump is malfunctioning or not operating normally *NOTE: When replacing the pump or float switch on internal (in tank) pumpout, 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.

Notes:

PARTS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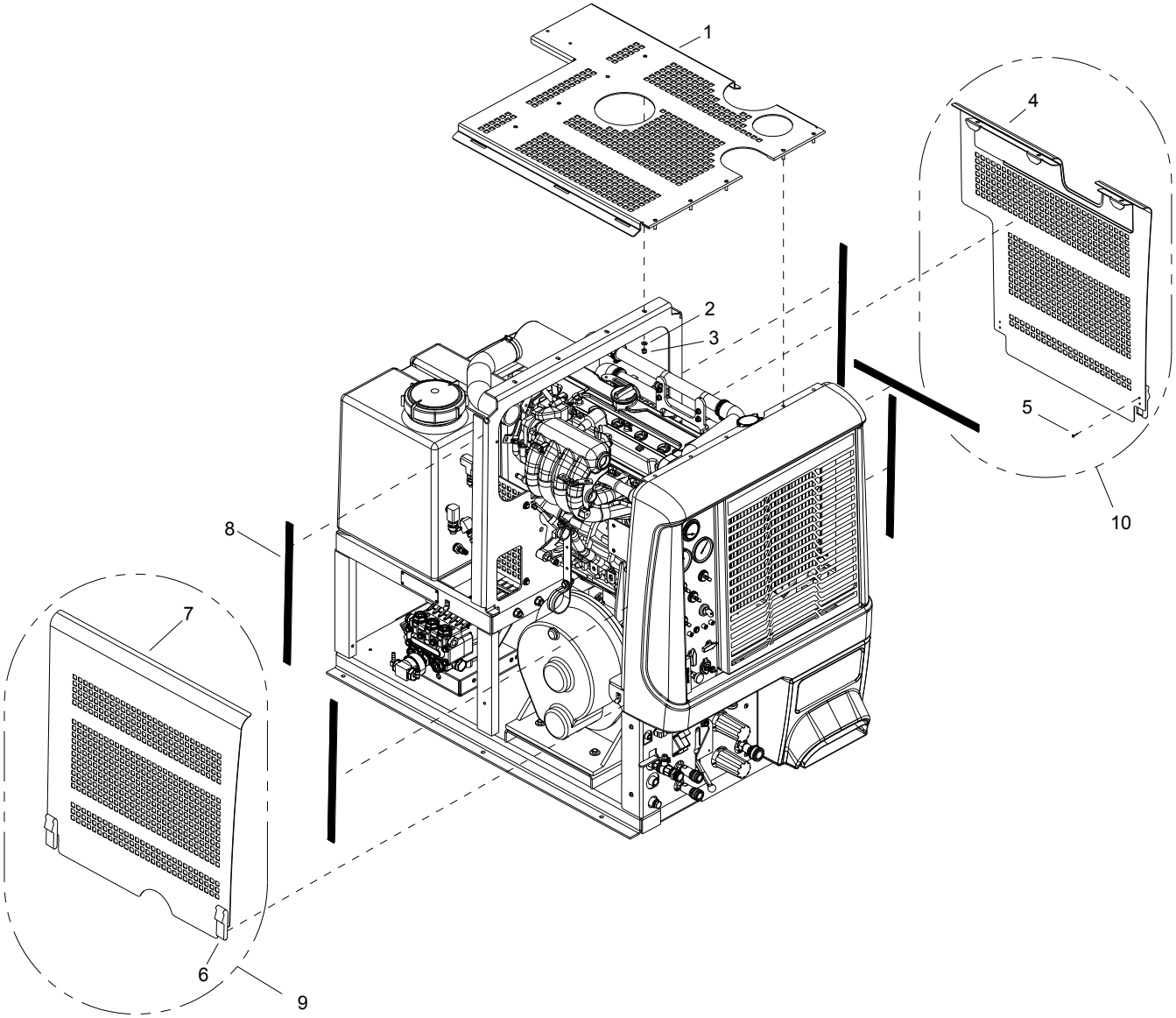
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86291430	1	ASSEMBLY, REAR MTR MTG		
2	86270330	8	FLATWASHER, 1/4		
3	86010780	6	WASHER, 1/4 SPLIT LOCK		
4	86274750	6	SCR, 1/4-20 X 3/4 HHCS PLTD		
5	86047960	1	GUARD, BLOWER HUB		
6	86291540	1	ASSY, FRAME		
7	86005770	4	NUT, 3/8-16 HEX NYLOCK		
8	86279510	8	WASHER, 3/8 FLAT		
9	86175380	1	BLT, 1/4-20 X 1 SHWH TYPE F TC		
10	86177040	1	CLAMP, CABLE 1-1/4 ID 5/16 BLT		
11	86274000	2	SCR, 3/8-16 X 3.0 HHCS GR5		
12	86047980	1	GUARD, BELT		
13	86297450	1	GUARD, BELT, RIGHT		
14	86277830	2	SCR, 3/8-16 X 2.0 HXHD		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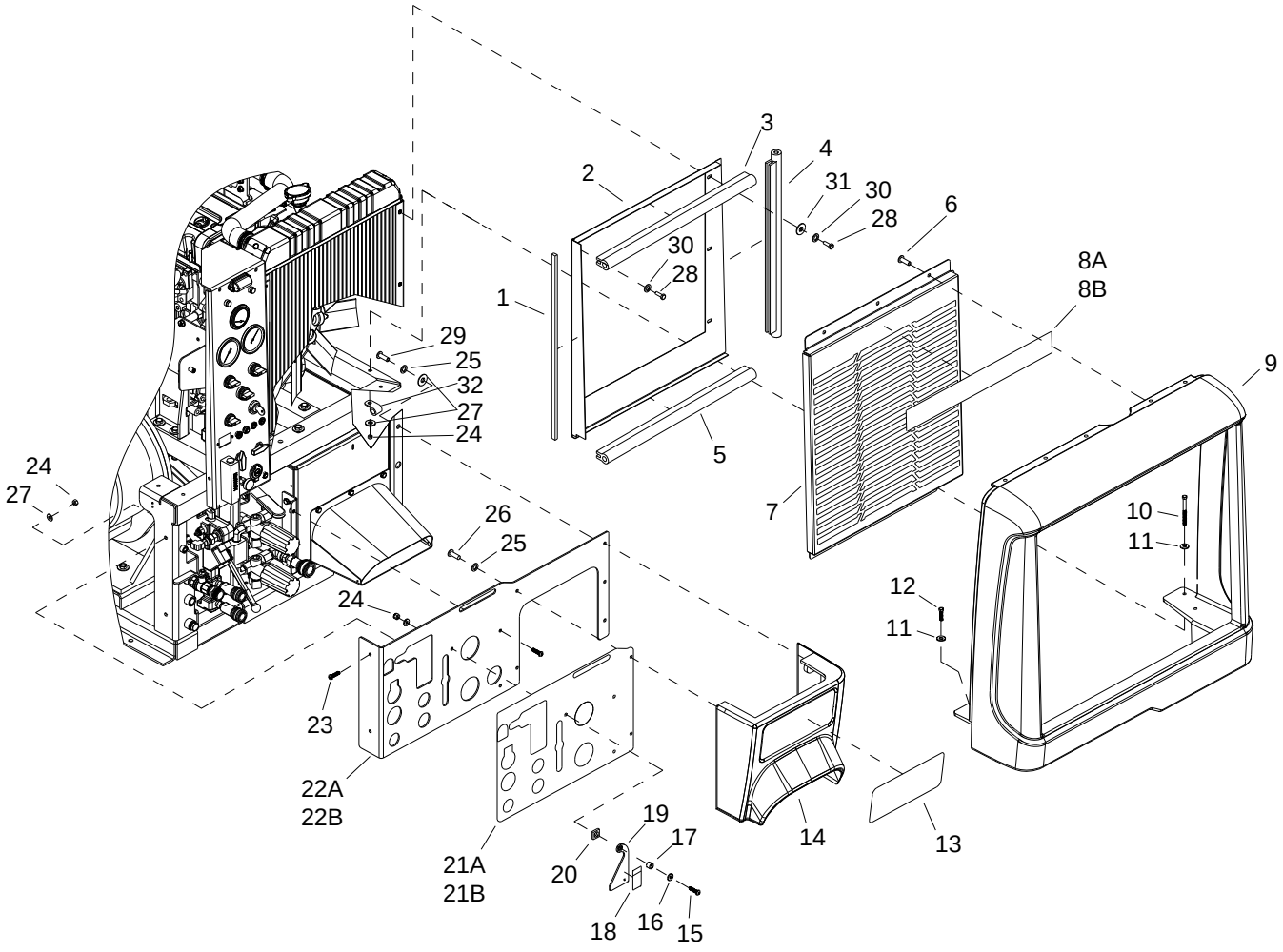
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86056210	1	PNL, CENTER HOOD		
2	86270330	9	FLATWASHER, 1/4		
3	86005680	9	NUT, 1/4-20 HEX NYLOCK		
4	86012110	1	ASSY, HOOD, RIGHT		
5	86191800	8	RIVET, 5/32OD X .188-.250 GL AL		
6	86161800	4	CATCH, CONCEALED KEEPER		
7	86012120	1	ASSY, HOOD, LEFT		
8	86315490	5	GASKET, HOOD VIBE DAMPNR		
9	86306600	1	ASM, EV LEFT HOOD SERVICE		INCLUDES 5, 6, 7
10	86306620	1	ASM, EV RIGHT HOOD SERVICE		INCLUDES 4, 5, 6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REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86133380	1	GASKET, 1/8 X 1/2 1SDA FOAM BLK		
2	86012770	1	PANEL, RADIATOR CLOSEOUT		
3	86014730	1	SEAL, STRT BULB SD168 X 17.5		
4	86014760	1	SEAL, STRT BULB SD168 X 20.5		
5	86014750	1	SEAL, STRT BULB SD168 X 19.5		
6	86275210	8	SCR, 1/4-20 X 1/2 PHTR BLK DL		
7	86050660	1	PANEL, GRILLE		
8A	86179440	1	DECAL, FRONT HOOD 650		LP ONLY
8B	86179450	1	DECAL, FRONT HOOD HP650		HP ONLY
9	86178280	1	COVER, FRONT END		
10	86277430	3	SCR, 1/4-20 X 3 SHCS SS		
11	86279150	4	WASHER, M6 X 25 FLAT BN732 PLT		
12	86273180	1	SCR, 1/4-20 X 1 HXHD GRD8		
13	86179490	1	DECAL, CONDENSED OPERATING		
14	86189620	1	OUTLET, EXHAUST		
15	86275490	1	SCR, 1/4-20 X 1.0 BH BLK PLATE		HP ONLY
16	86279520	1	WASHER, 1/4 ID FLAT BLK		HP ONLY
17	86007820	1	SPACER, 0.50D X 0.28ID X 0.38L NYL		HP ONLY
18	86186510	1	LABEL, CAUTION HP		HP ONLY
19	86051540	1	PLT, HIGH PRESSURE LCK		HP ONLY
20	86189660	1	PAD, 1/4 TURN VIBR		HP ONLY
21A	86179470	1	DECAL, LOWER FRONT LP		LP ONLY
21B	86179480	1	DECAL, LOWER FRONT HP		HP ONLY
22A	86056140	1	PNL, LOWER FRONT, LP		LP ONLY
22B	86056130	1	PNL, LOWER FRONT, HP		HP ONLY
23	86275460	4	SCR, 1/4-20 X 3/4 BHCS BLK PLATE		
24	86005680	7	NUT, 1/4-20 HEX NYLOCK		
25	86010780	5	WASHER, 1/4 SPLIT LOCK PLTD		
26	86274760	3	SCR, 1/4-20 X 1/2 HHCS PLTD		
27	86270330	6	FLATWASHER, 1/4		
28	86276410	6	SCR, 1/4-20 X 3/8 PPHMS BLK ZC NP		
29	86277730	2	SCR, 1/4-20 X 2.75 BHCS BLK		
30	86279400	6	WASHER, 1/4 SPLIT LOCK BLK		
31	86279520	6	WASHER, 1/4 ID FLAT BLK		
32	86177090	1	CLAMP, CABLE 1/2 I.D. 1/4 BLT		

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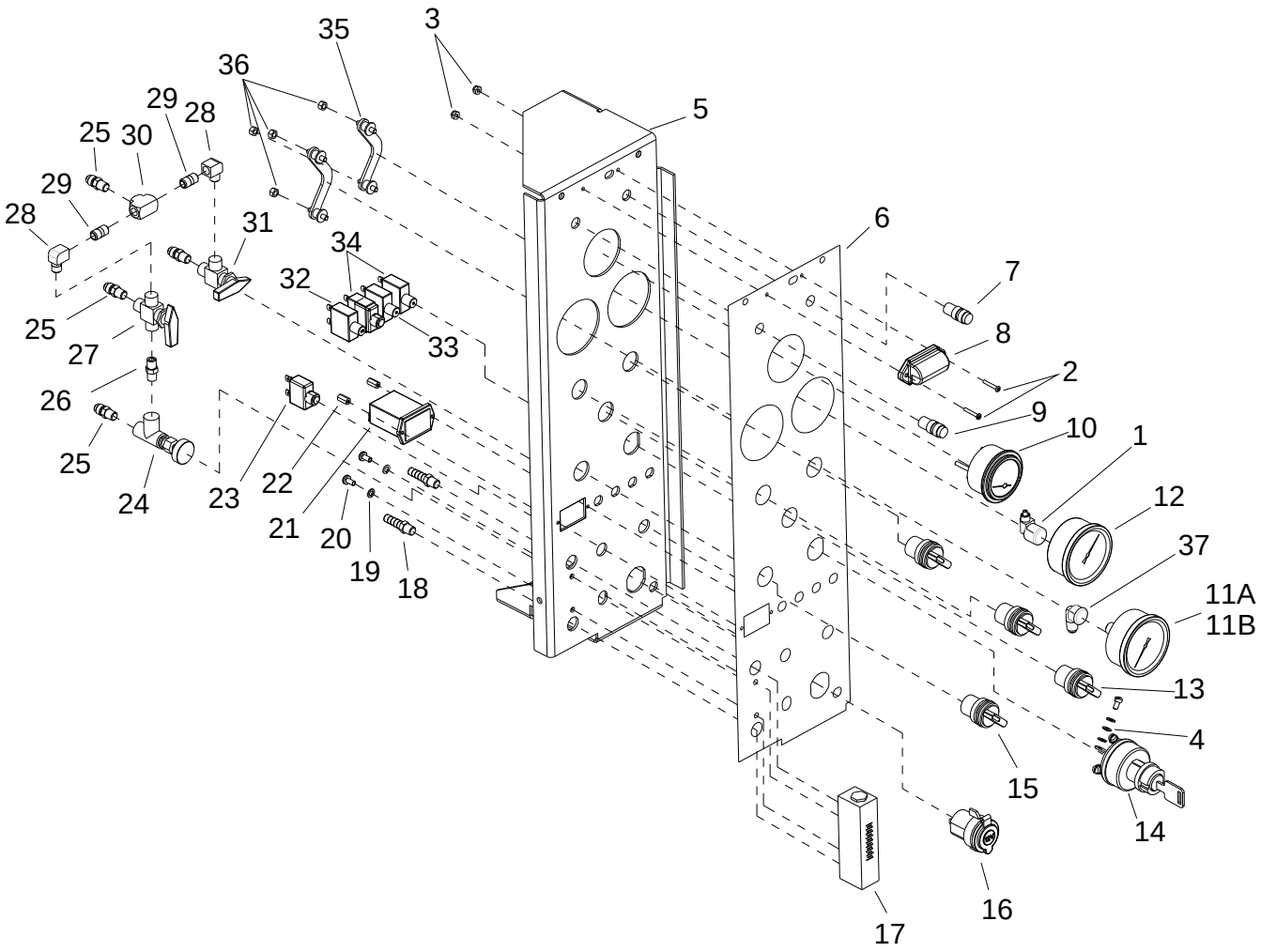
LP Only = Used Only on Low Pressure Units.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REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86180380	1	ELL, 1/4 FP X 1/4 POLY BR		
2	86273790	2	SCR, 6-32 X 3/4 PPHMS		
3	86270920	2	NUT, 6-32 HEX NYLOCK SS		
4	86278930	3	WASHER, #8 LOCK EXT. STAR PLT		
5	86050670	1	PANEL, CONTROL		
6	86179460	1	DECAL, CONTROL PANEL		
7	86186930	1	LIGHT, WARNING, IDEC AP2M		
8	86187070	1	LT, INST PRF805		
9	86186940	1	LIGHT, WARNING, AMBER, IDEC		
10	86181960	1	GAUGE, TEMP, DATCON		
11A	86181940	1	GAUGE, 0-4000 PSI		HP ONLY
11B	86181930	1	GAUGE, 0-1500 PSI		LP ONLY
12	86181950	1	GAUGE, VACUUM 30" HG		
13	86193750	3	SW, RTRY NON-ILLUM TM		
14	86193770	1	SW, START W/KEY 3 POS TM		
15	86295690	1	SWITCH, 4-WAY SPEED EV		
16	86189630	1	OUTLET, 12 VOLT AUXILIARY		
17	86181170	1	FLOWMETER 1/8 FP		
18	86181300	2	FTTG, BRB 1/8P X 5/16H		
19	86279470	2	WASHER, #10 SPLIT LOCK PLTD		
20	86274290	2	SCR, 10-32 X 3/8 PPHMS SS		
21	86246890	1	METER, 0-60VDC HOUR		
22	86255920	2	STANDOFF, 6-32 X 1/2 HEX NYL		
23	86298370	1	BRKR, CIRCUIT, 10A		
24	86195050	1	VALVE, METER 1/8FP		
25	86177660	4	CONN, 1/8P X 1/4T		
26	86188000	1	NIP, 1/8 HX BR		
27	86297070	1	VALVE, 3-WAY BALL 1/8P		
28	86180140	2	ELL, STREET 1/8 BR		
29	86247720	2	NIPPLE, 1/8 CLOSE		
30	86194160	1	TEE, 1/8 BR		
31	86195160	1	VALVE, 2-WAY BALL 1/8FP		
32	86175610	1	BRKR, CIRCUIT, 30A		
33	86298280	1	BRKR, CIRCUIT, 20A		
34	86175600	2	BRKR, CIRCUIT, 15A		
35	86175680	2	BRKT, WIKA MOUNTING		
36	86136310	4	NUT, M5 HEX		
37	86180350	1	ELL, 1/4 FP X 1/4 T BR		

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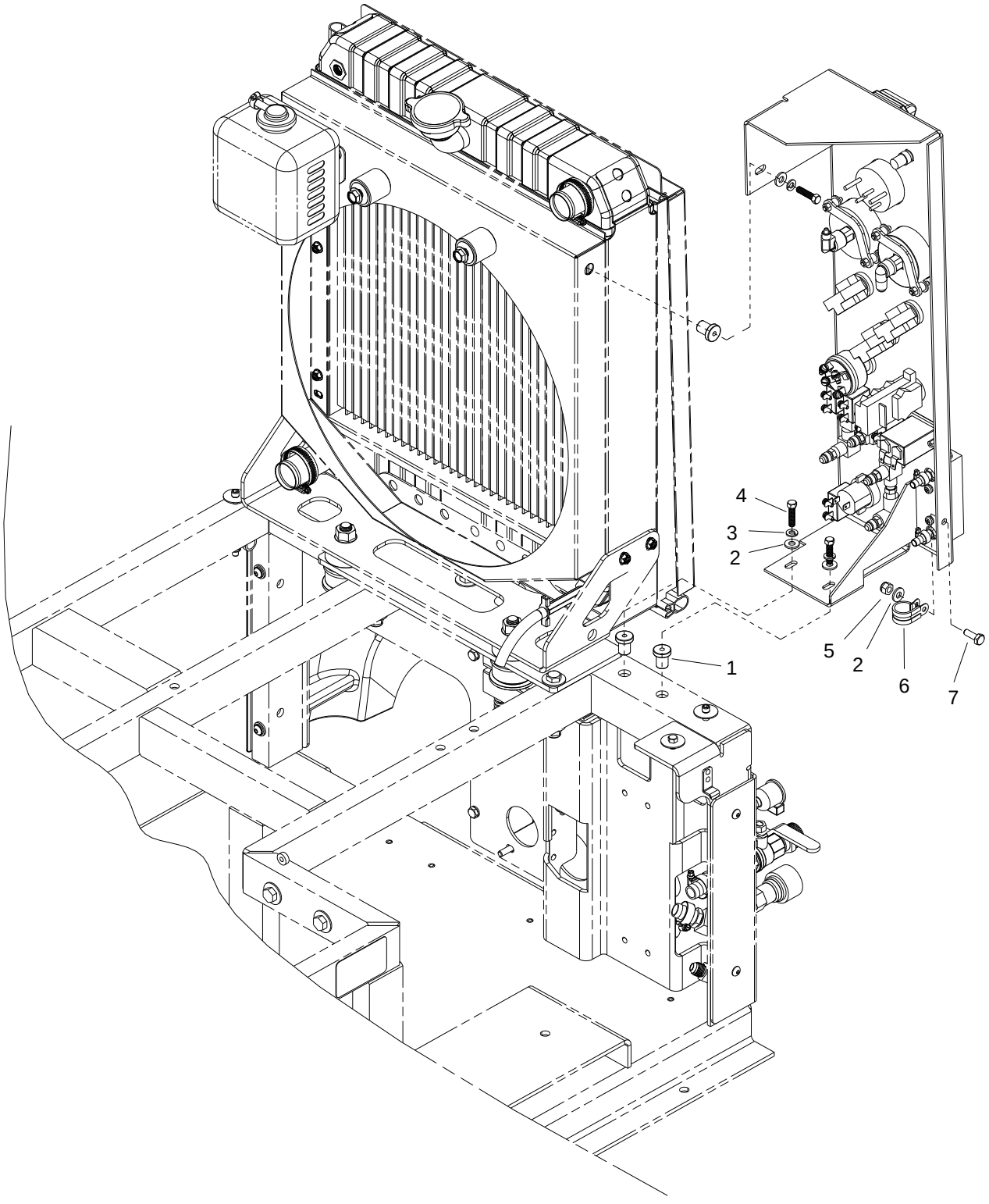
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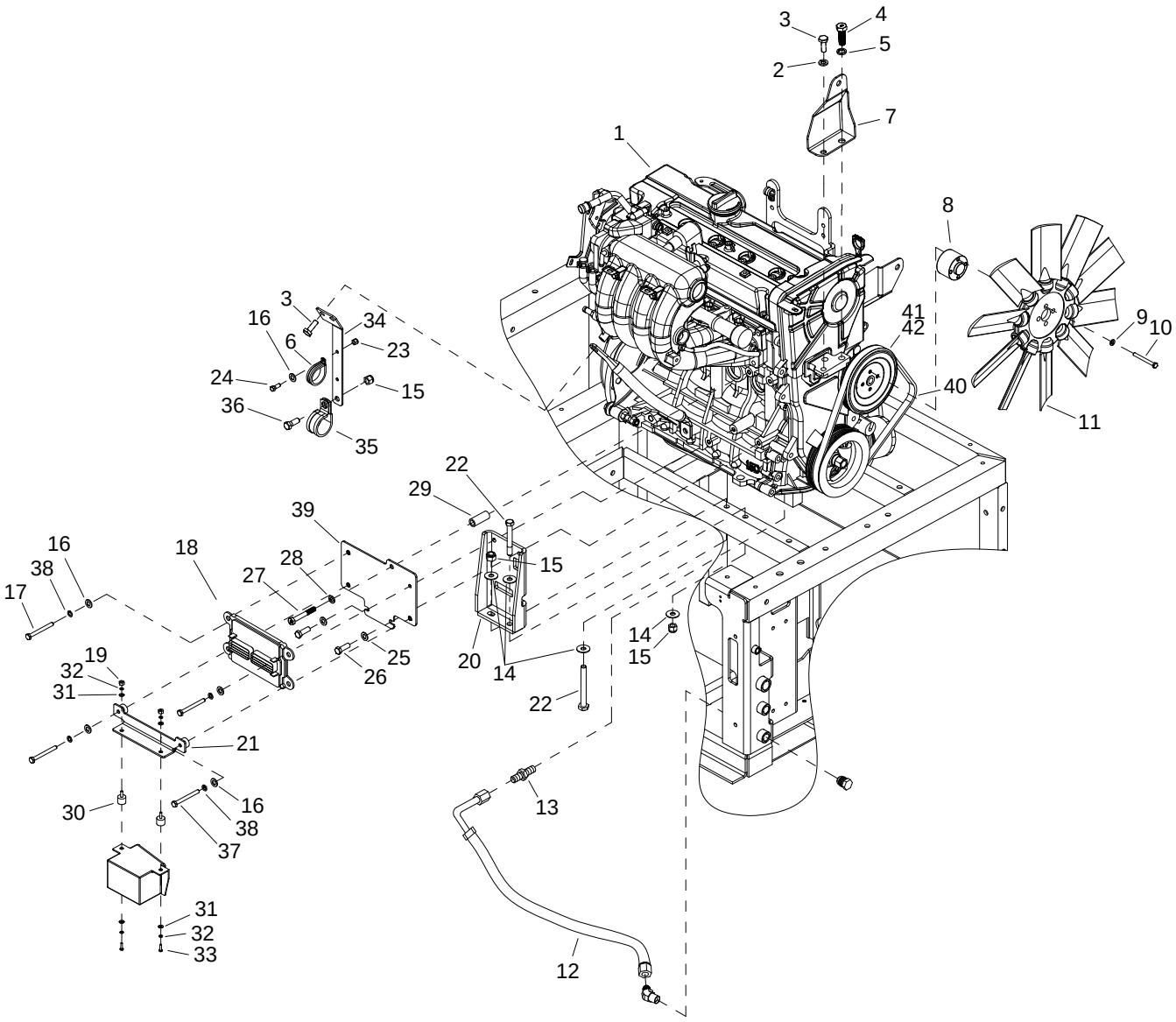
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86189050	3	NUT, WELL 1/4-20 HD		
2	86270330	4	FLATWASHER, 1/4		
3	86010780	3	WASHER, 1/4 SPLIT LOCK PLTD		
4	86273180	3	SCR, 1/4-20 X 1" HXHD GRD8		
5	86005680	1	NUT 1/4-20 HEX NYLOCK		
6	86233410	1	CLAMP, 3/4 DIA CUSHION .406DIA		
7	86274750	1	SCR, 1/4-20 X 3/4 HHCS PLTD		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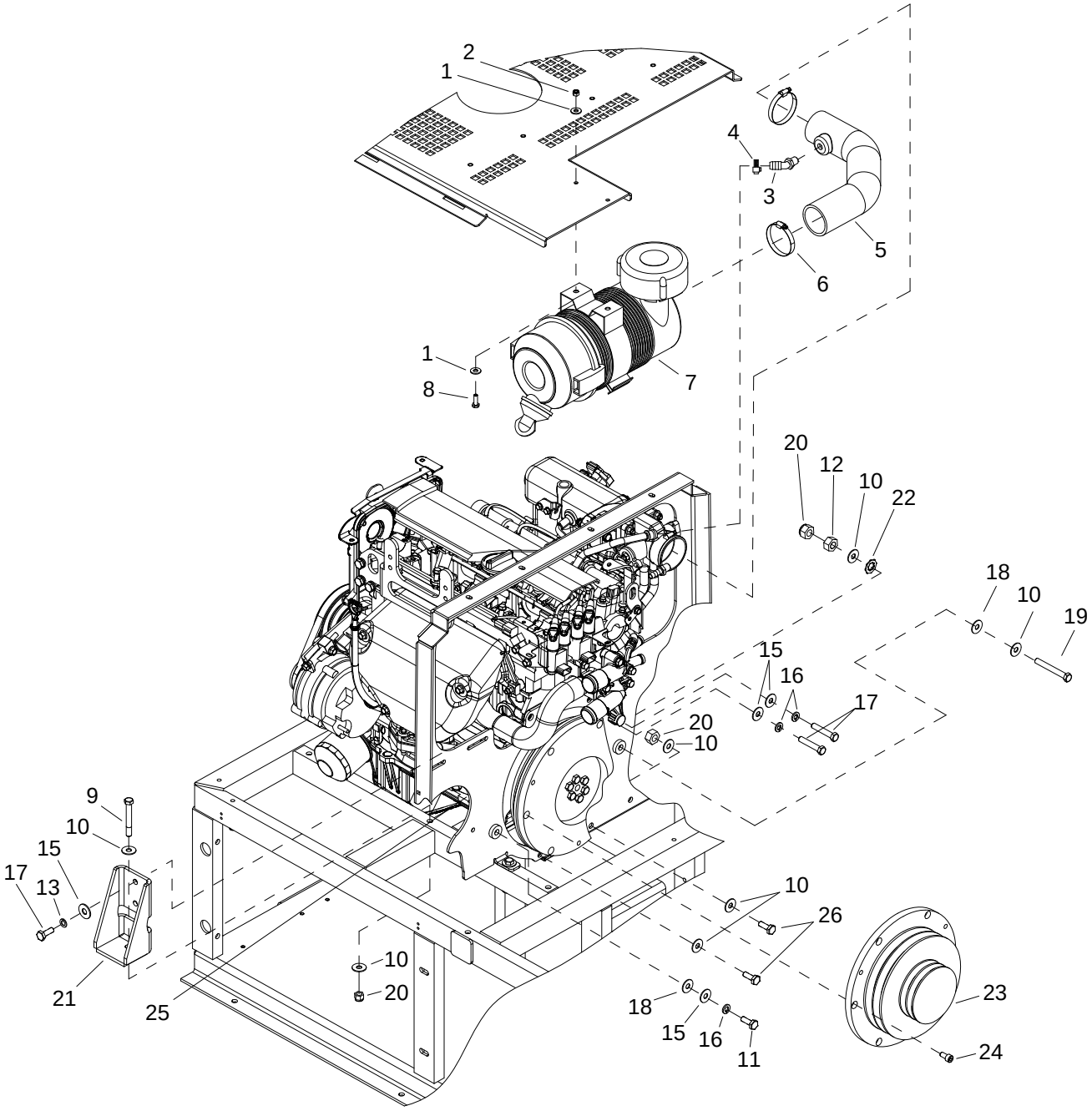
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86293490	1	ENG, HYUNDAI, 1.6L W/ALUM PAN		
2	86279500	1	WASHER, M10 SPLIT LOCK PLTD		
3	86277790	1	SCR, M10 X 1.25 X 25 MM HXHD DIN933		
4	86277800	1	SCR, M12 X 1.25 X 25 MM HXHD		
5	86259440	1	WASHER, M12 SPRING LOCK		
6	86177370	1	CLMP,FUEL LINE 5/16x1/4B		
7	86292180	1	BRKT, RAD TO ENG MTG		
8	86192960	1	SPACER, FAN, HYUNDAI 1.6L		
9	86279140	4	WASHER, M6 SPLIT LOCK DIN 127B		
10	86277820	4	SCR, M6 X 1.00MM X 55MM HXHD GR8.8		
11	86180890	1	FAN, SUCTION, HYUNDAI 1.6L		
12	86185220	1	HOSE, OIL DRAIN		
13	86042720	1	ADPTR, OIL DRAIN PLUG		
14	86279510	4	WASHER, 3/8 FLAT		
15	86005770	3	NUT, 3/8-16 HEX NYLOCK		
16	86270330	5	FLATWASHER, 1/4		
17	86273190	2	SCR, 1/4-20 X 1-1/2 HXHD		
18	86011980	1	ECU, ZPP 416		
19	86270780	2	NUT, 8-32 HEX		
20	86046270	1	BRKT, LEFT MOTOR MOUNT		
21	86293980	1	BRKT, ECU		
22	86274000	2	SCR, 3/8-16 X 3 HHCS GR5		
23	86005680	3	NUT, 1/4-20 HEX NYLOCK		
24	86274750	1	SCR, 1/4-20 X 3/4 HHCS PLTD		
25	86137280	2	WASHER, M8 FLAT DIN125A PLT		
26	86273590	2	SCR, CAP 8MM X 1.25MM X 20MM		
27	86277810	1	SCR, M8 X 1.25 X 60MM HXHD PLTD		
28	86137310	1	WASHER, M8 SPLIT LOCK		
29	86089650	1	TUBE, 5/8OD X .357ID X 1.57		
30	86014590	2	ISOLATOR, RUBBER, RELAY		
31	86278990	4	WASHER, #8 FLAT		
32	86288600	4	LKWSR, #8		
33	86273930	2	SCR, 8-32 X 1/2 PPHMS		
34	86046310	1	BRKT, HOSE MOUNT		
35	86177420	1	CLMP, 2-1/8ID X 3/8 BLT		
36	86006740	1	SCR, 3/8-16 X 1" HHCS BR5 PLT DL		
37	86273100	2	SCR, CAP1/4-20 X 2-1/4 HXD		
38	86010780	4	WASHER, 1/4 SPLIT LOC		
39	86294050	1	BRKT, ECU MTG		
40	86303730	1	BELT, FAN HYUNDAI 1.6L		
41	86332040	1	PULLEY-WATER PUMP OUTER ZPP		
42	86332050	1	PULLEY-WATER PUMP, P/S		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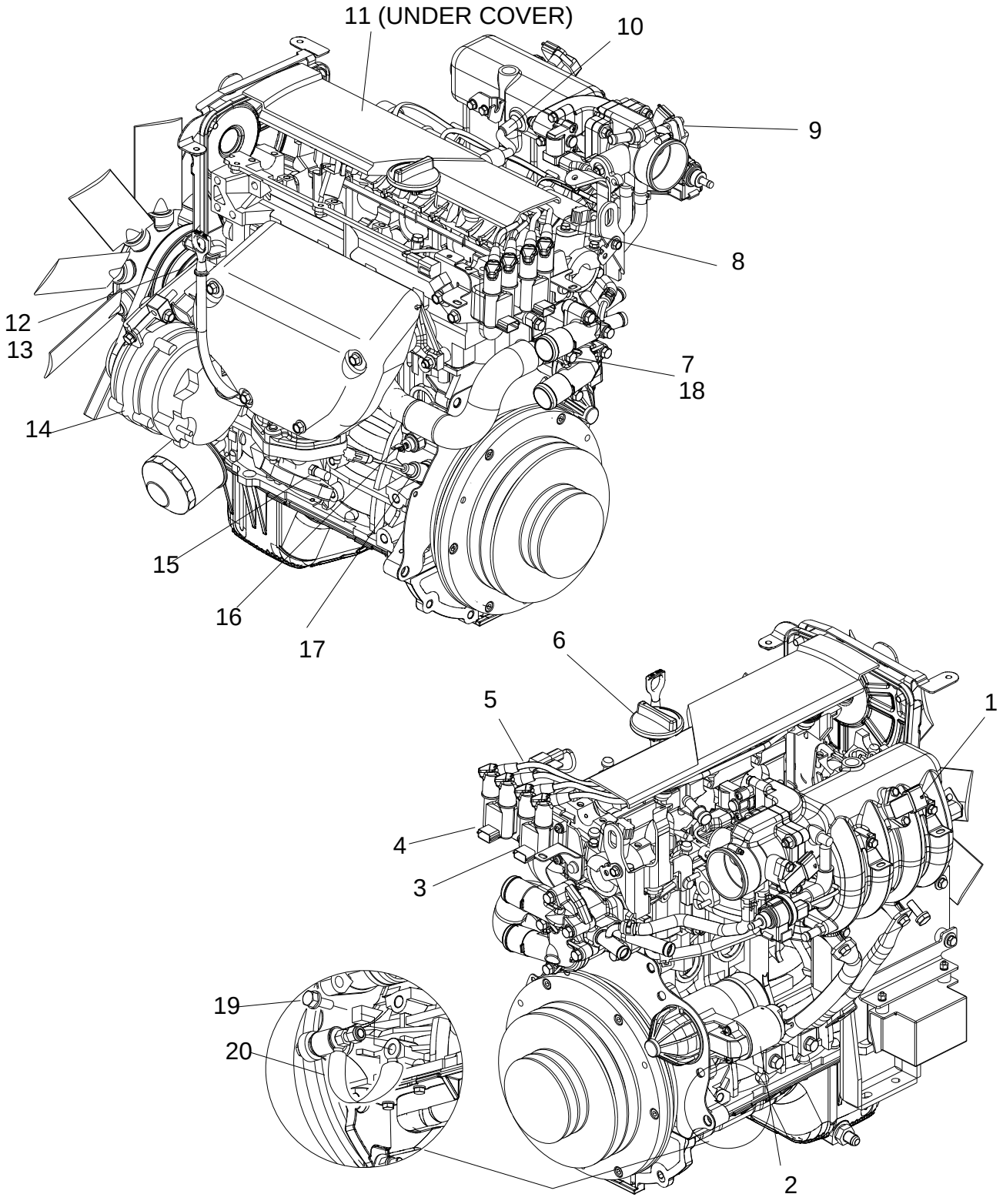
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86270330	4	FLATWASHER, 1/4		
2	86005680	2	NUT, 1/4-20 HEX NYLOCK		
3	86197620	1	HOSEBARB, 1/4MPT X 3/8 45D DL		
4	86176990	1	CLAMP, HOSE #4 SST		
5	86185090	1	HOSE, AIR INLET		
6	86177220	2	CLMP, HOS #32 1.5625/2.5, SST		
7	86173910	1	ASMBLY, FLTR, AIR, ZEEMS		
8	86274750	2	SCR, 1/4-20 X 3/4 HHCS PLTD		
9	86274000	1	SCR, 3/8-16 X 3 HHCS GR5		
10	86279510	8	WASHER, 3/8 FLAT		
11	86014850	1	SCR, M10 X 1.25 X 40MM HXHD		
12	86005730	1	NUT, 3/8-16 HEX		
13	86259440	5	WASHER, M12 SPRING LOCK		
14	OPEN	-	-		
15	86010720	5	WASHER, M10 X 30 PLTD		
16	86279500	3	WASHER, M10 SPLIT LOCK PLTD		
17	86277790	4	SCR, M10 X 1.25 X 25MM HXHD DIN 933		
18	86270320	2	FLATWASHER, 1/2" HEAVY		
19	86273420	1	SCR, CAP 3/8-16X3 ALL THD		
20	86005770	4	NUT, 3/8-16 HEX NYLOCK		
21	86046260	1	BRKT, RIGHT MOTOR MOUNT		
22	86295800	1	WASHER, 3/8 INT & EXT STAR		
23	86191330	1	PULLEY, HYUNDAI, REAR, ENGINE		
24	86277780	6	SCR, M8 X 1.25 X 16MM SOCHD GR12.9		
25	86290720	1	SWITCH, OIL PRESSURE, HYUNDAI		
26	86274660	2	SCR, 3/8-16 X 1.5 HHCS GR5 PLT		
-	86181190	1	FLT, AIR, ELMNT, ZEEMS		AIR FILTER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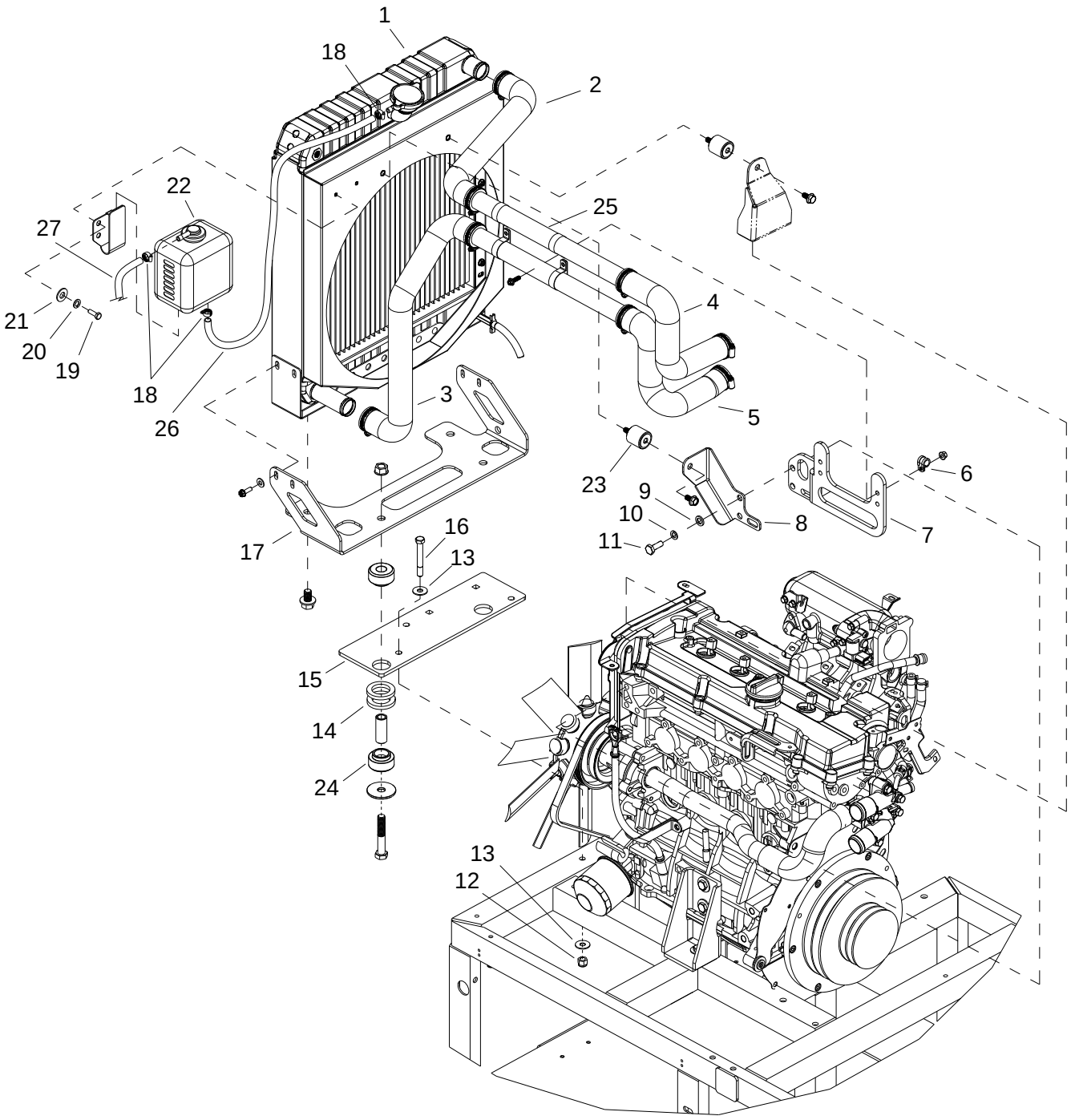
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86304360	1	SENSOR, MANIFOLD/AIR, HYUNDAI 1.6L		
2	86304350	1	STARTER, HYUNDAI 1.6L		
3	86304060	1	COIL PACK, 4 & 1, HYUNDAI 1.6L		
4	86304050	1	COIL PACK, 2 & 3, HYUNDAI 1.6L		
5	86304630	1	WIRES, SPARK PLUG, HYUNDAI 1.6L		
6	86304770	1	CAP, OIL, HYUNDAI 1.6L		
7	86304800	1	THERMOSTAT, HYUNDAI 1.6L		
8	86304760	1	SENSOR, CAM, HYUNDAI 1.6L		
9	86304850	1	BODY, BOSCH THROTTLE, HYUNDAI		
10	86304910	1	VALVE, PCV, HYUNDAI 1.6L		
11	86304650	4	SPARK PLUG, HYUNDAI 1.6L		
12	86304660	1	PUMP, WATER, HYUNDAI 1.6L		
13	86304790	1	GASKET, WATER PUMP, HYUNDAI 1.6L		
14	86303860	1	ALTERNATOR, HYUNDAI 1.6L		
15	86304740	1	SENSOR, OXYGEN, PRE-CAT HYUNDAI		
16	86290720	1	SWITCH, OIL PRESSURE, HYUNDAI		
17	86304880	1	SENSOR, CRANK, HYUNDAI 1.6L		
18	86304810	1	GASKET, THERMOSTAT, HYUNDAI 1.6L		
19	86306830	1	SCR, M12 X 1.25 X 20MM HXHD		
20	86306630	1	STRAP, FLEX BRAID 4GA TIN GRND		
-	86303830	1	HOSE, WATER PUMP, HYUNDAI 1.6L		NOT SHOWN
-	86304900	4	INJECTOR, FUEL, HYUNDAI 1.6L		NOT SHOWN
-	86325410	1	HARNESS, HYUNDAI 1.6L, EV		NOT SHOWN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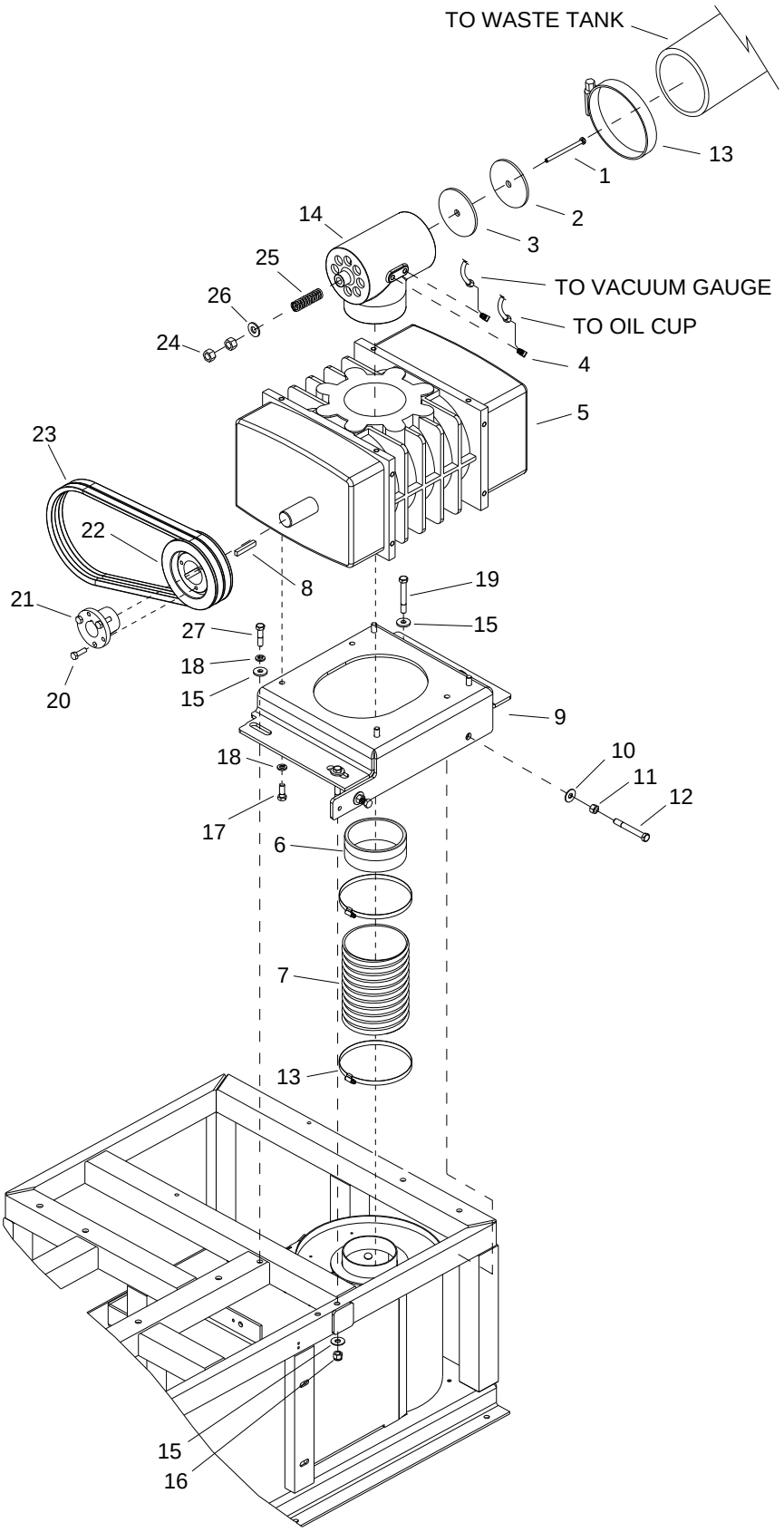
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86191540	1	RADIATOR, HYUNDAI, W/SHROUD		
2	86185100	1	HOSE, UPPER, RADIATOR, HYUNDAI		
3	86185110	1	HOSE, LOWER, RADIATOR, HYUNDAI		
4	86185120	1	HOSE, UPPER ENGINE COOLANT		
5	86185130	1	HOSE, LOWER ENGINE COOLANT		
6	86177090	1	CLAMP, CABLE 1/2ID 1/4BLT		
7	86046370	1	BRKT, RAD TUBE SUPT		
8	86292170	1	BRKT, RAD SUPT RIGHT		
9	86279700	3	WASHER, M10 X 18 FLAT		
10	86279500	3	WASHER, M10 SPLIT LOCK PLTD		
11	86277790	3	SCR, M10 X 1.25 X 25MM HXHD DIN933		
12	86005770	3	NUT, 3/8-16 HEX NYLOCK		
13	86279510	6	WASHER, 3/8 FLAT		
14	86012610	4	SPACER, RADIATOR ISOLATOR		
15	86291660	1	BRKT, RADIATOR MOUNTING		
16	86274000	3	SCR, 3/8-16 X 3 HHCS GR5		
17	86046280	1	BRKT, RADIATOR MOUNT		
18	86176990	3	CLAMP, HOSE #4 SST		
19	86274750	2	SCR, 1/4-20 X 3/4 HHCS PLTD		
20	86010780	2	WASHER, 1/4 SPLIT LOCK PLTD		
21	86270330	2	FLATWASHER, 1/4		
22	86175820	1	BTL, CLNT RECIV, PIN, 1 LTR		
23	86303790	2	ISOLATOR, 32 X 32, M8-1.25		
24	86303780	2	ISOLATOR, 46.4MM 51.21MM 1/2-13		
25	86303740	2	CONN, 410 X 32 DIA RADIATOR		
26	86017330	1	HOS,5/16 INR BRD X 17"		
27	86280110	1	HOS, 5/16 INR BRD X 52"		


TO WASTE TANK
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TO VACUUM GAUGE
TO OIL CUP
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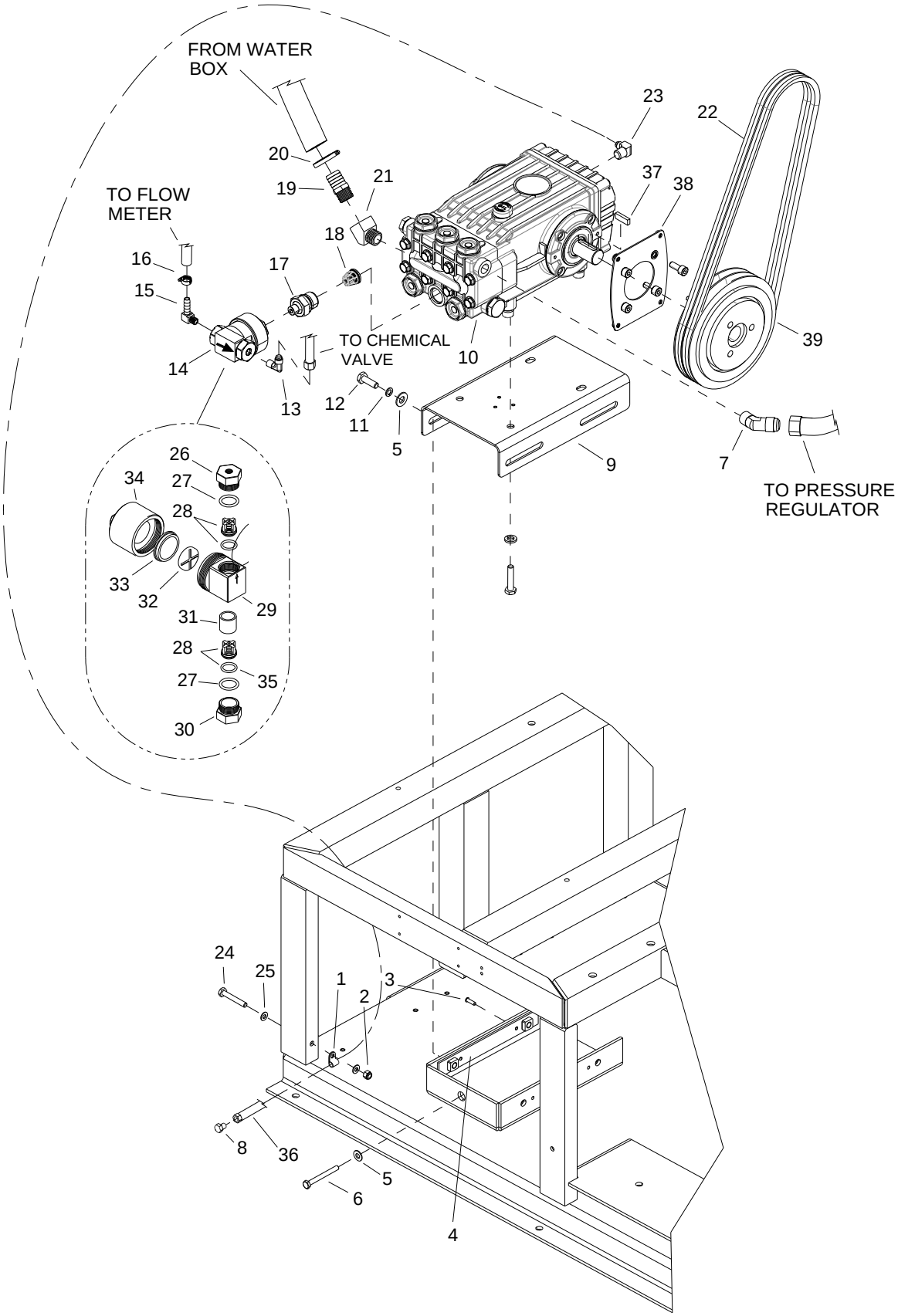
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86273660	1	SCR, CAP 1/2-13 X 5 HXHD		
2	86059340	1	WSR, VAC REL VLV PRF805		
3	86179600	1	DIAPH, VAC REL VLV PRF805		
4	86180370	2	ELL, 1/8P X 1/4 POLY BR		
5	86175370	1	BLOWER, TRI-FLOW 650 CFM		
6	86351750	1	NIP, VAC EXH OUTL, 650		
7	86351980	1	TUBING, FLEX, BLWR TO MFLR, 650		
8	86049230	1	KEY, 1/4 SQ X 1.88		
9	86051660	1	PLT, BLOWER MOUNT, ADJUST		
10	86279510	2	WASHER, 3/8 FLAT		
11	86005730	2	NUT, 3/8-16 HEX		
12	86277830	2	SCR, 3/8-16 X 2" HXHD		
13	86335760	3	CLAMP, HOSE #88 4"/6" SST		
14	86180620	1	ELL, VAC REL VLV		
15	86310690	7	WASH, 3/8 ID X 1.0 OD X 1/8 THK SS		
16	86005770	3	NUT, 3/8-16 HEX NYLOCK		
17	86006740	4	SCR, 3/8-16 X 1" HHCS GRD5 PLT DL		
18	86010790	5	WASHER, 3/8 SPLIT LOCK PLTD		
19	86274000	3	SCR, 3/8-16 X 3 HHCS GR5		
20	86273440	3	SCR, MACH 5/16-18 X 1" GR8		
21	86185390	1	HUB, P1 X 1-1/4		
22	86191290	1	PULLEY, BLOWER 2TB52		
23	86175240	2	BELT, GATES BP40 PREDATOR		
24	86271200	2	NUT, 1/2-13 HEX PLT		
25	86193160	1	SPG,VAC REL VLV 805		
26	86279440	1	WASHER, 1/2 X 1.09 FLAT		
27	86274660	1	SCR, 3/8-16 X 1.50 HHCS GR5		


FROM WATER BOX
TO FLOW METER
TO CHEMICAL VALVE
TO PRESSURE REGULATOR
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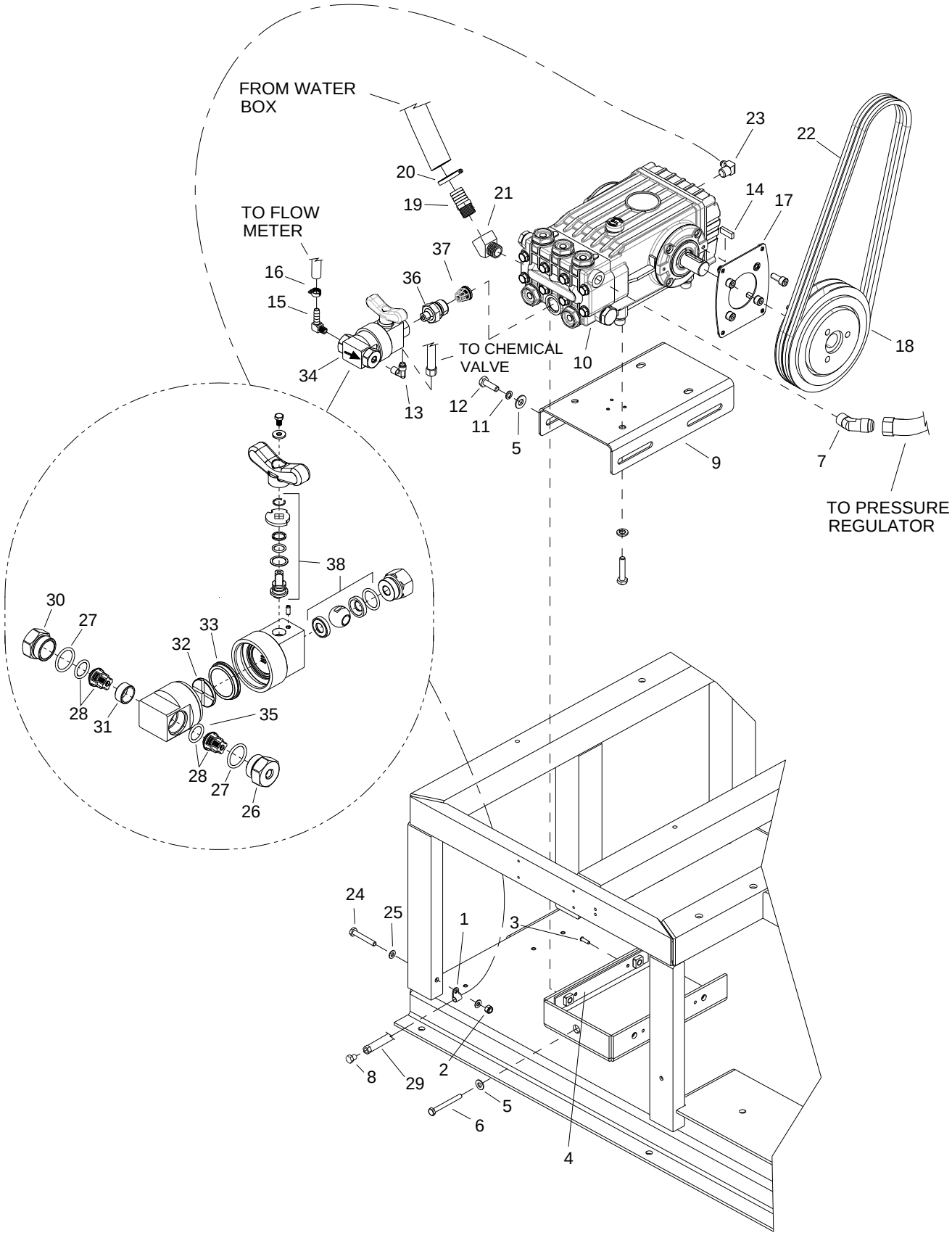
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86177210	1	CLMP, CABL 7/16ID 1/4BLT		
2	86005680	1	NUT, 1/4-20 HEX NYLOCK		
3	86273020	4	RIVET, 3/16OD X 5/8 AL		
4	86050310	2	NUTPLATE, WTR PMP MOUNT		
5	86279510	5	WASHER, 3/8 FLAT		
6	86277510	1	SCR, 3/8-16 X 5.0 HHCS SS FT		
7	86180450	1	ELL, 3/8P X 1/2T 45 DEG BR		
8	86190540	1	PLUG, 1/4T BR		
9	86046220	1	BRKT, UPPER WTR PMP MTG		
10	86191450	1	PUMP, ASSY, GEN, 5.6GPM		
11	86010790	4	WASHER, 3/8 SPLIT LOCK PLTD		
12	86006740	4	SCR, 3/8-16 X 1" HHC SGR		
13	86180360	1	ELL, 1/8P X 1/4T BR		
14	86191440	1	PUMP, CHEM, PULSE, GP		
15	86179920	1	EL, 90DEG 1/8 X 5/16HB		
16	86176990	1	CLAMP, HOSE #4 SST		
17	86173620	1	ADPTR, PULSE PUMP, GEN PUMP		
18	86329450	1	SOLN. PUMP CHECK VALVE		
19	86181370	1	FTTG, BRB 1/2P X 3/4H BR		
20	86177020	1	CLAMP, HOSE #12 SST		
21	86180230	1	ELL, STREET 1/2 45 DEG		
22	86174950	2	BELT, AX43 GOODYEAR MATCH		
23	86180340	1	ELL, 1/4P X 1/4T BR		
24	86273330	1	SCR, CAP 1/4-20 X 2.75 HXHD		
25	86270330	2	FLATWASHER, 1/4		
26	86195120	1	VALVE CAP, 303SST, OUTPUT		
27	86189290	2	O-RING, DURO, .862ID X .103CS		
28	86195110	2	VALVE KIT ASM, CHEM PULSE PUMP		
29	86191340	1	PULSE PUMP, BODY		
30	86195100	1	VALVE CAP, 303SST, INPUT		
31	86192920	1	SPACER RING, 303SST		
32	86249220	1	PLASTIC DISC		
33	86179550	1	DIAPHRAGM, CHEM PUMP		
34	86194630	1	TOP COVER, PULSE PUMP INLET		
35	86290720	1	O-RING, CHK VLV		
36	86184550	1	HOSE, 3/16 X 20-1/2		
37	86350880	1	KEY, INTERPUMP CLUTCH		
38	86350920	1	PLT, HTS CLUTCH ADAPTER		
39	86350890	1	CLUTCH, DUAL GROOVE GP		


FROM WATER BOX
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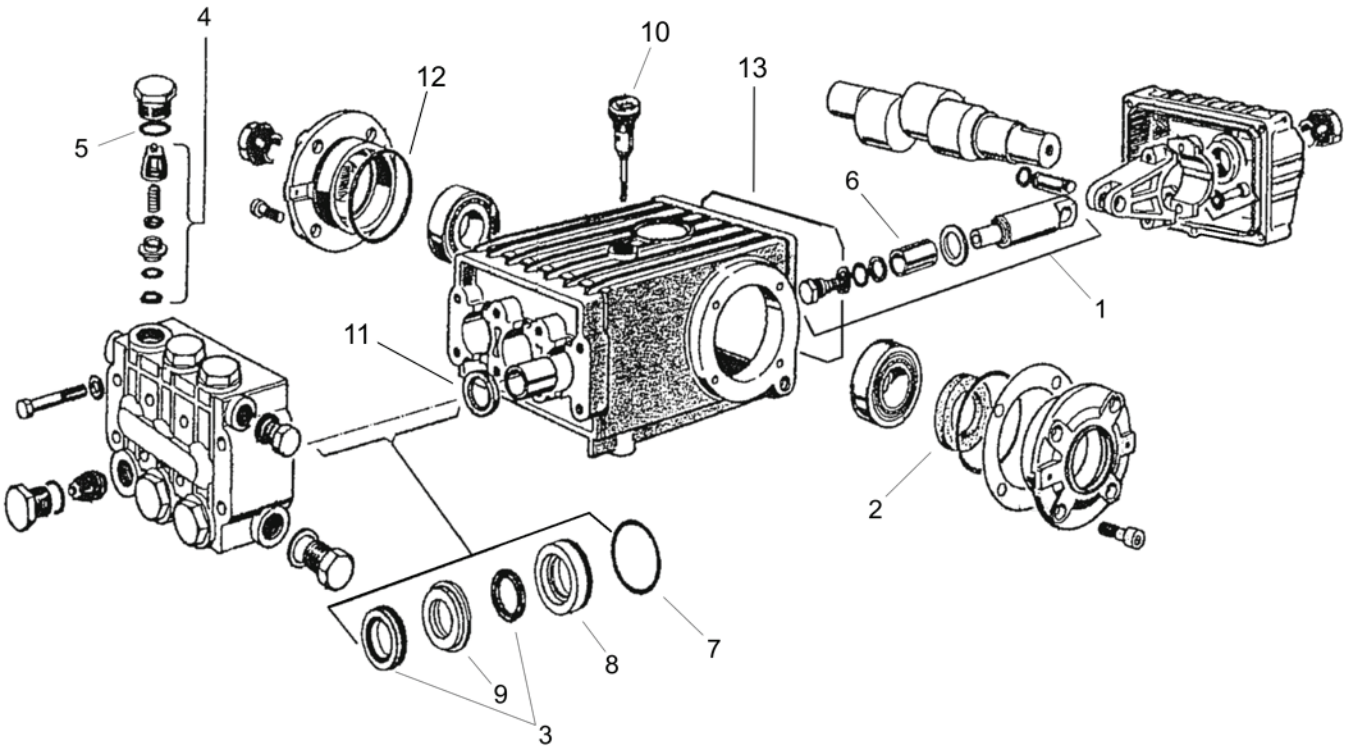
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86177210	1	CLMP, CABL 7/16ID 1/4BLT		
2	86005680	1	NUT, 1/4-20 HEX NYLOCK		
3	86273020	4	RIVET, 3/16OD X 5/8 AL		
4	86050310	2	NUTPLATE, WTR PMP MOUNT		
5	86279510	5	WASHER, 3/8 FLAT		
6	86277510	1	SCR, 3/8-16 X 5.0 HHCS SS FT		
7	86180450	1	ELL, 3/8P X 1/2T 45 DEG BR		
8	86190540	1	PLUG, 1/4T BR		
9	86046220	1	BRKT, UPPER WTR PMP MTG		
10	86191450	1	PUMP, ASSY, GEN, 5.6GPM		
11	86010790	4	WASHER, 3/8 SPLIT LOCK PLTD		
12	86006740	4	SCREW 3/8-16 X 1" HHCSGR5PLT DL		
13	86180360	1	ELL, 1/8P X 1/4T BR		
14	86350880	1	KEY, INTERPUMP CLUTCH		
15	86179920	1	EL, 90DEG 1/8 X 5/16HB		
16	86176990	1	CLAMP, HOSE #4 SST		
17	86350920	1	PLT, HTS CLUTCH ADAPTER		
18	86350890	1	CLUTCH, DUAL GROOVE GP		
19	86181370	1	FTTG, BRB 1/2P X 3/4H BR		
20	86177020	1	CLAMP, HOSE #12 SST		
21	86180230	1	ELL, STREET 1/2 45 DEG		
22	86174950	2	BELT, AX43 GOODYEAR MATCH		
23	86180340	1	ELL, 1/4P X 1/4T BR		
24	86273330	1	SCR, CAP 1/4-20 X 2.75 HXHD		
25	86270330	2	FLATWASHER, 1/4		
26	86195120	1	VALVE CAP, 303SST, OUTPUT		
27	86189290	2	O-RING, DURO, .862ID X .103CS		
28	86195110	2	VALVE KIT ASM, CHEM PULSE PUMP		
29	86184550	1	HOSE, 3/16 X 20-1/2”		
30	86195100	1	VALVE CAP, 303SST, INPUT		
31	86192920	1	SPACER RING, 303SST		
32	86249220	1	PLASTIC DISC		
33	86179550	1	DIAPHRAGM, CHEM PUMP		
34	86329320	1	PMP, CHEM, PULSE, GP, HP		
35	86290720	1	O-RING, CHK VLV		
36	86329370	1	3/8" HIGH PRESSURE ADAPTOR		
37	86329450	1	SOLN. PUMP CHECK VALVE		
38	86329330	1	SHUT-OFF VALVE REBUILD KIT		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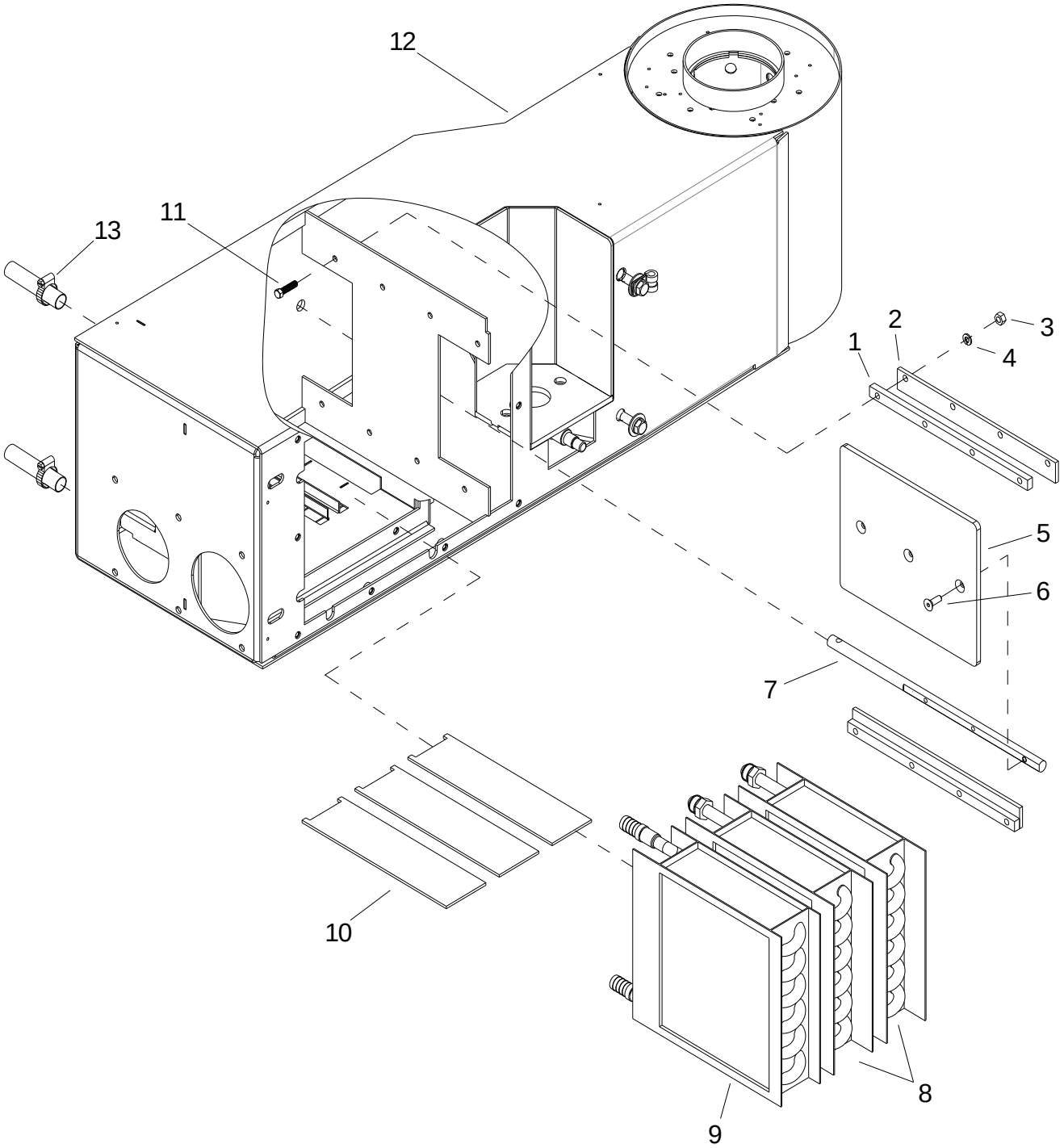
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86361380	1	PUMP, ASSY, GEN 5.6 GPM		
1	86014860	1	KIT, PLUNGER MAINTENANCE, 20MM		
2	86186220	1	KIT, SEALS CRANKCASE		
3	86014870	1	KIT, PLUNGER SEALS, 20MM GP		
4	86186250	6	KIT, CHK VALVE, GEN PMP, 6PC		
5	86189320	6	O-RING, CAP, GEN PMP		
6	86014880	3	PLUNGER, 20MM GP		
7	86014890	3	O-RING, PLUNGER SEAL GP		
8	86014900	3	SEAL RETAINER, 20MM GP		
9	86014910	3	RING, INTERMEDIATE, 20MM GP		
10	86300440	1	DIPSTICK, VENTED GP		
11	86361310	3	OIL SEAL, GP PUMP HTS, PLUNGER ROD		
12	86361320	1	O-RING, GP PUMP HTS SIGHT		
13	86361330	1	O-RING, GP PUMP HTS CRANKCASE		
-	86189110	1	OIL, GEN PUMP, SERIES 100		NOT SHOWN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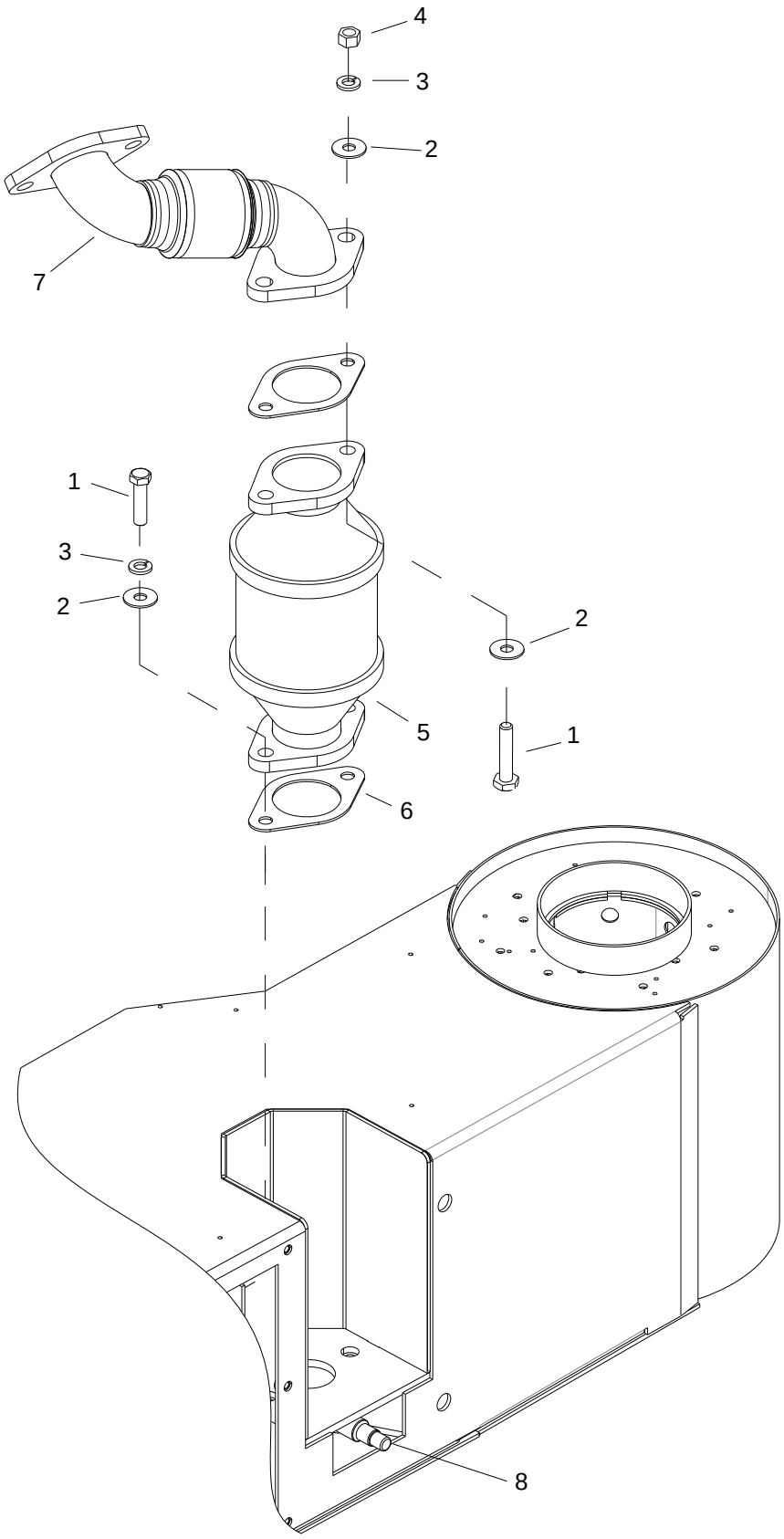
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86056840	2	SPACER, HT EXH DOOR GLIDE		
2	86047890	2	GLIDE, HT EXH DOOR		
3	86270770	8	NUT, 1/4-20 HEX		
4	86010780	8	WASHER, 1/4 SPLIT LOCK PLTD		
5	86047490	1	DOOR, EXHAUST DIRECT		
6	86006670	3	SCR, 1/4-20 X 3/4 FHCS		
7	86056670	1	ROD, HT EXH DOOR		
8	86173940	2	ASSEMBLY, SST HEATER CORE		
9	86293680	1	ASSEMBLY, COPPER HEATER CORE		
10	86189720	3	PAD, BTM VAC HTR CORE		
11	86273810	8	SCR, 1/4-20 X 1 HHCS SS		
12	86351740	1	HSG, VAC HE BOX, EV650		
13	86177260	2	CLAMP, HOSE #10		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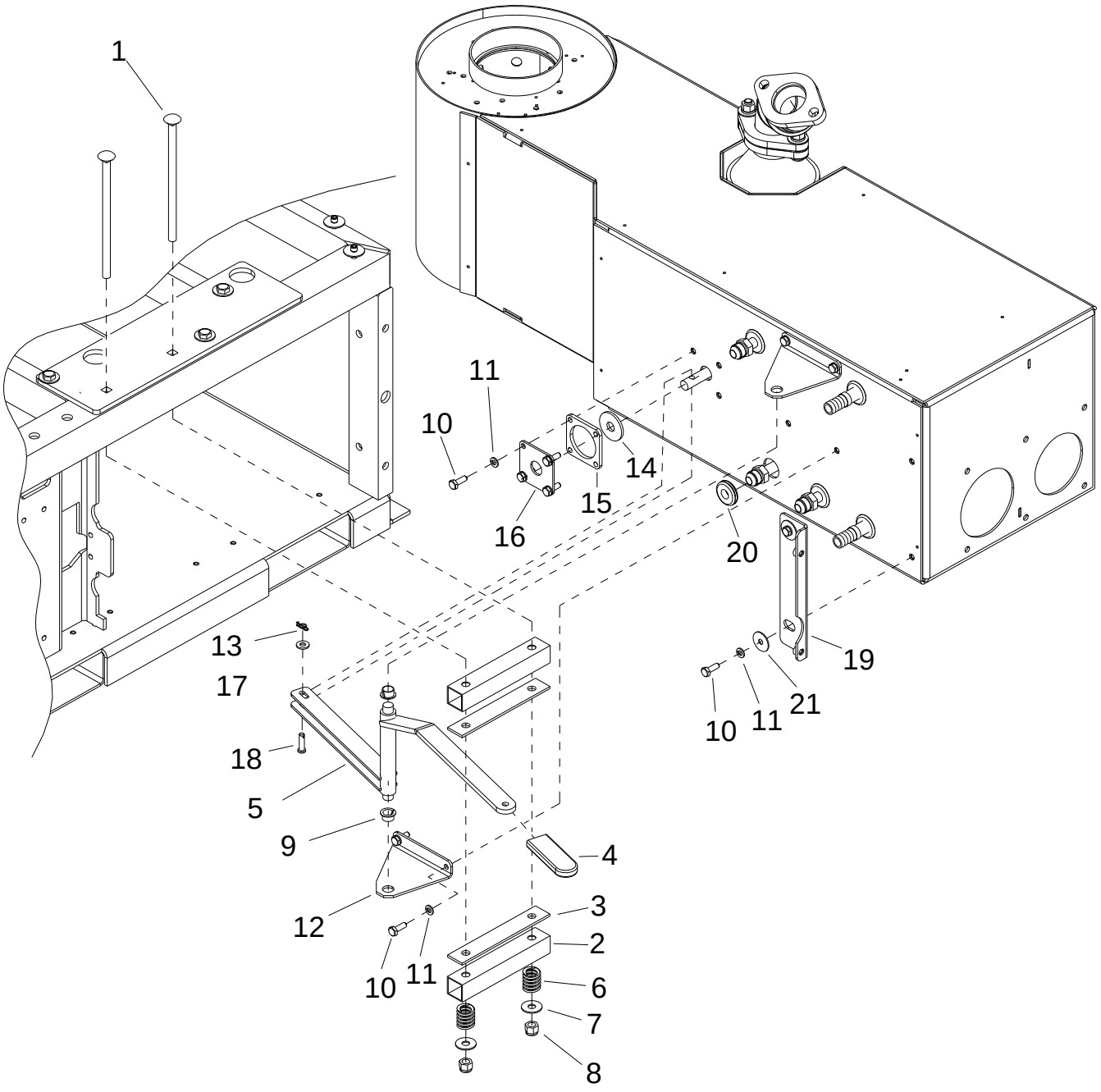
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86274660	4	SCR, 3/8-16 X 1.5 HHCS GR5 PLT		
2	86279510	6	WASHER, 3/8 FLAT		
3	86010790	4	WASHER, 3/8 SPLIT LOCK PLTD		
4	86005730	2	NUT, 3/8-16 HEX		
5	86293060	1	CONV, CAT, HYUNDAI		
6	86293070	2	GASKET, EXHAUST, HYUNDAI 1.6L		
7	86194900	1	TUBE, EXHAUST, HYUNDAI 1.6L		
8	86293090	1	SENSOR, OXYGEN HYUNDAI 1.6L		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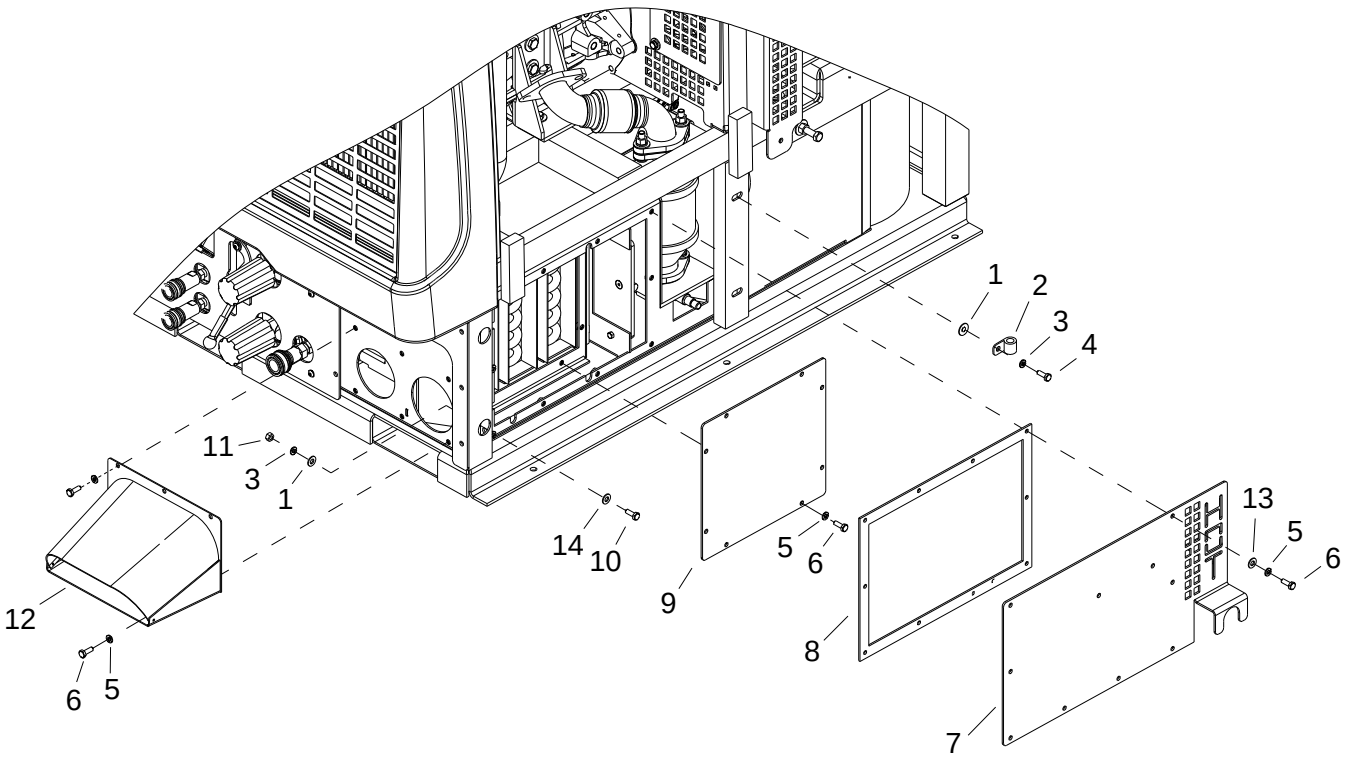
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86192130	2	SCR, 3/8-16 X 7 CARRIAGE PLTD		
2	86059190	2	TUBE, HT EXH LEVER BRACE		
3	86047880	2	GLIDE, HT EXH LEVER		
4	86182130	1	GRIP, ADJUSTING LEVER		
5	86049300	1	LEVER, HEAT ADJUSTING		
6	86193280	2	SPRING, COMP .71D X 1.0L X .12W		
7	86279510	2	WASHER, 3/8 FLAT		
8	86005770	2	NUT, 3/8-16 HEX NYLOCK		
9	86009050	2	BEARING, 1/2 ID X 11/32L NYLON		
10	86274750	10	SCR, 1/4-20 X 3/4 HHCS PLTD		
11	86010780	10	WASHER, 1/4 SPLIT LOCK PLTD		
12	86046330	2	BRKT, HT CONTROL PIVOT		
13	86008650	1	COTTER, 1/4" RING		
14	86011840	1	GASKET, DOOR ROD		
15	86011850	1	SPACER, DOOR ROD GASKET		
16	86011860	1	PLT, DOOR ROD COVER		
17	86270330	1	FLATWASHER, 1/4		
18	86008690	1	PIN, CLEVIS 1/4 X 1.00 PLTD		
19	86044670	1	BRACE, FRONT PANEL		
20	86182190	6	GROMT, 1/2ID X 1-1/4OD 1/8G 5/16W		
21	86279150	2	WASHER, M6 X 25 FLAT BN732 PLT		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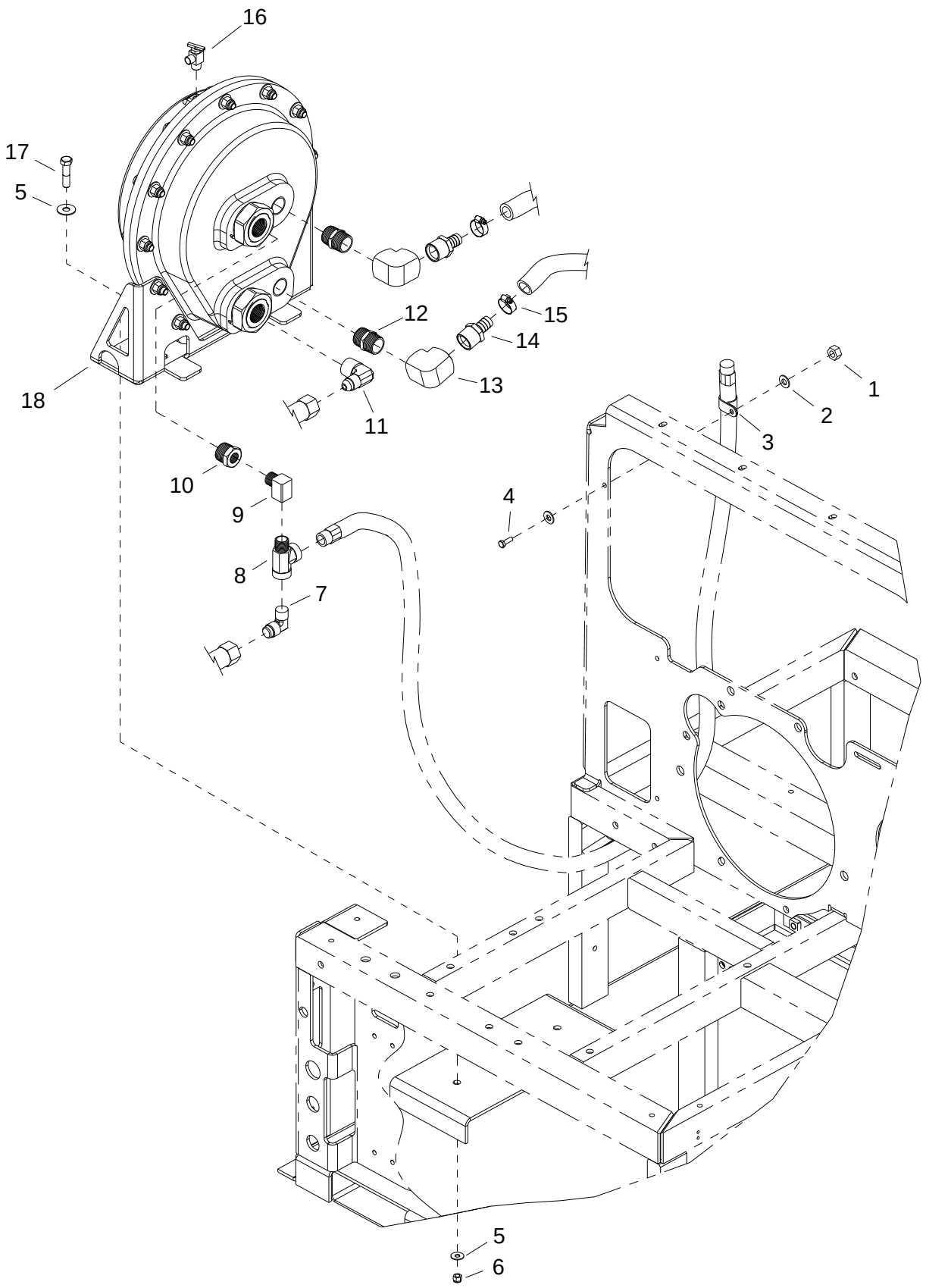
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86279510	4	WASHER, 3/8 FLAT		
2	86177320	1	CLMP, CABL 1/4ID 3/8BLT		
3	86010790	4	WASHER, 3/8 SPLIT LOCK PLTD		
4	86275150	2	SCR, 3/8-16 X 1 3/4 HHCS PLT		
5	86010780	24	WASHER, 1/4 SPLIT LOCK PLTD		
6	86274750	24	SCR, 1/4-20 X 3/4 HHCS PLTD		
7	86050340	1	OUTER COVER, HE BOX		
8	86181880	1	GASKET, HE, OUTER COVER		
9	86056200	1	PNL, HT EXH INNER CVR		
10	86275190	2	SCR, 3/8-16 X 1.25 HHCS SS		
11	86005730	2	NUT, 3/8-16 HEX		
12	86043980	1	ASSY, EXHAUST DEFLECTOR		
13	86270330	10	FLATWASHER, 1/4		
14	86278830	2	WASHER, 5/16 FLAT PLTD		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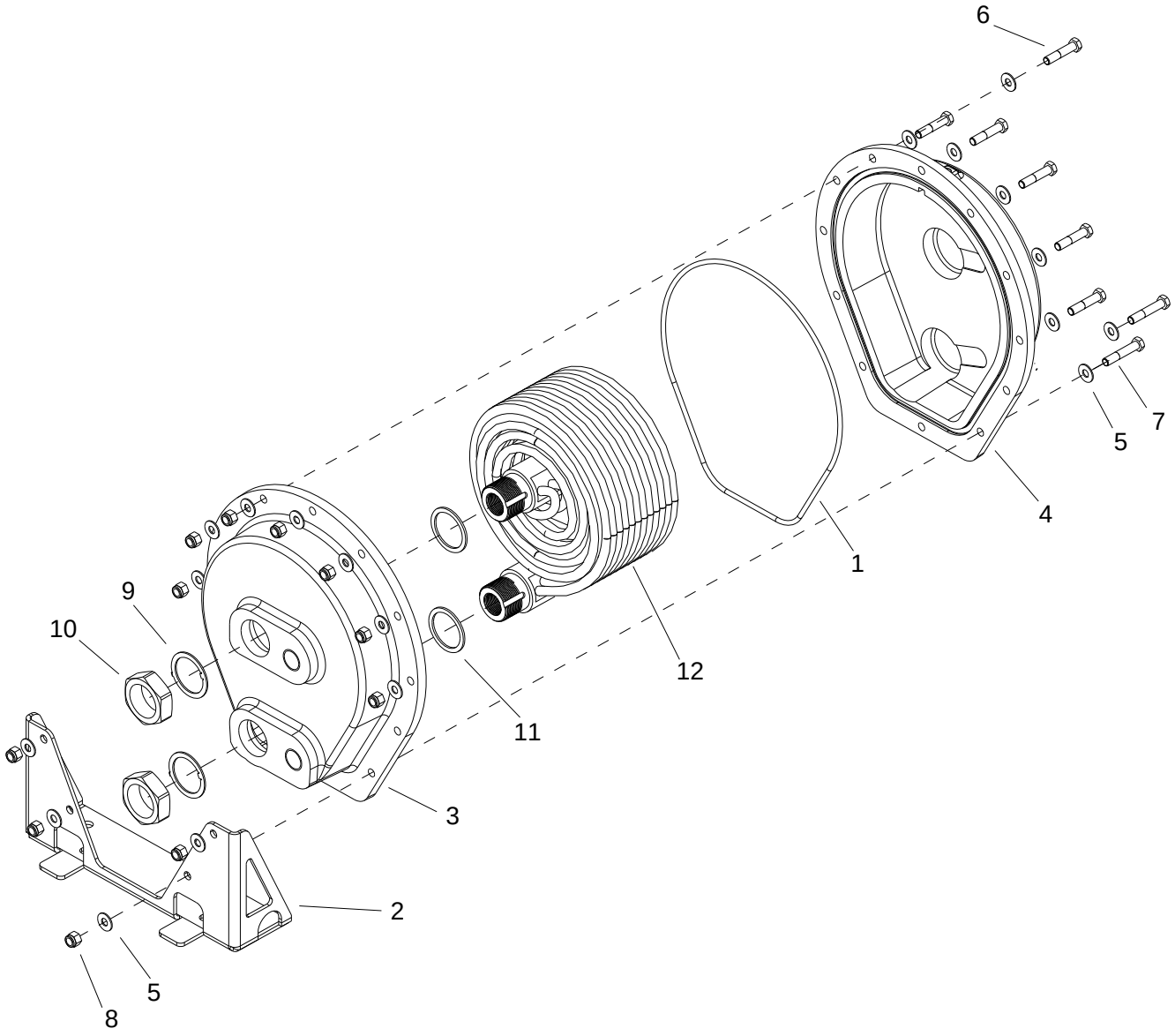
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86005680	1	NUT, 1/4-20 HEX NYLOCK		
2	86270330	2	FLATWASHER, 1/4		
3	86233390	1	CLAMP, 7/8 DIA "P" CUSHIONED		
4	86274750	1	SCR, 1/4-20 X 3/4 HHCS PLTD		
5	86279510	4	WASHER, 3/8 FLAT		
6	86005770	2	NUT, 3/8-16 HEX NYLOCK		
7	86180410	1	ELL, 3/8P X 1/2T BR		
8	86194180	1	TEE, SERVICE 3/8		
9	86180210	1	ELL, ST 3/8 BR		
10	86176060	1	BUSH, 3/4MPT X 3/8FPT BR		
11	86180430	1	ELL, 3/4P X 1/2T BR		
12	86188530	2	NIP, 3/4 HEX BR		
13	86180680	2	ELL, 3/4 BR		
14	86181590	2	FTTG, BRB 3/4MPT X 5/8H BR		
15	86177260	2	CLMP, HOS #10 9/16MIN 1-1		
16	86177560	1	COCK, DRN 1/4P X 1/4HOS ELL		
17	86274660	2	SCR, 3/8-16 X 1.5 HHCS GR5 PLT		
18	86342100	1	ASSEMBLY, HELICOIL		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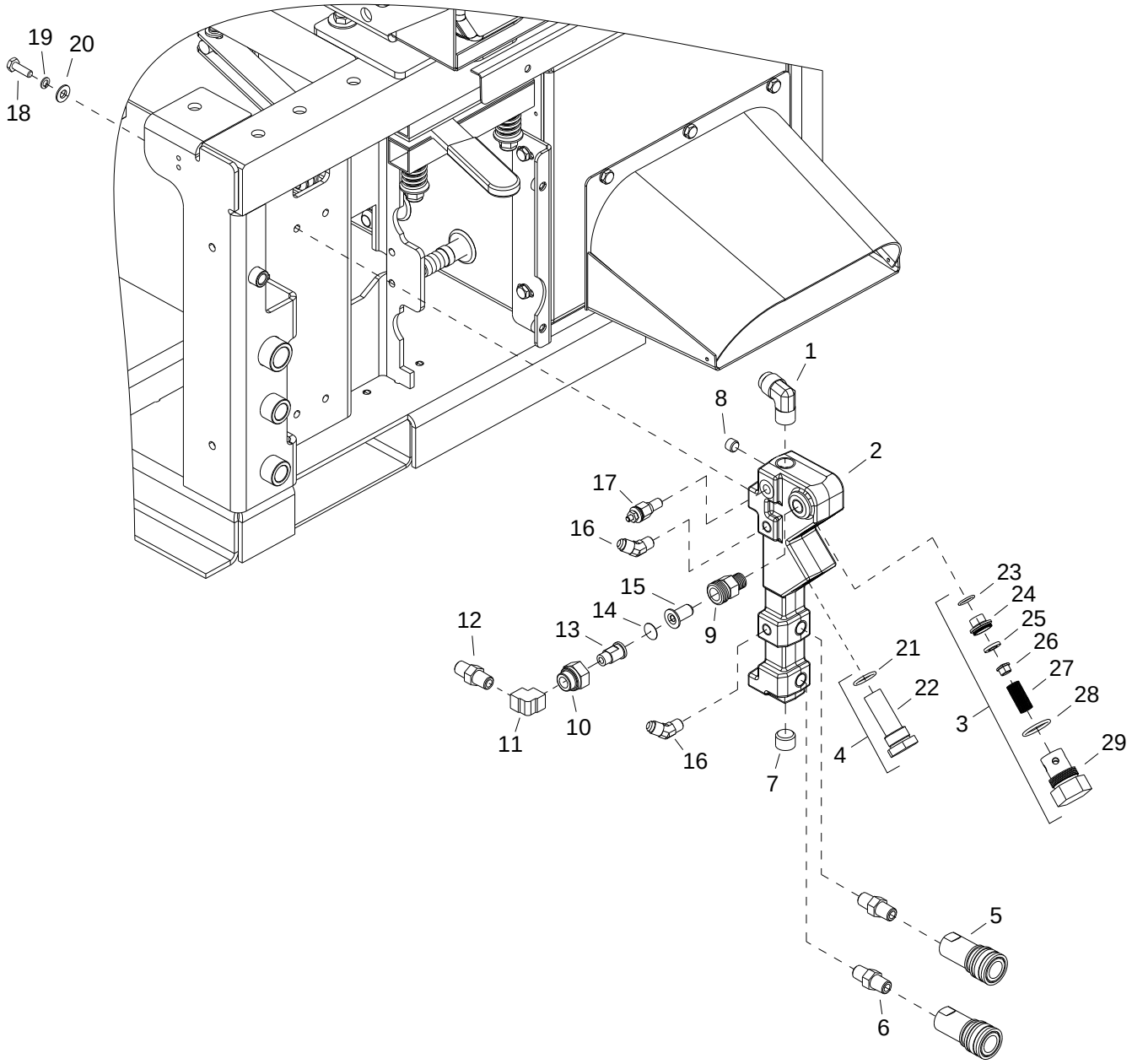
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86344980	1	O-RING, HELICOIL		
2	86342090	1	BRKT, HELICOIL MTG		
3	86342080	1	SHELL, FRONT, HELICOIL		
4	86342070	1	SHELL, REAR, HELICOIL		
5	86278910	24	WASHER, 3/8 X 7/8 FLAT SS		
6	86276430	8	SCR, 3/8-16 X 1.75 HHCS SS		
7	86274010	4	SCR, 3/8-16 X 2.00 HHCS SS		
8	86271930	12	NUT, 3/8-16 HEX NYLOCK SS		
9	86191900	2	RNG, LOCK, MNFLD, HE		
10	86188980	2	NUT,1-3/4-12HXHD HE		
11	86182370	2	GSKT,MNFLD HE		
12	86047190	1	COIL, HE		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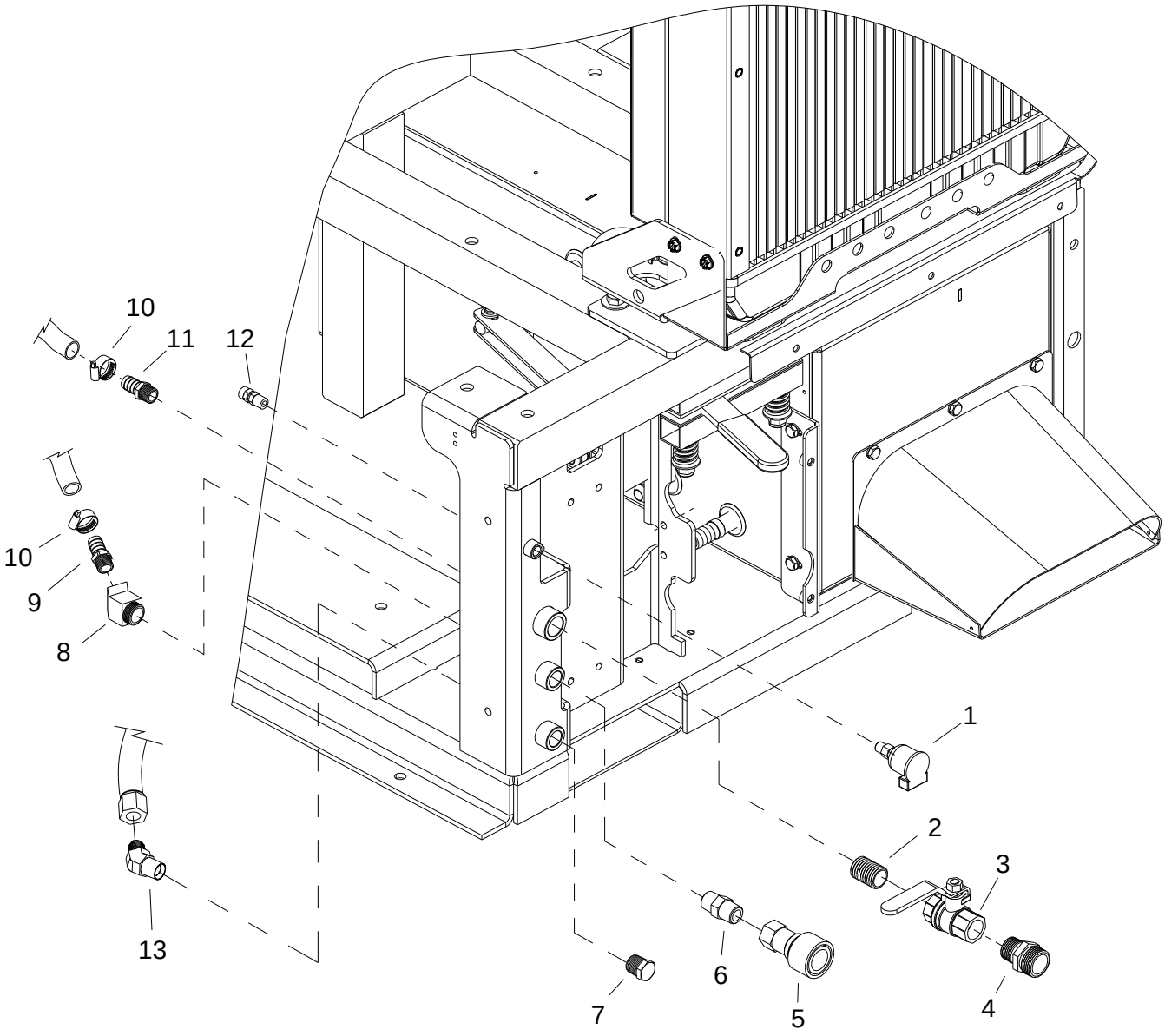
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86180410	1	ELL, 3/8P X 1/2T BR		
2	86187260	1	MANIFOLD, SOLUTION		
3	86195030	1	VALVE, CHECK		
4	86192240	1	SCRN, MESH W/O-RNG, SOL MNFLD		
5	86002450	2	COUPLER, 1/4 QD		
6	86247680	2	NIPPLE, 1/4 HEX		
7	86190520	1	PLUG, 3/8 SOCHD BR		
8	86190180	1	PLUG, 1/8 SOCHD BR		
9	86177860	1	CONN, 1/4P X 11/16-16M		
10	86002820	1	CAP, NOZZLE		
11	86180670	1	ELL, 1/8 FEMALE NPT, BR		
12	86177660	1	CONN, 1/8FPT X 1/4TUBE FLARE		
13	86173580	1	ADAPTER, HOSE BYPASS		
14	86189190	1	ORIFICE PLATE, EVEREST BYPASS		
15	86193490	1	STRNR, JET 50MESH		
16	86180420	2	ELL, 1/8P X 1/4T 45 DEG		
17	86192490	1	SENDER, TEMP 140-320 DEG		
18	86274750	4	SCR, 1/4-20 X 3/4 HHCS PLTD		
19	86010780	4	WASHER, 1/4 SPLIT LOCK PLTD		
20	86270330	4	FLATWASHER, 1/4		
21	86189260	1	O-RING		
22	86192210	1	SCREEN, CHECK VALVE		
23	86189230	1	O-RING		
24	86192390	1	SEAT, CHK VLV ASSY		
25	86194250	1	TEFLON SEAT		
26	86190910	1	POPPET, CHK VLV ASSY		
27	86193260	1	SPRING		
28	86189270	1	O-RING, 7/8 ID 1-1/16 OD		
29	86176350	1	CAP		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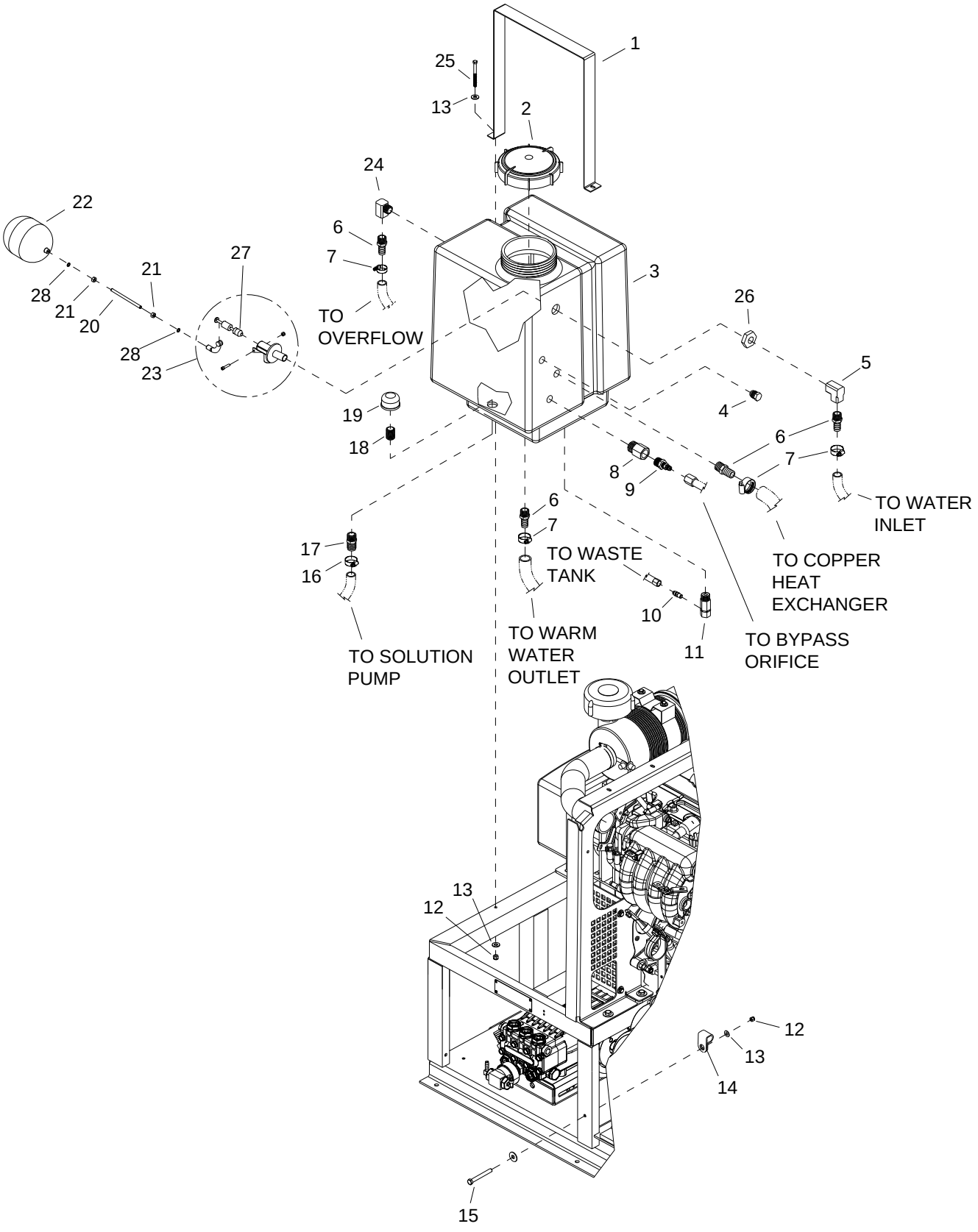
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86178700	1	CUP, OIL FILL 1/8P		
2	86188180	1	NIP, 1/2 X CL		
3	86195230	1	VLV, BALL 1/2FP BS		
4	86173530	1	ADAPTER, HOSE 1/2M X 3/4 MGT		
5	86179710	1	DSC, 3/8F X 3/8FP		
6	86188080	1	NIP, 3/8 HX BR		
7	86197720	1	PLUG, 3/8 NPT		
8	86180240	1	ELL, ST 3/8 45DEG BR		
9	86181400	1	FTTG, BRB 3/8P X 5/8H BR		
10	86177260	2	CLMP, HOS #10 9/16MIN		
11	86181360	1	FTTG, BRB 1/2P X 5/8H BR		
12	86177640	1	CONN, 1/8P X 1/4POLY BR		
13	86180690	1	ELL, 3/8MPT X #6 JIC 45 DEG BR		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TO WASTE
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TO BYPASS
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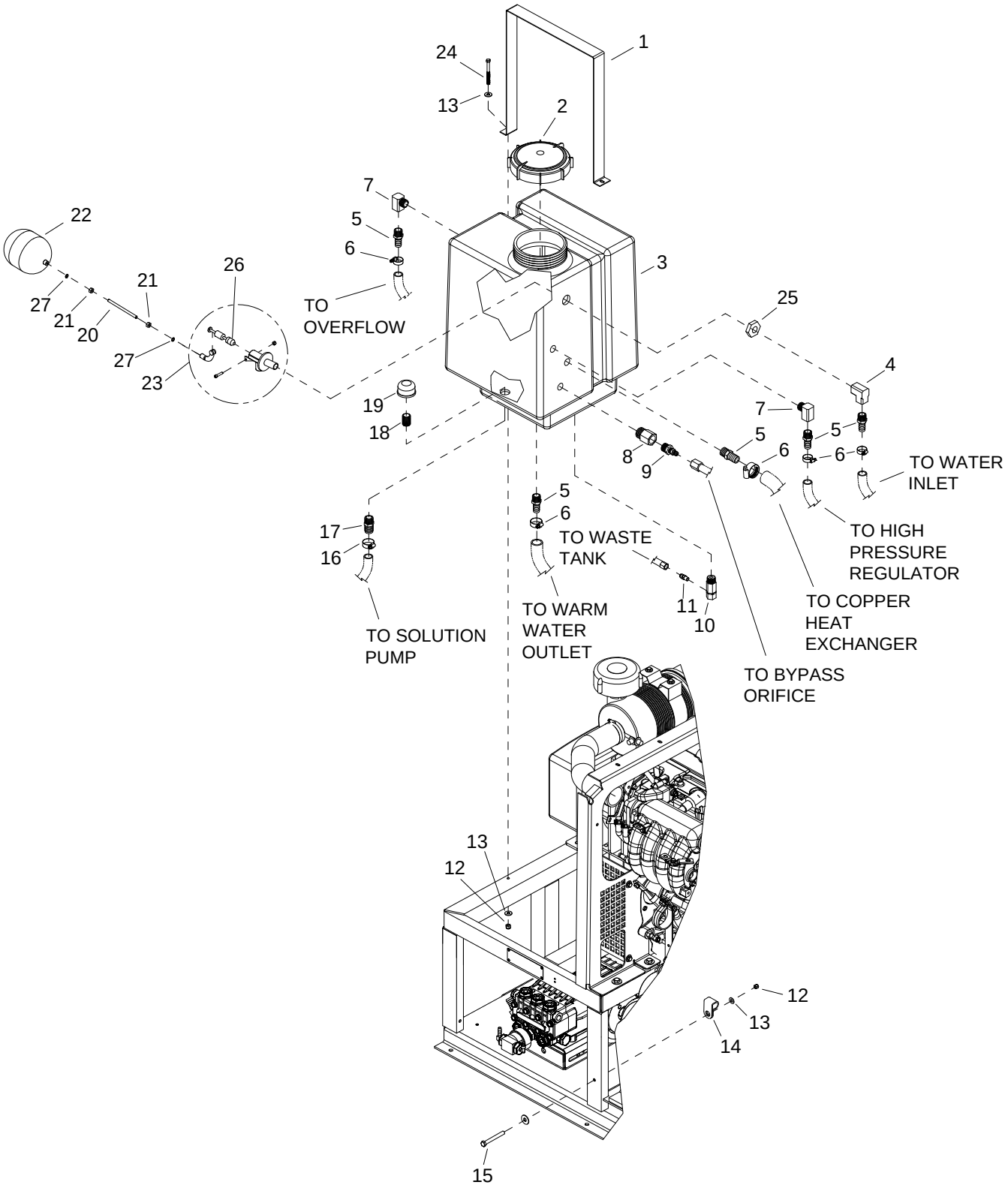
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86057180	1	STRAP, WTR BOX HOLDDOWN		
2	86176400	1	CAP, WATER BOX		
3	86293150	1	MLDG, WATER BOX		
4	86190480	1	PLUG, 1/2 SOCHD BR		
5	86180250	1	ELL, 1/2 BR		
6	86181360	4	FTTG, BRB 1/2P X 5/8H BR		
7	86177260	4	CLMP, HOS #10 9/16 MIN		
8	86175860	1	BUSH, 1/2 X 1/4 BR		
9	86177650	1	CONN, 1/4P X 1/4T BR		
10	86177660	1	CONN, 1/8FPT X 1/4TUBE FLARE		
11	86195340	1	VLV, TEMP REL 145DEG		
12	86005680	3	NUT, 1/4-20 HEX NYLOCK		
13	86270330	5	FLATWASHER, 1/4		
14	86177370	1	CLMP, FUEL LINE 5/16 X 1/4B		
15	86273190	1	SCR, 1/4-20 X 1-1/2 HXHD		
16	86177020	1	CLAMP, HOSE #12 SST		
17	86181370	1	FTTG, BRB 1/2P X 3/4H BR		
18	86188180	1	NIP, 1/2 X CL		
19	86193440	1	STRAINER, SUC END 1/2FP		
20	86056660	1	ROD, FLOAT (1/4-20 X 4") SS		
21	86270770	2	NUT, 1/4-20 HEX		
22	86348200	1	BALL, 4" DIA X 5" L, WHITE FLOAT		
23	86195060	1	VALVE, FLOAT, TM		
24	86180170	1	ELL, STREET 1/2 BR MACH		
25	86273330	2	SCR, CAP 1/4-20 X 2.75 HXHD		
26	86189010	1	NUT, FLOAT VALVE		
27	86192380	1	SEAT, FLOAT VALVE TM		
28	86010660	2	WASHER 1/4 LOCK EXT STAR SS		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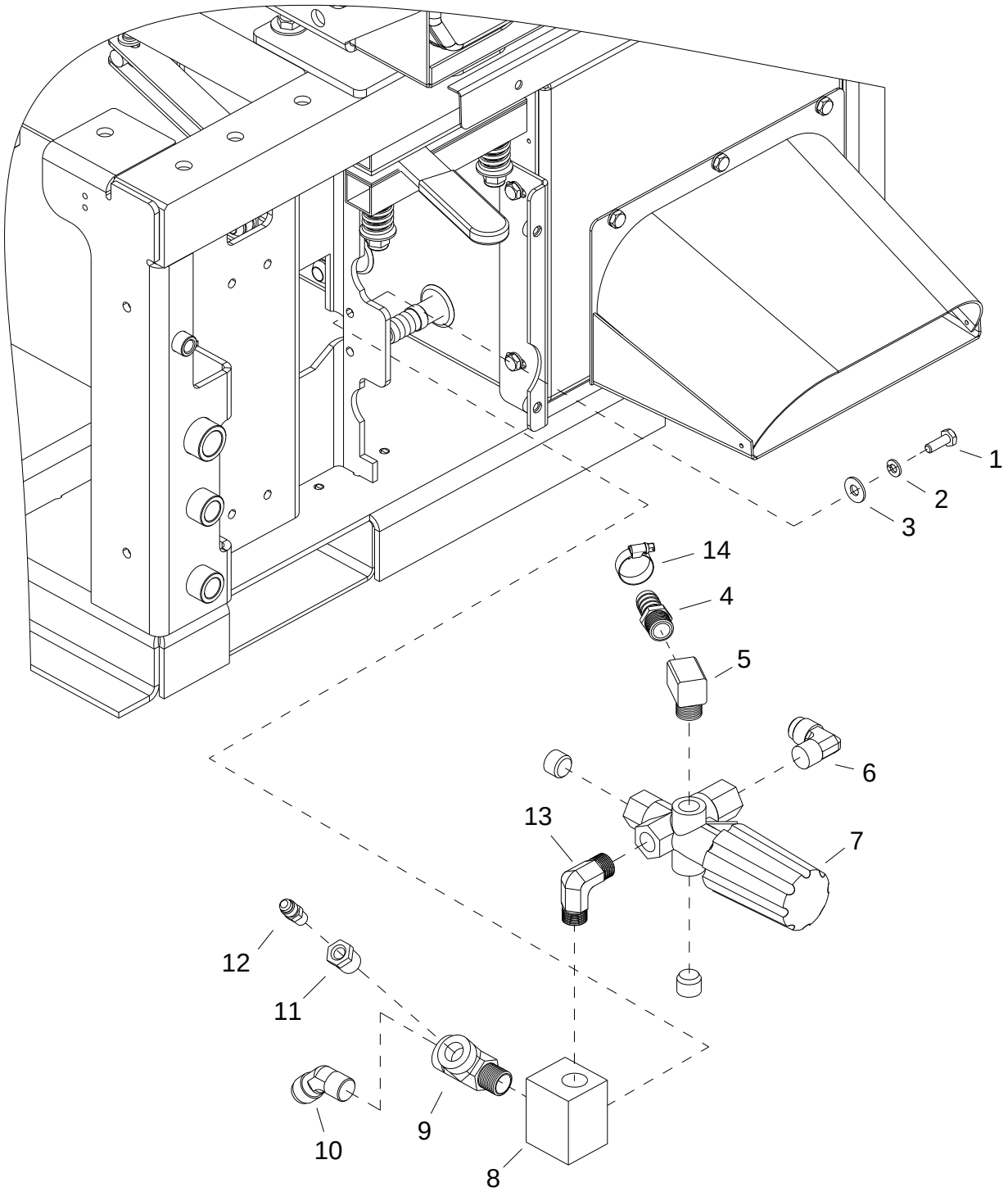
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86057180	1	STRAP, WTR BOX HOLDDOWN		
2	86176400	1	CAP, WATER BOX		
3	86293150	1	MLDG, WATER BOX		
4	86180250	1	ELL, 1/2 BR		
5	86181360	5	FTTG, BRB 1/2P X 5/8H BR		
6	86177260	5	CLMP, HOS #10 9/16 MIN		
7	86180170	2	ELL, STREET 1/2 BR MACH		
8	86175860	1	BUSH, 1/2 X 1/4 BR		
9	86177650	1	CONN, 1/4P X 1/4T BR		
10	86195340	1	VLV, TEMP REL 145DEG		
11	86177660	1	CONN, 1/8FPT X 1/4TUBE FLARE		
12	86005680	3	NUT, 1/4-20 HEX NYLOCK		
13	86270330	5	FLATWASHER, 1/4		
14	86177370	1	CLMP, FUEL LINE 5/16 X 1/4B		
15	86273190	1	SCR, 1/4-20 X 1-1/2 HXHD		
16	86177020	1	CLAMP, HOSE #12 SST		
17	86181370	1	FTTG, BRB 1/2P X 3/4H BR		
18	86188180	1	NIP, 1/2 X CL		
19	86193440	1	STRAINER, SUC END 1/2FP		
20	86056660	1	ROD, FLOAT (1/4-20 X 4") SS		
21	86270770	2	NUT, 1/4-20 HEX		
22	86348200	1	BALL, 4" DIA X 5" L, WHITE FLOAT		
23	86195060	1	VALVE, FLOAT, TM		
24	86273330	2	SCR, CAP 1/4-20 X 2.75 HXHD		
25	86189010	1	NUT, FLOAT VALVE		
26	86192380	1	SEAT, FLOAT VALVE TM		
27	86010660	2	WASHER 1/4 LOCK EXT STAR SS		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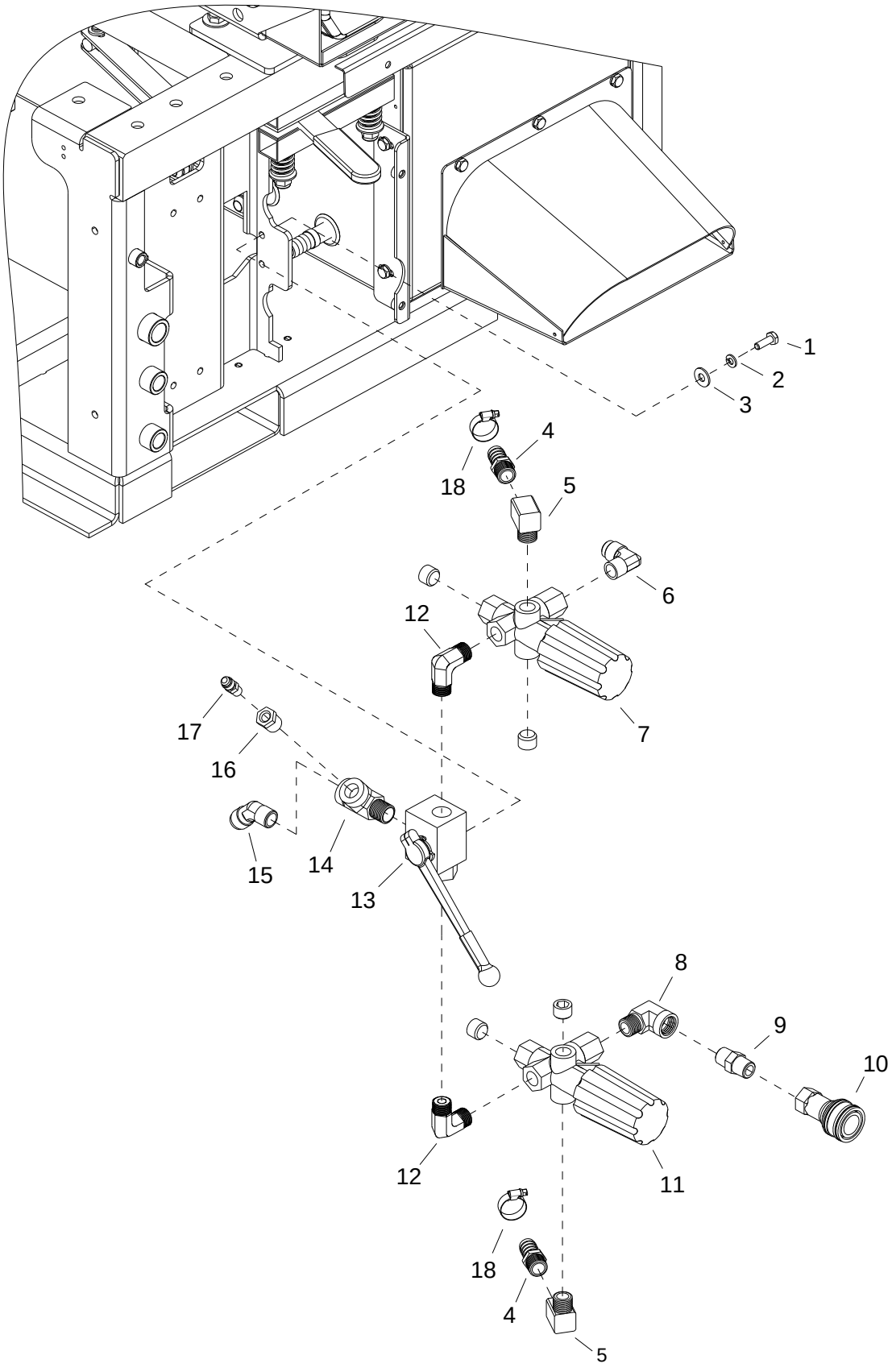
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86274750	2	SCR, 1/4-20 X 3/4 HHCS PLTD		
2	86010780	2	WASHER, 1/4 SPLIT LOCK PLTD		
3	86270330	2	FLATWASHER, 1/4		
4	86181400	1	FTTG, BRB 3/8P X 5/8H BR		
5	86180210	1	ELL, ST 3/8 BR		
6	86180410	1	ELL, 3/8P X 1/2T BR		
7	86191660	1	REGULATOR, LOW PRESSURE SOLUTION		
8	86175360	1	MANIFOLD, LOW PRESSURE		
9	86194180	1	TEE, SERVICE 3/8		
10	86180450	1	ELL, 3/8P X 1/2T, 45 DEG. BR		
11	86175920	1	BUSH, 3/8 X 1/8 BR		
12	86177660	1	CONN, 1/8FPT X 1/4 TUBE FLARE		
13	86180660	1	ELL, 3/8 MALE NPT SST		
14	86177260	1	CLMP, HOS #10 9/16MIN		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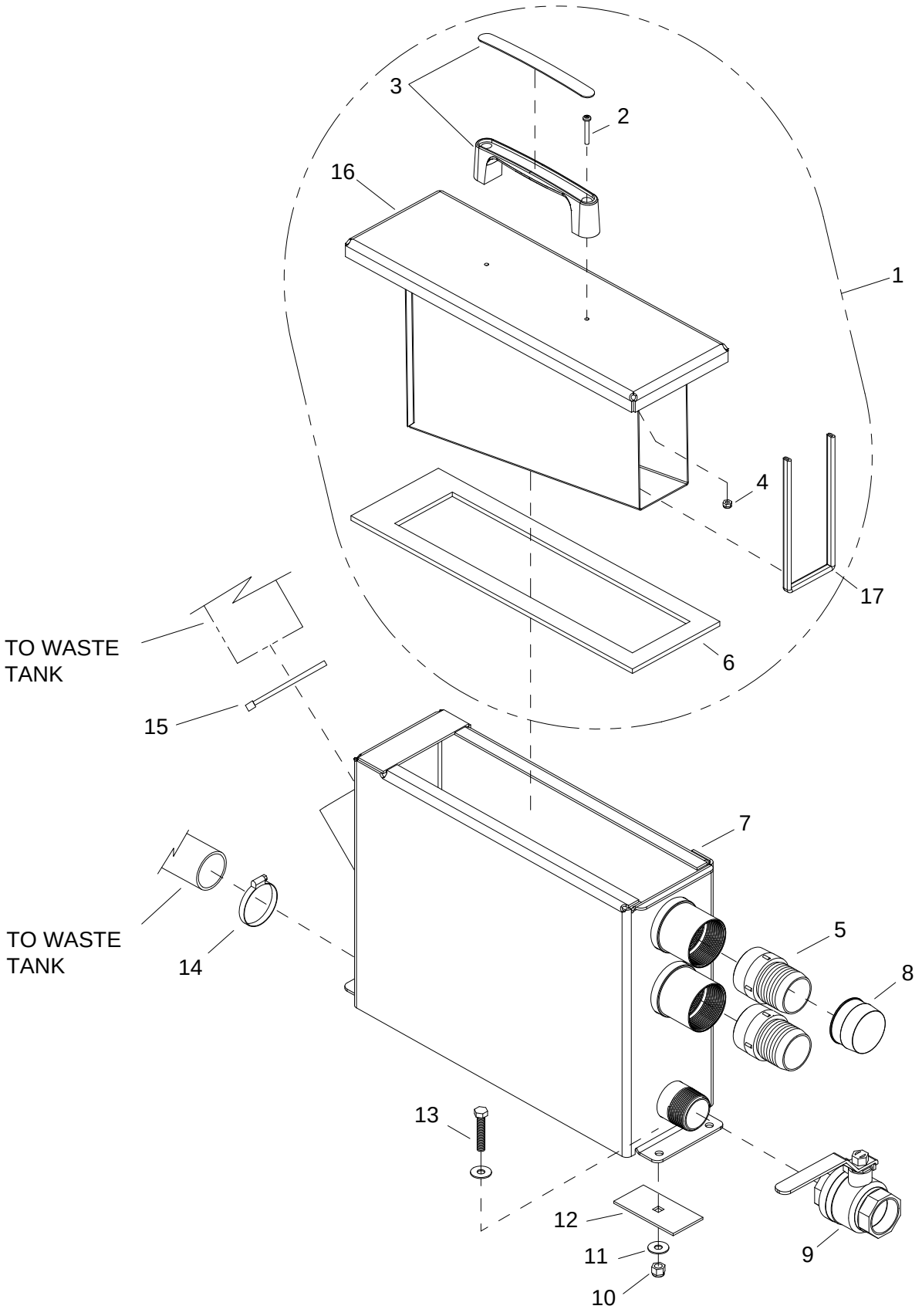
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86274750	2	SCR, 1/4-20 X 3/4 HHCS PLTD		
2	86010780	2	WASHER, 1/4 SPLIT LOCK PLTD		
3	86270330	2	FLATWASHER, 1/4		
4	86181400	2	FTTG, BRB 3/8P X 5/8H BR		
5	86180210	2	ELL, ST 3/8 BR		
6	86180410	1	ELL, 3/8P X 1/2T BR		
7	86191660	1	REGULATOR, LOW PRESSURE SOLUTION		
8	86180190	1	ELL, ST 3/8 SST		
9	86188390	1	NIP, HEX 3/8 SST		
10	86179800	1	DSC, 3/8F X 3/8FP SST		
11	86191650	1	REGULATOR, HIGH PRESSURE SOLUTION		
12	86180660	2	ELL, 3/8 MALE NPT SST		
13	86195540	1	VLV, BALL, 3-WAY, HI-TEMP/PRES		
14	86194180	1	TEE, SERVICE 3/8		
15	86180450	1	ELL, 3/8P X 1/2T, 45 DEG. BR		
16	86175920	1	BUSH, 3/8 X 1/8 BR		
17	86177660	1	CONN, 1/8FPT X 1/4TUBE FLARE		
18	86177260	2	CLMP, HOS #10 9/16MIN		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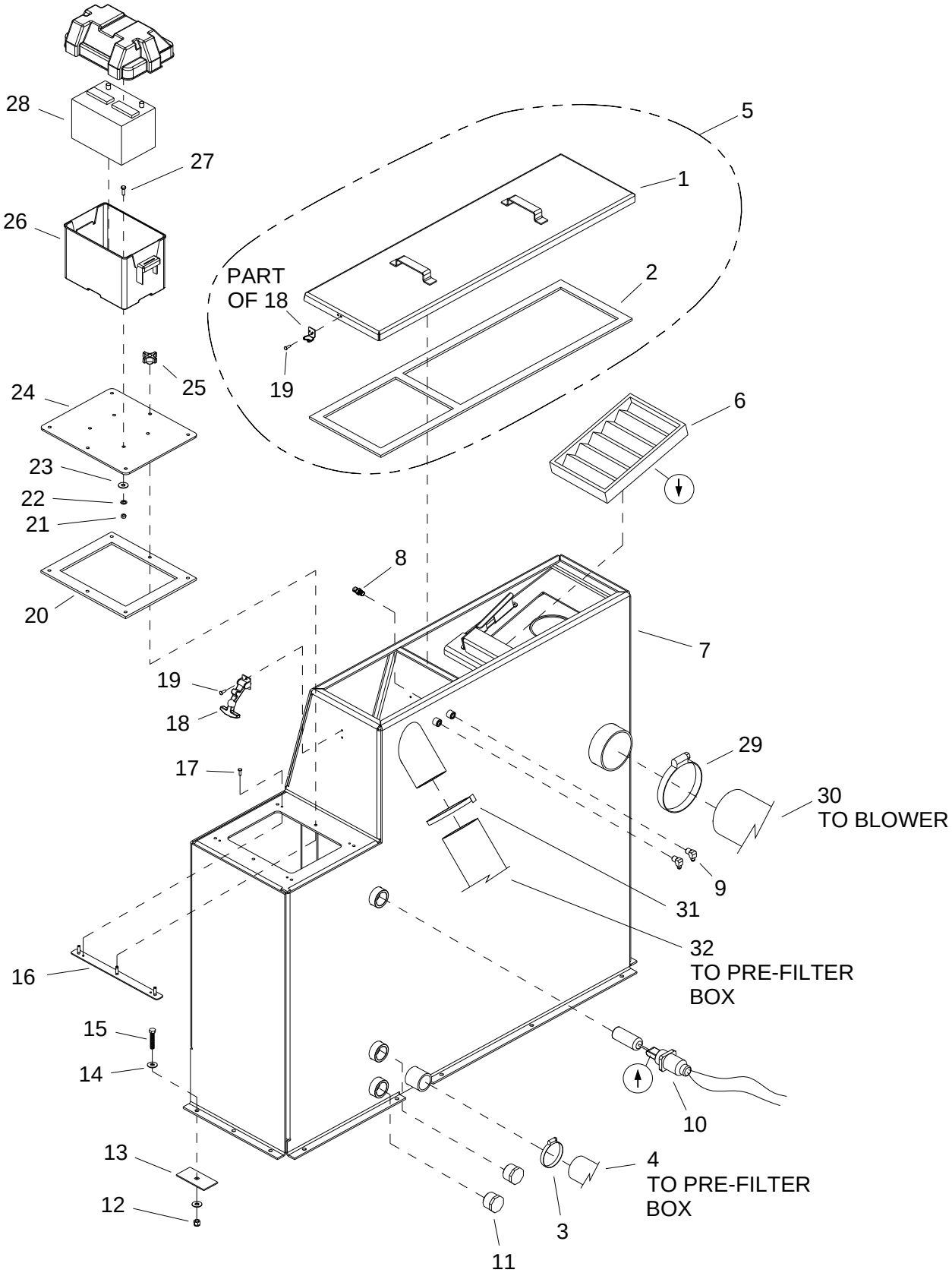
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86294290	1	KIT, PREFILTER BOX		COMPLETE
1	86318250	1	ASM, PRE-FLTR BOX LID, COMPLETE		
2	86274280	2	SCR, 10-32 X 1-3/8 PPHMS		
3	86182870	1	HANDLE, PREFILTER BOX		
4	86270990	2	NUT, 10-32 HEX NYLOCK SS		
5	86331170	2	FITTING, 2" NPT X 2" HB		
6	86182770	1	GSKT, PREFILTER BOX		
7	86331160	1	BOX, PREFILTER		
8	86180700	1	END CAP, VAC INLET, 1-1/2"		
9	86195180	1	VALVE, BALL 1.5 FNPT		
10	86005770	3	NUT, 3/8-16 HEX NYLOCK		
11	86279510	6	WASHER, 3/8 FLAT		
12	86249550	3	PLATE, TRUCKMOUNT SHIPPING		
13	86277830	3	SCR, 3/8-16 X 2" HXHD		
14	86177220	1	CLMP, HOSE #32 1.5625/2.5, SST		
15	86177070	1	CLMP, HOSE #60 3.3125/4.5, SST		
16	86288630	1	LID, PREFILTER BOX		
17	86194670	1.5FT	TRIM, FLEX, TM		
-	86264850	1	ADH, GSKT (ADHESIVE)		NOT SHOWN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TO PRE-FILTER
BOX
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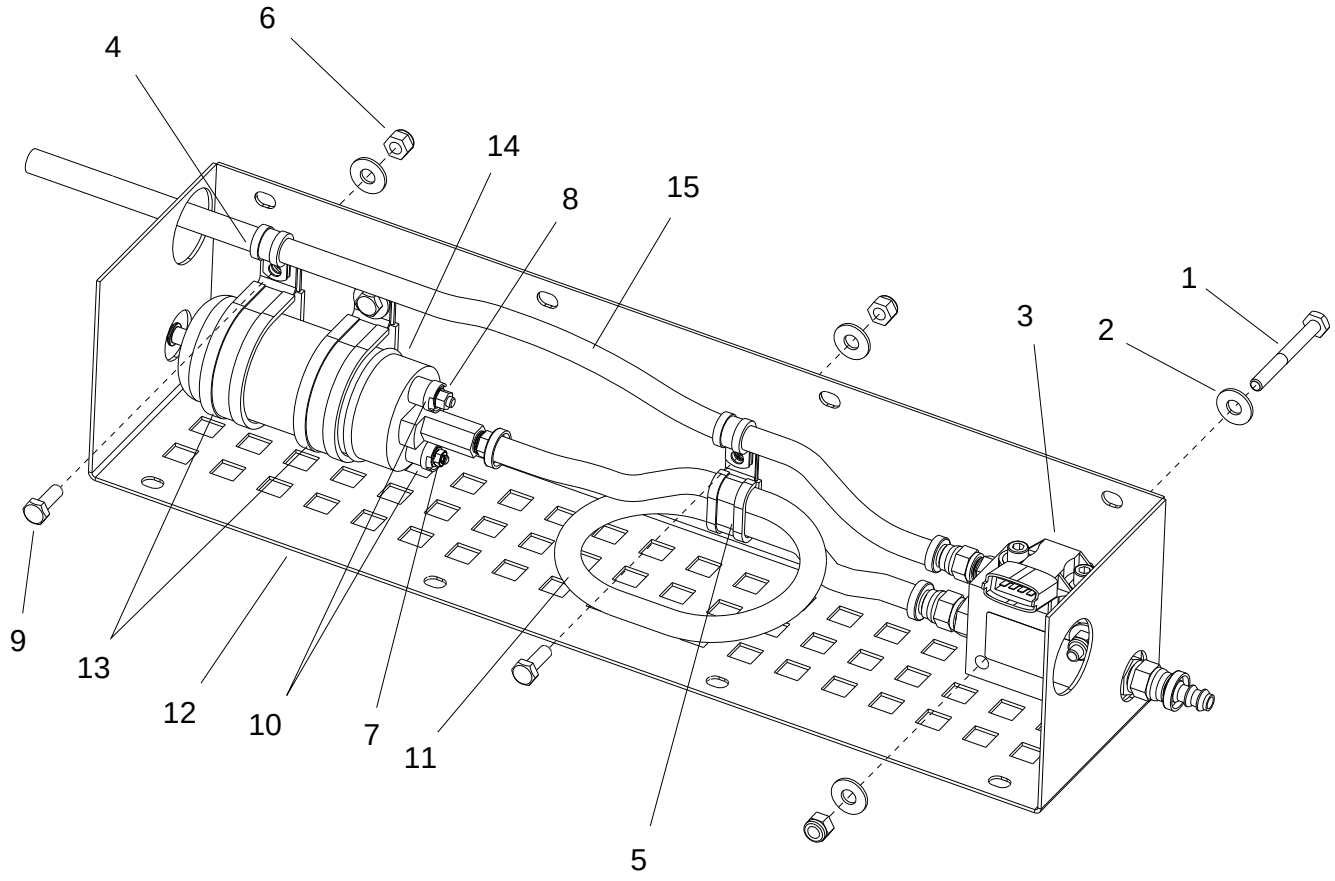
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86288660	1	LID, WASTE TANK		
2	86182780	1	GSKT, WST TNK		
3	86177220	1	CLMP, HOS#32 1.5625/2.5, SST		
4	86049060	1	HOSE, INT VAC 2.0 X 40.0 BLK		
5	86350780	1	ASSY, WASTE TANK LID, EV100G		
6	86193540	1	STRNT, WST TNK, RECT, 1/5”		
7	86057340	1	TANK, WASTE, 100 GAL		
8	86202180	1	VV-JET 1/4 8006		
9	86180340	2	ELL, 1/4P X 1/4T BR		
10	86193870	1	SWITCH, FLOAT, N.C., HARWIL		
11	86190530	2	PLUG, 1-1/4 HXHD PVC		
12	86005770	4	NUT, 3/8-16 HEX NYLOCK		
13	86249550	4	PLATE, TRUCKMOUNT SHIPPING		
14	86279510	8	WASHER, 3/8 FLAT		
15	86277830	4	SCR, 3/8-16 X 2" HXHD		
16	86011870	2	PLT, WST TNK/BATT BOX MTG		
17	86273020	4	RIVET, 3/16 OD X 5/8 AL		
18	86186860	2	LATCH, DRAW 2-7/8 SST		
19	86273020	8	RIVET, 3/16 OD X 5/8 AL		
20	86011460	1	GSKT, WST TNK ACCESS		
21	86270770	4	NUT, 1/4-20 HEX		
22	86010780	4	WASHER, 1/4 SPLIT LOCK PLTD		
23	86270330	4	FLATWASHER		
24	86011450	1	PNL, WST TNK ACCESS		
25	86242170	6	KNOB, 1/4-20 4 PRONG		
26	86012060	1	BOX, BATTERY, MODIFIED		
27	86011470	4	BOLT, ELEVATOR, 1/4-20 X 1		
28	86174580	1	BATTERY		
29	86177280	1	CLMP, HOS#72 4-1/16MIN 5		
30	86049070	1	HOSE, INT VAC 4.5 X 8.0 BLK		
31	86177070	1	CLMP, HOSE #60 3.3125/4.5, SST		
32	86049080	1	HOSE, INT VAC 3.5 X 40.0 BLK		
-	86264850	1	ADH, GSKT (ADHESIVE)		NOT SHOWN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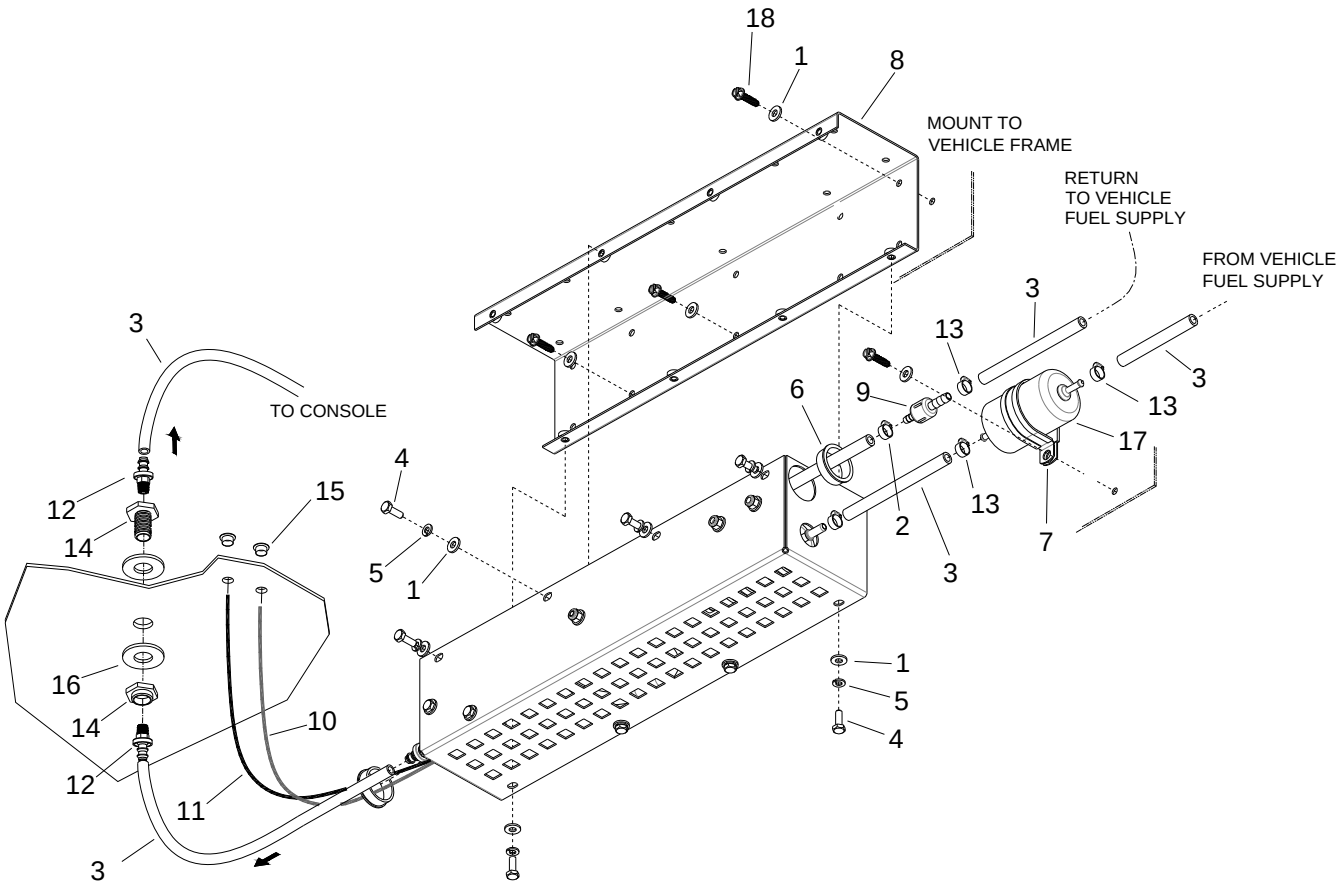
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86273100	2	SCR, ¼-20X2-1/4 HXHD CAP		
2	86270330	7	FLATWASHER, 1/4		
3	86293080	1	REGULATOR, FUEL PRESS, HYUNDAI		
4	86177090	2	CLAMP, CABLE 1/2 I.D. 1/4 BLT		
5	86177370	1	CLMP, FUEL LINE 5/16X1/4B		
6	86005680	5	NUT, 1/4-20 HEX NYLOCK		
7	86288500	1	NUT, M4 HEX		
8	86136310	1	NUT, M5 HEX		
9	86274750	3	SCR, 1/4-20 X 3/4 HHCS PLTD		
10	86010640	2	WASHER, #10 LOCK EXT STAR SS		
11	86012240	1	HOSE, FUEL, 5/16 X 20" SAE30R9		
12	86012070	1	HOUSING, FUEL SYSTEM		
13	86177420	2	CLMP, 2-1/8 ID X 3/8 BLT		
14	86191470	1	PUMP, FUEL, HYUNDAI 1.6L		
15	86012250	1	HOSE, FUEL, 1/4 X 20" SAE30R9		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MOUNT TO
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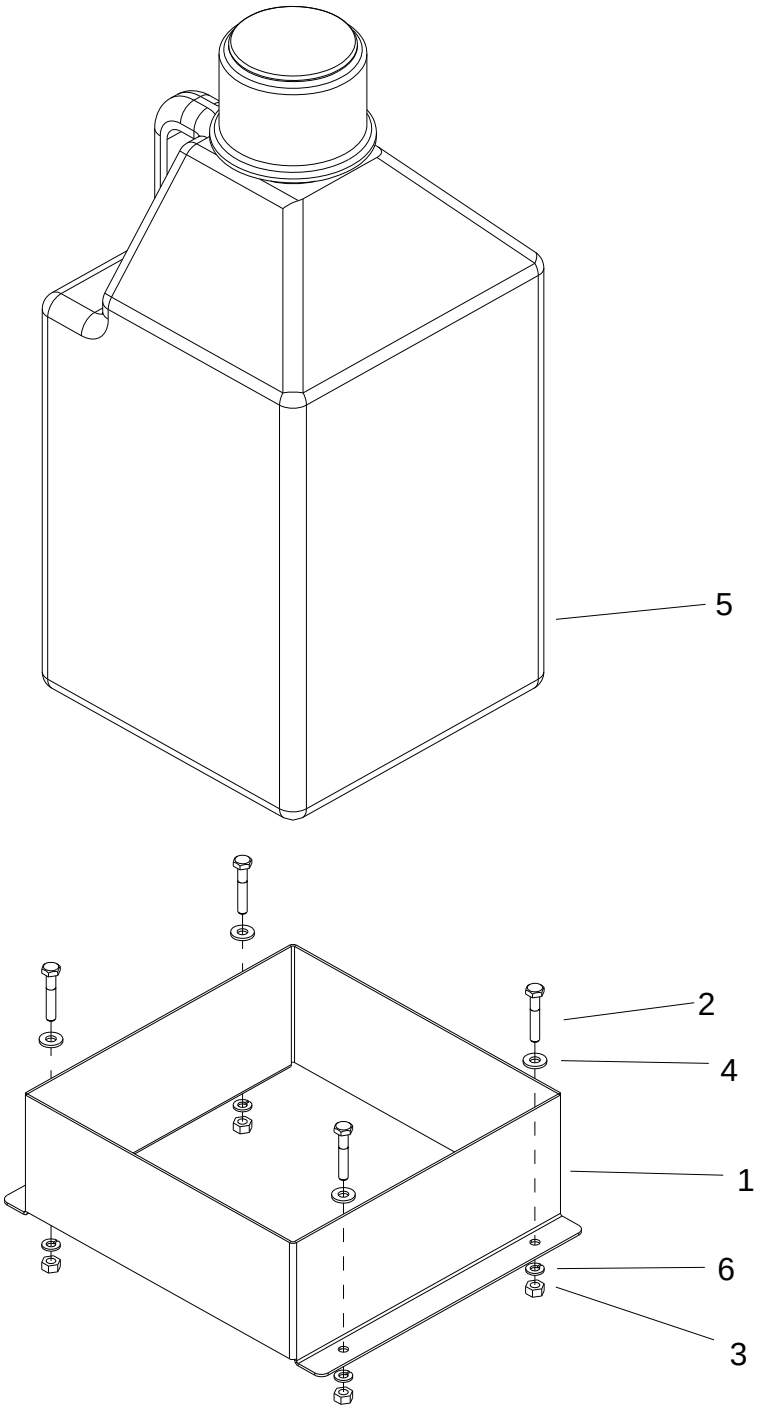
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86012360	1	FUEL KIT, EVEREST 408/650		COMPLETE
1	86270330	18	FLATWASHER, 1/4		
2	86177390	2	CLMP, F.I., SAE 12, 1/4" HOSE		
3	86184980	1	HOSE, 5/16" FUEL X 12', T-FLEX		
4	86274750	8	SCR, 1/4-20 X 3/4 HHCS PLTD		
5	86010780	8	WASHER, 1/4 SPLIT LOCK PLTD		
6	86231210	2	BUSHING, 1.5 HOLE SNAP		
7	86177420	4	CLMP, 2-1/8 ID X 3/8 BLT		
8	86012080	1	COVER, FUEL SYSTEM HOUSING		
9	86339630	1	VALVE, CHECK, 1/4H X 5/16H FUEL		
10	86176940	1	CD, FUEL PUMP, ZEEMS		
11	86012380	1	CD, FUEL PRESS REG, HYUNDAI		
12	86012230	2	FTTG, 1/8P X 5/16 PUSH ON HB		
13	86177400	6	CLMP, F.I., SAE 14, 5/16" HOSE		
14	86175850	1	BULKHEAD		
15	86175980	1	BUSH,OPEN/CLSD 5/8HOL		
16	86182460	1	GSKT, BLKHD-FUEL LINE HKU		
17	86295910	1	FILTER, FUEL HYUNDAI 1.6L		
18	86274620	4	SCR, 1/4-20 X 1.25 HHCS PLTD		GM ONLY
-	86175380	4	BLT, 1/4-20 X 1 SHWH TYPE F TC		FORD ONLY
-	86265730	1	TIE,CABL 8"WHT		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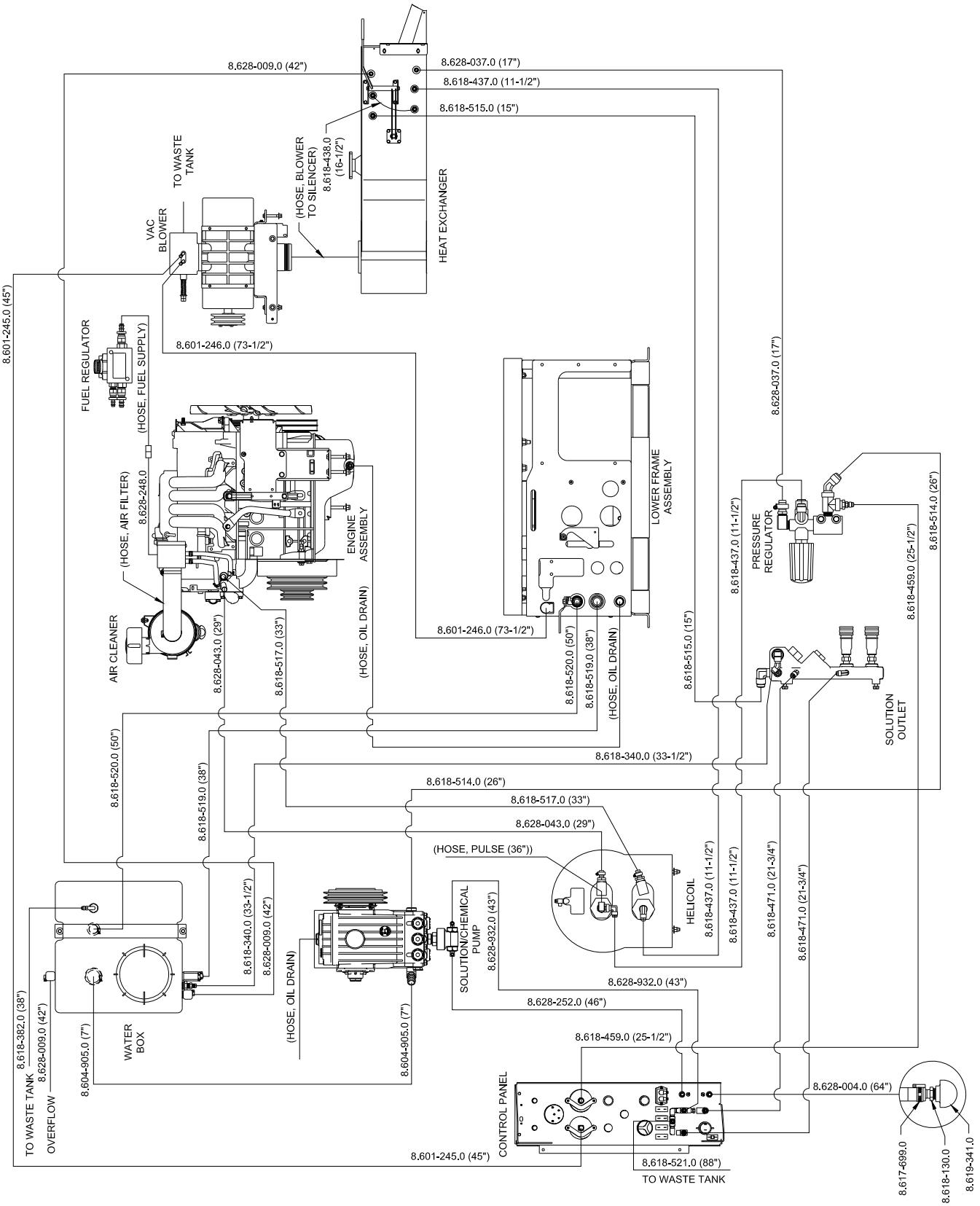
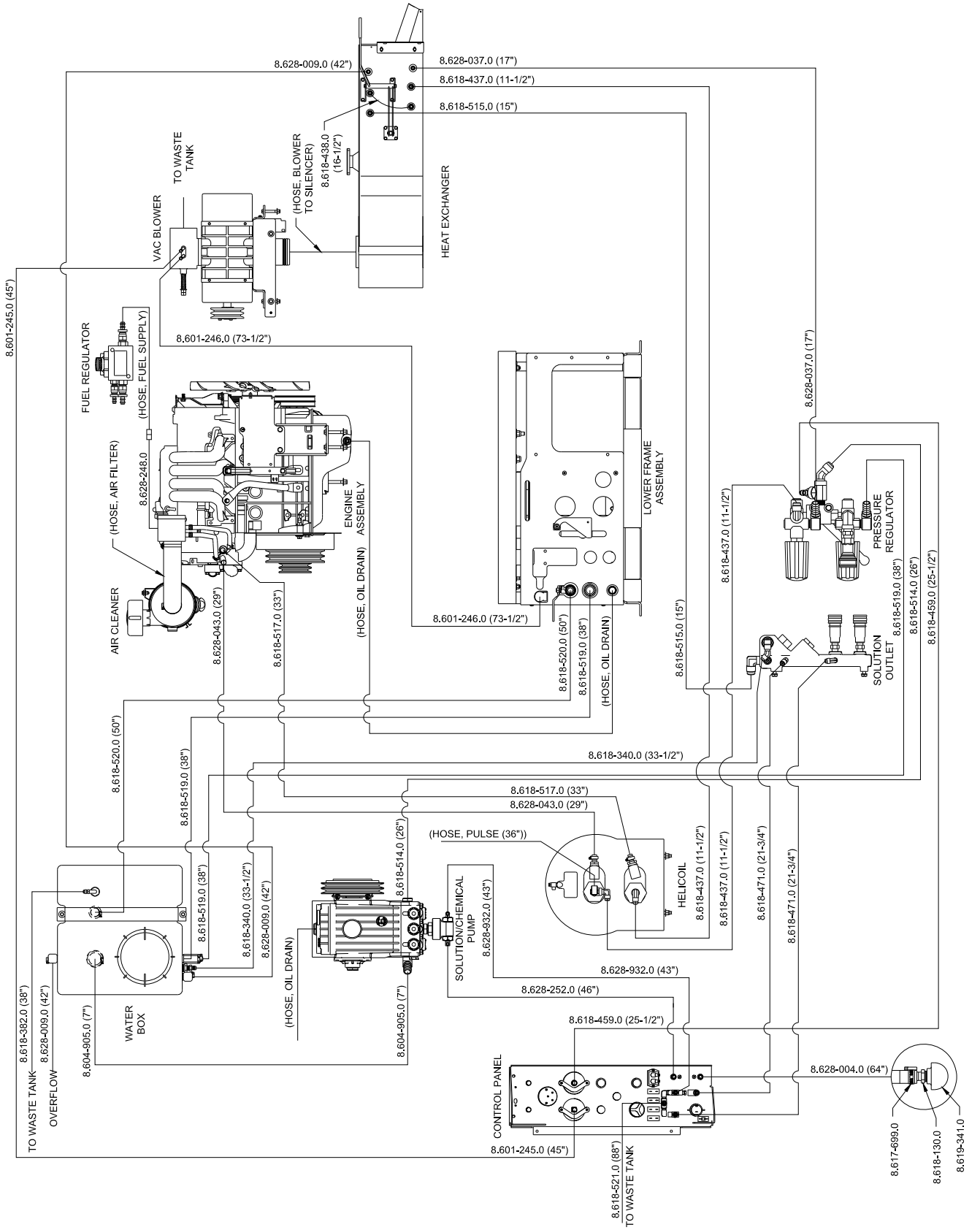
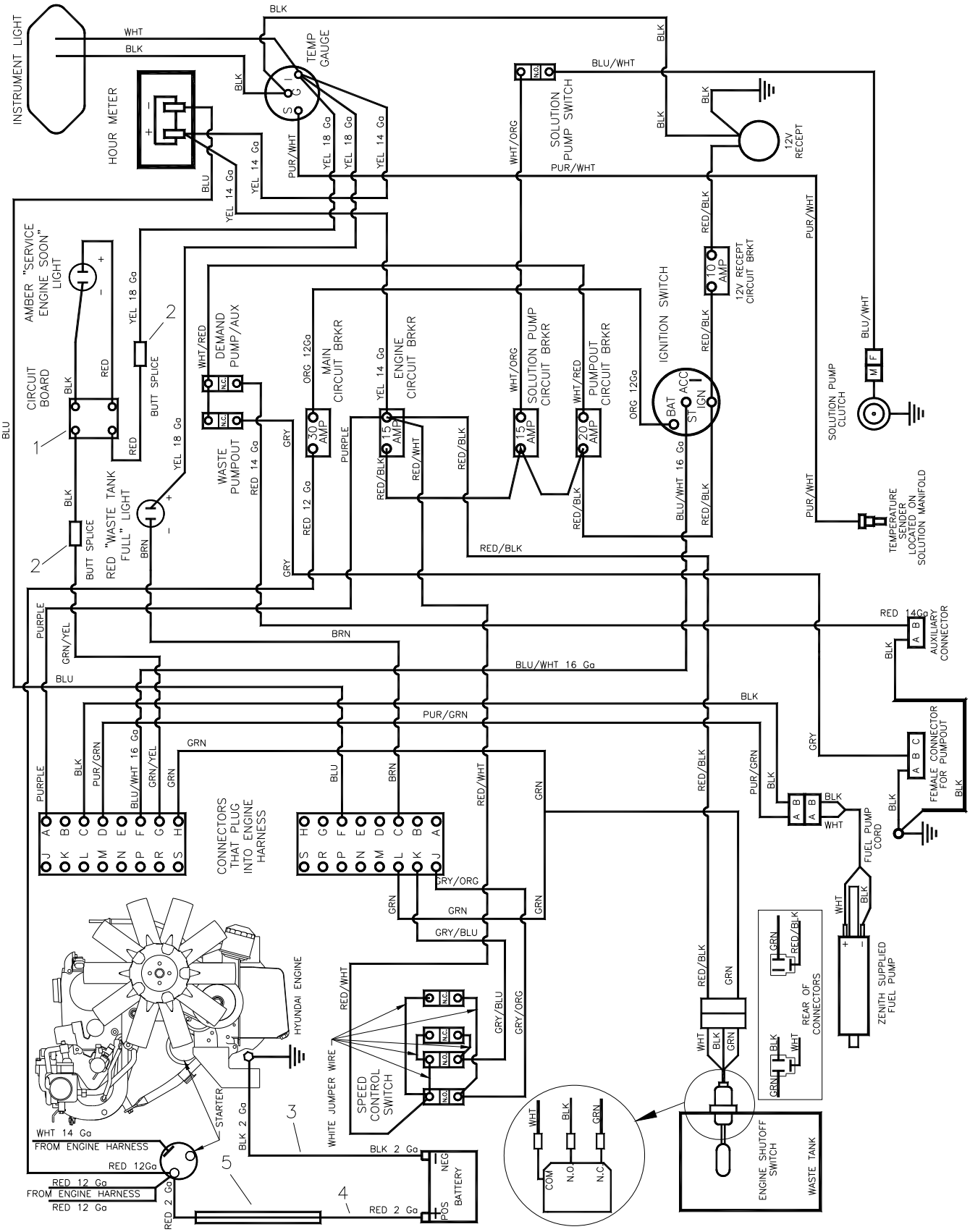
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86298250	1	HOLDER, 5 GAL JUG		
2	86273190	4	SCR, 1/4-20 X 1-1/2 HXHD		
3	86270770	4	NUT, 1/4-20 HEX		
4	86270330	4	FLATWASHER, 1/4		
5	86185720	1	JUG,5 GAL, SINGLE HNDL, WHITE		
6	86010780	4	WASHER 1/4 SPLIT LOCK PLTD		


8.628-009.0 (42")
8.628-037.0 (17")
8.618-437.0 (11-1/2")
8.618-515.0 (15")
TO WASTE TANK
VAC BLOWER
(HOSE, BLOWER TO SILENCER)
8.618-438.0 (16-1/2")
HEAT EXCHANGER
8.601-245.0 (45")
FUEL REGULATOR
(HOSE, FUEL SUPPLY)
8.601-246.0 (73-1/2")
8.628-037.0 (17")
(HOSE, AIR FILTER)
8.628-248.0
ENGINE ASSEMBLY
LOWER FRAME ASSEMBLY
8.618-437.0 (11-1/2")
PRESSURE REGULATOR
8.618-459.0 (25-1/2")
8.618-514.0 (26")
AIR CLEANER
8.628-043.0 (29")
8.618-517.0 (33")
(HOSE, OIL DRAIN)
8.601-246.0 (73-1/2")
8.618-520.0 (50")
8.618-519.0 (38")
(HOSE, OIL DRAIN)
8.618-515.0 (15")
SOLUTION OUTLET
8.618-340.0 (33-1/2")
8.618-520.0 (50")
8.618-519.0 (38")
8.618-514.0 (26")
8.618-517.0 (33")
8.628-043.0 (29")
(HOSE, PULSE (36"))
HELICOIL
8.618-437.0 (11-1/2")
8.618-437.0 (11-1/2")
8.618-471.0 (21-3/4")
8.618-471.0 (21-3/4")
8.618-382.0 (38")
8.628-009.0 (42")
8.618-340.0 (33-1/2")
8.628-009.0 (42")
SOLUTION/CHEMICAL PUMP
8.628-932.0 (43")
8.628-932.0 (43")
8.628-252.0 (46")
WATER BOX
(HOSE, OIL DRAIN)
8.604-905.0 (7")
8.604-905.0 (7")
8.618-459.0 (25-1/2")
TO WASTE TANK
OVERFLOW
CONTROL PANEL
8.628-004.0 (64")
8.601-245.0 (45")
8.618-521.0 (88")
TO WASTE TANK
8.617-699.0
8.618-130.0
8.619-341.0

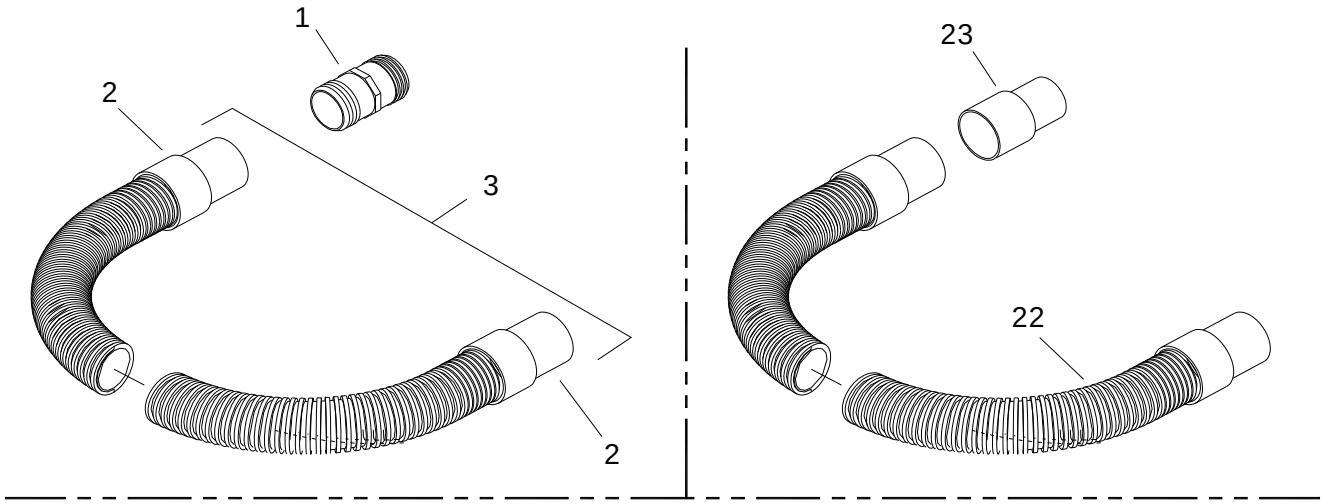

8.628-009.0 (42")
8.628-037.0 (17")
8.618-437.0 (11-1/2")
8.618-515.0 (15")
TO WASTE TANK
VAC BLOWER
(HOSE, BLOWER TO SILENCER)
8.618-438.0 (16-1/2")
HEAT EXCHANGER
8.601-245.0 (45")
FUEL REGULATOR
(HOSE, FUEL SUPPLY)
8.601-246.0 (73-1/2")
(HOSE, AIR FILTER)
8.628-248.0
ENGINE ASSEMBLY
LOWER FRAME ASSEMBLY
PRESSURE REGULATOR
AIR CLEANER
8.628-043.0 (29")
8.618-517.0 (33")
(HOSE, OIL DRAIN)
8.618-520.0 (50")
8.618-519.0 (38")
8.618-514.0 (26")
8.618-459.0 (25-1/2")
SOLUTION OUTLET
8.618-340.0 (33-1/2")
(HOSE, PULSE (36"))
HELICOIL
8.618-471.0 (21-3/4")
SOLUTION/CHEMICAL PUMP
8.628-932.0 (43")
8.628-252.0 (46")
WATER BOX
8.618-382.0 (38")
8.628-009.0 (42")
OVERFLOW
8.604-905.0 (7")
CONTROL PANEL
8.628-004.0 (64")
8.617-699.0
8.618-130.0
8.619-341.0
8.618-521.0 (88")
TO WASTE TANK


INSTRUMENT LIGHT
WHT
BLK
HOUR METER
TEMP GAUGE
SOLUTION PUMP SWITCH
12V RECEPT
AMBER "SERVICE ENGINE SOON" LIGHT
CIRCUIT BOARD
BUTT SPLICE
DEMAND PUMP/AUX
WASTE PUMPOUT
MAIN CIRCUIT BRKR
ENGINE CIRCUIT BRKR
SOLUTION PUMP CIRCUIT BRKR
PUMPOUT CIRCUIT BRKR
IGNITION SWITCH
12V RECEPT CIRCUIT BRKT
SOLUTION PUMP CLUTCH
RED "WASTE TANK FULL" LIGHT
TEMPERATURE SENDER LOCATED ON SOLUTION MANIFOLD
AUXILIARY CONNECTOR
FEMALE CONNECTOR FOR PUMPOUT
FUEL PUMP CORD
ZENITH SUPPLIED FUEL PUMP
REAR OF CONNECTORS
CONNECTORS THAT PLUG INTO ENGINE HARNESS
HYUNDAI ENGINE
STARTER
SPEED CONTROL SWITCH
WHITE JUMPER WIRE
ENGINE SHUTOFF SWITCH
WASTE TANK
WHT 14 Ga FROM ENGINE HARNESS
RED 12Ga
RED 12 Ga FROM ENGINE HARNESS
BLK 2 Ga
RED 2 Ga
NEG BATTERY POS
COM N.O. N.C.

REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86297880	1	CIRCUIT BOARD, SERVICE ENG LT		
2	86266060	2	TERM, 18-16G BUTT SPLICE		
3	86176280	1	CABLE, BATTERY, 81" BLACK		
4	86176270	1	CABLE, BATTERY, 81" RED		
5	86011650	1	SLEEVE, CABLE 36" BLUE		
-	86265870	2	TERM, 18G #10 RING		
-	86265910	2	TERM, 14G #10 RING		
-	86183060	1	HARNESS, WIRING		

Notes:

OPTIONS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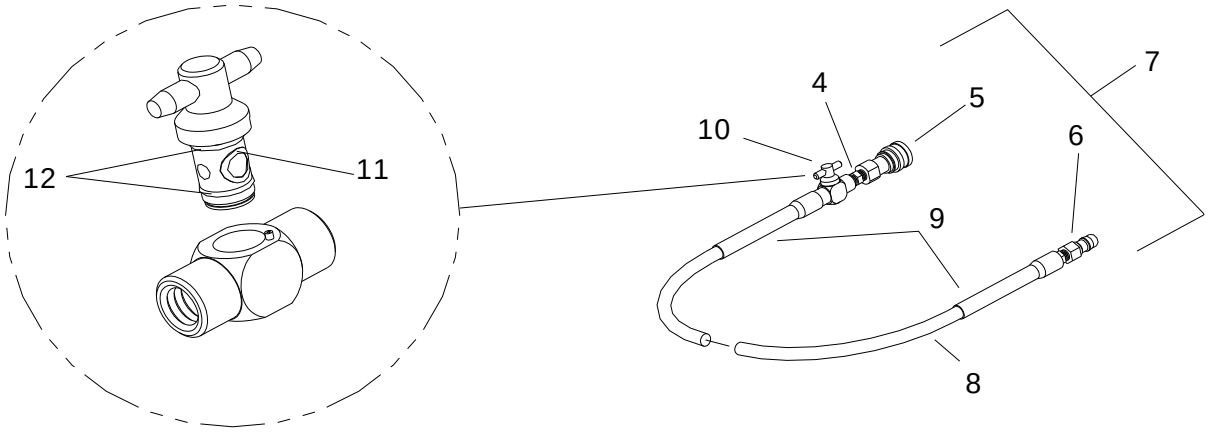
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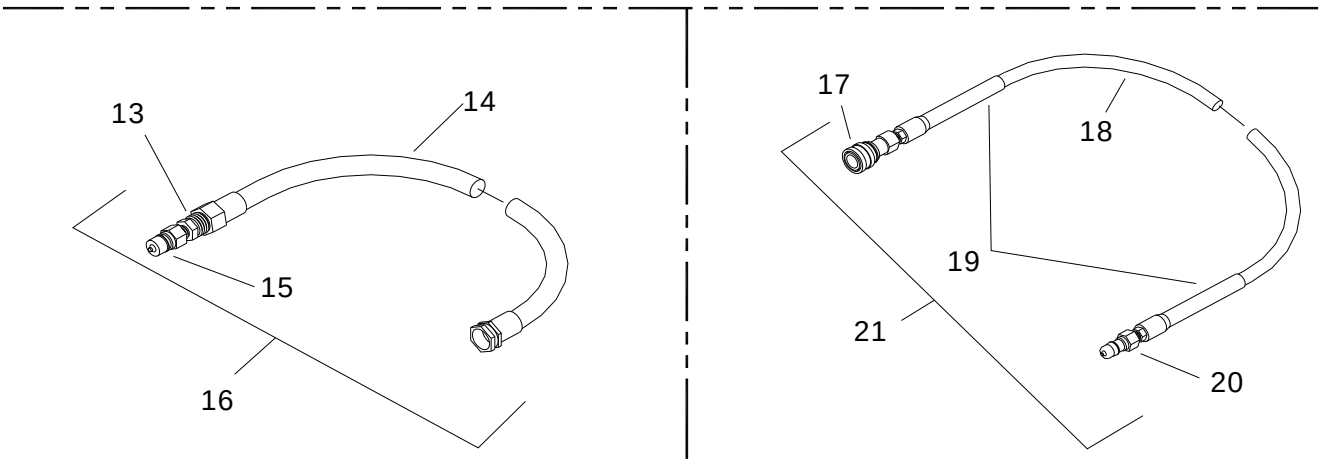
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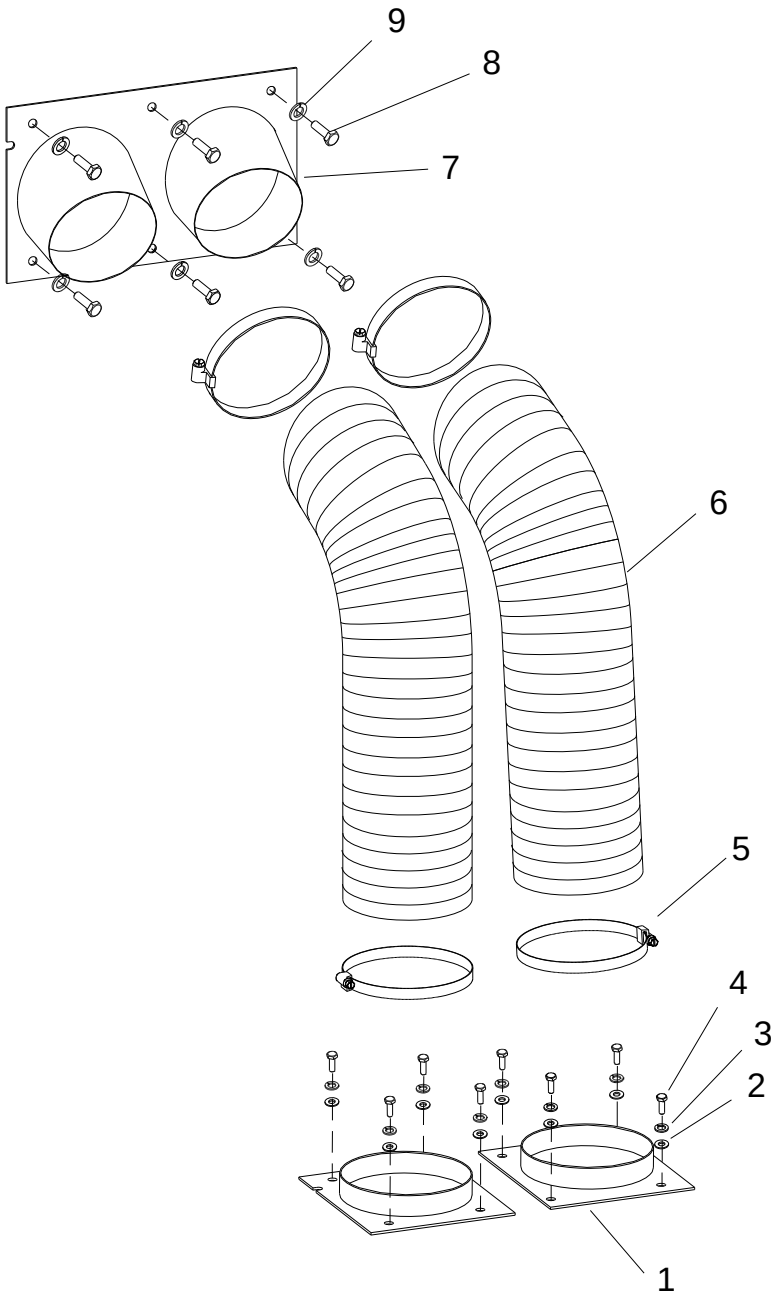
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86180980	1	FITTING, BRB 2H BS PVC		
2	86178640	2	CUFF, 2”		
3	86184510	1	HOSE, VAC 2”X50’ W/ CUFFS & HOSE		
4	86247680	1	NIPPLE, 1/4 HEX		
5	86002450	1	COUPLER, 1/4 QD		
6	86005580	1	NIPPLE, 1/4 FPT QD		
7	86184530	1	HOSE, HP 1/4 X 50FT W/QD & VLVE		
8	86184520	1	HOSE, HP 1/4 X 50’		
9	86182800	2	GUARD, HOSE VINYL		
10	86194990	1	VALVE, BALL 1/4FP		
11	86189240	2	O-RING, 7/32ID X 11/32OD		
12	86189250	2	O-RING, 3/8 ID X 1/2 OD		
13	86188210	1	NIP, 1/2 X 3/8 HEX BR		
14	86184570	1	HOSE, WATER 1/2 X 50’		
15	86179630	1	DISCONNECT 3/8M X 3/8FP		
16	86184620	1	HOSE, WATER 1/2 X 50’		
17	86002450	1	COUPLER, 1/4 QD		
18	86184520	1	HOSE, HP 1/4 X 50’		
19	86182800	2	GUARD, HOSE VINYL		
20	86005580	1	NIPPLE, 1/4 FPT QD		
21	86184540	1	HOSE, HP 1/4 X 50FT W/QD		
22	86328140	1	HOS, VAC 2-1/2" X 50' W/CUFFS & HOSE		
23	86328150	1	COUPLER, HOS 2-1/2" TO 2" REDUCER		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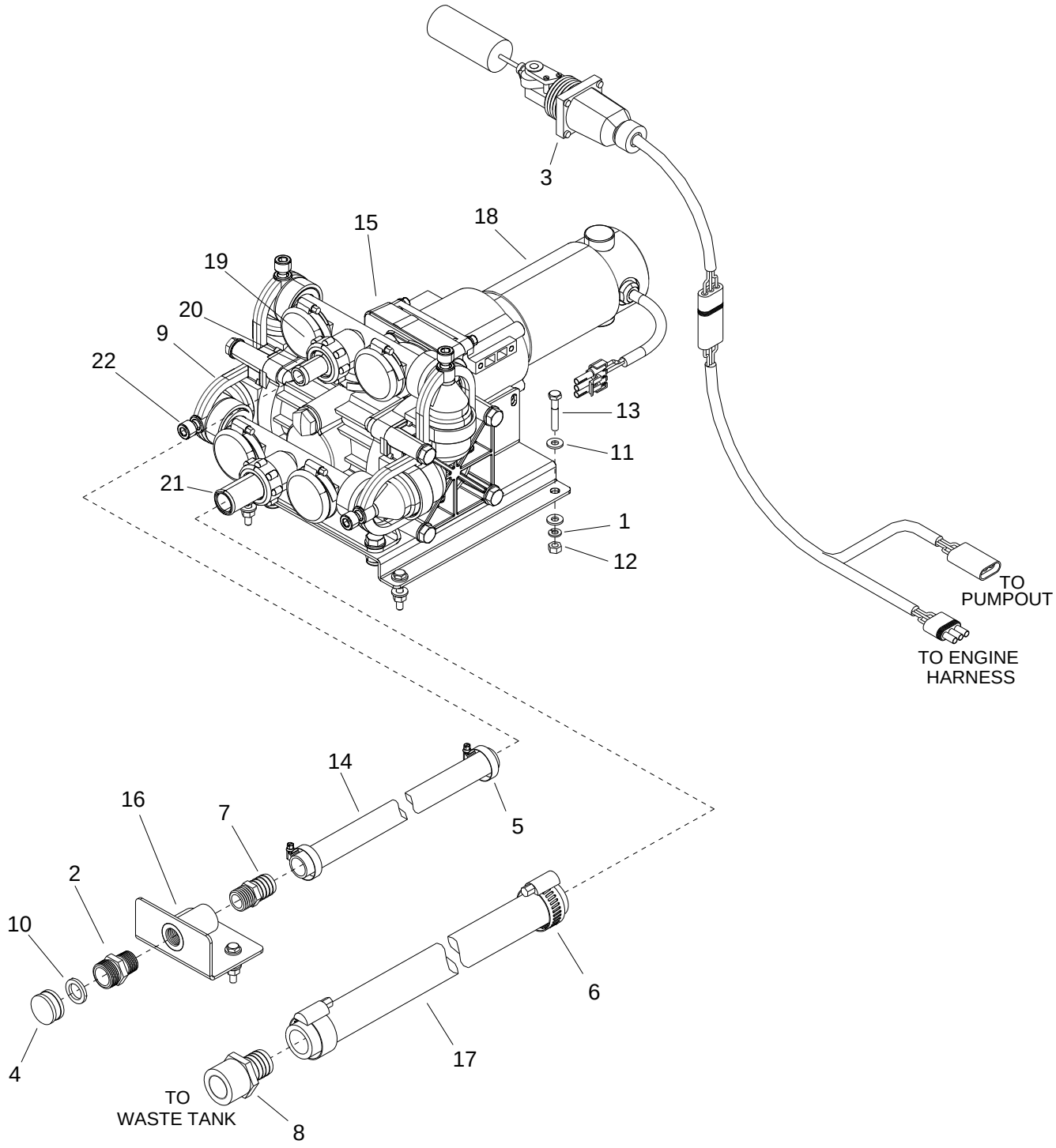
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86300980	1	KIT, FLEXIBLE EXHAUST DIVERTER		COMPLETE KIT
1	86300940	2	BRKT, LOWER EXH DIVERTER		
2	86279520	8	WASHER, 1/4 ID FLAT BLK		
3	86279400	8	WASHER, 1/4 SPLIT LOCK BLK		
4	86275210	8	SCR, 1/4-20 X 1/2PHTR BLK DL		
5	86177070	4	CLAMP, HOSE #60 3.3125/4.5, SST		
6	86300970	2	TUBING, FLEXIBLE EXHAUST		
7	86300920	1	BRKT, UPPER EXH DIVERTER		
8	86274750	6	SCR, 1/4-20 X 3/4 HHCS PLTD		
9	86010780	6	WASHER, 1/4 SPLIT LOCK PLTD		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TO ENGINE
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TO
WASTE TANK
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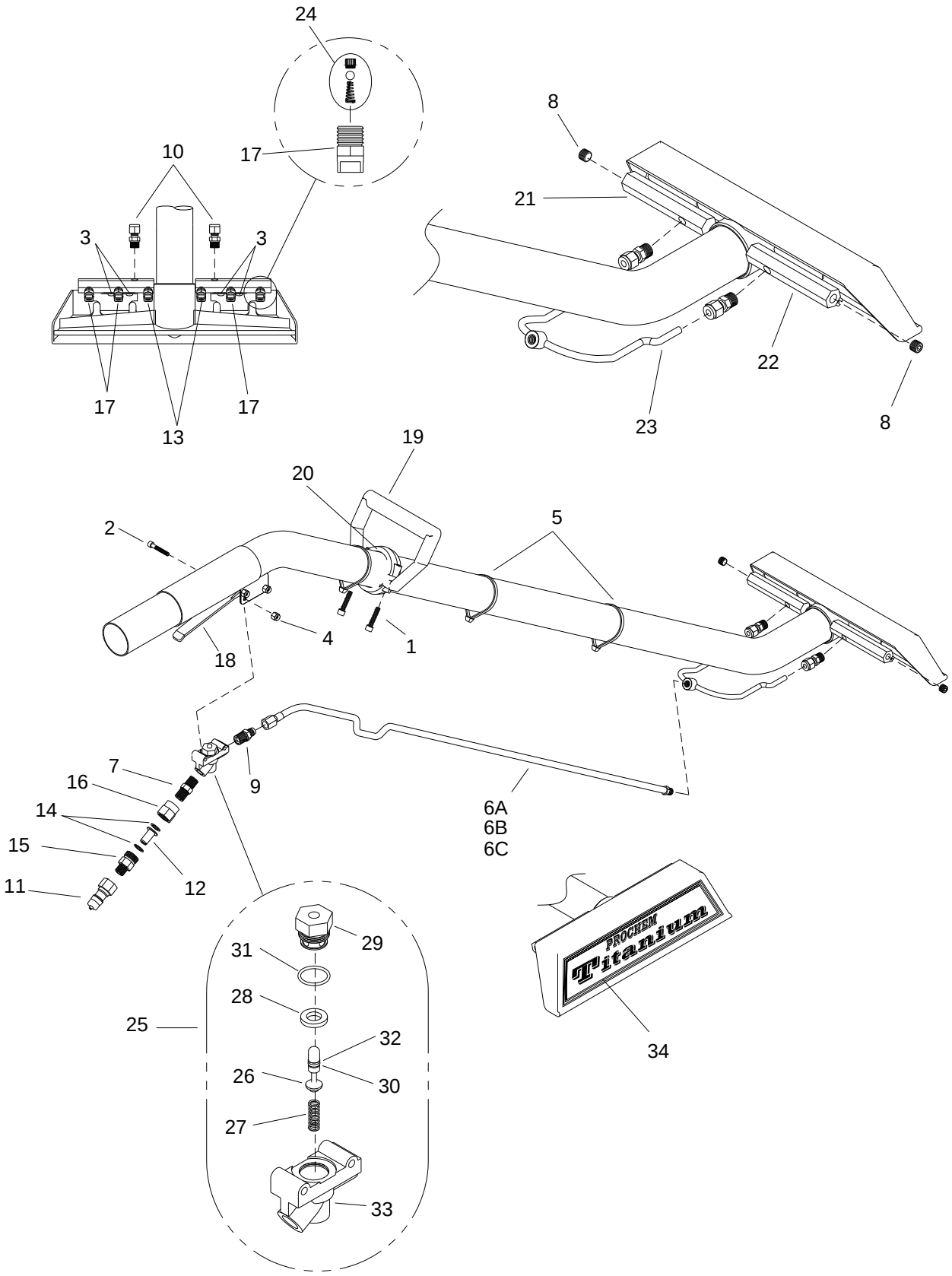
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86335970	1	ASSY, PUMPOUT, DUAL DIAPHRAGM		COMPLETE ASSEMBLY
1	86010780	1	WASHER, 1/4 SPLIT LOCK, PLTD		
2	86173530	1	ADAPTER, HOSE 1/2M X 3/4 MGT		
3	86174260	1	ASSY, LVL SW WASTE PUMPOUT		
4	86176420	1	CAP,HOS 3/4 BR		
5	86177020	2	CLAMP, HOSE #12 SST		
6	86177050	2	CLAMP, HOSE #20		
7	86181370	1	FTTG, BRB 1/2P X 3/4H BR		
8	86181440	1	FTTG, 1-1/4P X 1"H BR		
9	86336420	4	CLAMP, DUAL PUMPOUT		
10	86195820	1	WSR,HOS 5/8 ID 1"OD		
11	86270330	12	FLATWASHER, 1/4		
12	86270770	6	NUT, 1/4-20 HEX		
13	86273190	6	SCR, 1/4-20 X 1-1/2 HXHD		
14	86280230	1	HOSE, 3/4ID WTR X 41”		
15	86333880	1	PUMPOUT, WASTE, DUAL DIAPHRAGM		
16	86335950	1	BRKT, HOSE CONNECTING		
17	86335960	1	HOSE, 1" ID X 18" BLACK EXHAUST		
18	86336370	1	MOTOR, BISON PUMP 12V		
19	86336350	1	NUT, 3/4"DIA OUTLET, DUAL PUMPOUT		
20	86336360	1	FTTG, BARB, 3/4"DIA, DUAL PUMPOUT		
21	86336380	1	FTTG, BARB, OUTLET, DUAL PUMPOUT		
22	86336410	4	SCR, CLAMP SHCS, DUAL PUMPOUT		
-	86336300	2	DIAPHRAGM, PUMP OUT, DUAL		
-	86336310	2	BOLT, DIAPH RETAINING		
-	86336320	2	WASHER, DIAPH RETAINING		
-	86336340	4	VALVE, DUAL PUMPOUT, CHECK		
-	86336390	4	O-RING, DUAL PUMPOUT, MANIFOLD		
-	86336400	4	O-RING, BARB FTTG, DUAL PUMPOUT		
-	86336430	4	O-RING, DUAL PUMPOUT, ELBOW		
-	86336440	1	KIT, DUAL PUMPOUT, REBUILD		
	86184780	1	HOSE, GARDEN 3/4 X 75’		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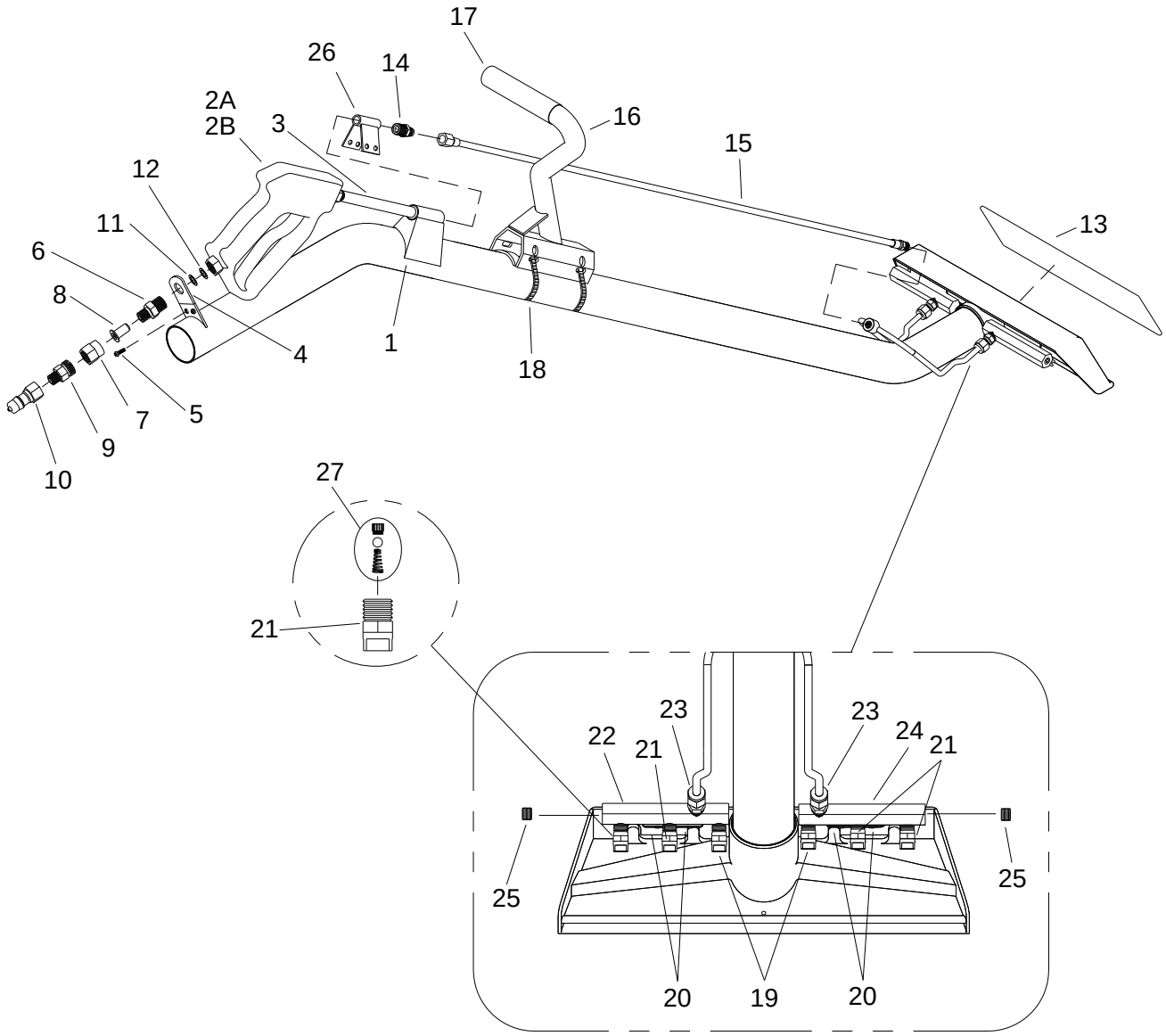
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86288350	1	WD, TM, 6 JET, TITANIUM (8001) PC		COMPLETE
1	86273310	2	SCR, CAP 1/4-20 X 1 1/4 SOC SS		
2	86192030	2	SCR, CAP 10-32 X 1 1/4 SOCH		
3	86006680	4	SCREW, 10-32 X 1/4 PPHMS SS		
4	86270990	2	NUT, 10-32 HEX NYLOCK SS		
5	86264910	2	TIE, CABLE 13” WHITE		
6A	86184270	1	HOSE, 3/16 X 46 (1/8P X 1/4FT) MET		▲
6B	86337360	1	HOSE, 3/16 X 47 (1/8P X 1/4FT) MET		▲
6C	86183720	1	HOSE, 3/16 X 47 5/8 (1/8P X 1/4FT) MET		▲
7	86247680	1	NIPPLE, 1/4 HEX		
8	86190180	2	PLUG, 1/8 SOCHD BR		
9	86177650	1	CONN, 1/4P X 1/4T BR		
10	86177710	2	CONN, 1/8P X 1/4T COMP BR		
11	86005580	1	NIPPLE, 1/4 FPT QD		
12	86193490	1	STRAINER, JET 50 MESH		
13	86194450	2	TIP, SPRAY 9501 X 1/8P SST		
14	86195570	2	WASHER, NYLON		
15	86177860	1	CONN, 1/4P X 11/16-16M		
16	86177870	1	CONN, 1/4FP X 11/16-16F BR		
17	86194580	4	TIP, SPRAY 8001 SST \1/8 VJET		
18	86340720	1	TRIGGER, WD VLV, 9 DEG		
19	86174680	1	BODY, WD HDL, 2” TB, BK		
20	86198180	1	HOLD DN-WD HDL 2” TUBE		
21	86187610	1	MANFOLD, LEFT		
22	86187620	1	MANIFOLD, RIGHT		
23	86174060	1	ASSY, MNFLD S-BEND		
24	86341590	6	CHECK VALVE, NOZZLE WD		
25	86174120	1	ASSY, EXTRACTOR VALVE		
26	86193360	1	STEM, EXTRACTOR VALVE		
27	86193200	1	SPRING, EXTRACTOR VALVE		
28	86192410	1	SEAT, EXTRACTOR VALVE		
29	86183160	1	HLDR, VLV STEM-EXTRACTOR VL		
30	86189510	1	O-RING, .114 ID .254OD		
31	86189520	1	O-RING, .551ID .691OD		
32	86174500	1	BACK-UP, .250DIA		
33	86174630	1	BDY, EXTRACTOR VLV		
34	86179250	1	DEC, WD HD TITANIUM		

▲ MEASURE AND MATCH EXISTING HOSE LENGTH.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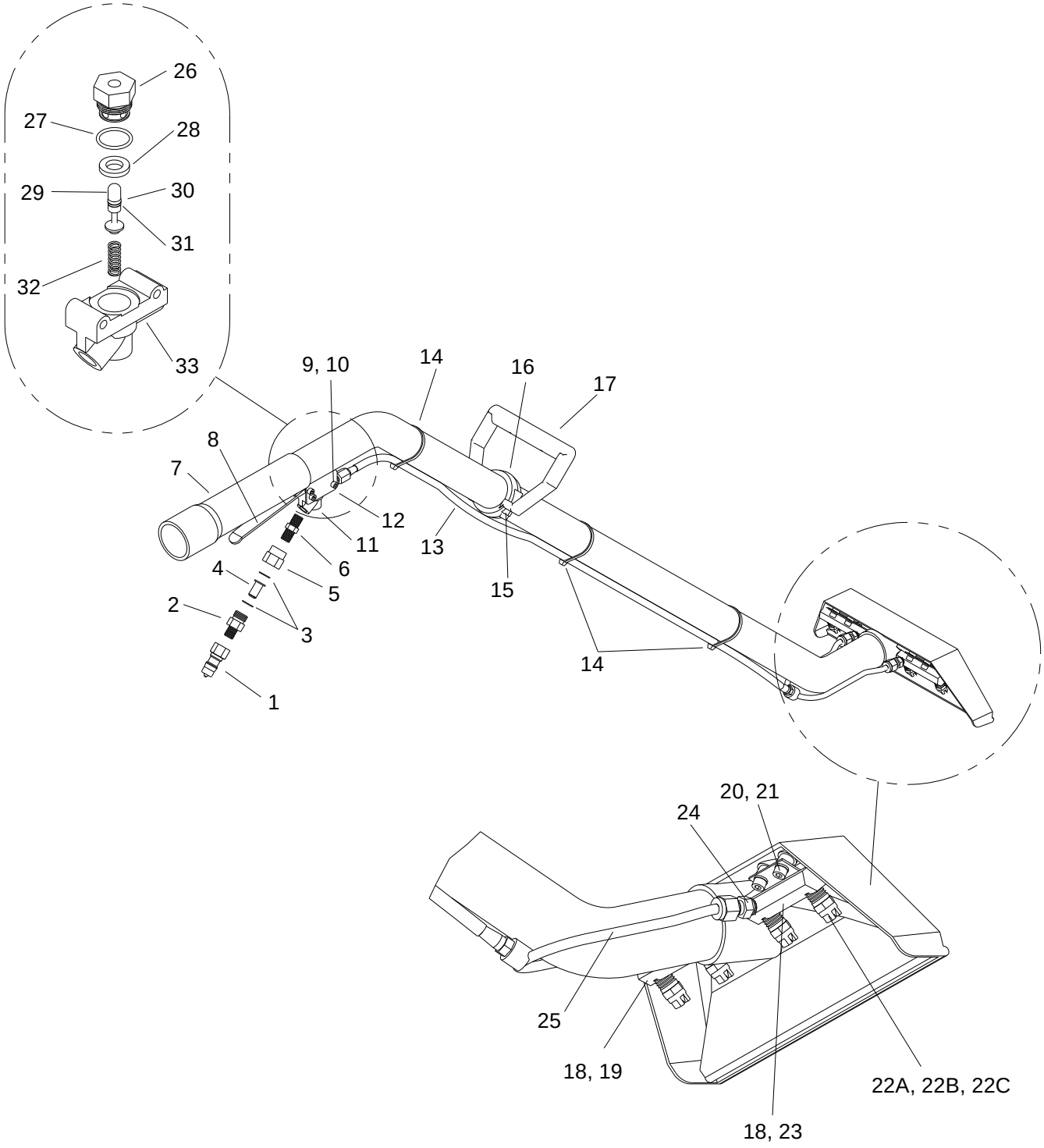
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86326900	1	WAND, ERGO TI		COMPLETE
1	86195560	1	WAND/HEAD WELDMENT		
2A	86182820	1	GUN, PRESS WASH TM		
2B	86011740	1	YG5000 SPRAY GUN ASM		
3	86188590	1	NIPPLE, 1/4 X 5 SS		
4	86175760	1	BRKT, HNDL, CLMP		
5	86277760	2	SCR, 8-32 X 1/4 SHCS SS		
6	86188280	1	NIP, 3/8 X 1/4 HX SST		
7	86177870	1	CONN, 1/4FP X 11/16-16F BR		
8	86193490	1	STRNR, JET 50 MESH		
9	86177860	1	CONN, 1/4 X 11/16-16M		
10	86005580	1	NIP, 1/4 FPT QD		
11	86195600	1	WASHER, BLK WD		
12	86195610	1	WASHER, FLAT SS WD		
13	86179020	1	DEC, WD HD (CAST SST) TM		
14	86177650	1	CONN, 1/4P X 1/4T BR		
15	86031580	1	HOSE, 3/16 X 40-1/2		
16	86183110	1	HDL, TITANIUM WND W/SPYR		
17	86182120	1	GRIP, BLU HANDLE		
18	86177150	2	CLAMP, #38 HOSE SS		
19	86194450	2	TIP, SPRY 9501 X 1/8P SST		
20	86270990	4	NUT, 10-32 HEX SS NYLOCK		
21	86194580	4	TIP, SPRAY 8001 SST 1/8 VJE		
22	86187620	1	MNFLD, LT TITAN		
23	86177710	2	CONN, 1/8P X 1/4T COMP BR		
24	86187610	1	MNFLD, RT TITAN		
25	86190180	2	PLG, 1/8 SOCHD BR		
26	86175660	1	BRKT, MANIFOLD, WAND		
27	86341590	6	CHECK VALVE, NOZZLE WD		
-	86186100	1	KIT, REPAIR 17-803025		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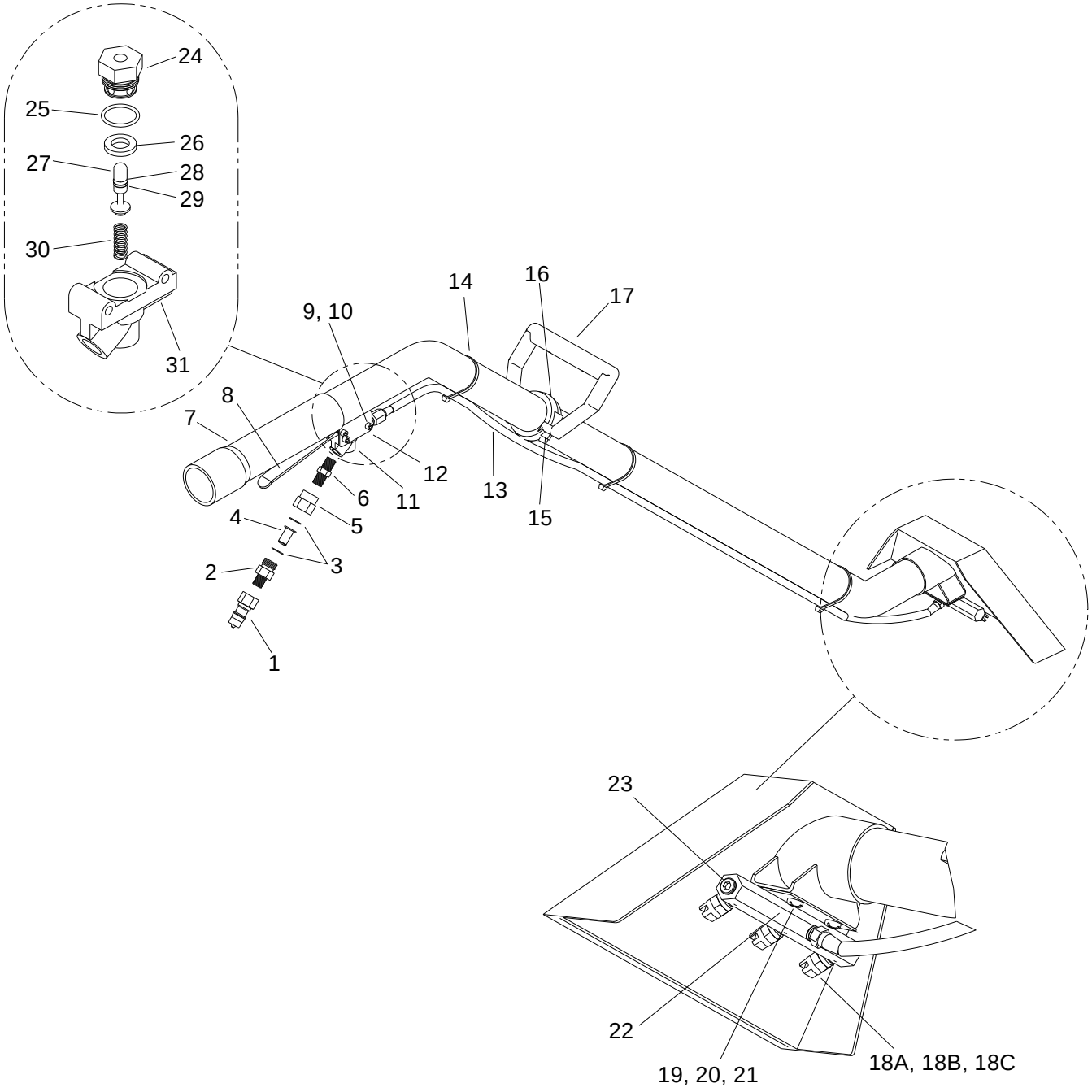
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86285570	-	WAND, TM, QJW (95015) PC		COMPLETE
-	86285580	-	WAND, TM, QJW (9502) PC		COMPLETE
-	86285560	-	WAND, TM QJW (9501) PC		COMPLETE
-	86285540	-	WAND, TM, QJW, (9501) NO DECAL		COMPLETE
1	86005580	-	NIPPLE, 1/4 FPT QD		
2	86177860	1	CONN, 1/4P X 11/16-16M		
3	86195570	1	WASHER, NYLON		
4	86193490	2	STRAINER, JET 50 MESH		
5	86177870	1	CONN, 1/4FP,11/16-16R BR		
6	86247680	1	NIPPLE, 1/4 HEX		
7	86280020	1	SLEEVE, WD HDL 9.5		
8	86194650	1	TRIGGER, WD VLV		
9	86192030	3	SCR, CAP 10-32X 1-1/4 SOCH		
10	86270990	3	NUT, 10-32 HEX NYLOCK SS		
11	86174120	1	ASSY, EXTRCTR VLV		
12	86177650	1	CONN, 1/4P X 1/4T BR		
13	86183970	1	HOSE, 3/16 X 43-1/2 (1/8P X 1/4)		
14	86265730	3	TIE, CABLE 8” WHT		
15	86273310	2	SCR, CAP 1/4-20 X 1-1/4 SOC		
16	86198160	1	HOLD DOWN, WD HDL		
17	86182840	1	BODY, WD HDL		
18	86190180	2	PLUG, 1/8 SOCHD BR		
19	86043300	1	ASSY, L S-BEND MNFLD		
20	86273450	4	SCR, CAP 10-24 X1/4 SOCHD		
21	86279470	4	WASHER, #10 SPLIT LOCK		
22A	86194400	4	TIP, SPRY 95015X1/8P SST		89238
22B	86194410	4	TIP, SPRY 9502X1/8P SST		89239
22C	86194450	4	TIP, SPRY 9501X1/8P SST		89237 89235 (NO DECAL)
23	86043310	1	ASSY, RT S-BEND MNFLD		
24	86177710	2	CONN, 1/8PX1/4T COMP BR		
25	86174030	1	ASSY, S-BEND MNFLD		
26	86183160	1	HOLDER, VLV STEM-EXTRCTR VL		
27	86189520	1	O-RING, .551 ID .691 OD		
28	86192410	1	SEAT, EXTRCTR VLV		
29	86193360	1	STEM, EXTRCTR VLV		
30	86174500	1	BACK-UP, .250 DIA		
31	86189510	1	O-RING, .144 ID .254 OD		
32	86193200	1	SPRING, EXTRCTR VLV		
33	86174630	1	BODY, EXTRCTR VLV		
-	86179020	1	DECAL, WD HD (CAST SS)		
-	86186160	-	KIT, REP-WD VLV		INCLUDES PARTS 27-29 & 31-33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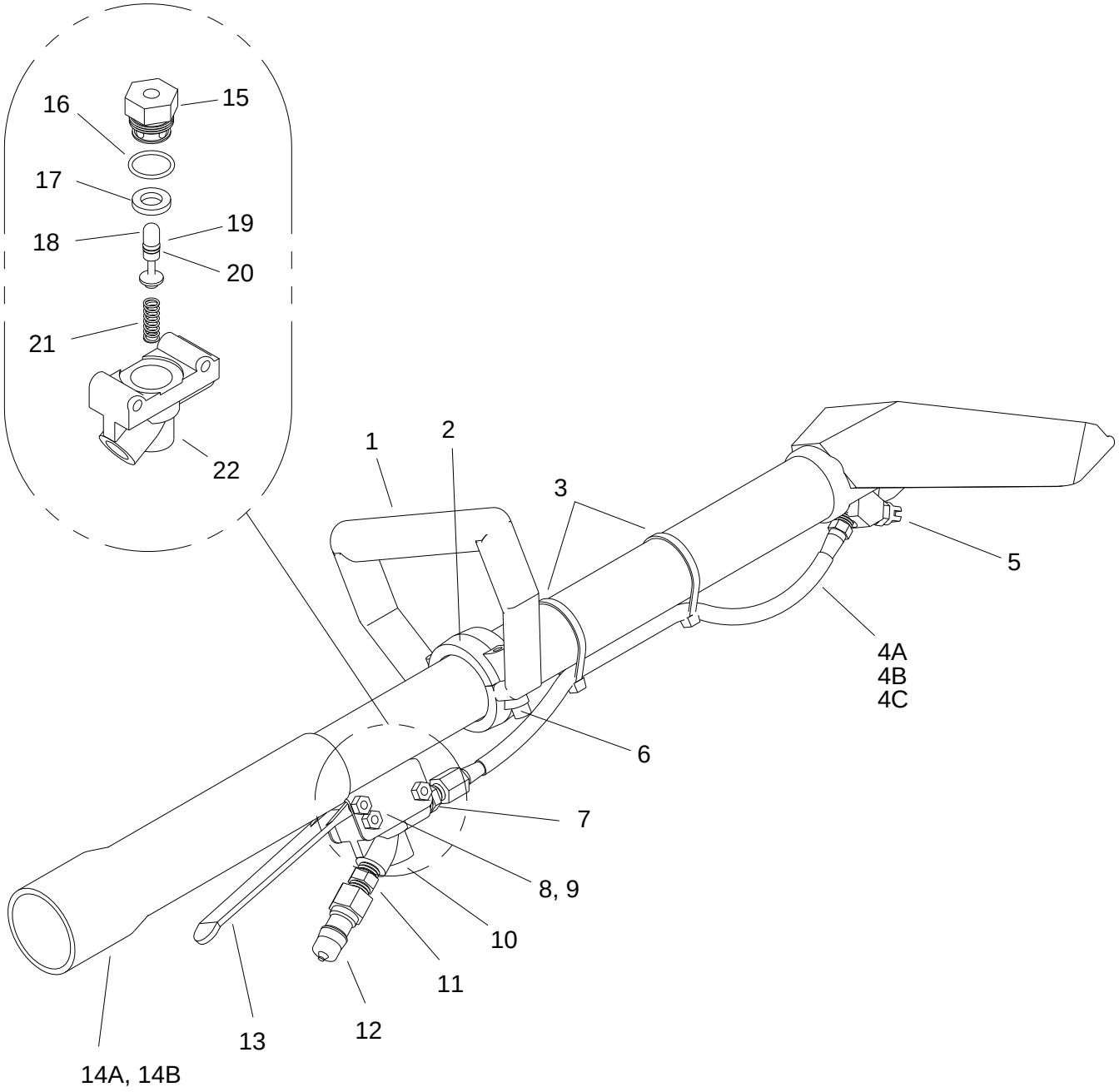
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86285520	-	WAND, TJW (9502) PC		COMPLETE
-	86285510	-	WAND, TJW, (95015) CUBXL		COMPLETE
-	86285530	-	WAND, TJW, (9503) PC		COMPLETE
1	86005580	1	NIPPLE, 1/4 FPT QD		
2	86177860	1	CONN, 1/4P X 11/16-16M		
3	86195570	2	WASHER, NYLON		
4	86193490	1	STRAINER, JET 50MESH		
5	86177870	1	CONN, 1/4FP, 11/16-16R BR		
6	86247680	1	NIPPLE, 1/4 HEX		
7	86280020	1	SLEEVE, WD HDL 9.5		
8	86194650	1	TRIGGER, WD VLV		
9	86192030	3	SCR, CAP 10-32X 1-1/4 SOCH		
10	86270990	3	NUT, 10-32 HEX NYLOCK SS		
11	86174120	1	ASSY, EXTRCTR VLV		
12	86177650	1	CONN, 1/4P X 1/4T BR		
13	86183970	1	HOSE, 3/16X49 (1/8P X 1/4FT)		
14	86265730	3	TIE, CABLE 8” WHT		
15	86273310	1	SCR, CAP 1/4-20 X 1-1/4 SOC		
16	86198160	1	HOLD DOWN, WD HDL		
17	86182840	1	BODY, WD HDL		
18A	86194410	3	TIP, SPRY 9502X1/8P SST		89233
18B	86194400	3	TIP, SPRY 9501X1/8P SST		89232
18C	86194520	3	TIP, SPRY 9503X1/8P SST		89234
19	86274290	2	SCR, 10-32 X 3/8 PPHMS SS		
20	86279470	2	WASHER, #10 SPLIT LOCK		
21	86270800	2	NUT, 10-32 HEX SS		
22	86187700	1	MANIFOLD, WD TRI-JET		
23	86190180	2	PLUG, 1/8 SOCHD BR		
24	86183160	1	HOLDER, VLV STEM-EXTRCTR VL		
25	86189520	1	O-RING, .551 ID .691 OD		
26	86192410	1	SEAT, EXTRCTR VLV		
27	86193360	1	STEM, EXTRCT VLV		
28	86174500	1	BACK-UP, .250DIA		
29	86189510	1	O-RING, .114ID .254OD		
30	86193200	1	SPRING, EXTRCTR VLV		
31	86179020	1	BODY, EXTRCTR VLV		
-	86179020	-	DECAL, WD HD		
-	86186160	-	KIT, REP-WD VLV		INCLUDES PARTS 25-27 & 29-31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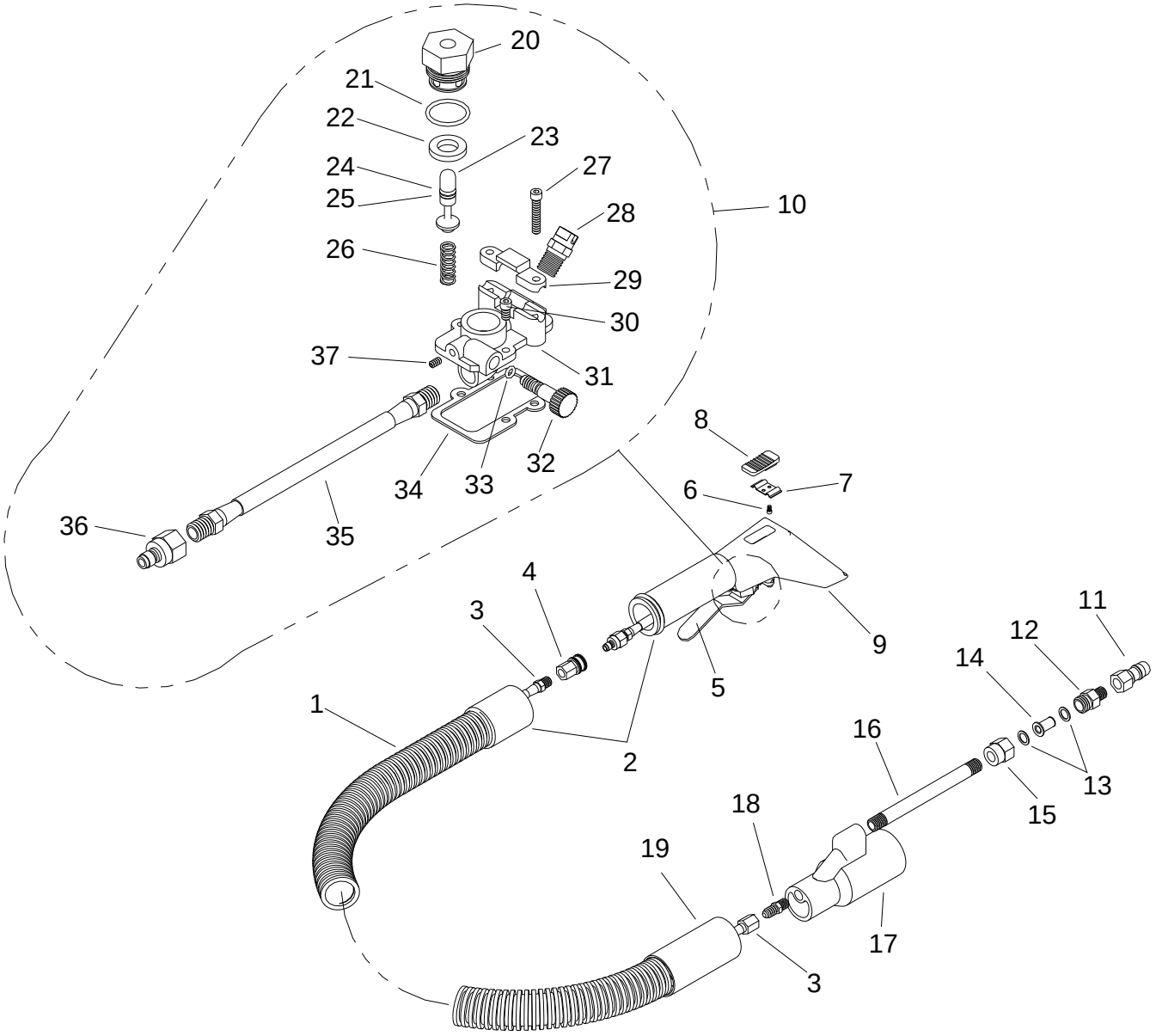
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86285350	-	TL, STAIR, LNG, TM DJ (80015)		COMPLETE
-	86285290	-	TL, STAIR, SHT, TM (80015)		COMPLETE
1	86198080	1	BODY, WD HDL PORT		
2	86198170	1	HOLD DOWN, WD HDL PORT		
3	86265730	2	TIE, CABLE 8” WHT		
4A	86183710	1	HOSE, 3/16X13-3/4 (1/8PX1/4)		
4B	86184000	1	HOSE, 3/16X7-1/2 (1/8P X 1/4F)		
4C	86356140	1	HOSE, 3/16 X 9 (1/8PX1/4FT)MET		
5	86194410	1	TIP, SPRY 9502X1/8P SST		
6	86273310	2	SCR, CAP 1/4-20 X 1-1/4 SOC		
7	86177650	1	CONN, 1/4P X 1/4T BR		
8	86192030	3	SCR, CAP 10-32X1-1/4 SOCH		
9	86270990	3	NUT, 10-32 HEX NYLOCK SS		
10	86174120	1	ASSY, EXTRCTR VLV		
11	86247680	1	NIPPLE, 1/4 HEX		
12	86005580	1	NIPPLE, 1/4 FPT QD		
13	86194650	1	TRIGGER, WD VLV		
14A	86280020	1	SLEEVE, WD HDL 9.5		
14B	86040950	1	SLEEVE, STAIR TL HDL 7-1/8		
15	86183160	1	HOLDER, VLV STEM-EXTRCTR VL		
16	86189520	1	O-RING, .551 ID .691 OD		
17	86192410	1	SEAT, EXTRCTR VLV		
18	86193360	1	STEM, EXTRCTR VLV		
19	86174500	1	BACK-UP, .250DIA		
20	86189510	1	O-RING, .114 ID .254 OD		
21	86193200	1	SPRING, EXTRCTR VLV		
22	86174630		BODY, EXTRCTR VLV		
-	86178970		DECAL, STAIR TL		
-	86186160		KIT, REP-WD VLV		INCLUDES PARTS 16-19 & 20-22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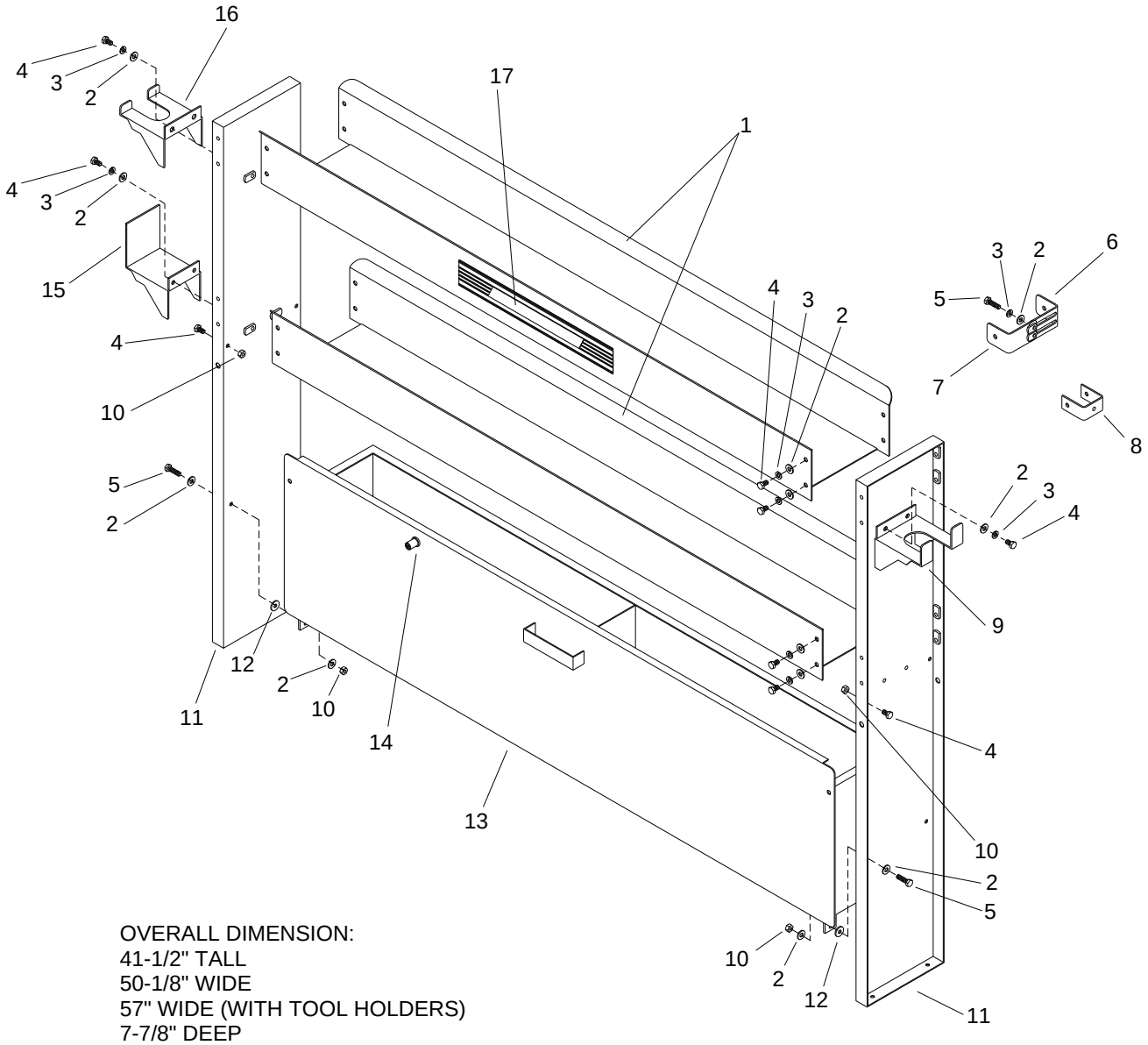
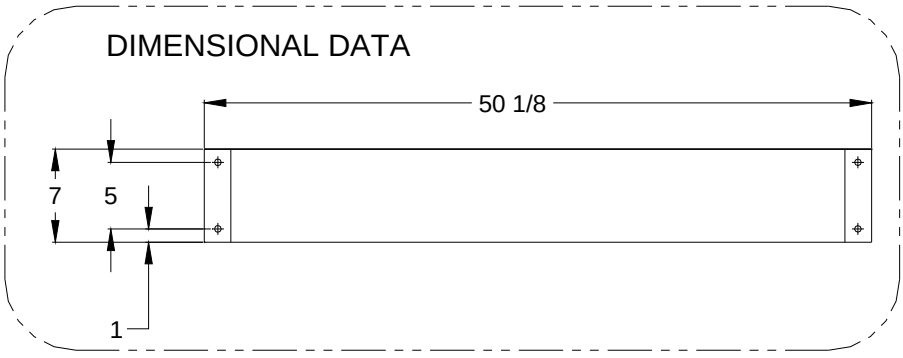
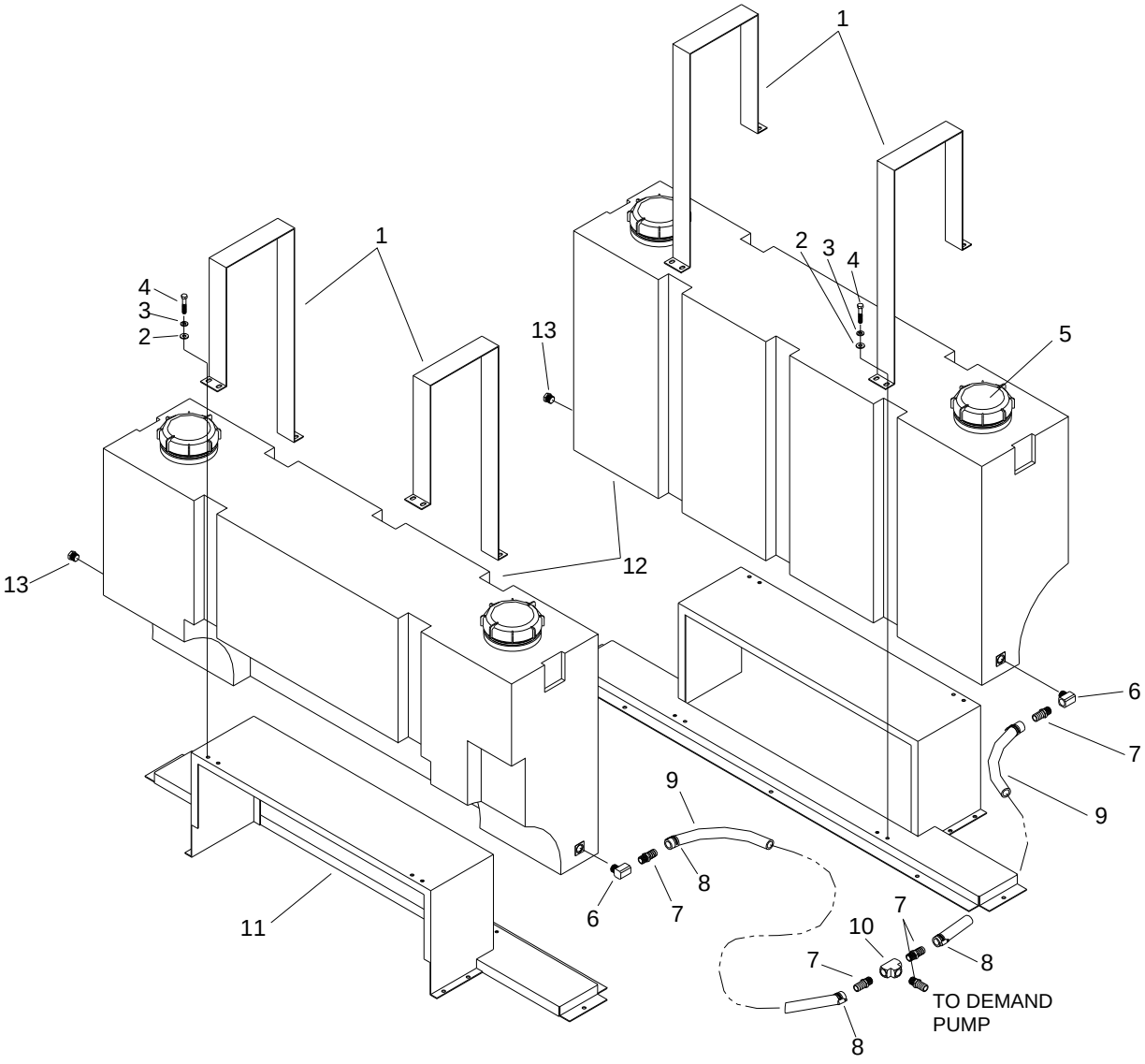
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86285260	1	TL, UPHOLST, PC (80015)		COMPLETE
1	86280240	2	HOSE, VAC 1-1/4X10' BLU		
2	86178660	1	CUFF, SWIV 1-1/4HX1-1/4T		
3	86184670	1	HOSE, 3/16X119-1/2 (1/8PX1/4FT)		
4	86179720	1	DSC, 1/8FC1/8FP SST		
5	86178550	1	UPHOLSTERY TL TRIGGER		
6	86273370	1	SCR, CAP 4-40 X7/32 SHCS SS		
7	86193050	1	SPRING, VAC ADJ BUTT		
8	86176080	1	BUTTON, VAC ADJ		
9	86194590	1	TOOL, UPHOLSTERY		
10	86174140	1	ASSY, UPHLST TL VLV		INCLUDES PARTS 20-26, 28, & 31- 37
11	86005580	1	NIPPLE, 1/4 NPT QD		
12	86177860	1	CONN, 1/4P X 11/16-16M		
13	86195570	1	WASHER, NYLON		
14	86193490	1	STRAINER, JET 50MESH		
15	86177870	1	CONN, 1/4FPX11/16-16F BR		
16	86188320	1	NIP, 1/4X5 SST		
17	86178520	1	COUPLER, UPHLST TL		
18	86177660	1	CONN, 1/8P X 1/4T		
19	86178630	1	CUFF, 1 1/4H X 1 1/2T GRY		
20	86183160	1	HOLDER, VLV STEM-EXTRCTR VL		
21	86189520	1	O-RING, .551 ID .691 OD		
22	86192410	1	SEAT, EXTRCTR VLV		
23	86193360	1	STEM, EXTRCTR VLV		
24	86174500	1	BACK-UP, 250DIA		
25	86189510	1	O-RING, .144 ID .254 OD		
26	86193200	1	SPRING, EXTRCTR VLV		
27	86273350	2	SCR, 6-32 X 1 SCHD SS		
28	86194500	1	TIP, SPRY 80015X1/8P SST		
29	86178540	1	CSTG, TRIGGER CLMP		
30	86273360	2	SCR, CAP 6-32X3/8 SOCHD		
31	86195210	1	VALVE, UPHLST TL		
32	86195530	1	VALVE, ADJ-UPHLST TL VLV		
33	86189460	1	O-RING, 5/32IDX9/32OD VIT		
34	86182570	1	GASKET, UPHLST TL VLV		
35	86183770	1	HOSE, 3/16X6-1/2 (1/8P BS)		
36	86179740	1	D SC, 1/8MX1/8FP SST		
37	86192070	1	SCR, SET 3-32 X 1/4 SOCHD		
-	86178980	1	DECAL, UPHLST TL		
-	86186160	1	KIT, REPAIR-WAND VLV		INCLUDES PARTS 20-22 & 24-26



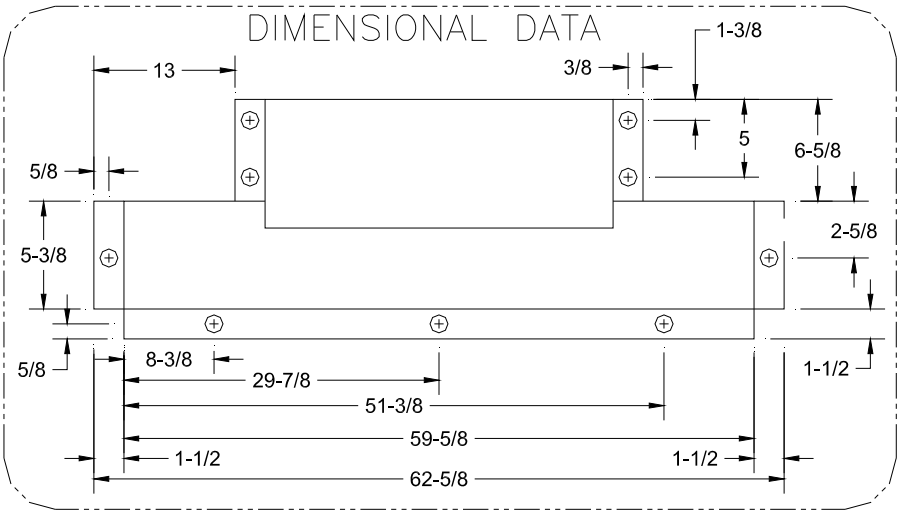
OVERALL DIMENSION:
41-1/2" TALL
50-1/8" WIDE
57" WIDE (WITH TOOL HOLDERS)
7-7/8" DEEP

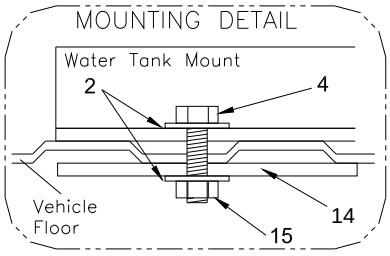


REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86354970	1	ASM, VAN STORAGE UNIT		COMPLETE
1	86363820	2	SHELF, LOWER TM		
2	86270330	20	FLATWASHER, 1/4		
3	86010780	20	WASHER, 1/4 SPLIT LOCK		
4	86274760	20	SCR, 1/4-20 X 1/2 HHCS PLTD		
5	86274750	4	SCR, 1/4-20 X 3/4 HHCS PLTD		
6	86175710	1	BRKT, ADJUST MTG SLOT		
7	86175730	1	BRKT, ADJUST MTG HLDR		
8	86198090	1	BRKT, SHELF MOUNTING		
9	86363850	1	HLDR, STAIR TL		
10	86270620	4	LOCK NUT, 1/4-20 HXHD		
11	86024890	2	PANEL, SHLF END		
12	86278840	2	WASHER, NYLON		
13	86024900	1	DRAWER, SHELF GRAY		
14	86186850	1	LATCH, ADJ GRIP		
15	86363840	1	HLDR, UP TL HOS		
16	86363830	1	HLDR, UPHLST TL		
17	86179350	1	DECAL, PROCHEM		

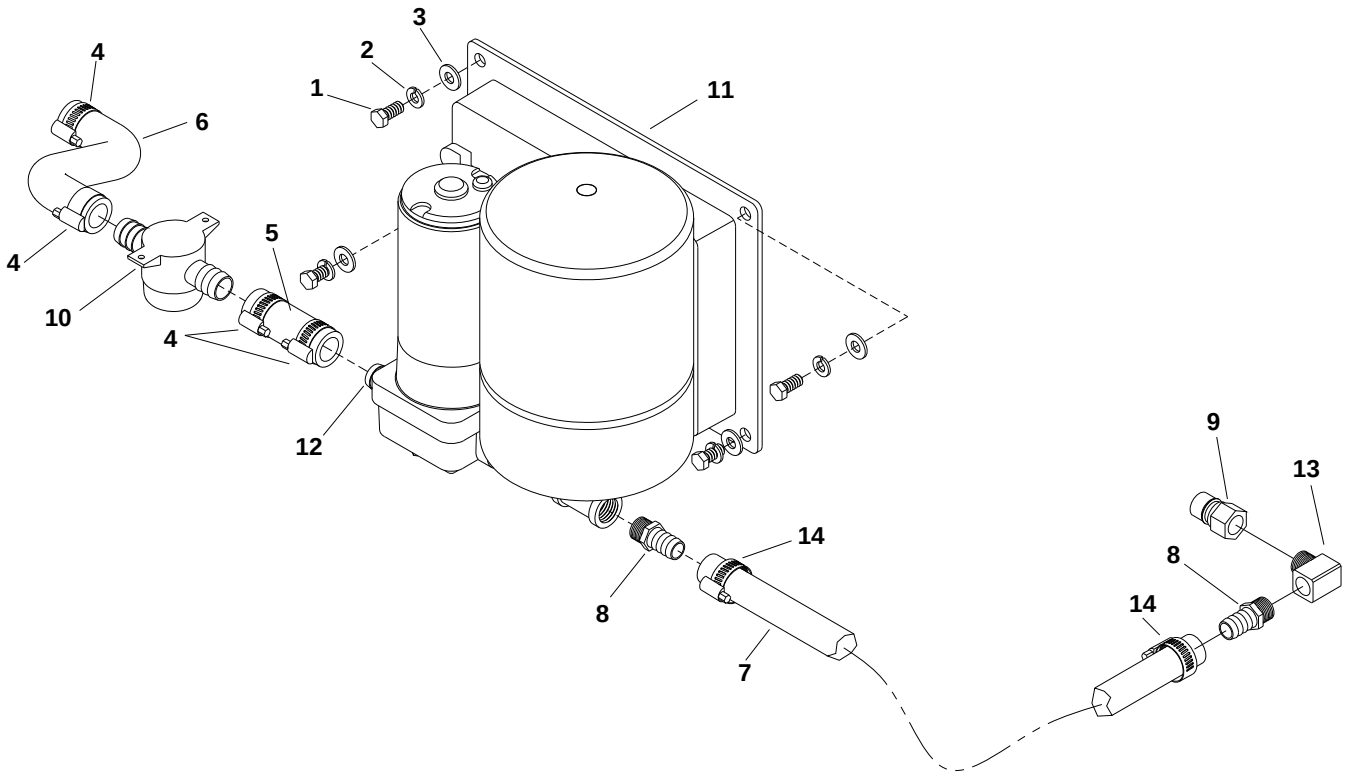


OVERALL DIMENSION:
32-1/2" TALL
62-5/8" WIDE
15-1/2" DEEP





REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86041730	-	TANK, DUAL SADDLE W/DMD PUMP		COMPLETE
-	86041710	-	SINGLE SADDLE TANK W/DMND PMP		COMPLETE
1	86048310	4	HOLD DOWN, SADDLE TANK GRAY		
2	86279510	16	WASHER, 3/8 FLAT		
3	86010790	16	WASHER 3/8 SPLIT LOCK		
4	86277830	16	SCR, 3/8-16 X 2' HXHD		
5	86176400	4	CAP, WATER BOX		
6	86180170	2	ELL, STREET 1/2 BR		
7	86181370	5	FTTG, BRB 1/2P X 3/4H BR		
8	86177020	4	CLAMP, HOSE #12 SST		
9	86280590	1	HOSE, WTR 3/4 X 96		
10	86194120	1	TEE, 1/2 BRASS		
11	86043320	2	ASSY, BASE SADDLE TANK GRAY		
12	86030990	2	MOLDING, WATER TANK		
13	86190500	2	PLUG, 1/2 BRASS HXHD		
14	86190170	8	PLATE, INSTALL MT		
15	86005770	9	NUT, 3/8-16 HEX NYLOCK		
-	86285190	1	SHLR, CHEM, 10-GAL JUG		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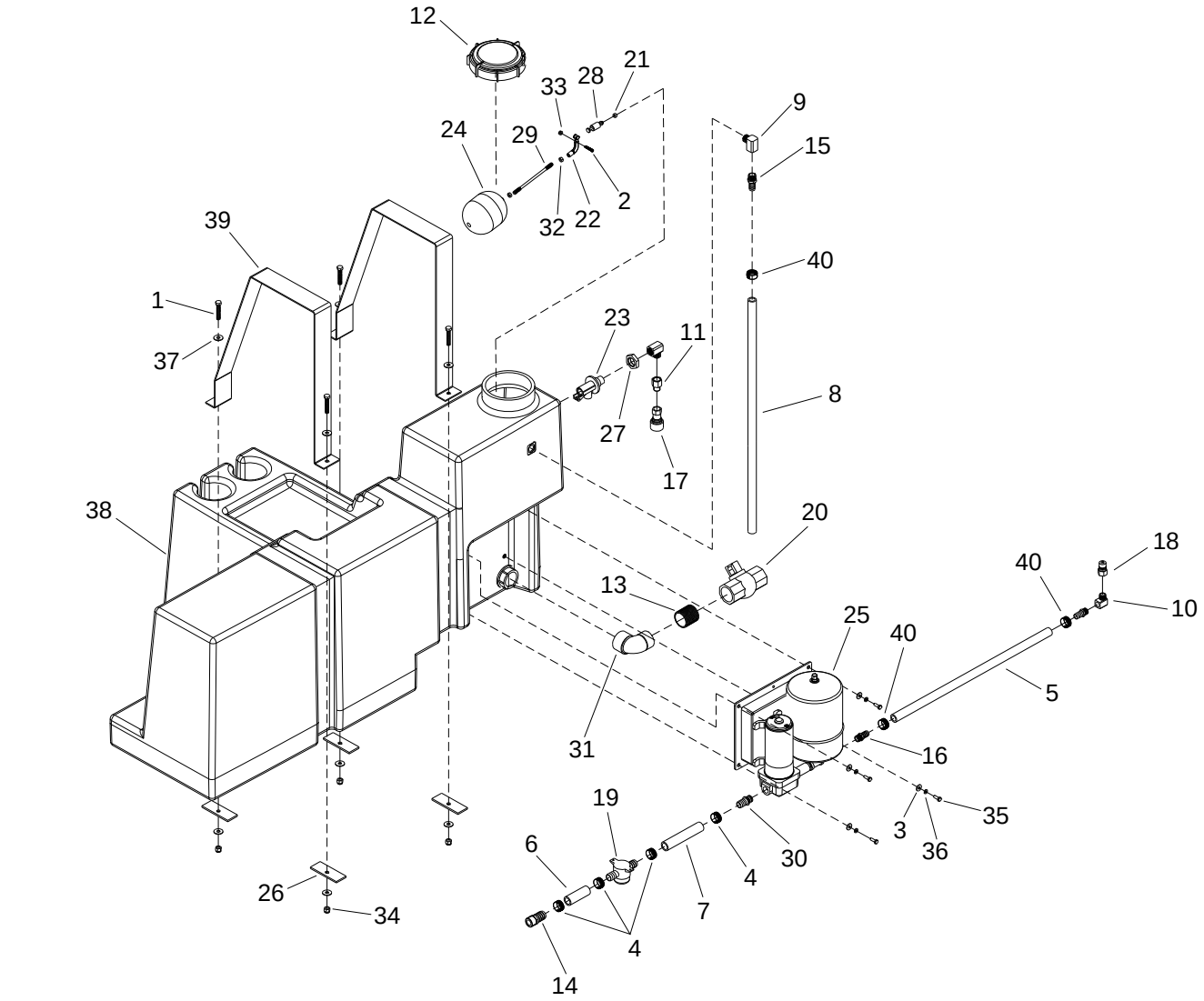
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86191390	1	PUMP ONLY, TM DEMAND		
-	86186030	1	KIT SERVICE DEMAND PMP		
1	86006760	4	SCR, 5/16-18 X 3/4 HHCS GR5 PL TDL		
2	86279130	4	WASHER, 5/16 SPLIT LOCK PLTD		
3	86278830	4	WASHER, 5/16 FLAT		
4	86177020	4	CLAMP, HOSE #12 SST		
5	86280290	1	HOSE, WATER 3/4 X 3”		
6	86280420	1	HOSE, WATER .75 X 5.5		
7	86280550	1	HOSE, 5/8ID BLU X 55”		
8	86181400	1	FTTG, BRB 3/8P X 5/8H BR		
9	86179630	1	DISCONNECT, 3/8M X 3/8FP		
10	86180900	1	FILTER, DEMAND PUMP		
11	86190740	1	PUMP, WATER BOOSTER		
12	86186120	1	KIT, PORT		
13	86180210	1	ELBOW, ST 3/8 BR		
14	86177060	2	CLAMP, HOSE #8 SST		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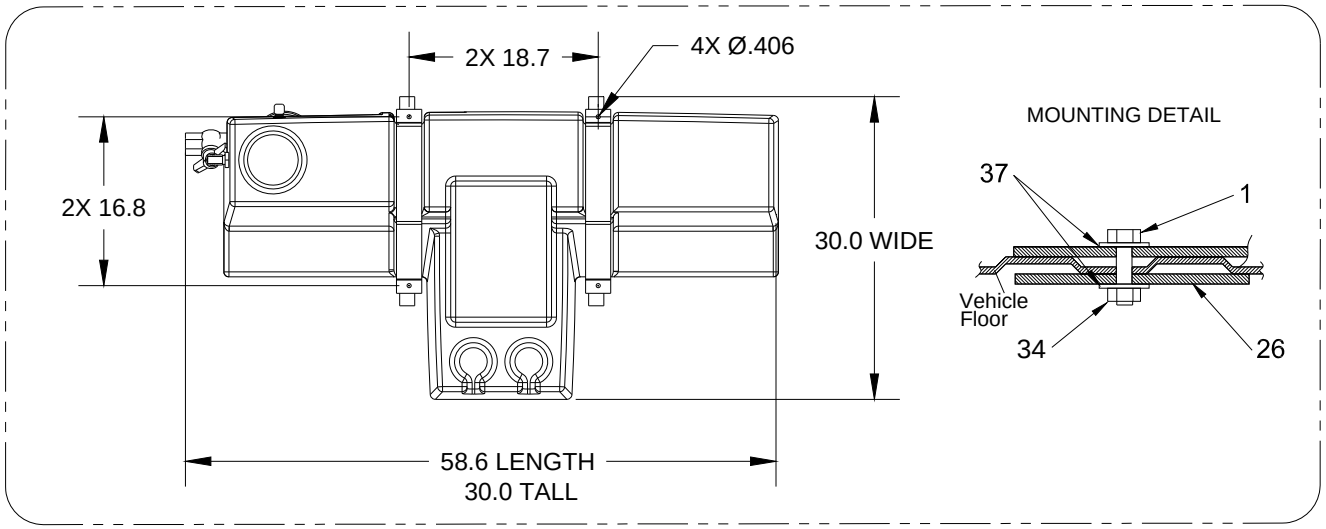
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30.0 WIDE
58.6 LENGTH
30.0 TALL
MOUNTING DETAIL
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Vehicle
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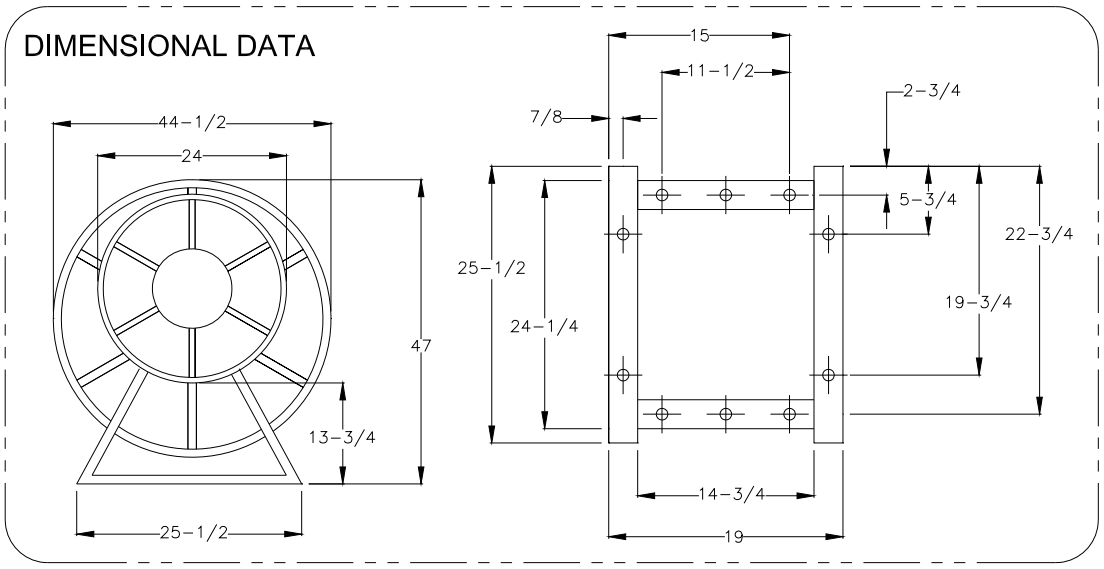
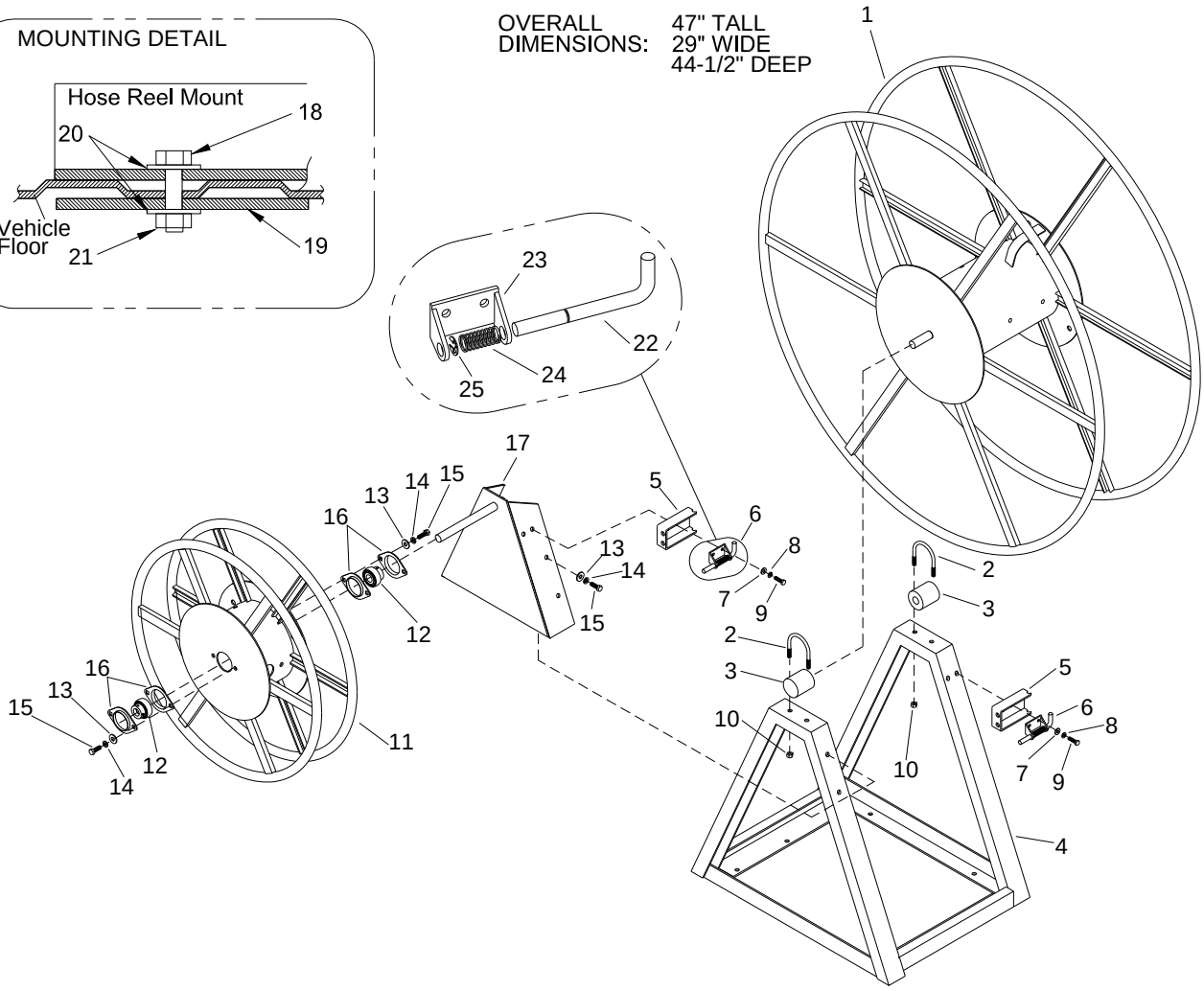
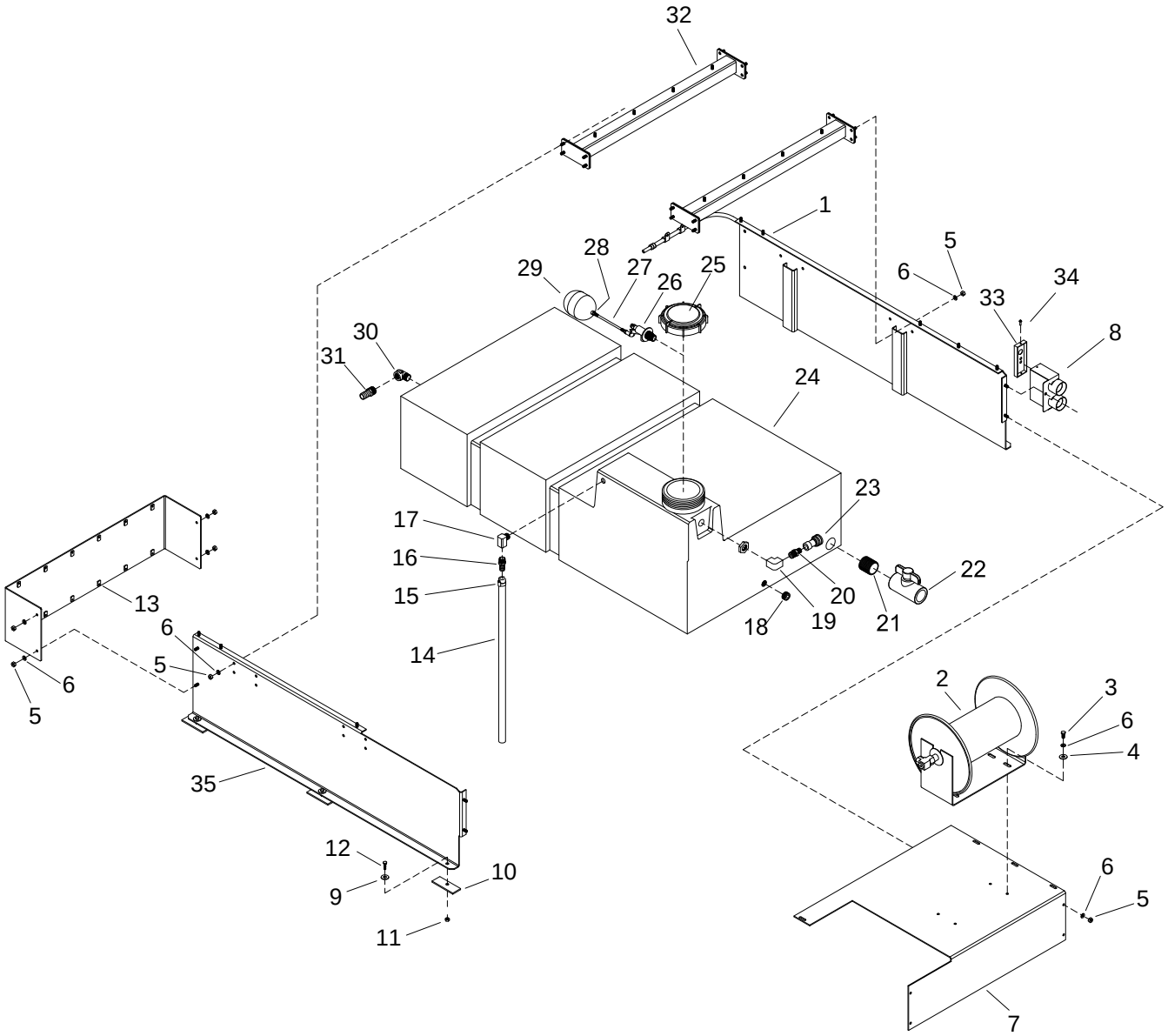
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86041580	1	ASSY, AUX WTR TNK W/PMP		COMPLETE
1	86277830	4	SCR, 3/8-16 X 2” HXHD		
2	86277850	1	SCR, 10-32 X 1” SOCHD SST		
3	86270330	4	FLATWASHER, 1/4		
4	86177020	4	CLAMP, HOSE #12 SST		
5	86280550	1	HOSE, 5/8 ID BLU X 55”		
6	86280290	1	HOSE, 3/4 ID WTR X 3”		
7	86280420	1	HOSE, 3/4 ID WTR X5.5”		
8	86280140	1	HOSE, 5/8 ID BLU X 30 1/2		
9	86180170	2	ELL, STREET 1/2 BR MACH		
10	86180210	1	ELL, ST 3/8 BR		
11	86191600	1	RED, 1/2FP X 3/8P BR		
12	86176400	1	CAP, WATER BOX		
13	86188480	1	NIP, 3/4 X 2-1/2 BR		
14	86181320	1	FTTG, BRB 3/4PX3/4H BR		
15	86181360	1	FTTG, BRB 1/2 X 5/8H BR		
16	86181400	2	FTTG, BRB 3/8P X 5/8 BR		
17	86179710	1	DISCONNECT 3/8F X 3/8FP		
18	86179630	1	DISCONNECT 3/8M X 3/8FP		
19	86180900	1	FILTER, DEMAND PUMP		
20	86195330	1	VLV, BALL 3/4FP BS		
21	86192380	1	SEAT, FLOAT VLV TM		
22	86173820	1	ARM, PIVOT-FH VLV		
23	86174610	1	BDY, FLOAT VLV		
24	86174540	1	BALL, FLOAT		
25	86190740	1	PMP, WTR BOOSTER FLOJET 2		
26	86190170	4	PLATE, INSTALL MT		
27	86189010	1	NUT, FLOAT VALVE		
28	86028860	1	PISTON, FLOAT VLV PISTON		
29	86181150	1	FLOAT ROD, TM		
30	86186120	1	KIT, PORT DEMAND PUMP		
31	86180260	1	ELL,3/4 ST BR		
32	86270770	2	NUT, 1/4-20 HEX		
33	86270990	1	NUT, 10-32 HEX NYLOCK SS		
34	86005770	4	NUT, 3/8-16 HEX NYLOCK		
35	86274750	4	SCR, 1/4-20 X 3/4 HHCS PLTD		
36	86010780	4	WASHER, 1/4 SPLIT LOCK PLTD		
37	86279510	8	WASHER, 3/8 FLAT		
38	86031000	1	TANK, FRESH WATER 70GAL		
39	86057170	2	STRAP, WTR TNK HOLD DOWN		
40	86177060	3	CLAMP, HOSE #8 SST		
-	86261290	1	HARNESS, WTR PMP SADDLE TANK		NOT SHOWN



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



REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86285140	1	HOSE REEL, HIGH PROFILE PC		COMPLETE
1	86191620	1	REEL, VACUUM HOSE GRAY		
2	86177270	2	CLAMP, MFLR 1-3/4		
3	86175990	2	BUSHING, HOSE REEL		
4	86174560	1	BASE, HOSE RL (250')		
5	86175740	2	BRKT, LOCKOUT HOSE REEL		
6	86186870	2	LATCH ASSEMBLY		
7	86270330	4	FLATWASHER, 1/4		
8	86010780	4	WASHER, 1/4 SLPIT LOCK		
9	86274750	4	SCR, 1/4-20 X 3/4 HHCS PLTD		
10	86005650	4	NUT, 5/16-18 HEX		
11	86191820	1	REEL, HP HOSE GRAY		
12	86174740	2	BEARING HOSE REEL		
13	86278830	4	FLATWASHER, 5/16		
14	86279130	4	WASHER, 5/16 SPLIT LOCK PLTD		
15	86006750	4	SCR, 5/16-18 X 1" HHCSGR5PLT		
16	86181030	4	FLANGE, 47MST		
17	86174730	1	BODY, HP HOSE GRAY		
18	86277830	10	SCR, 3/8-16 X 2" HXHD		
19	86190170	10	PLATE, INSTALL MT		
20	86279510	10	WASHER, 3/8 FLAT		
21	86005770	10	NUT, 3/8-16 HEX NYLOCK		
22	86189850	2	PIN, LOCK HOSE REEL		
23	86175700	2	BRKT, HOSE REEL LOCK		
24	86193240	2	SPRING, LOCK-LOCK PIN ASSY		
25	86177190	2	CLIP, RETAINER-LOCK PIN ASSY		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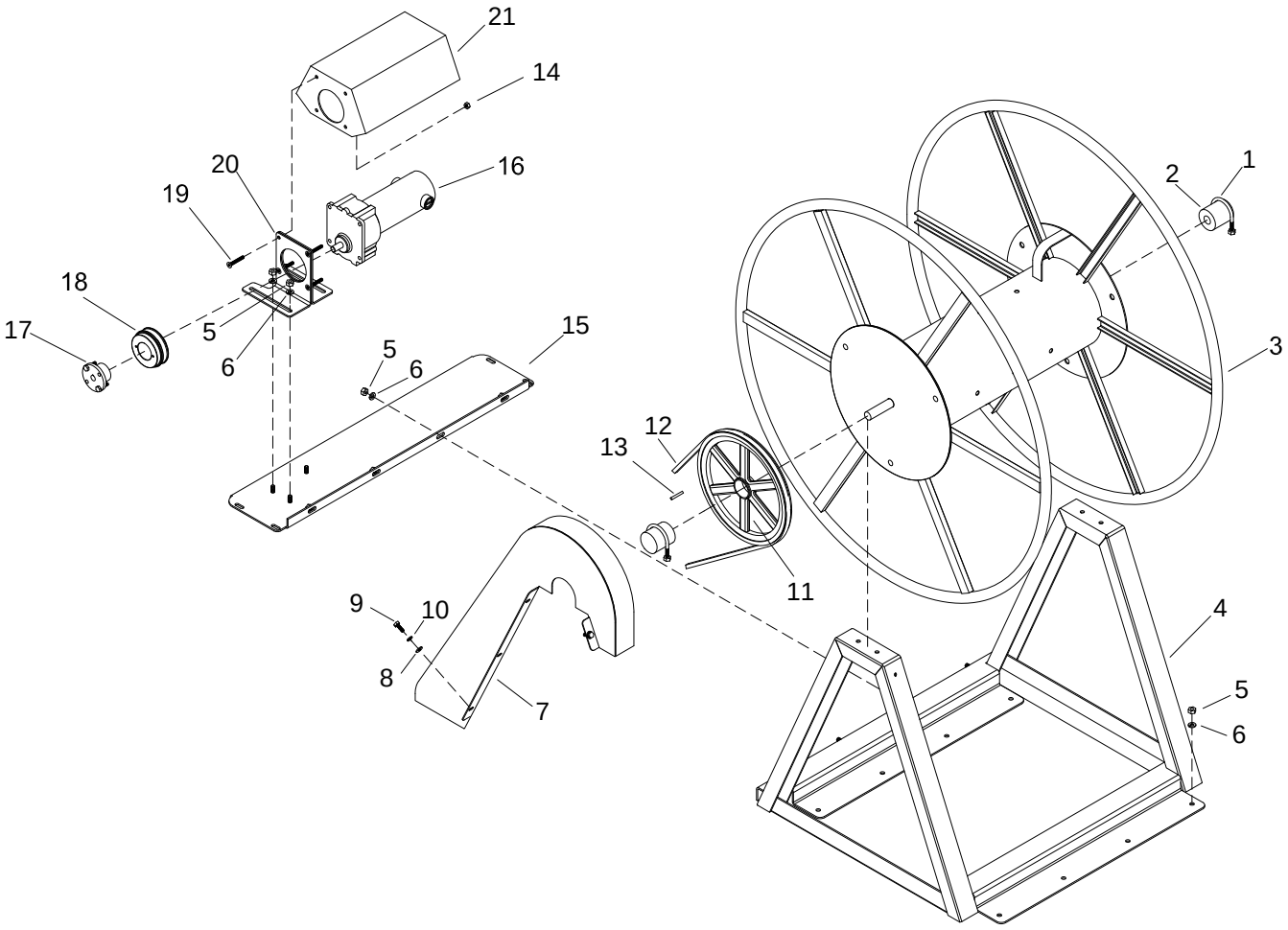
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86041670	1	MOTORIZED HOSE REEL PC		
1	86044110	1	BASE, RT SD HOE RL MTR		*
2	86191830	1	RL, HOS HP SOL		
3	86006760	4	SCR, 5/16-18 X 3/4 HHCS		
4	86278830	4	WASHER, 5/16 FLAT PLTD		
5	86005650	24	NUT, 5/16-18 HEX		
6	86279130	28	WASHER, 5/16 SPLIT LOCK PLTD		
7	86044070	1	BASE, HOS RL FRT & TOP		*
8	86046520	1	BX, SW HOS RL MTR		
9	86279510	6	WASHER, 3/8 FLAT		
10	86190170	6	PLATE, INSTALL MT		
11	86005770	6	NUT, 3/8-16 HEX NYLOCK		
12	86275150	6	SCR, 3/8-16 X 1 3/4 HHCS PLT		
13	86054090	1	PNL, DEMAND PMP MT		*
14	86280100	1	HOSE, WTR 5/8 X 27		
15	86177020	2	CLAMP, HOSE #12 SST		
16	86181360	1	FTTG, BRB 1/2P X 5/8 BR		
17	86180170	1	ELL, STREET 1/2 BR		
18	86190190	1	PLG, 3/4 SOCHD BR		
19	86180250	1	ELL, 1/2 BR		
20	86188210	1	NIP, 1/2 X 3/8 HEX BR		
21	86188470	1	NIP, 1-1/2 X CL PVC (SCH80)		
22	86195010	1	VALVE, BALL PVC 1-1/2FP		
23	86179710	1	DSC, 3/8F X 3/8FP		
24	86030980	1	MLDG, WTR TANK 95GAL W/OVERFLW		
25	86176400	1	CAP, WATER BOX		
26	86195060	1	VALVE, FLOAT		
27	86181150	1	FLT ROD		
28	86270770	1	NUT, 1/4-20 HEX		
29	86174540	2	BALL, FLOAT		
30	86180260	1	ELL, 3/4 ST BR		
31	86181320	1	FTTG, BRB 3/4P X 3/4H BR		
32	86044190	2	BASE, CROSS BAR TB HS RL		*
33	86051770	1	PNL, SW BX CVR PLT MTR		
34	86161960	3	SCR, #8 X 1/2 PPHST BLK		
35	86044150	1	BASE,LF SD HOS RL MTR DR		*
-	86261360	1	CABLE, RETAIN VAC PLG		

* WHEN ORDERING INDICATE PART NUMBER AND COLOR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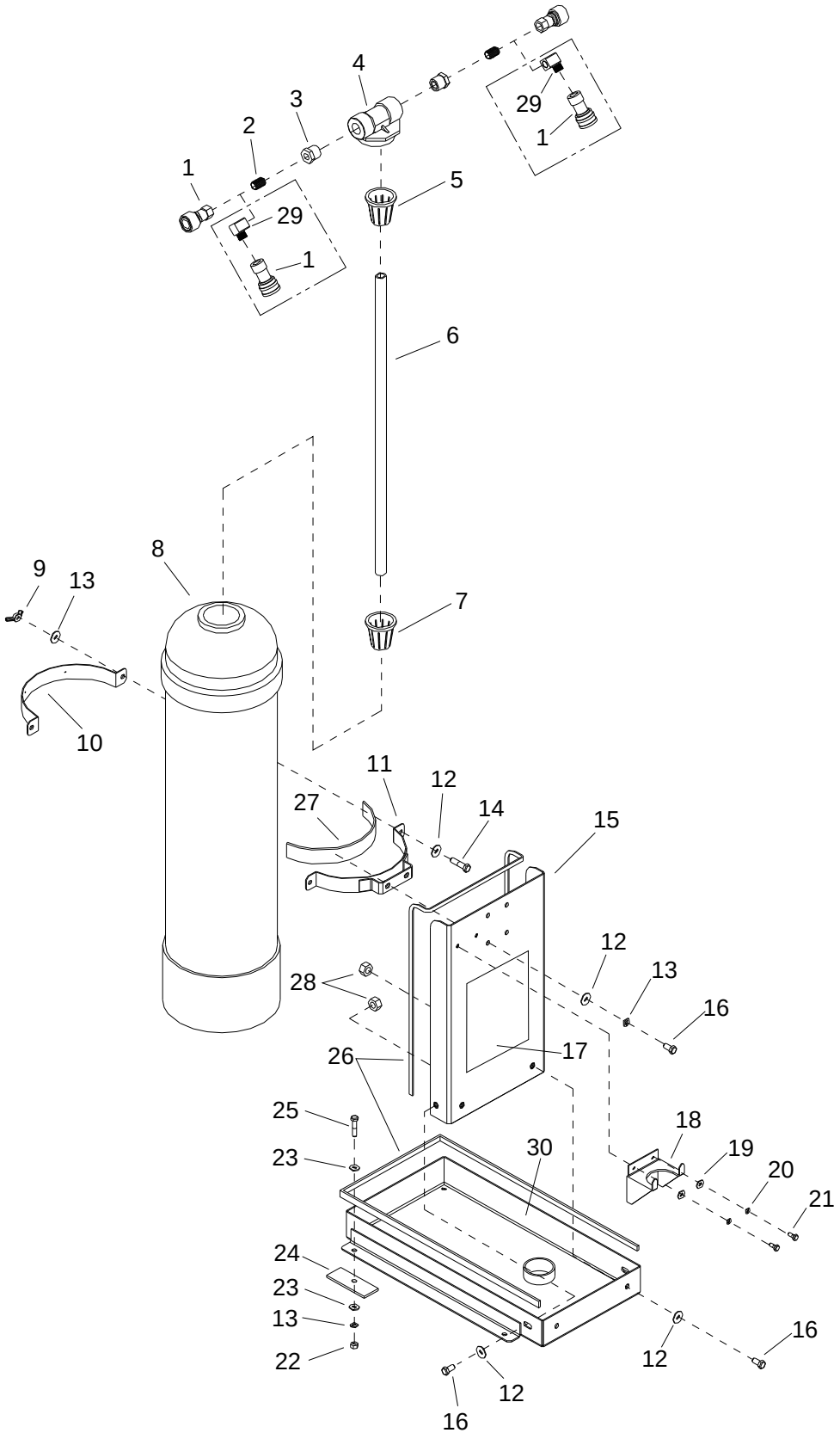
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES:
1	86177270	2	CLAMP, MFLR 1-3/4		
2	86175990	2	BUSHING, HOSE REEL		
3	86056560	1	RL, VAC HOS-HOS RL MTR DR		*
4	86044300	1	BASE, MTR. HOSE REEL		*
5	86005650	16	NUT, 5/16-18 HEX		
6	86279130	16	WASHER, 5/16 SPLIT LOCK PLTD		
7	86047910	1	GUARD, BELT MOTORIZED REEL		
8	86270330	4	FLATWASHER, 1/4		
9	86274750	4	SCR, 1/4-20 X 3/4 HHCS PLTD		
10	86010780	4	WASHER, 1/4 SPLIT LOCK PLTD		
11	86191090	1	PULL, AK104		
12	86324350	1	BELT, AX66 GOODYEAR MATCH		
13	86135960	1	KEY, 3/16 X 1 1/8		
14	86270770	4	NUT, 1/4-20 HEX		
15	86044230	1	BASE, MTR MT PNL HOS RL		*
16	86187870	1	MOT, 1/8HP 12V EP5786		
17	86185360	1	HUB, H1/2		
18	86191100	1	PULL, AK32H		
19	86192100	4	SCR, CAP 1/4-20 X 1-1/2 FLT		
20	86050110	1	MT, MTR HOS RL MTR DRIVE		
21	86047450	1	CVR, HOS RL MTR CVR		

* WHEN ORDERING INDICATE PART NUMBER AND COLOR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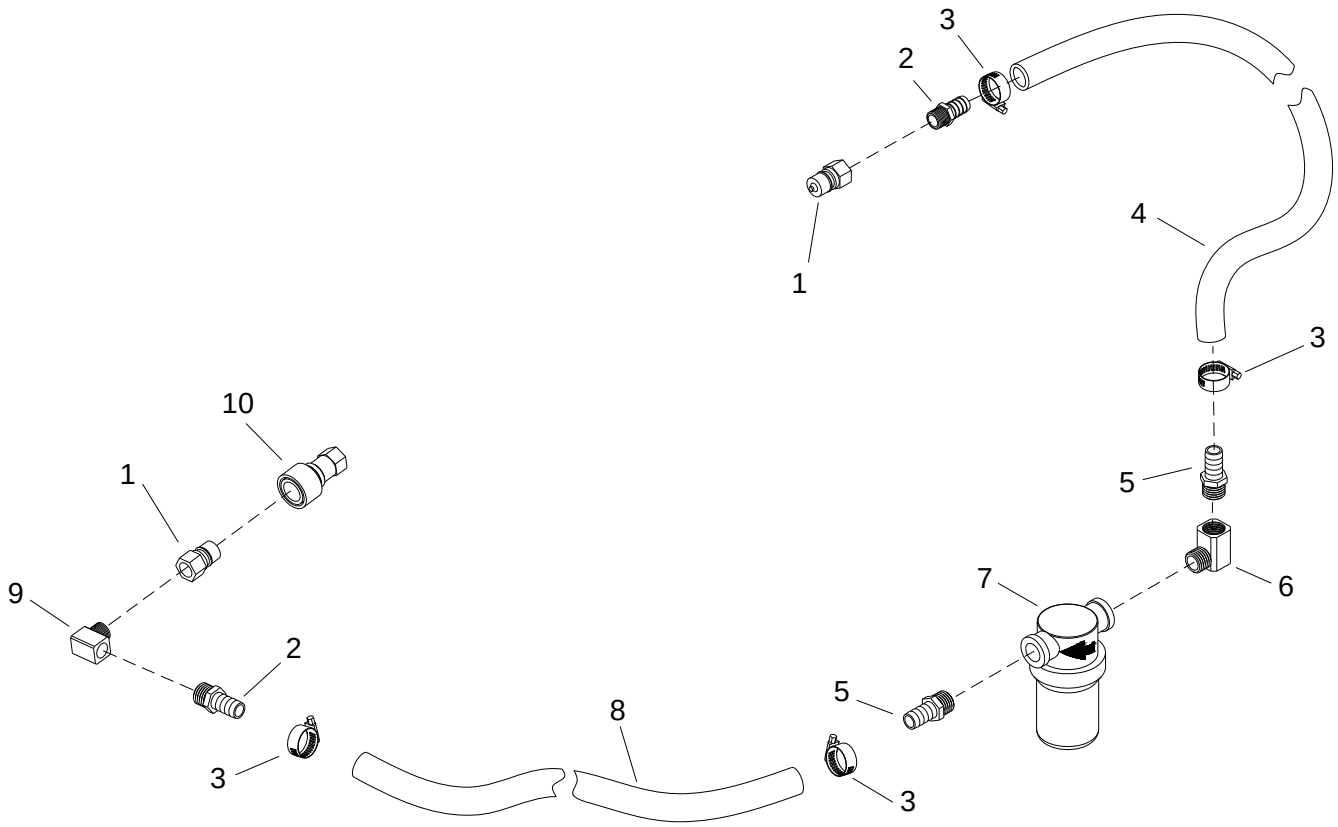
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
-	86041740	1	WATER SOFTENER 30" PC		COMPLETE
1	86179710	2	DCS, 3/8F X 3/8FP		
2	86188220	2	NIP, 3/8 X CL SST		
3	86175880	2	BUSH, 3/4 X 3/8 ALUM		
4	86173650	1	ADPT, TNK#50-0271		
5	86179650	1	DIST, TOP #41-2514		
6	86057920	1	TB, PVC 13/16X27”		
7	86177590	1	COLLECTOR, LWR #41-2410		
8	86349450	1	TANK, WATER SOFTNER, BLUE 30”		
9	86270710	2	NUT, WING 3/8-16		
10	86057120	1	STRAP, WTR, SOFT CLAMP		
11	86047140	1	CLAMP, TNK WTR SOFT		
12	86279510	8	WASHER, 3/8 FLAT		
13	86010790	12	WASHER, 3/8 SPLIT LOCK		
14	86277830	2	SCR, 3/8-16 X 2" HXHD		
15	86054050	1	PNL, SOFT MTG-WTR SOFT CIR GRAY		
16	86006920	4	SCR, 3/8-16 X 3/4 HHCS GR5 PLTD		
17	86179160	1	DEC, CDNSD REGEN OPER		
18	86048330	1	HLDR, FLTR-WTR SOFT		
19	86270330	2	FLATWASHER, 1/4		
20	86010780	2	WASHER, 1/4 SPLIT LOCK PLTD		
21	86275890	2	SCR, 1/4-20 X 5/8 HHCS PLTD		
22	86005650	4	NUT, 5/16-18 HEX		
23	86278830	8	WASHER, FLAT PLTD		
24	86190170	4	PLATE, INSTALL MT		
25	86274690	4	SCR, 5/16-18 X 1.5 HHCS BR5PLT		
26	86194660	2	TRIM, FLX 1/16 X 29/64 BLK		
27	86182270	1	GSKT, FOAM-WTR SOFT		
28	86005770	4	NUT, 3/8-16 HEX NYLOCK		
29	86180210	2	ELL, ST 3/8 BR		OPTIONAL
30	86349090	1	TRAY, RECT, WTR SOFTNER		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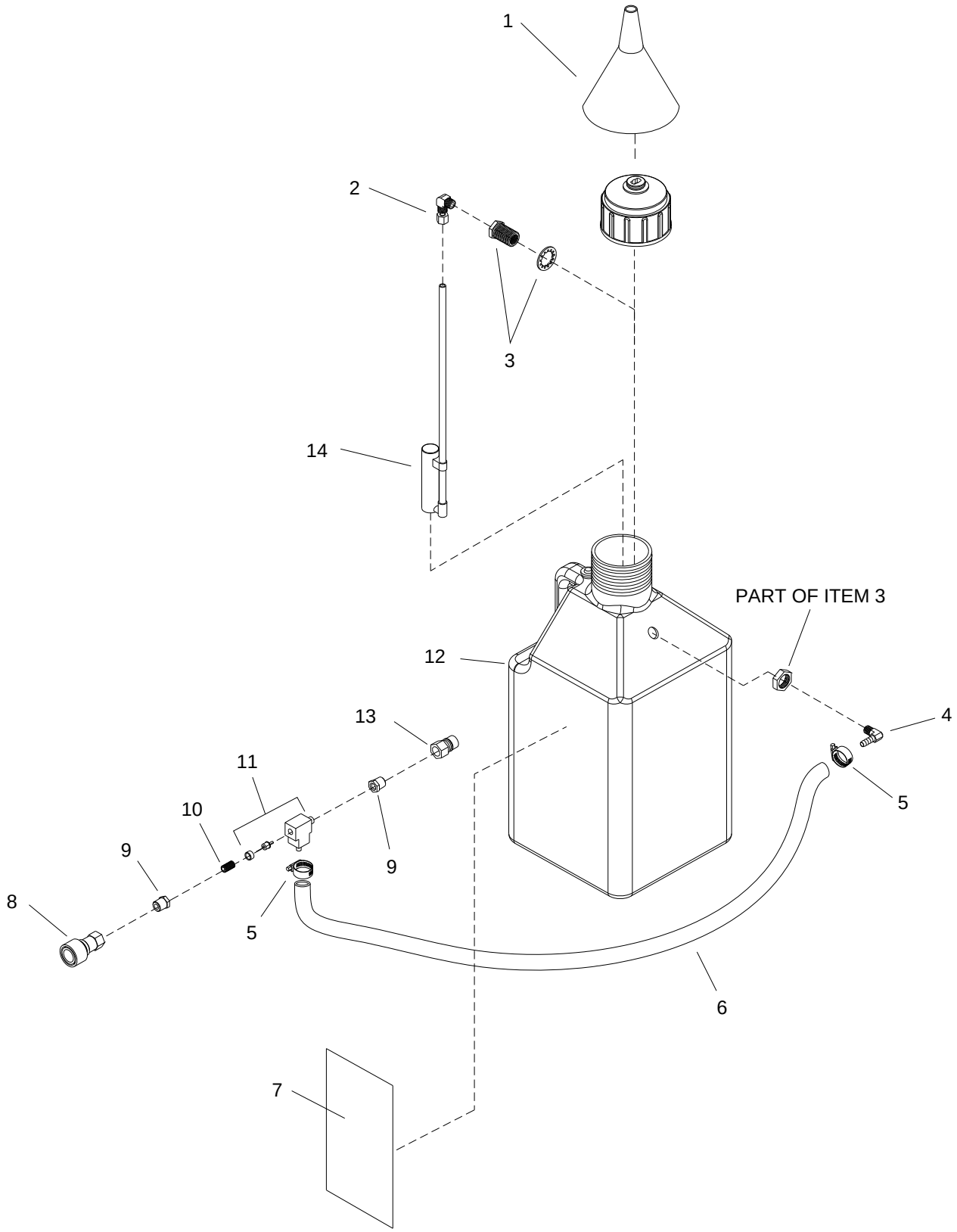
REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86179630	1	DISCONNECT, 3/8M X 3/8FP		
2	86181400	2	FTTG, BRB 3/8P X 5/8H BR		
3	86177260	4	CLMP, HOS#10 9/16MIN		
4	86280140	1	HOSE, WTR 5/8X 30-1/2		
5	86181360	2	FTTG, BRB 1/2P X 5/8H BR		
6	86180170	1	ELL, STREET 1/2 BR		
7	86193510	1	STRNR, IN-LINE 1/2FP BS		
8	86280130	1	HOSE, WTR 5/8X 97		
9	86180210	1	ELL, ST 3/8 BR		
10	86179710	1	DSC, 3/8F X 3/8FP		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REF	PART NO.	QTY	DESCRIPTION	SERIAL NO. FROM	NOTES
1	86195930	1	FUNNEL, BIG BLU		
2	86180470	1	ELL, 1/4P X 3/8 POLY BR		
3	86177620	1	CONN, 1/4P BLKHD LNG BR		
4	86180480	1	ELL, BRB 1/4P X 1/4H BR		
5	86176990	2	CLAMP, HOSE #4 SST		
6	86280630	1	HOSE, 1/4ID NYLOBRD X 30"		
7	86179160	1	DEC, CDNSD REGEN OPER		
8	86179710	1	DSC, 3/8F X 3/8FP		
9	86175920	2	BUSH, 3/8 X 1/8 BR		
10	86247720	1	NIPPLE, 1/8 CLOSE		
11	86195460	1	VLV, INJ W/#1JET		
12	86185720	1	JUG, 5 GAL		
13	86179630	1	DISCONNECT 3/8M X 3/8FP		
14	86030950	1	VLV, AIR CHK W/STEM#4560		