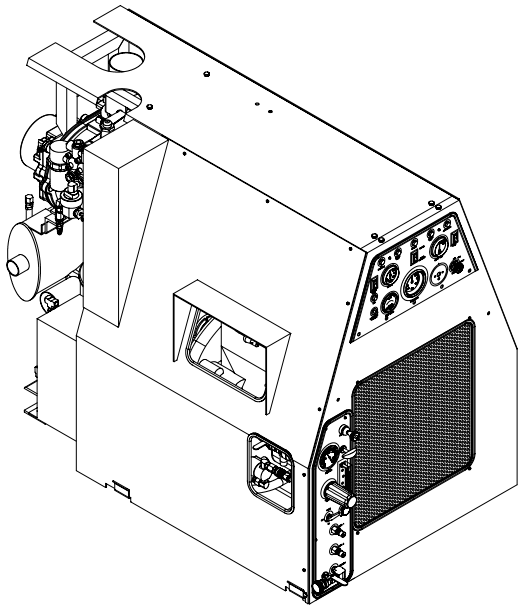
WHITE MAGIC, INC.

PRO 1900



OWNER'S MANUAL

"OUR FUTURE DEPENDS ON YOUR COMPLETE SATISFACTION."

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(800) 422-1128

03/29/2002
Revision 1.0
Price U.S. - $25.00

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ORIENTATION

The White Magic Pro 1900 is a 53 HP Ford liquid-cooled 4 cylinder powered carpet and upholstery cleaning system, completely self contained which requires no external power or secondary fuels.

A large fresh water holding tank is provided with the Pro 1900 system. Hot water is generated through a highly efficient heat transfer system. First the cool water is heated in a pre-heater that transfers the heat from the hot engine coolant. Next the water is superheated by means of the main heat exchanger that extracts the heat from the hot exhaust gases of the engine. A catalytic converter has been added for increased temperature and to reduce the pollution output associated with combustion engines. The water temperature, water pressure, and amount of chemical injection are completely adjustable.

The vacuum system is preset by the factory to provide the best extraction and drying without exceeding the rating of the Roots 59 recovery blower. This machine has dual wand capabilities and because of the high power it can be operated effectively at great distances. The pumping system runs cold water through it to provide for the longest machine life possible. With proper maintenance this machine is designed to provide years of efficient operation.

It is important to read this manual completely before using your White Magic Pro 1900 System. It provides important operation, maintenance, and troubleshooting information which if followed closely, will greatly increase the life of your system.

- ***NEVER , UNDER ANY CIRCUMSTANCES, MAY A PORTABLE CONTAINER BE USED OR CARRIED IN A VEHICLE EQUIPPED WITH **WHITE MAGIC** EQUIPMENT. THIS PRACTICE IS UNSAFE AND ILLEGAL IN MOST AREAS. ONLY APPROVED EXTERNAL TANKS ARE PERMITTED TO FUEL **WHITE MAGIC** EQUIPMENT**.**

INSTALLATION

READ THE ENTIRE INSTALLATION PROCEDURE CAREFULLY BEFORE STARTING. THIS WILL ASSURE A CORRECT AND SAFE INSTALLATION.

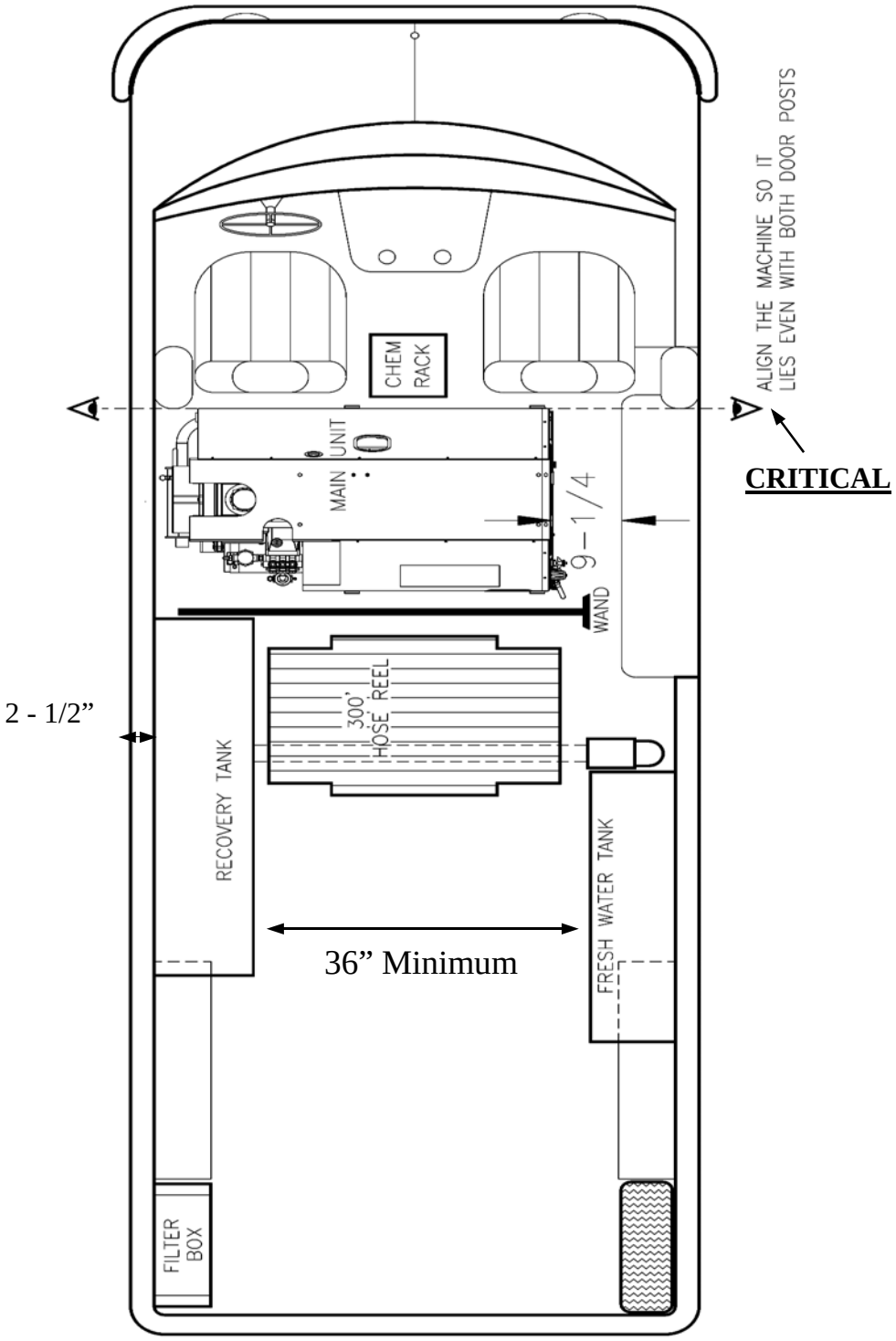
TOOLS REQUIRED

The following is a list of tools needed to install the slide-in unit:

1. Fork Lift
2. Automotive jacks and several 24" long pieces of ½" diameter black iron pipe
3. 2 pieces of 1 ¼" schedule 40 black iron pipe 42" long
4. Electric drill
5. Sawzall with metal cutting blades
6. Common hand tools (wrenches, hammers, etc.)
7. ¼", 1 1/8", 1 ½", 1 ¾" & 3 ½" hole saws
8. Tube of silicone caulking

PLACEMENT OF MAJOR COMPONENTS

Diagram shows the approximate location of major components in a typical van installation.



INSTALLING MACHINE INTO TRUCK

1. Remove the side covers from the machine. Place the two black iron pipes through the ring lift points on the lower frame rail. Be sure to clamp the pipes to the forklift as the machine is top heavy. Use these pipes to lift the machine with a forklift and place in the truck.

2. The machine unit should be placed in the truck and jockeyed into position prior to drilling of mounting holes for either section.

3. Situate the machine as close to the driver's side wall as possible without touching. Align the right hand side of the machine so it lies even with the sliding door post and the driver's side post. See diagram under "Placement of major components."

4. Prior to drilling the holes that bolt the machine to the floor, assure that there are no components under the vehicle which will be damaged, such as fuel lines, electrical wires or hydraulic lines.

5. Always use the supplied reinforcement brackets (J433) under the floor of van when bolting the machine in place.

6. Once the machine is securely bolted in place, slide the 3" x 90 degree muffler sweep onto the blower pointing down. Mark the floor approximately where the center of the sweep would go through the floor, them remove sweep and drill with a 3-1/2" hole saw. Do the same for the 1-1/2" sweep from the exhaust muffler and drill a 1-¾" hole saw through the floor.

7. Clamp the 3" x 90 degree muffler sweep in place on the blower output directed toward the new hole in the floor. From under the van mount the other O3" x 90 degree muffler sweep to the first sweep. Attach the muffler and hanger as shown in the diagram.

8. Clamp the 1-1/2" expanded muffler pipe to the 1-1/2" muffler sweep and place through floor, then clamp in place to the muffler output.

9. With a 1-1/8" hole saw drill a hole directly under the pop off valve through the floor.

10. Run the pop off valve hose through the floor.

11. Seal all holes through the floor with high temp silicone caulking.

INSTALLING MACHINE INTO TRUCK (continued..)

12. Recovery Tank must be placed as close to the drivers side of van as possible (especially for hose reel clearance.) It should be placed 2 1/2" from the side cover of the machine.

13. Drill a 7/16" hole 3" from either end of tank mounting foot. (Always check to make sure no damage will be done to critical van components before drilling any holes.) Drop a bolt in each hole as it is drilled to prevent the tanks from moving. Drill through the mount on the top of the tank. Use a 1-1/2" long 3/8-16 fully threaded bolt, 3/8" flat washer, and a special 1" x 2 1/2" long nut plate supplied for the top. This can be slid into one of the holes of the frame of the van and held with fingers while starting the bolt. Use two 3/8-16 x 2" long fully threaded bolts with 3/8" flat washers for the bottom of the tank. Use fender washers, lock washers, and nuts underneath the van. It should be noted that where ever a bolt goes through the heat shielding under the van a hole saw should be used to cut out some shielding to give access for the hardware. Do not tighten the nuts against the heat shielding.

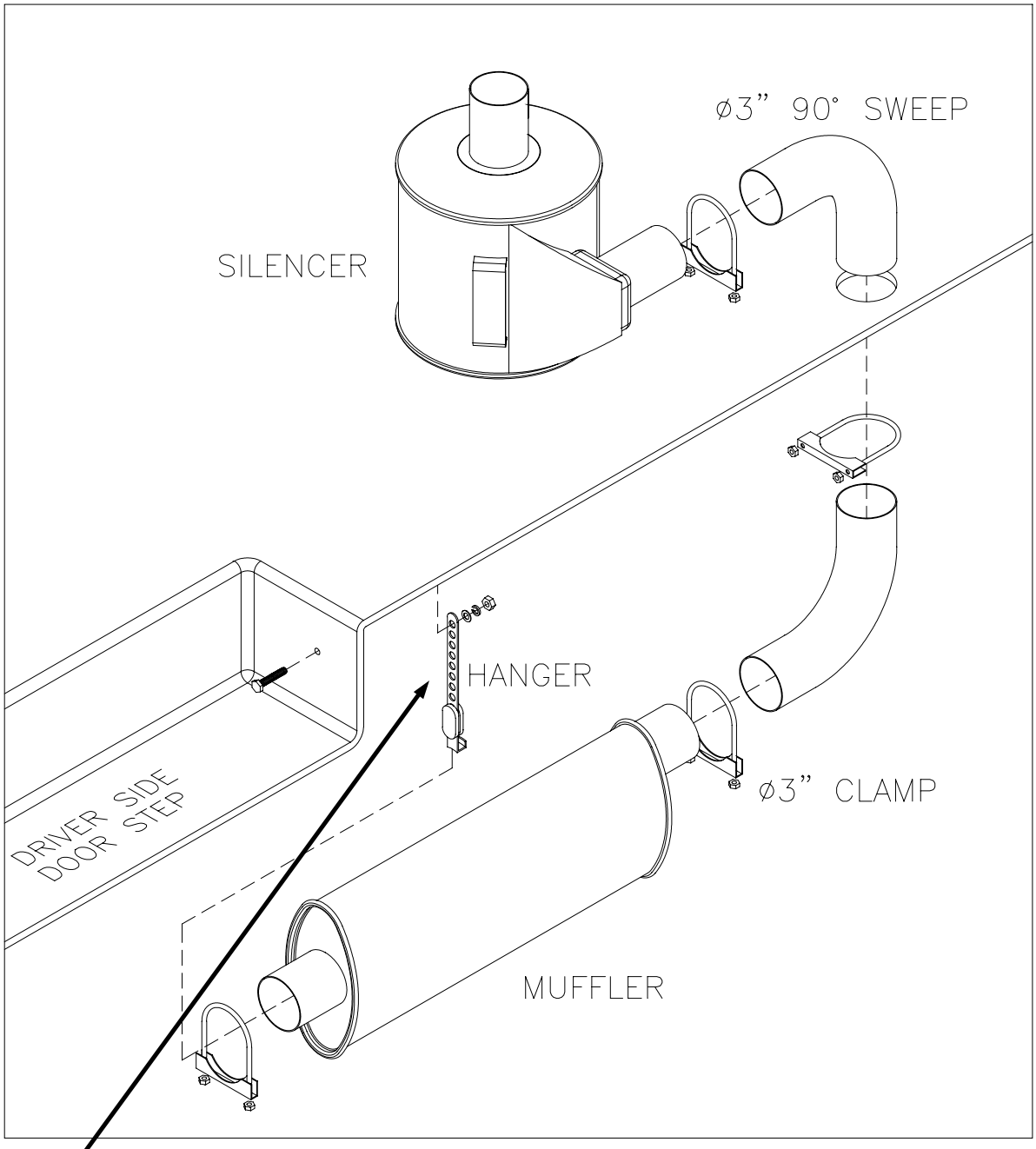
14. Water tank must be as close to the passenger side of the van as possible. Clearance between water and recovery tanks **MUST** be at least 36" to allow for placement of hose reel. Front to back placement of water tank is flexible and depends on van length, customer preference, and accessories such as; water reels, sprayer racks, ect.

15. Secure water tank in same manner as recovery tank.

16. Install filter box if so equipped.
    a.) The filter box is bolted to the floor with (3) 3/8-16 fully threaded bolts with fender and lock washers underneath. It is positioned in the rear driver's side corner of the van with the 3" input toward the van wall.
    b.) A piece of 3" hose is cut to 7' to go from the input of the recovery tank to the output of the filter box. It should be tie strapped to the ribs of the van wall approximately 40" from the floor.

17. Install hose reel if so equipped. Note that the hose reel must be tilted back to check for clearance before bolting bracket to the floor. The side of the hose reel should be even with the edge of the recovery tank.

Muffler Installation



Hanger may need modification.

PLUMBING

1. Run 1/2” water hose from pump to output valve on water tank. Note that the hose is already connected to pump.

2. Run 1/2” bypass hose from unloader valve (already connected) to return plumbing of water tank (slightly above output valve). Note that caution must be used to not allow this hose to be kinked or pinched as it carries system pressure when machine is running.

3. Drill a 1 1/8” hole through floor at the rear of the water tank for overflow hose. Note that hose must be slit to insure pressure cannot build up in tank in case hose gets blocked with ice , ect.

4. Connect 1/4” black vacuum hose from primer and pressure relief valves of machine to barb on recovery tank.

5. Connect 4” hose from blower input elbow to recovery tank filter assembly.

6. Run approximately 7’ of 3” hose from recovery tank to filter box if so equipped. If no filter box, a 3” to 2” adapter is supplied to connect directly to vacuum source.

7. Plumb 2” drain from recovery tank and clamp to floor. (Refer to Pro-1900 section pg. 6 G2)

8. Seal all holes through floor with silicone caulking.

***Drain location can vary according to vehicle type and size. Drawing is for reference only.

WIRING

1. Install battery (note that battery is not included and must be Everstart #26 - 5 or equivalent) Obviously, use caution when hooking up battery.

2. Connect white wire from machine to brown wire of the recovery tank float switch.

3. If equipped with an electric hose reel, run 10 Ga. Black wire from hose reel to + terminal on the starter. Use a 14 Ga. fusible link in between. Ground hose reel to left front mount bolt of hose reel with existing ground wire terminal. Note that machine recovery tank and hose reel must have common ground if mounted to a wooden floor.

FUEL LINE HOOKUP

CAUTION

Do not start vehicle or use any electrical devices that could accidentally ignite gasoline while installing any of the connections into the fuel tank. Use an industrial knife to cut hoses.

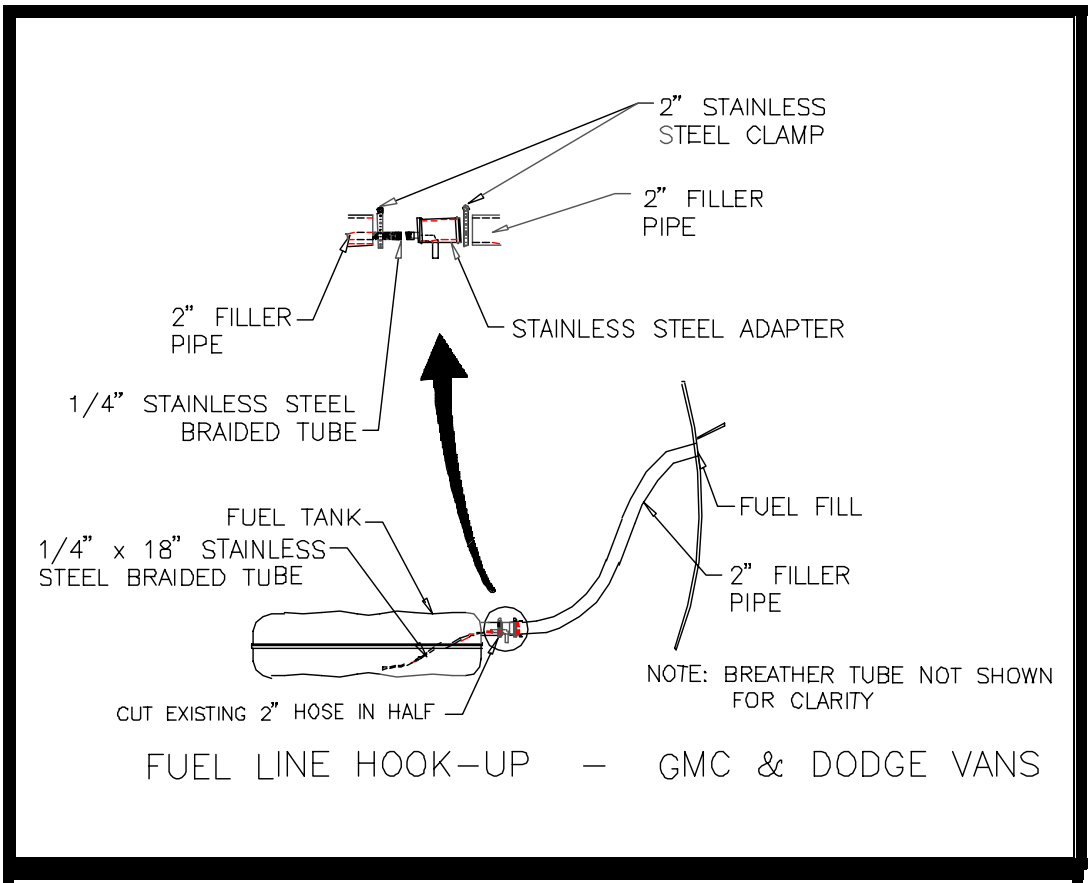
1. Assume that gasoline level in the vehicle's fuel tank is below the level of filler connection to the tank. If it is not below this level it will be necessary to drain out some of the fuel.

2. Cut 2" fuel filler hose in two pieces 4"- 6" above the fuel tank connection. Install the stainless steel adapter into the hose feeding the ¼"stainless steel braided hose down into the fuel tank. Ensure that the hose is long enough to reach the tank bottom. Secure adapter connections tightly with stainless steel hose clamps.

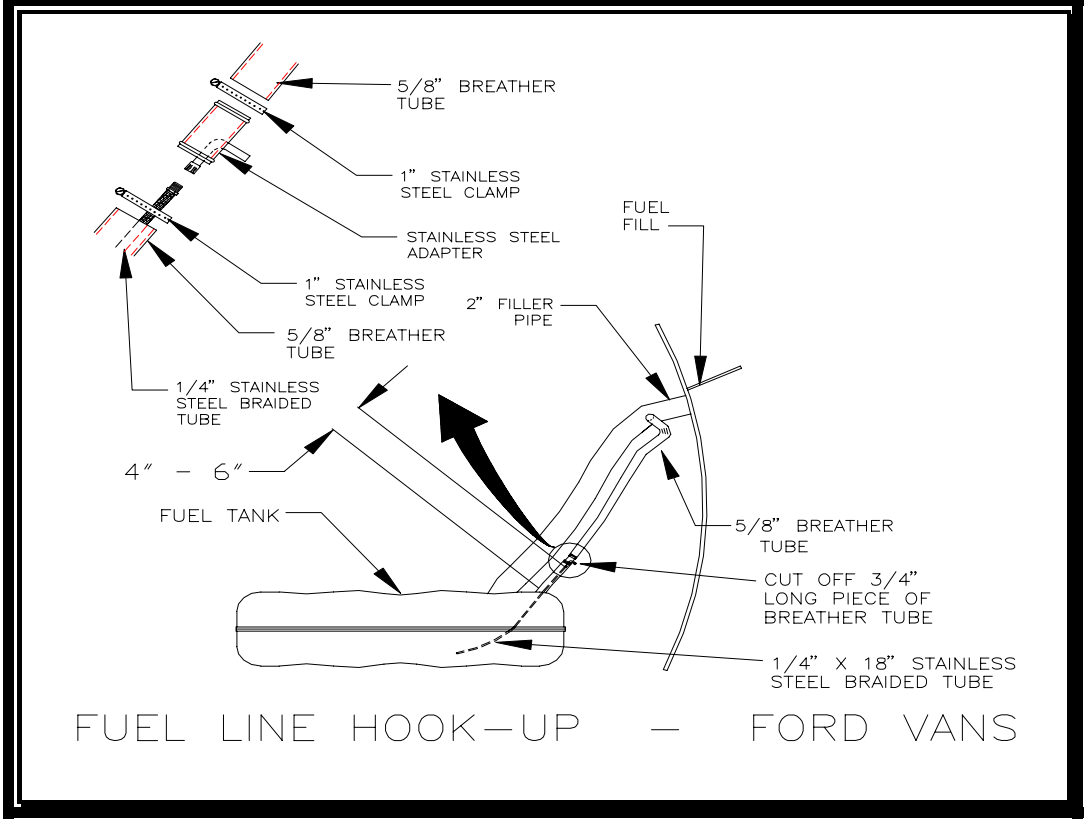
3. Drill a ¾" hole in the floor between the battery tray and preheater to run the fuel line from the Ford engine fuel pump to the fuel line adapter. Use a short piece of ½" hose to protect the fuel line where it passes through the floor. Silicone around the hose. Use stainless steel hose clamps to tightly secure the ends of the fuel line on the fuel pump and adapter.

4. Make sure that the fuel line is not routed near the vehicle's or machine's exhaust system or near any moving parts. Secure the fuel line to the vehicle body and/or frame with appropriate clamps or tie-wrap straps.

5. Adjust the lengths of any of the hoses as necessary.



FUEL LINE HOOK–UP – GMC & DODGE VANS

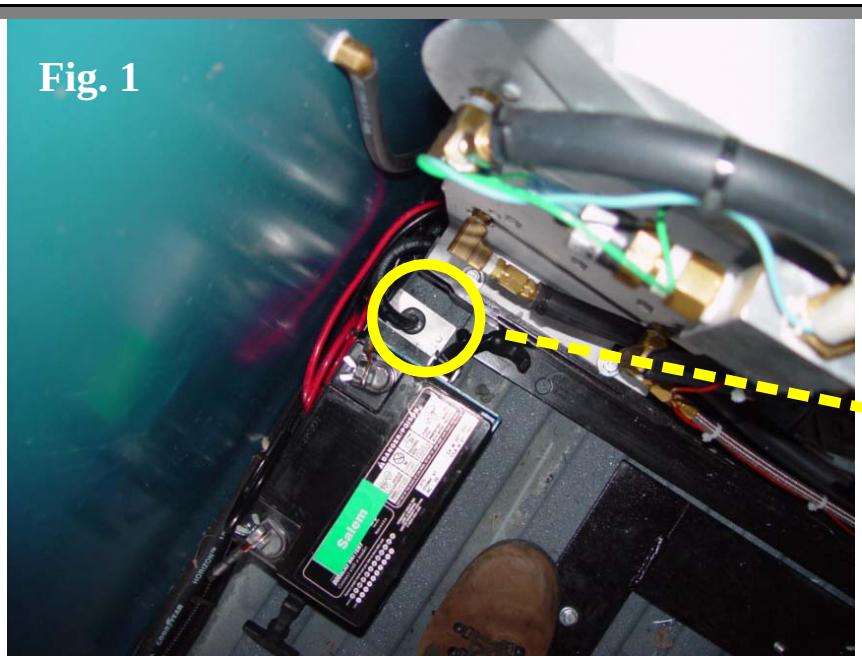


FUEL LINE HOOK–UP – FORD VANS

2003 Chevy
Fuel Line Kit Installation Procedure
07-01-03

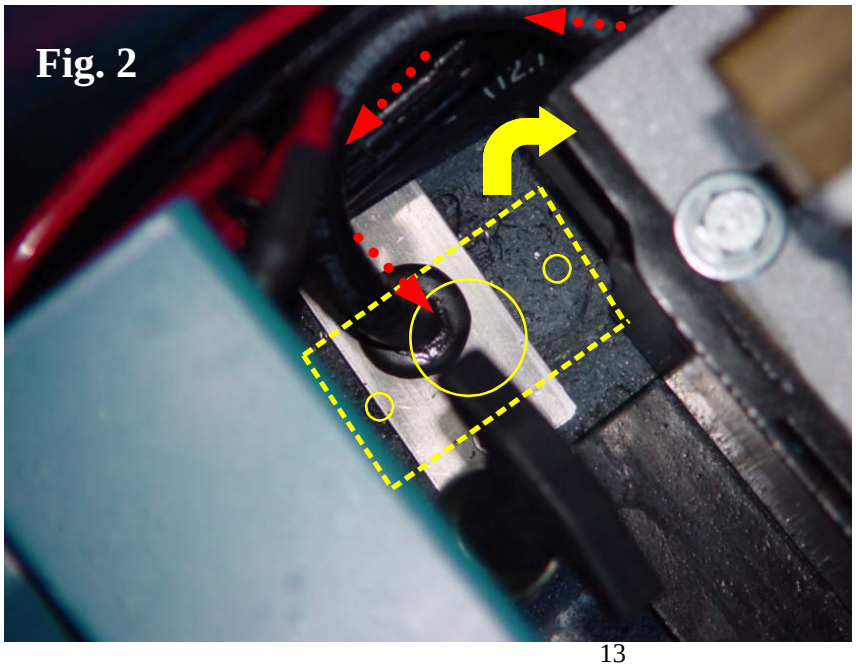
*****IMPORTANT*****

As of 09/09/03 the fuel line kit (PN#A500) can be used only with a White Magic Signature Series machine (on machines manufactured after 07-01-03, w/ S/N# 237066 and above.) A special fuel solenoid is required in conjunction with this kit to prevent dangerous fuel spills or leaks. Currently, White Magic Signature Series Machines utilize these solenoids. In the future, all White Magic Slide-In Systems will be fitted with these solenoids. However, the factory should be consulted if the machine being installed was shipped without a (PN#A500) fuel line kit as original equipment.



1.) Install White Magic Inc.'s Signature Series machine using installation procedure and assure all safety precautions have been taken. If the battery has already been installed, remove and relocate battery away from area.

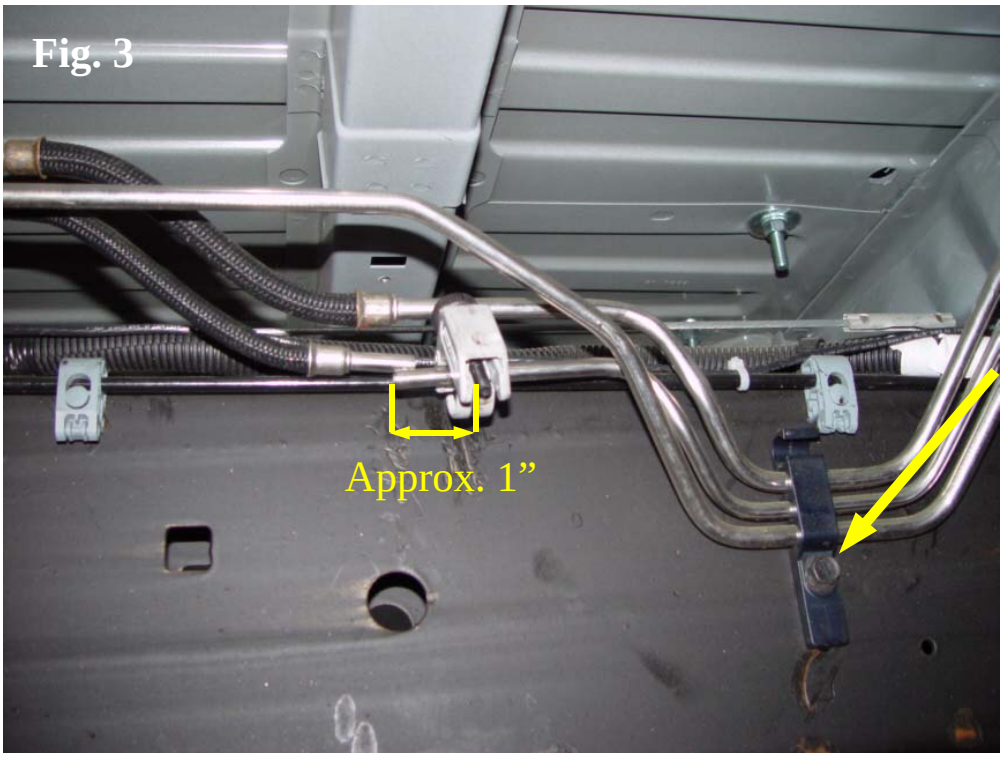
2.) *Using extreme caution as the van's gas tank is in close proximity, drill a 7/8" hole through the floor of the van near the rear left corner of the machine. (Fig. 1)



3.) Mount **(PN#J545)** bracket to floor of van using (2) **(PN#D028**) Tek Screws. The bracket may be mounted across the floor slots as shown or in them. (Fig. 2)

4.) Run the fuel line through the **(PN#A020)** grommet and bracket then out of the floor of the truck. Use silicone spray to move grommet over hose more easily. (Fig. 2)

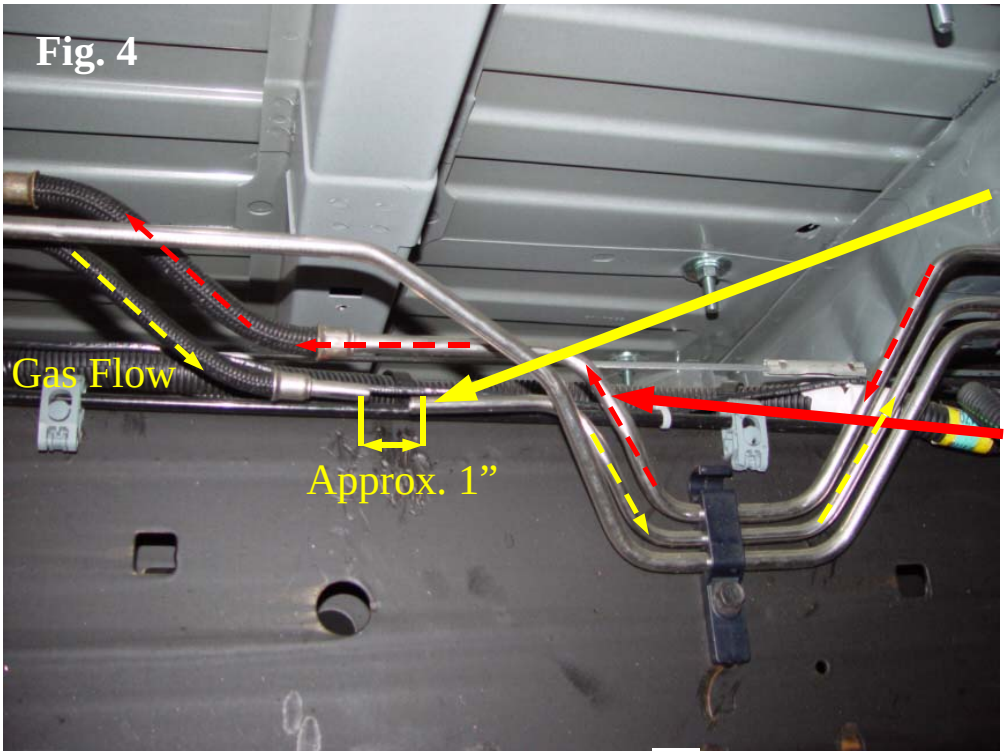
2003 Chevy
Fuel Line Kit Installation Procedure
07-01-03



5.) Loosen or remove this clamp to allow for more working room.

6.) Using a good quality mini pipe cutter (such as “Rigid”), cut into the metal return line as shown. (Fig. 3)

*****NEVER, UNDER ANY CIRCUM-STANCES, USE ANY ELECTRICAL DEVICE OR OTHER DEVICE THAT MAY CAUSE A SPARK TO CUT THE FUEL LINE, OR TO PERFORM ANY TASK IN THE VECINITY OF ANY MOTOR FUEL.*****



**The return line is the 5/16” diameter tube connected to one of the two flexible lines. (Fig. 4)

***The 3/8” line is the main feed from the fuel pump. **DO NOT** cut this line. (Fig. 4)

Be sure to measure hose diameter prior to each installation.

2003 Chevy

Fuel Line Kit Installation Procedure

07-01-03

Fig. 5

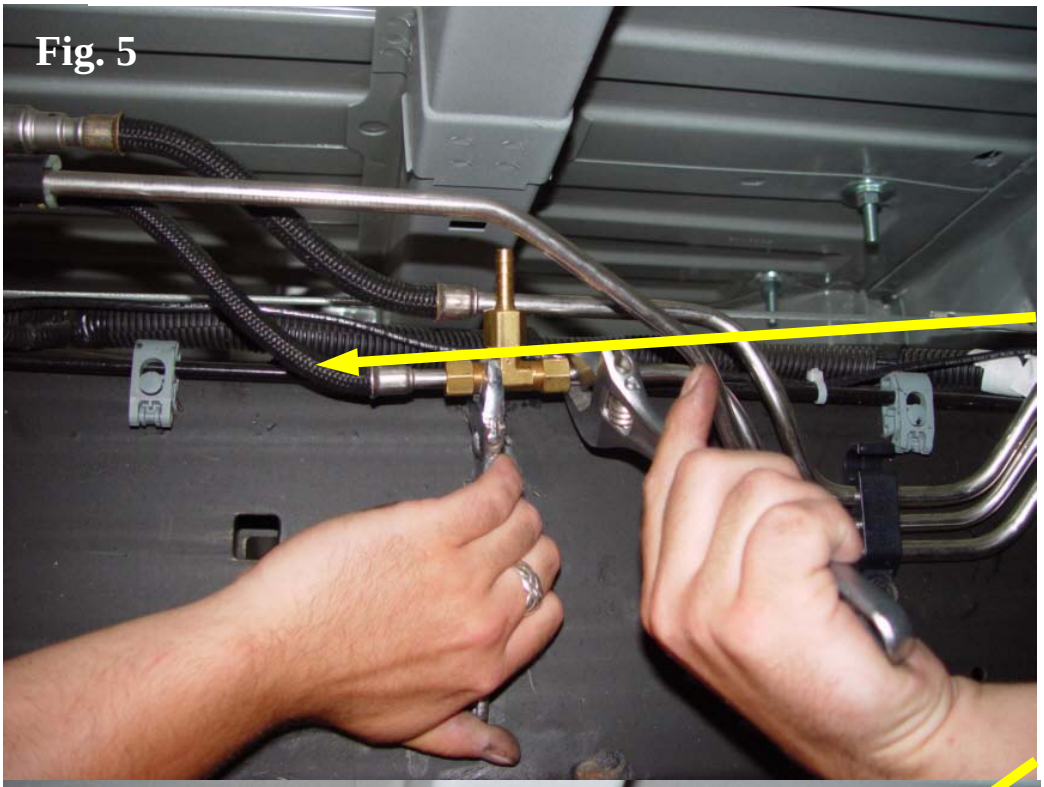
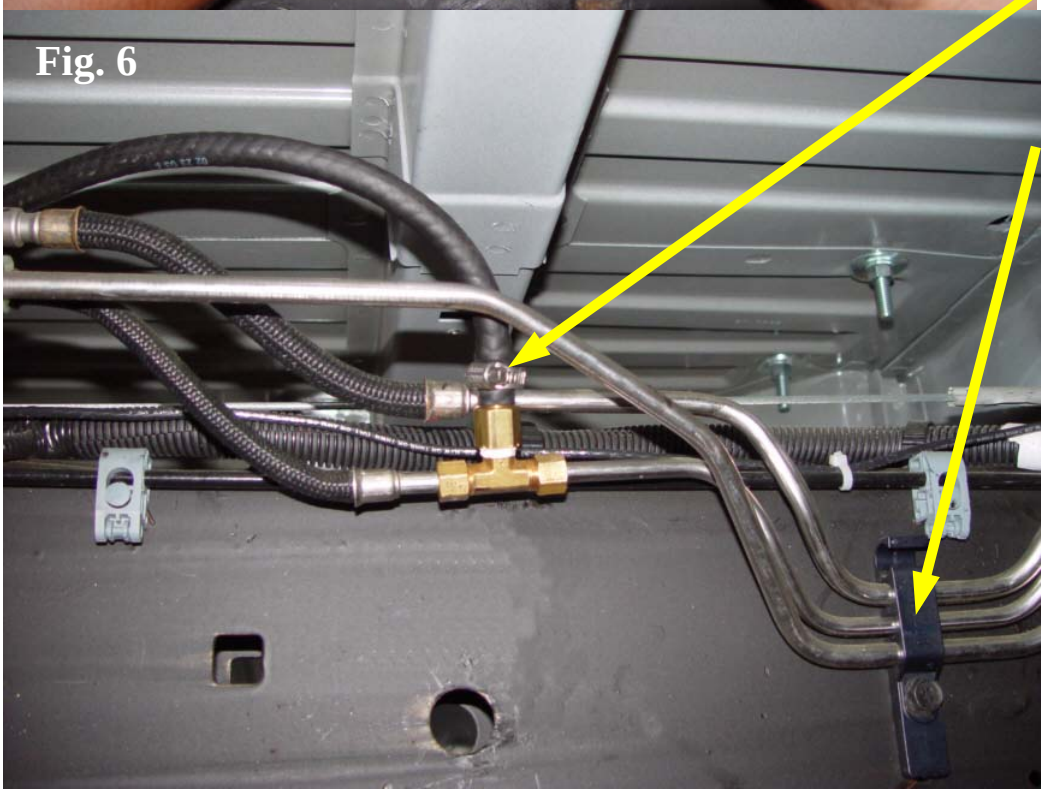


Fig. 6



6.) Install the **(PN#B192)** Compression Tee and the **(PN#E090)** 1/4” barb X 1/4” FPT .

If this hose has a tendency to kink, it may be necessary to remove a small section of tube. (See Fig. 3, 4)

Tighten the compression nuts with barb pointing upward. (Fig. 5)

6.) Route the fuel line to the barb and secure using a **(PN#B029)** 1/4” SS hose clamp. Also re-tighten the clamp holding the fuel lines.

7.) Carefully check for leaks by running van engine for a few minutes.

8.) Turn machine on to assure good gas flow.

NOTE: **NEVER** run your carpet cleaning machine with van engine running.

INITIAL START-UP & TEST RUN

WARNING: Do not attempt to start and/or run the machine until the machine installation is completed and this manual has been entirely read and fully understood.

1. Fill the water tank with clean fresh water.
2. Fill the chemical jug and place the chemical line in the jug.
3. Attach the hose and the standard wand to the machine.
4. Set the temperature on the control knob to about ¾ of the way to HI.
5. Flip the Machine Mode switch on the machine to “Normal”.
6. Flip the Pump power switch to the “on” position.
7. Assure that the temperature control valve is in the closed position.
8. Assure that the manual pressure relief valve on the lower manifold is closed.
9. Start the engine and run at a low speed. (Refer to “Machine set-up for carpet cleaning operation” steps 1-15
10. Attach a hose to the Auxiliary valve then open until a good steady flow is observed from hose then close.
11. Key the wand until it produces a steady spray then adjust the pressure with the pressure adjust knob to 500 psi.
12. Seal the vacuum at the wand, reel, and tank. Turn the chemical switch to “PRIME” until all air is purged from the chemical lines and flow meter, then return to “ON”
13. Adjust the chemical flow with the chemical adjust knob using a White Magic standard wand.
14. Set the engine RPM to approximately 2500 RPM and turn the temperature to the maximum setting.

Without using any water the temperature will cycle. First at a low temperature then going higher each cycle until the engine has reached it's optimum operating temperature. This is the point when the thermostat open (the upper radiator hose gets hot to the touch). Temperatures should cycle between 260 degrees max and 230 degrees min.

OPERATING INSTRUCTIONS

*****NEVER RUN YOUR CARPET CLEANING MACHINE WITH VAN ENGINE RUNNING!!!**

VEHICLE PREPARTION

1. **Park vehicle, place automatic transmission in park or standard transmission in neutral and set emergency brake.**

2. The vehicle engine must not remain running. Both the rear and side doors should both be left in the open position to provide proper ventilation of the machine to prevent any overheating.

CAUTION

A. Do not park vehicle on a lawn or close to shrubs, as heat from exhaust or water overflow may cause damage.

B. Do not allow vacuum or solution hoses to rest against vehicle exhaust pipe or damage will result.

C. Assure that the vehicle interior temperatures do not exceed 140 degrees. A vehicle roof vent may also be required.

D. Do not operate machine with covers or guards removed. The machine will not properly ventilate and may overheat.

MACHINE SET-UP FOR CARPET CLEANING OPERATION

1. Assure that chemical jug has adequate chemical supply.

2. Connect an incoming water source to the water storage tank. Assure the inline water supply valve is open and that there is an adequate amount of water in the tank.

3. Assure that the recovery tank drain valve is closed.

4. Assure that the face panel Auxiliary valve is closed.

5. Connect the vacuum and solution hoses to the machine. Connect the cleaning tool to the other end of the hoses and open the solution line valve.

6. Check the pump oil level and adjust as necessary.

7. Check the engine oil level and adjust as necessary.

OPERATING INSTRUCTIONS (continued..)

8. Check the blower oil level and adjust as necessary.

9. Pull out the choke T-handle and pull out the throttle knob slightly (about ¼).

10. Set the center operation mode switch to the "NORMAL" position.

11. Set the CHEMICAL SWITCH valve to the "ON" position.

12. Set the TEMPERATURE CONTROL VALVE on the side of the machine to the "CLOSED" position.

13. Turn the key switch to the "START" position until the engine catches. Release the key and it will spring back to the "ON" position. Push in the choke T-handle.

14. Allow engine to warm up by idling for 5 minutes.

15. Press red button and pull out throttle control slowly to attain desired operating speed, then release red button. Fine tuning of engine speed setting can be accomplished by turning the throttle control knob either clockwise (reduces speed) or counterclockwise (increases speed). Do not exceed 3300 rpm. Only run at the speed necessary to accomplish the cleaning activity. White Magic recommends operation at 2000-2500 rpm for single wand cleaning, 2500-2800 rpm for dual wand operation.

16. Flip the PUMP SWITCH to the "ON" position.

17. Depress the cleaning tool trigger and observe the water pressure gauge reading. The desirable pressure is 500 psi. To adjust, turn the unloader handle clockwise to increase pressure and counterclockwise to decrease pressure.

18. Set the output water temperature by adjusting the TEMPERATURE CONTROL KNOB which is located on the upper face panel.

19. Depress the cleaning tool trigger and monitor the face panel chemical flow meter reading. Adjust as desired by rotating chemical adjust valve counterclockwise to increase flow and clockwise to decrease flow. If air is in flow meter or lines, or no flow is indicated, pulse pump may need to be primed. (Refer to pulse pump priming)

20. Proceed to your cleaning task by starting to clean at the point furthest away from the vehicle and working back toward it.

OPERATING INSTRUCTIONS (continued..)

21. To disconnect a tool from the solution line, turn the solution valve to the perpendicular “OFF” position and depress the cleaning tool trigger and disconnect the tool.

22. When cleaning is complete, flip the PUMP POWER switch to the “OFF” Position.

23. Return the throttle knob to the idle position and turn the temperature control to “LOW” then allow 2 minutes for the machine to cool down.

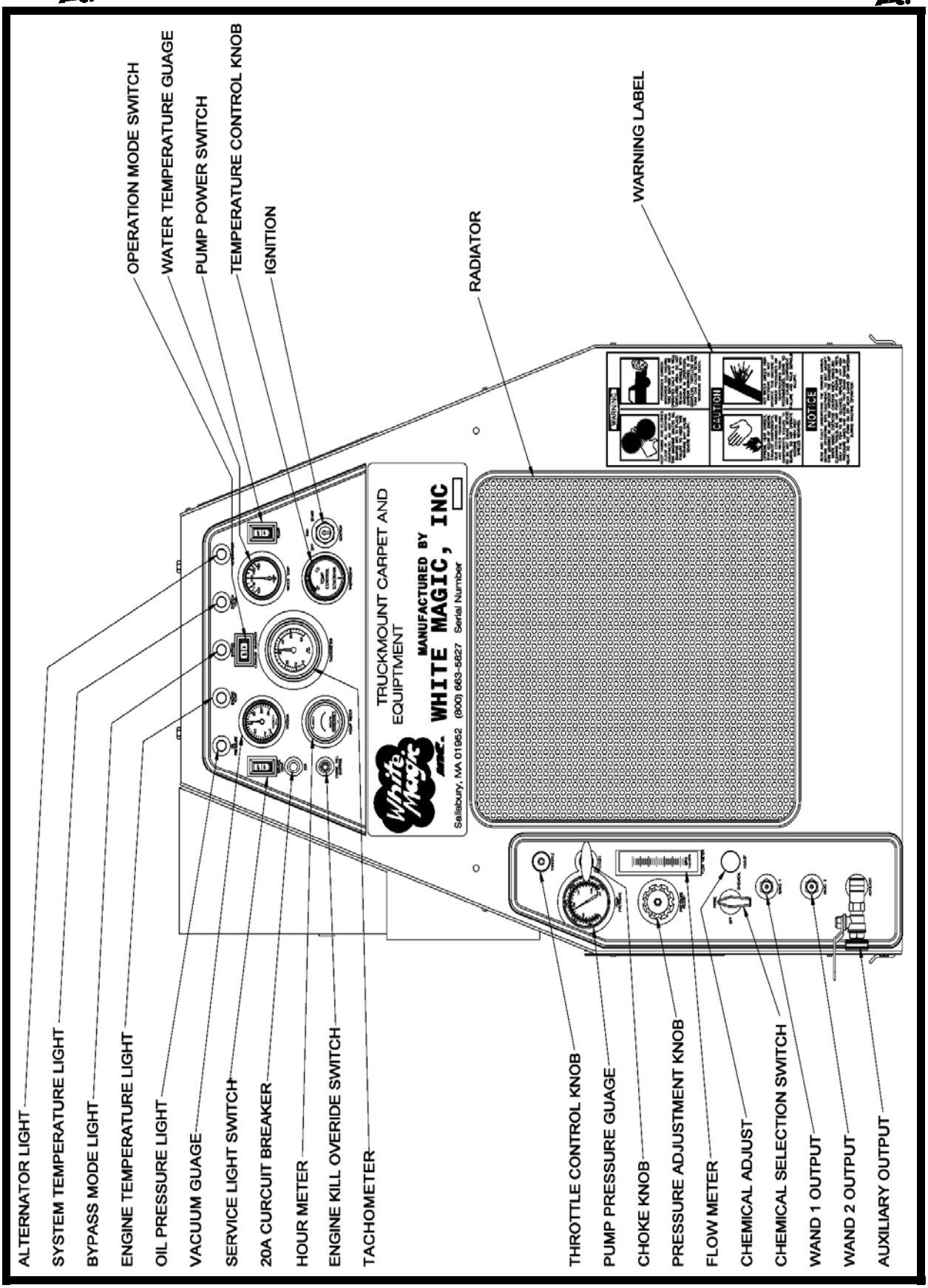
24. Turn the key switch to the “OFF” position.

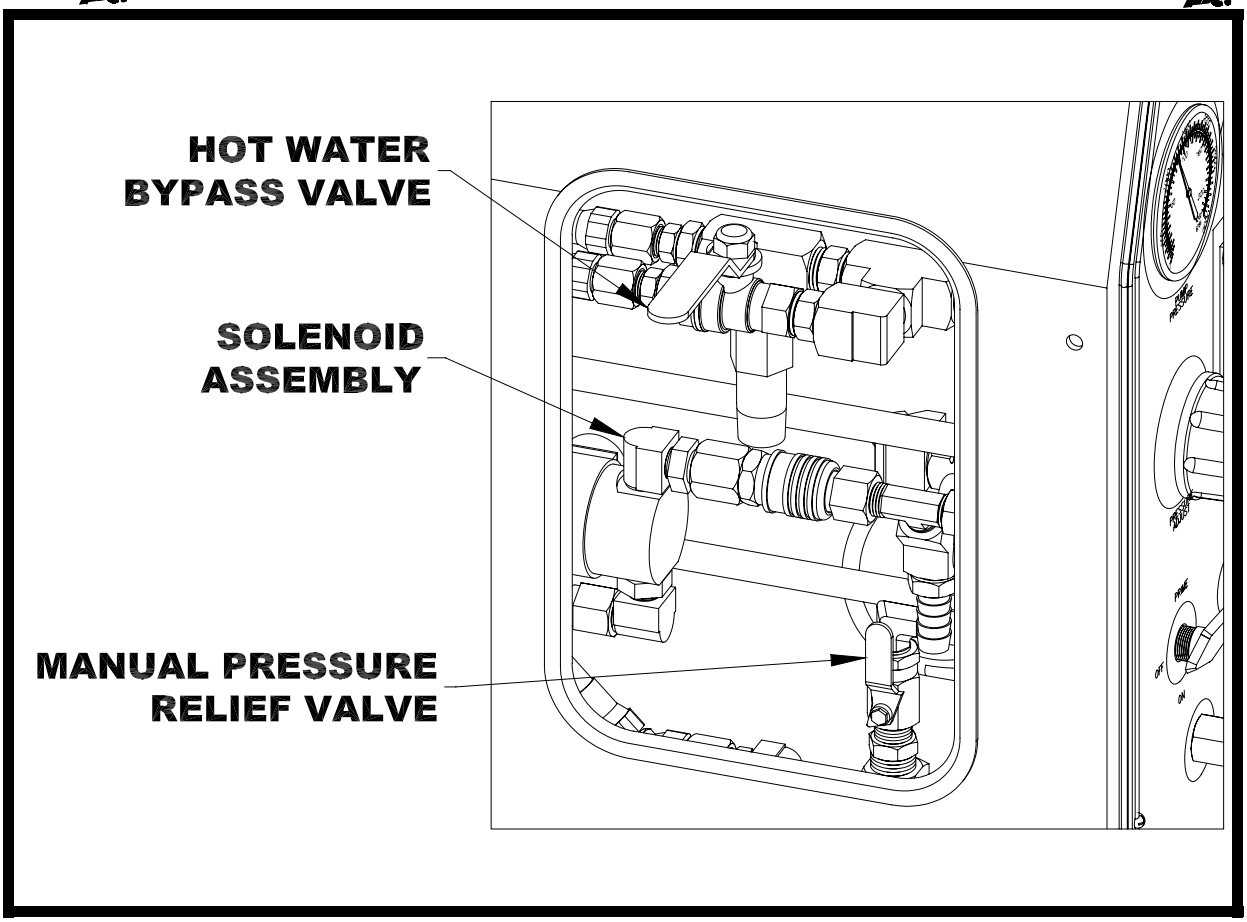
25. Disconnect set-up and proceed to an approved waste dump area if necessary. Close drain valve before starting the next cleaning job.

CAUTION

PROTECT EQUIPMENT FROM FREEZING

IF RECOVERY TANK BECOMES FULL, IT WILL AUTOMATICALLY SHUT THE MACHINE OFF. ROTATE THE MAIN POWER SWITCH TO OFF AND EMPTY THE RECOVERY TANK.


ALTERNATOR LIGHT
SYSTEM TEMPERATURE LIGHT
BYPASS MODE LIGHT
ENGINE TEMPERATURE LIGHT
OIL PRESSURE LIGHT
VACUUM GUAGE
SERVICE LIGHT SWITCH
20A CURCUIT BREAKER
HOUR METER
ENGINE KILL OVERIDE SWITCH
TACHOMETER
OPERATION MODE SWITCH
WATER TEMPERATURE GUAGE
PUMP POWER SWITCH
TEMPERATURE CONTROL KNOB
IGNITION
RADIATOR
WARNING LABEL
THROTTLE CONTROL KNOB
PUMP PRESSURE GUAGE
CHOKE KNOB
PRESSURE ADJUSTMENT KNOB
FLOW METER
CHEMICAL ADJUST
CHEMICAL SELECTION SWITCH
WAND 1 OUTPUT
WAND 2 OUTPUT
AUXILIARY OUTPUT
TRUCKMOUNT CARPET AND EQUIPTMENT
MANUFACTURED BY
WHITE MAGIC, INC
Salisbury, MA 01952 (800) 663-5827 Serial Number
WARNING
CAUTION
NOTICE



GAUGE READINGS AND SETTINGS

Vacuum Gauge: With vacuum port sealed, vacuum gauge should read 13-15 inches of mercury. DO NOT exceed this level as damage to the blower will result. Do not run the machine when vacuum is less than 6-8" (with the drain valve open for example). The machine needs vacuum for the temperature control system to function.

Tachometer: Reads the machine's engine speed in revolutions per minute (RPM). With machine operating, it should read about 2200 RPM for single wand operation and 2700 RPM for dual wand operation. The machine should not be operated at an engine speed under 1000 RPM or over 3300 RPM or machine damage will result.

Temperature Gauge: This gauge reads the water temperature at the outlet of the exhaust gas heat exchanger when water is being drawn. The output temperature is adjustable by turning the temperature control valve on the upper face panel. If very cool water is desired, the preheater bypass valve can be opened.

GAUGE READINGS AND SETTINGS (continued..)

Flow Meter: The flow meter reads the flow rate from the chemical jug while the chemical is being drawn. The chemical adjustment should normally be set at 1 or 2 GPH for a normal job and at 2 or 3 for an extremely dirty job. NOTE: This setting depends upon the type of chemicals used and their concentrations. Always use the lowest flow rate that properly cleans the affected areas, whereas excessive chemical may cause damage to the item being cleaned.

Hour Meter: The hour meter records the operating time of the machine. This information is needed to calculate engine oil change intervals as well as additional machine maintenance times.

Water Pressure Gauge: Water pressure is set by adjusting the unloader valve to the desired water pressure. Prior to increasing pressure conform to all precautions noted in the pressure washing section.

Normal setting is 500 PSI minimum for carpets and 1000 PSI maximum for pressure washing.

If upholstery tool designed for truck mount operation is used, the pressure for upholstery cleaning can be set at the same level as for carpet cleaning. **DO NOT** run the machine at less than 500 PSI.

Temperature Control Knob: This knob is used to control the temperature of the hot water output.

Manual Pressure Relief Valve: This valve is used to manually purge the pressure from the system.

Pressure Adjust Knob: The unloader valve is used to regulate and adjust the pump output pressure.

Chemical Switch: The chemical switch is used to turn the chemical flow on or off, as well as to prime the system.

Chemical Adjust Knob: This is used to adjust and regulate the amount of chemical used.

Throttle Control Knob: This is used to adjust and regulate the engine RPM. Minute adjustments can be made by pushing in the button and pulling the knob until the engine is close to the desired RPM, then rotate the knob for precise throttle adjustment.

GAUGE READINGS AND SETTINGS (continued..)

Alternator Light: The light illuminates when the alternator is not producing enough electricity.

System Temperature Light: The light illuminates when the hot water output has reached 280 degrees or the fresh water in the tank has reached 140 degrees.

Bypass Mode Light: When the electric bypass solenoid activates to maintain desired operating temperature the light illuminates.

Engine Temperature Light: The light illuminates when the engine has overheated.

Oil Pressure Light: This light will illuminate when there is not adequate oil pressure in the engine.

Pump Power Switch: This switch is used to turn the power to the pump clutch on and off.

Operation Mode Switch: This switch is used to change between normal operation and water recovery (no hot water or pump).

Engine Kill Override Button: This button is used to momentarily disable all safety sensors on the machine to isolate problems when the machine will not start. **Not to be used as a normal means of starting the engine.**

Hot Water Bypass Valve: This valve is used to get cooler water in the pump output for water extraction or pressure washing.

Solenoid Valve: This is used to maintain the system temperature by purging excess hot water back into the water tank. Remove and clean the screen regularly.

PULSE PUMP PRIMING

1. Assure chemical jug is adequately filled and the chemical input line is submersed in chemical.

2. Open the CHEMICAL ADJUST valve (1 or 2 turns counterclockwise).

3. Set the CHEMICAL FEED switch to prime.

4. Start the machine and run at idle.

5. Flip the PUMP POWER switch to the "ON" position.

6. Allow water to flow until all the air is worked out of the chemical feed line and flow meter.

7. Rotate the CHEMICAL FEED switch to the "ON" position. Chemical adjustment can now be made as desired for the cleaning tool to be used.

CHEMICALS

Carpet Cleaning Chemicals: Always use a good quality emulsifier which is recommended for use in truck-mounted equipment. Mix emulsifier thoroughly in accordance with the manufacturer's recommendations. Note that combining two or more chemicals, inadequate dissolving of powders, or using inferior quality materials may cause sedimentation and will clog the machine. Serious damage will result from using improper chemicals or mixtures.

Upholstery Cleaning Chemicals: Use only chemicals recommended for wet cleaning of upholstery fabrics. Consult factory for specific instructions.

Pressure Washing Chemicals: Use #1 or #2 pressure washing solvents only. **Do Not Use** the highly aggressive #3 alkaline degreaser. Flush chemical system and pumping system with clean water after job is complete.

UPHOLSTERY CLEANING OPERATION

We recommend using a White Magic upholstery tool designed for truck-mount pressures which has an automatic high pressure solution bleed-off. Cleaning can be performed with either a single or a dual wand. When cleaning upholstery change to a chemical recommeneded for wet cleaning and take all necessary precautions to ensure satisfactory results.

PRESSURE WASHING OPERATION

CAUTION

Use extreme caution not to come in contact with the spray or personal injury could result.

Reduce the vacuum load on the system to about 10" Hg (but do not allow vacuum to go below 8" Hg). Adjust the machine high pressure output as desired up to a maximum of 1000 psi. With the pressure washing tool valve open, adjust chemical draw reading on flow meter as desired. When pressure washing is completed, re-adjust pump pressure and reconnect the vacuum hose to the system.

WATER EXTRACTION OPERATION

1. Prepare the machine in the same manner as you would for normal carpet cleaning; assure that there is an adequate supply of water in the fresh water tank and that the Cat pump and pulse pump have been properly primed.

2. Flip the PUMP POWER switch to the "OFF" position.

3. Adjust the TEMPERATURE CONTROL KNOB to "HI".

4. Flip the OPERATION MODE switch on the upper face panel to the "WATER RECOVERY" position.

5. Connect the vacuum hose directly to the optional filter box assembly or directly to the recovery tank. Do not use the active hose reel or excessive vacuum loss will occur.

6. White Magic recommends running the machine at 2200 RPM for single wand operation or 2700 RPM for dual wand operation. Proceed with water extraction.

7. Drain recovery tank as necessary. Return machine to normal settings when complete.

AUXILIARY HOT WATER OUTPUT

CAUTION

Do not use the auxiliary output if the engine is overheating or if the Cat pump is turned off. Dangerous high pressure steam may cause severe burns.

1. To use the auxiliary output make sure the machine is properly primed and ready to operate.

2. Attach a hose to the output garden hose fitting and open the valve.

NOTICE

The water output from the auxiliary output is not the same temperature as the output solution. It is approximately the same temperature as the engine itself.

DUAL WAND OPERATION

The Pro-1900 system has sufficient capacity for dual wand operation with minimal pressure loss at each wand. The pump pressure and temperature can remain at the same levels as for single wand operation. The chemical flow rate may be set slightly higher than for single wand operation. To set up for dual wand operation, remove the plug on the optional filter box assembly or on the dual wand adapter elbow. For proper operation, each vacuum hose line should be the same length. White Magic recommends running the machine at 2200 RPM for single wand operation or 2700 RPM for dual wand operation.

WINTER OPERATION

CAUTION

Extreme care must be taken to assure that the machine and its associated tools are protected from freeze damage. Freeze damage may be extremely expensive to repair and is not covered under the warranty. If below freezing temperatures are experienced the van must either be garaged in a heated area or the equipment must be properly winterized.

WINTERIZING

NOTE: Undiluted windshield washing antifreeze is sufficient for temperature down to 10 degrees. For protection at lower temperatures, permanent engine antifreeze must be used. Some "RV Antifreeze" (for portable systems) may also be used for lower temperatures. Before cleaning operations the antifreeze must be flushed from the system.

White Magic will neither provide warranty coverage nor be held responsible for any damage caused by freezing.

1. Drain recovery tank and close the drain valve.

2. Rotate the temperature control knob to "Winterize" and start machine in The normal manner. Block the vacuum inlet to the recovery tank then spray a small amount of WD40 or equivalent oil into the blower through the vacuum relief valve located on the top side of the blower. This will prevent rust from developing in the blower if the machine is left idle as well as lubricate the vacuum relief mechanism.

3. Flip the Pump Power switch to the "ON" position.

4. Turn the Chemical Switch to the "ON" position.

5. Attach any tool to either wand outputs #1 or #2.

6. Remove chemical draw line from chemical jug and place it into a container of antifreeze. Fully open the chemical adjust valve (turn counterclockwise) until a minimum flow rate of 5+ GPH is reached when the tool is turned on.

7. Once you observe that the antifreeze is drawn through the chemical line, flow meter and pulse pump, allow machine to continue to run another ten to fifteen seconds then turn the chemical switch to the "OFF" position. Close the chemical adjust valve (turn clockwise).

WINTERIZING (continued..)

8. Turn the chemical switch to “PRIME” position for approximately 5 minutes then turn back to the “OFF” position.

9. Close the fresh water tank output valve.

10. Drain water tank by opening drain valve on side of tank.

11. Disconnect and place the output hose from the water tank and the bypass hose from the machine into a container of antifreeze. It may be desirable to keep the bypass hose out of the antifreeze container until it has a steady flow of antifreeze.

12. Run machine at low speed until antifreeze is observed coming from the auxiliary hose. Be sure the temperature control valve on the side of the machine is closed.

13. Connect any hoses or tools to be winterized to “WAND 1 & 2” and run tool until antifreeze is observed from jets. It is imperative that both “WAND 1 & 2” and “AUXILIARY” outpus have all been winterized. Failure to do so will not supply antifreeze to both heat exchangers. They are plumbed in different circuits and freeze damage will occur.

14. Open the “TEMPERATURE CONTROL VALVE “ on the side of the machine for a period of five seconds.

15. All solution and water hoses as well as all cleaning tools must also be winterized if they are to be exposed to freezing temperatures. To winterize the solution hoses, simply connect the desired tool and hose to the “WAND 1” output on the face panel and depress the trigger until antifreeze is observed spraying from the jets. Repeat this process for all tools and hoses. Assure that the same is done to the “WAND 2” output on the face panel as well.

16. Remove all hoses from the antifreeze container.

17. The system is now winterized.

NOTICE

It will require approximately one gallon of antifreeze to protect machine and approximately two gallons of antifreeze if hoses and tools are to be winterized.

WINTERIZING AN AUTOMATIC PUMPOUT SYSTEM

1. Prior to machine winterization empty the recovery tank by using the automatic pumpout or by turning the system off and opening the drain valve.

2. With the machine off and the drain valve open allow the recovery tank to drain completely. When empty close valve.

3. With the cap removed from the end of the pumpout turn the pumpout switch to manual position to start pump.

4. Allow pump to run until water stops flowing from pumpout drain hose.

5. Return automatic pumpout switch to the middle position.

6. Elevate the pumpout drain hose and pour approximately 16 oz. of antifreeze into it. The antifreeze will run into the pump and protect it from freezing

7. Re-attach cap to end of pumpout hose and proceed to machine winterization.

MAINTENANCE SCHEDULE

WARNING: Rotating equipment has inherent dangers and demands certain precautions. Caution should be exercised to assure that clothing, hair, and hands are not caught in equipment. Always shut van off and remove key before checking or adjusting belts, pulleys, pump or blower unless specifically noted. Do not operate system with the casing removed. The maintenance and troubleshooting steps listed below require some general mechanical experience and ability. Therefore maintenance personnel should understand the separate steps required, given only general instructions such as "align the pulleys or tighten the belts."

DAILY

1. Drain recovery tank. Be sure to dispose of waste in accordance with Federal, State and Local laws and ordinances.

2. Remove and clean the filter bag if equipped with a filter box.

3. Check the system vacuum reading with the hose end in the sealed and unsealed condition. Compare the readings from day to day to assure that the vacuum system is not clogged nor has any air leaks.

4. Visually check that the blower oil is between the two red lines on the oil level sight gauge. Adjust as necessary.

5. Check the engine oil with the dipstick and adjust as necessary. Allow the machine to sit for several minutes after shut down so the oil can drain back into the oil pan for a proper reading.

6. Check the engine coolant level in the radiator and adjust as necessary.

7. Thoroughly check the entire machine to look for any fluid leaks, i.e.oil, coolant, fuel, chemical, or water. Repair any leaks if necessary.

8. Check the condition of the drive belts. Replace any worn, cracked or frayed belts.

MAINTENANCE SCHEDULE (continued..)

25 HOURS OR WEEKLY

1. Grease both blower fittings located on top of the machine cover using a high temperature NLGI #2 bearing grease. One shot per fitting. DO NOT OVER GREASE.

2. Remove the quick disconnect and clean the stainless steel inline filter in the bypass solenoid assembly.

2. Check the Cat Pump oil level through sight gauge on rear of pump. Adjust as necessary. DO NOT OVERFILL. Oil level must be midway between the red dot and the top of sight glass. Slightly higher than the dot due to reverse rotation of the pump.

FIRST 50 HOURS ONLY

1. Completely drain the Cat Pump oil shortly after machine operation. Replace with new Cat Pump oil. DO NOT OVERFILL. Oil level must be midway between the red dot and the top of sight glass. Slightly higher that the red dot due to reverse rotation of the pump.

2. Completely drain the blower oil and replace with a premium grade, non-detergent, with rust, oxidation, and foam inhibitors. DO NOT OVERFILL. *Do not replace the ventilation plug with a non-vented plug or serious blower damage will result.*

EVERY 100 HOURS

1. Drain the engine oil and remove the oil filter. Replace with a new filter and fresh new motor oil. Refer to the Ford owner's manual for the proper viscosity vs. temperature rated oils.

2. Check the governor oil level and adjust as necessary. Refer to the Ford owner's manual.

3. Check the fluid level of the battery. Recharge and/or top off with distilled water as necessary.

MAINTENANCE SCHEDULE (continued..)

4. Clean the crank case ventilation cap located on top of the valve cover.

5. Lubricate the power-take-off (PTO) bearing.

6. Remove and clean the recovery tank filter located on top of the recovery tank.

7. Remove and clean the in-line strainer attached to the Cat Pump.

8. Check the operation of and clean the float valve in the water tank and the float switch in the recovery tank.

9. Grease the hose reel bearings on the axle with a general purpose grease.

10. Lubricate the chain drive of the hose reel if equipped with an electric drive.

11. Check the spray patterns of all wands and tools. Replace or clean all jets as necessary.

EVERY 200 HOURS

1. Check the radiator cooling fins for any debris and clean any air blockage from the fins with low-pressure air from the back of the radiator.

2. Clean the battery cables and connections; remove any corrosion buildup.

3. Lubricate the throttle, governor, and choke linkage with a general purpose lubricant such as WD40 and grease the fittings on the governor.

4. Check and adjust the drive belts on the engine.

EVERY 250 HOURS

1. Completely drain the Cat Pump oil shortly after machine operation. Replace with new Cat Pump oil. DO NOT OVERFILL. Oil level must be midway between the red dot and the top of sight glass. Slightly higher than the red dot due to reverse rotation of the pump.

2. Remove the waste drain valve and thoroughly clean it.

MAINTENANCE SCHEDULE (continued..)

EVERY 400 HOURS

1. Remove the air cleaner assembly and replace the air cleaner element with a new one.

2. Remove and replace the fuel filter

3. Check and adjust the idle speed. Refer to Ford owner's manual.

4. Check and adjust the idle mixture. Refer to Ford owner's manual.

5. Remove and replace the spark plugs. Be sure to set them to the proper gap (See Engine Service Manual).

6. Remove the valve cover and check the valve clearance. Adjust as necessary.

EVERY 800 HOURS

1. Remove the PCV valve and replace it with a new one.

2. Adjust the throttle/governor as necessary. Refer to the Ford owner's manual.

3. Completely drain and flush the coolant system and replace with fresh coolant. This should be done every year if 800 hours is not reached first.

4. Re-torque the intake manifold bolts. Refer to the Ford owner's manual.\

EVERY 1000 HOURS

Completely drain the blower oil and replace with a premium grade, non-detergent with rust, oxidation and foam inhibitors. The oil level should be midway between the two red lines in the sight tube. Roots synthetic oil is highly recommended **DO NOT OVERFILL. Never replace the breather fitting in the blower with a non-vented plug or serious blower damage will result.**

Recommended Oil Grades

Ambient Temperature ºF (ºC)	Viscosity Range SSU at 100ºF	ISO No.	Approximate SAE No.
Above 90º (32º)	1000-1200	320	60
32º to 90º (0º to32º)	700-1000	220	50
0º to 32º (-18º to0º)	500-700	150	40
Below 0º (-18º)	300-500	100	30

53 HP FORD MAINTENANCE

OPERATING INSTRUCTIONS

Anti– Knock Index (Octane Rating)

Your engine has been designed to operate using a gasoline with an (R + M) / 2 minimum anti-knock index rating of 87 or 89. Federal regulations require that each retail gasoline dispensing pump must display a label bearing the minimum anti-knock index rating.

Use of unleaded gasoline with an anti-knock index ratings lower than 87, can cause persistant, heavy spark knock, which can lead to engine damage. If your engine knocks heavily when you use gasoline with anti– knock index of 87 or higher, or if you hear continuous spark knock while maintaining constant speeds, consult your dealer or another qualified technician.

Gasohol and Alcohol/Gasoline Blends

Gasohol, a mixture of gasoline and ethanol (grain alcohol), is available in some areas. Ford engines should operate satisfactorily on gasohol blends containing no more than 10% ethanol by volume and having an anti-knock index of 87 or 89, reference engine specifications.

CAUTION - In some cases, methanol (wood alcohol) or other alcohols may be added to gasoline. Ford engines should operate satisfactorily on blends containing up to 5% methanol by volume when cosolvents and other necessary additives are used. If not properly formulated with appropriate cosolvents and corrosion inhibitors, such blends may cause drivability problems or damage emissions and fuel system materials. Insufficient data is available to insure the suitability of all methanol/gasoline blends at this time. To avoid jeopardizing your engine warranty or incurring unnecessary repair costs, DO NOT USE blends containing more than 5% methanol by volume, or blends that do not contain cosolvents or corrosion inhibitors.

If you are uncertain as to the presence of alcohols in the gasoline you are purchasing, check the label on the pump or ask the station attendant.

CAUTION - Discontinue use of any gasohol or alcohol gasoline blend if drivability of fuel system problems occur. Do not use such fuels unless they are UNLEADED.

Maintenance Schedule for Ford Engine

Initial Start-up Sequence	Operation	100 Hrs	200 Hrs	300 Hrs	400 Hrs	500 Hrs	600 Hrs	700 Hrs	800 Hrs	900 Hrs	1000 Hrs
1	Oil, Engine, Check Level	**Daily**									
2	Coolant, Check Level (7)	**Daily**									
3	Fuel, Oil and Coolant Leaks, Check	**Daily**									
	PTO Release Beariing, Lubricate	**Daily**									
4	Govener, Check Oil Level (2)	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Oil, Engine, Change (1)	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Oil Filter Engine Change (1)	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
5	Air Cleaner, Replace Element				**X**				**X**		
6	Battery, Check Charge and Level	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Crankcase Vent System Breather Cap, Clean (4)	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
7	PTO Bearings, Lubricate	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
8	Transmission-Manual Fluid Level, Check		**X**		**X**		**X**		**X**		**X**
	Radiator, Inspect and Clean Exterior (1)		**X**		**X**		**X**		**X**		**X**
	Battery Cables, Clean		**X**		**X**		**X**		**X**		**X**
10	Fan, Alternator, or Governor Belts, Check and Adjust Tension (5)(6)		**X**		**X**		**X**		**X**		**X**
	Throttle, Governor and Choke Linkage, Lubricate		**X**		**X**		**X**		**X**		**X**
	Fuel Filter, Replace (1)(4)				**X**				**X**		
	Cooling System, Check or Refill				**X**				**X**		
12	Idle Speed, Check and Adjust				**X**				**X**		
13	Idle Mixture, Check and Adjust				**X**				**X**		
	Spark Plugs, Clean, Adjust, and Test or Replace				**X**				**X**		
	Distributor, Clean and Check Points (4)				**X**				**X**		
	Ignition Timing, Check and Adjust (Check Advance) (4)				**X**						
	PCV Valve, Replace								**X**		
14	Throttle and Governor Adjust								**X**		
	Coolant—Replace 24 months								**X**		
	Points, Replace (4)								**X**		
11	Intake Manifold Bolts, Torque (3)								**X**		
15	All Bolts and Nuts, Check for Tightness (3)										
9	PTO Clutch Release Bearings, Adjust (3)										
16	Valve Clearance, Check and Adjust (3)				**X**						

Maintenance Schedule for Ford Engine (continued…)

(1) - More frequent intervals may be required in dusty areas - 50 Hrs for oil and filter.
(2) - Mechanical Governor (Belt Driven)
(3) - Seasonal or as Required
(4) - If so Equipped
(5) - Replace worn, frayed, cracked, or damaged belts.
(6) - Replace governor belts every 24 months
(7) - Check engine coolant condition and protection, hoses and clamps annually - Prior to cold weather

Note : Scheduled maintenance beyond 1000 hrs should be continued at the same intervals as before.

Maintenance Instructions for Ford Engine

Initial Start-Up

Your ford industrial engine was inspected before leaving the factory. However, the initial startup checks must be made before putting the unit into operation. The Preventative Maintenance Schedule provides a handy checklist. Perform the initial startup operations in the sequence listed in the left-hand column.

Routine Service

Make sure your unit is ready to go whenever you need it. There are some things that you can do, or have done, to be sure it is well cared for:

- Make frequent checks of the engine oil and coolant levels.
- Keep engine air filter clean
- Watch the engine temperature
- Watch engine oil pressure

Scheduled Preventative Maintenance

The operations listed in the maintenance schedule are covered in detail on the following pages. Whenever your engine requires maintenance of any kind your Ford Power Products distributor or dealer has skilled technicians who will do an expert job of keeping your engine in its prime condition.

Maintenance Instructions for Ford Engine (continued…)

Engine Oil

Checking Oil Level

The oil level should be checked frequently, at least daily, and maintained between the minimum and maximum marks on the dipstick. Allow a few minutes after shutting off the engine for the oil to drain down before checking.

CAUTION - Do not operate the engine with the oil level below the bottom mark. Never add oil above the top mark since the excess oil is wasted and the oil consumption is increased.

Adding Oil

It is normal to add some oil between oil changes. The amount will vary with the severity of operations. When adding or replacing engine oil be sure oils meet specifications listed.

Changing Oil and Oil Filter

For most operations, the engine oil and filter must be changed every 100 hours or seasonally. Under normal operating conditions, you do not need to change more often if you use oil and filters of the recommended quality.

The oil and filter should be changed more often if the engine is operated in dusty areas, or extended idling or low speed conditions, or frequent stops during cold weather. No oil additives are or break-in oil change is required.

Oil Quality

To help achieve proper engine performance and durability, it is important that you use only engine lubricating oils of the proper quality in your engine. Proper quality oils also provide maximum efficiency for the crankcase ventilation system, which reduces pollution.

Use Ford or Motorcraft oil or equivilent that meets Ford Specification ESE-M2C153-E and API categories SG, SG/CC, or SG/CD.

It is best not to mix different brands of lubricants and oils, because sometimes they are not compatible and deteriorate when mixed. Stay with one brand to assure compatibility.

Oil Viscosity

When you change or add oil, you should select oil with the proper specifications and with the viscosity which most closely matches the temperature range you expect to encounter for the next 100 hours of operation.40

Maintenance Instructions for Ford Engine (continued…)

SINGLE-VISCOSITY OILS

When Outside Temp. is Consistently:	Use SAE Viscosity Number:
-10°F to + 60°F	*10W
+10°F to + 90°F	20W-20
Above +32° F	-30
Above +50° F	-40

MULTI-VISCOSITY OILS

When Outside Temp. is Consistently:	Use SAE Viscosity Number:
Below +10°F	*5W-20
Below +60°F	5W-30
+10°F to + 90°F	10W-30
Above -10° F	10W-40 or 10W-50
Above +20° F	20W-40 or 20W-50

* Not Recommended for severe service - Including High RPM Operation.

Oil Filter

Use a Motorcraft FL-400A Long-Life Oil Filter which meets Ford Specification ES-E1ZE-6714-AA. These filters protect your engine by filtering harmful, abrasive, or sludgy particles without blocking flow to vital engine parts.

To replace, use a filter wrench to remove filter.

Clean the filter mounting base. Lightly coat the gasket surface of the new filter with engine oil and hand tighten until the gasket contacts the base, then tighten another half turn. Fill the crankcase and run the engine to check for leaks. (Tighten filter more if necessary.)

WARNING - Do not handle a hot oil filter with bare hands. Continuous contact with used motor oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water.

Maintenance Instructions for Ford Engine (continued…)

Air Cleaner

Your air cleaner filters air entering the engine induction system and acts as a silencer and a flame arrester when assembled to induction system. Air that contains dirt and grit produces an abrasive fuel mixture and can cause severe damage to the cylinder walls and piston rings. Damage to the cylinder walls and piston rings will cause high oil consumption and short engine life. A restricted or dirty air cleaner will also cause a rich fuel mixture. Thus, it is extremely important that the air cleaner be serviced at recommended intervals.

CAUTION - Service the air cleaner more frequently under sever dust conditions.

Remove the paper filter element from the air cleaner assembly. Inspect the element for foreign material restrictions or signs of excessive wear or damage. Replace as necessary.

Remove all dust and foreign matter from the air cleaner housing.

Make sure that the air cleaner assembly is seated properly on the carburetor with the seal installed.

COOLING SYSTEM

Coolant Level

Check the coolant level in the expansion chamber or radiator daily, only when engine is cool. Maintain the coolant level at approx. 3/4 to 1-1/2 inches below the filler neck seat on the radiator when the coolant is cold.

Whenever coolant level checks are made, check condition of radiator cap rubber seal. Make sure it is clean and free of any dirt particles. Rinse off with clean water if necessary. When replacing cap on radiator, also make sure radiator filler neck is clean.

WARNING - NEVER remove the radiator cap under any conditions while the engine is operating. Failure to follow these instructions could result in damage to the cooling system or engine and/or personal injury. To avoid having scalding hot steam or coolant blow out of the radiator, use extreme caution when removing the cap from a hot radiator. If possible, wait until the engine has cooled, then wrap a thick cloth around the radiator cap and turn it slowly to the first stop. Step back while the pressure is released from the cooling system. When you are sure all of the pressure is released, press down on the cap , turn and remove it.
Do Not add coolant to any engine that has become overheated until the engine cools. Adding coolant to an extremely hot engine can result in a cracked block or cylinder head.

Maintenance Instructions for Ford Engine (continued…)

Coolant Level (Continued…)

Use only a permanent-type coolant that meets Ford Specification ESE-M97B44-A, such as Ford Cooling System Fluid. Refer to the coolant mixture chart on the container for additional anti-freeze protection information. Do not use alcohol or methanol antifreeze, or mix them with the specified coolant.

Plain water may be used in an emergency, but replace it with the specified coolant as quickly as possible to avoid damage to the system. With only water in the system, do not let the engine run hot.

Radiator

Inspect exterior of the radiator for obstructions. Remove all bugs, dirt, or foreign materialwith a soft brush or cloth. Use care to avoid damaging the fins. If available, use low pressure compressed air or a stream of water in the opposite direction of normal air flow.

Check all hoses and connections for leaks. If any of the hoses are cracked, frayed, or feel spongy, they should be replaced.

Drive Belts

The water pump is belt driven. This same belt may also drive the fan and/or alternator. The drive belt(s) should be properly adjusted at all times. A loose drive belt causes improper alternator, fan and water pump operation, in addition to overheating. Over tightening the belt may result in excessive wear on the alternator and water pump bearings, as well as premature wear on the belt itself. Therefore, it is recommended that a belt tension guage be used to check the and adjust the belt tension. **Any belt that has operated for a minimum of ten minutes is considered a used belt,** and when adjusted, it must be adjusted to the reset tension shown in the specifications.

Belt Tension

Install the belt tension tool on the drive belt and check the tension following the instructions of the tool manufacturer.

If the tension is not to specification, loosen the alternator mounting and adjusting arm bolts. Move the alternator away from the engine until the correct tension is obtained. Remove the gauge. Tighten the alternator adjusting arm and mounting bolts. Install the tension gauge and recheck the belt tension.

Battery

If there is any corrosion on the cables and terminals, remove it with a wire brush and neutralize the acid with a solution of baking soda or ammonia with water. After cleaning, flush the top of the battery with clean water, install the terminal clamps on the battery posts, and coat the parts with grease to retard further corrosion.

Fluid Level (Non-Maintenance Free Battery)

Because the battery is the "heart" of your unit's electrical system, periodic checks are necessary to keep it functioning properly. Keep the battery level in each cell up to the level indicator.

Governor

Oil Level

Clean the body of the governor in the area of the fill plug.

Check the oil level by slowly removing the oil level plug. If oil drips out, the oil level is full. If oil does not drip out, slowly add engine oil into the fill hole. As soon as it begins to drip out of the hole, insert the plug.

Adjustment

Before making any governor adjustments, check the governor drive belt tension with a belt tension gauge. Set the belt to the tension listed in the Specification Section. (Replace the belt if any damage is visible eg., cracks, or shipping damage, ect.)

The first adjustment is the governor-to-carburetor control rod adjustment. With the control rod connected, manually remove the governor throttle lever to the maximum open throttle position. Check that carburetor throttle shaft lever is set from 1/32 to 1/16 of an inch from its maximum open position stop. If necessary, adjust length of the control rod to obtain the setting. (3/8 to 7/16 of an inch on variable Venturi Carbs.)

To perform a high-speed adjustment, attach a tachometer to the engine, then run the engine until it reaches normal operating temperature.

- Loosen the locknut on the high speed stop screw.
- Disengage the engine load.
- Slowly pull the throttle control to desired maximum no load engine speed.

Governor

Adjustment (Continued…)

- Adjust the high speed stop screw on the governor to attain the desired maximum engine speed - DO NOT exceed the recommended maximum RPM.

- Tighten the Locknut.

The next adjustment is for spread . Proper governor operation requires a difference between full load and no load governor speed. Too small an RPM spread between the 2 speeds will cause governor hunting and surging. Too large a spread will cause low response. For this governor, normal RPM spread is approx. 250 RPM within the full load speed range of 2000 - 2800 RPM.

To increase the RPM spread, adjust the screw to move the spring away from the lever hub.

To decrease the RPM spread, adjust the screw to move the spring closer to the lever hub.

The no-load surge adjustment is set at the factory and rarely requires adjustment. If necessary, this adjustment can be used to prevent hunting and surging at no-load speeds only, provided the RPM spread adjustment is set properly. Make the adjustment with the tachometer installed. Increase the engine speed with the hand throttle control to 75 RPM lower than the maximum no load desired control RPM. Then loosen the no-load surge adjustment screw locknut and turn the screw inward until the RPM increases to the desired control RPM. Reset high speed adjustment screw and tighten locknuts.

CAUTION - Do not turn the screw in all the way. It will interfere with proper governor operation and prevent the governor from returning the engine to idle speed.

Lubrication

At the specified intervals, apply an appropriate lubricant, such as Lubriplate (COAZ-19584-A) at the pivot points on the throttle, governor, and throttle linkage.

Storage

One Month

While engine is running, treat upper cylinders by spraying engine fogging agent into the air intake for about two minutes. Fogging agent can be obtained from your local aftermarket supplier. Open throttle for a short burst of speed, shut off ignition and allow engine to come to a stop while continuing to spray fogging agent into air intake.

Maintenance Instructions for Ford Engine (continued…)

Storage

One Month (Continued…)

Leave spark plugs in holes or seal spark plug holes with suitable threaded metal plugs and cover all openings into engine with suitable non-hydroscopic material.

If engine is less transmission, spray flywheel and ring gear with mixture of one part recommended engine oil and one part Stoddard Solvent, or equivalents.

Check coolant protection. Store indoors in dry area.

For Extended Periods

Drain Crankcase completely and refill with recommended engine oil (S.A.E. 10), or equivilent.

Run engine until completely out of gasoline, then restart and run on stabilizer mixed with unleaded gas for at least 10 minutes.

While engine is still running and at completion of above run, treat upper cylinders by spraying fogging agent into the air intake for about 2 minutes. Open throttle for short bursts of speed, shut off ignition and allow engine to come to a stop while continuing spraying fogging agent into air intake.

Check coolant protection.

Disconnect and remove battery.

Clean exterior surface of engine.

Leave spark plugs in holes or seal spark plug holes with suitable threaded metal plugs .

Seal all openings into engine and engine accessories with suitable non-hydroscopic material. Mask off all areas to be used for electrical contact.

Make sure all surfaces are dry, the spray all taped openings, all engine accessories including ignition wiring, and all exterior surfaces of engine with Insulation Compound.

If engines are equipped with automotive type clutch, block clutch in slightly disengaged position so that lining and pressure plate are not in contact.

TROUBLESHOOTING GUIDE

This guide provides specific instructions to aid in troubleshooting and repairing most of the possible problems encountered during the use of the PRO 1900 carpet cleaning system. This guide has been provided to help reduce your down time and the cost that would be involved in contacting your local distributor or the national service center to diagnose each minor problem.

MACHINE WILL NOT START WHEN KEY IS TURNED

Does not crank over:

1. Depress circuit breaker on face panel.
2. Check battery charge and connection terminals.
3. Check for disconnected or broken wiring.
4. Check continuity on ignition switch.
5. Check starter solenoid.
6. Check starter.
7. With the key removed from the machine ignition and the pump switch "OFF" remove the machine cover. Loosen the belt from the engine to the blower. Assure that they are not seized. The blower should rotate freely. The pump will need to be rotated with a wrench.

If engine cranks over but will not fire:

1. **If "SYSTEM TEMP" light is illuminated, input water may be over 140 degrees or output water may exceed 280 degrees. If this occurs add fresh cool water to the water tank.**
2. If "ENGINE TEMP" light is on the engine has overheated.
3. Check fuel level.
4. Check recovery tank – if it is full the machine will not start.
5. Check for defective recovery tank shut-off switch as follows.
    a. Bypass the wiring to the float tank shut-off switch by disconnecting one wire. If the machine starts this means the float switch in the recovery tank is non-operational and mechanism should be cleaned or replaced.

TROUBLESHOOTING GUIDE (continued..)

6. Check the choke operation.

7. Check fuel filter.

8. Check ignition wire connections.

9. Check spark plugs.

Engine will not start until adequate oil pressure is reached. It may take several seconds or several restarts when cold. The "ENGINE KILL OVERIDE" switch may be held in to temporarily start the engine while in safety kill mode. Start only after cool water has been added to water tank or if 280 degrees output was reached allowing machine to cool down. **It is imperative that the machine be shut down immediately if the "OIL PRESSURE" light remains on.**

LOW VACUUM OR POOR AIRFLOW

Troubleshooting vacuum and airflow problems is usually quite simple. Start by removing the input vacuum hose at the top of the recovery tank and sealing the vacuum. The vacuum should read about 14" Hg and the engine rpms should be about 2500 rpms. Visually check to see if the drive belts slow down under load. If the blower belts slow down shut the engine off. Feel the pulleys, idlers, or clutch to check for excessive heat. By systematically checking each of the items below most problems can be easily found:

1. Check that the drain valve is not in the open position or leaking.

2. Recovery tank or in-line filter box gaskets may not be sealing properly.

3. Filters may be dirty on recovery tank of in-line filter box.

4. Hose leaks or blockages. (If blockage is suspected simply reverse hose by putting wand end directly to recovery tank or filter box to remove debris)

5. Vacuum relief valve on blower stuck open or leaking excessively.

6. Blockage in head of cleaning tool.

7. Blockage in hose reel swivel.

8. Blower input hose collapsed because of excessive heat inside case.

9. Clogged blower exhaust system.

TROUBLESHOOTING GUIDE (continued..)

10. Slipping or worn belts on blower.

11. Defective blower.

12. Worn engine or blower pulley.

13. Seized bearings on blower, pump or engine.

WATER PRESSURE PROBLEMS

A pumping system cannot put out what it cannot take in. This means that you should assure that the pump input is adequate and that it is not drawing air. To test the pump it may be necessary to disconnect the input and output plumbing and replace it with short pieces of hose connected directly to the pump. This will determine if the pumping system failure is internal or external to the pumping system. With the pump operating at normal speed and the CHEMICAL ADJUST valve turned off pump output should be approximately 4 gallons per minute. If it is less than this refer to the Cat Pump manual. If the pump output appears normal without pulsations the problem must be external to the pump. Carefully analyze the following until the problem is located:

1. Pump operating too slow because belts are slipping. Adjust idler as necessary.

2. Pump clutch is slipping. Visually compare speed of the clutch pulley to the speed of the center section of the clutch.

3. Assure that the line from the fresh water tank is allowing adequate flow. Check for blockage or pinched line under console. Inspect disconnect and water shut off valve.

4. Check unloader valve. Attach a length of hose to the auxiliary valve then open it. Start the machine and slowly pinch the bypass valve hose. If output increases rebuild or replace the unloader valve.

5. Check the preheater. A tell-tale sign of a failed preheater is the constant overflow of coolant from the radiator overflow without the engine running hot.

6. Check the heat exchanger. Look at the machine exhaust output, check to see if an unusually large amount of water is being ejected from the pipe. Condensation will naturally occur in exhaust fumes.

7. Shut off the chemical adjust and observe the auxiliary output.

8. Swap tools and observe water flow. Check valve ball or tool jet may be clogged.

TROUBLESHOOTING GUIDE (continued..)

9. Check quick disconnects on face panel. Solution hose or tool may be faulty. Intermittent or reoccurring pressure problems often indicate a disconnect malfunction.

PULSATIONS IN PUMPING SYSTEM

Slight pulsations in the pumping system are normal due to the pulse pump putting a slight additional load on one cylinder of the main pump however if pulsations are severe look for the following:

1. Chemical use very high. (over 5 gallons per hour)

2. Chemical system not bled properly or is letting air into pulse pump.

3. Air getting into pump inlet via:

   a. Leaking inlet plumbing (bad hose washer, loose fittings, cut hose, filter gasket etc.).

   b. Worn inlet seals on pump.

4. Dirty or defective valve in pump or pulse pump.

5. Defective plunger(s) or worn high pressure seal.

6. Blockage or defective disconnect in down stream plumbing.

7. Insufficient water supply; pinched hose, blocked filter, empty water tank.

WATER TEMPERATURE LOW

The causes of low water temperature are usually easy to locate. Check the following:

1. The temperature control valve could be turned to the open position (an error) or it could be defective. A defective valve will allow water to leak through it causing low temperatures.

2. The coolant level in the radiator is low.

3. Radiator stop leak has been added to the system. This coats the preheater coils and reduces the heat output. If this has occurred the preheater must be removed and internally cleaned.

4. Defective engine thermostat.

5. Defective radiator cap.

TROUBLESHOOTING GUIDE (continued..)

6. Preheater needs bleeding. To bleed air from it loosen the plug on top of preheater and start engine and tighten the plug when air bubbles cease. Don't bleed preheater when the coolant is excessively hot – may cause severe burns.

7. Using a large volume of water from the machine check the size of the tool jets.

8. Water is flowing from the engine radiator; replace preheater and add antifreeze to engine.

9. The exhaust diverter valve may be sticking or defective, or the vacuum solenoid (electric vacuum switch on cross member) may be defective.

10. Hot water bypass solenoid may be stuck open, constantly bypassing water back to the fresh water tank. (Usually indicated by the pressure gauge NOT staying at 0 psi when wand trigger is not depressed.) To check to see if the bypass solenoid is working correctly, do the following:

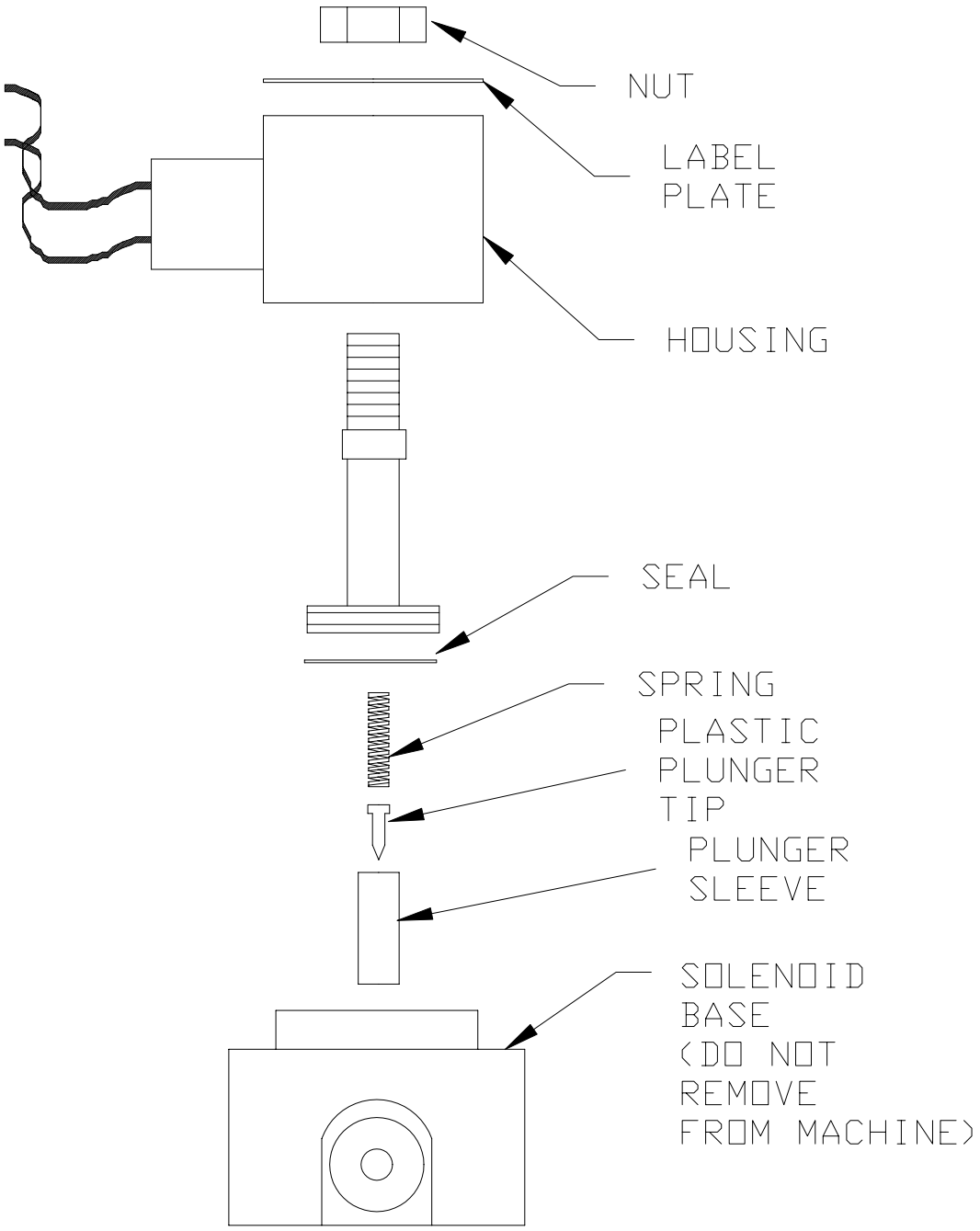
    1. When the machine is cold, turn the key on the engine to the start position. It is not necessary to start the machine at this time. Put the winterization / water recovery switch in the normal position. Turn the thermostat knob to high. Place a metal object (wrench or screwdriver) against the solenoid housing. There should be MINIMAL magnetization of the housing. Momentarily flip the winterization / water recovery switch to winterize. The solenoid housing should now be magnetized, indicating it is electri cally functioning properly. If the solenoid housing is magnetized in the normal settings, the heat control thermostat on the face panel has most likely failed and will need replacing.

    2. If the solenoid housing is not magnetized in the normal settings, it is possible there is debris in the base of the solenoid allowing hot water to constantly bypass back to the fresh water tank. To check for "debris" leak by, do the following:

        1. When the machine is cold, disconnect the solenoid assembly at the up per female Q.D. (#2) leaving the bottom side input hose Q.D. (#3) connected.
        2. Place a 1/4" male Q.D. into female Q.D. (#2) which will open the Q.D. Let the solenoid assembly hang into a bucket or point in a safe direction and start the engine. With all settings in their nor mal positions, no water should flow from the now open Q.D. (#2). Water should only flow from here if the switch has been flipped

TROUBLESHOOTING GUIDE (continued..)

to winterization / water recovery or if the temperature thermostat on the face panel is turned fully clockwise to its lowest setting. If water flows in normal modes, solenoid has debris inside or a defective plunger . Disassemble the solenoid and clean and check the plunger. Reassemble and retest the unit repeating the above steps. (See below diagram)



CHEMICAL FLOW PROBLEMS

1. Using poor quality chemicals will cause deposits and may lead to complete line blockages.

2. Air leaks at any point through clear line from jug to pulse pump or within flow meter.

3. Clogged filter in chemical jug.

4. Defective chemical adjust valve.

5. Blocked jet or defective check ball assembly at the wand.

6. Defective pulse pump:

    a. Torn diaphragm
    b. Broken chemical disk
    c. Dirty inlet or output check valve or defective valve, seat or spring

7. If chemical flow continues when wand trigger is not depressed:

    a. Check for unloader not going into bypass mode.
    b. Defective diaphragm.

The chemical system and pump are very closely inter-related. What may seem to be solely a chemical problem may indeed be a pump problem. It may be necessary to troubleshoot under "water pressure problems" and "pulsation in pumping system."

White Magic Inc.
PLATINUM GUARANTEE WARRANTY PLAN

White Magic Inc. warrants truckmount machines of its manufacture to be free from defects in material and workmanship if properly installed and operated under normal conditions with competent supervision as is illustrated within the *White Magic Inc.* instructional/operational *Owners Service Manual.*

No person, agent, representative or dealer (distributor) is authorized to give any warranties on behalf of *White Magic Inc.* or to assume for *White Magic Inc.* any liability in connection with any *White Magic Inc.* products.

This warranty extends to the original purchaser of equipment upon date of installation as listed below.

To ensure the functionality and safety of equipment the *White Magic Inc. Platinum Guarantee Warranty Plan* shall cease to be in effect, if repairs, modifications or replacement components are made without the express consent of *White Magic Incorporated.*

Machinery, equipment and accessories furnished by *White Magic Inc.*, but manufactured by others, are warranted only to the extent of the original manufacturer's warranty to *White Magic Inc.* unless specified otherwise by *White Magic Inc.*

White Magic Inc. agrees, at its option, to repair or replace without charge any parts or products of *White Magic Inc.'s* manufacture, which within the warranty period shall be proven to White Magic Inc. to have been defective when shipped, provided that the purchaser or distributor promptly notifies *White Magic Inc.* in writing of the defect.

White Magic Inc. will pay all freight and transportation charges within the United States under normal ground shipping for replacement of warranted parts for a period of *(1) ONE YEAR*.

The *White Magic Inc. Warranty* covers parts. It does not cover labor *(*see below for exceptions)* which may be necessary for the completion of repairs. The warranty is limited to repair or replacement of defective parts using new or remanufactured parts. To be covered under warranty the defective parts must be returned with an authorized *RMA#* to *White Magic Inc.* within *(30) DAYS*. No liability shall be attached to *White Magic Inc.* until products have been paid for.

As stated in White Magic Inc.'s warranty, only the parts and the equipment is covered. *White Magic Inc.* shall have no liability for: consequential, incidental, or other damages caused. This included, but is not limited to: lost business, downtime, lodging or any other incidentals. Parts covered under this warranty will be warranted for only the remaining time left in the original warranty period of the equipment.

All components not listed in the schedule below are covered under this warranty for a period of *(1) ONE YEAR*, except those, which are considered by *White Magic Inc.*, to be expendable or normal wear items in normal use, including paint and other cosmetic parts or features. Freezing of any water or chemical related components would VOID all warranties on water or chemical related components, internal or external, of the equipment.

Deposits and build up in the water, chemical, recovery or heating systems due to hardness in the water used or chemicals which results in deposits, will VOID all warranties in the affected components and areas.

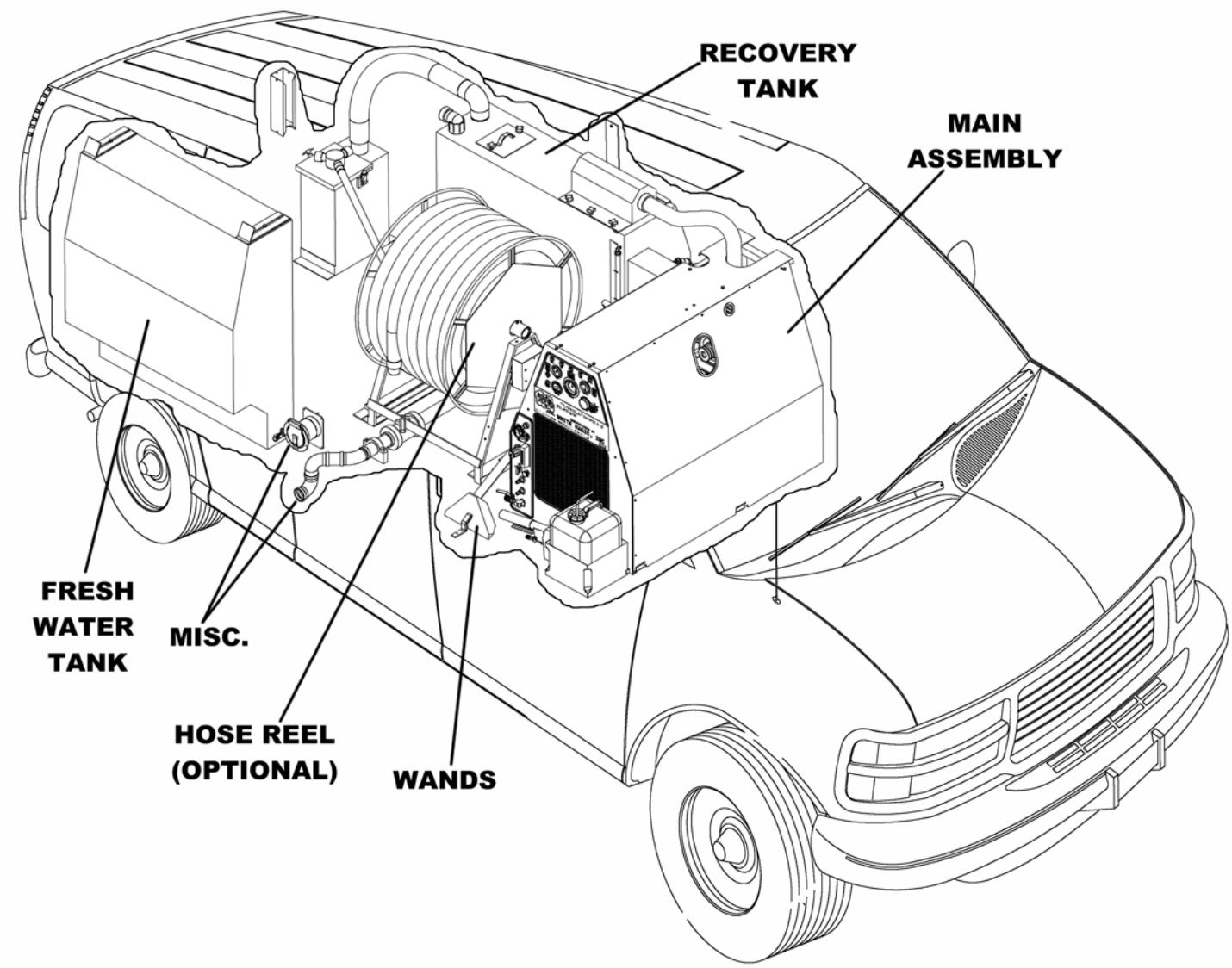
The use of any chemical or solvents, which may damage metal, rubber, plastic, or painted parts, will *VOID* all warranties on those parts.

FRAME, COVER ASSEMBLIES	*5 years*
VACUUM RECOVERY TANKS	*5 years*
FRESH WATER TANKS	*3 years*
ENGINES	*2 years*
ENGINES (Direct Drive Vans)	*(original Manufacturer's Warranty)*
DRIVE SHAFT'S (Direct Drive Units)	*5 years*
Heat Exchangers	*2 years*
VACUUM BLOWER (as provided by original Manufacturer)	*18 months*
CHEMICAL SYSTEMS	*1 year*
CLEANING WAND	*1 year*
INTERNAL MACHINE HOSES	*1 year*
HIGH PRESSURE COMPONENTS	*1 year*
EXTERNAL MACHINE HOSES	*1 year*
BELTS, FITTINGS, FILTER SCREENS, GAUGES	*1 year*
HEAT CONTROL SYSTEM	*1 year*
WATER PRESSURE PUMP (through original manufacture)	*1 year*
ELECTRICAL COMPONENTS	*1 year*
*MANUFACTURERS PRE-AUTHORIZED LABOR**	*90 days*

** Normal maintenance (oil, filter changes, etc.) not covered*

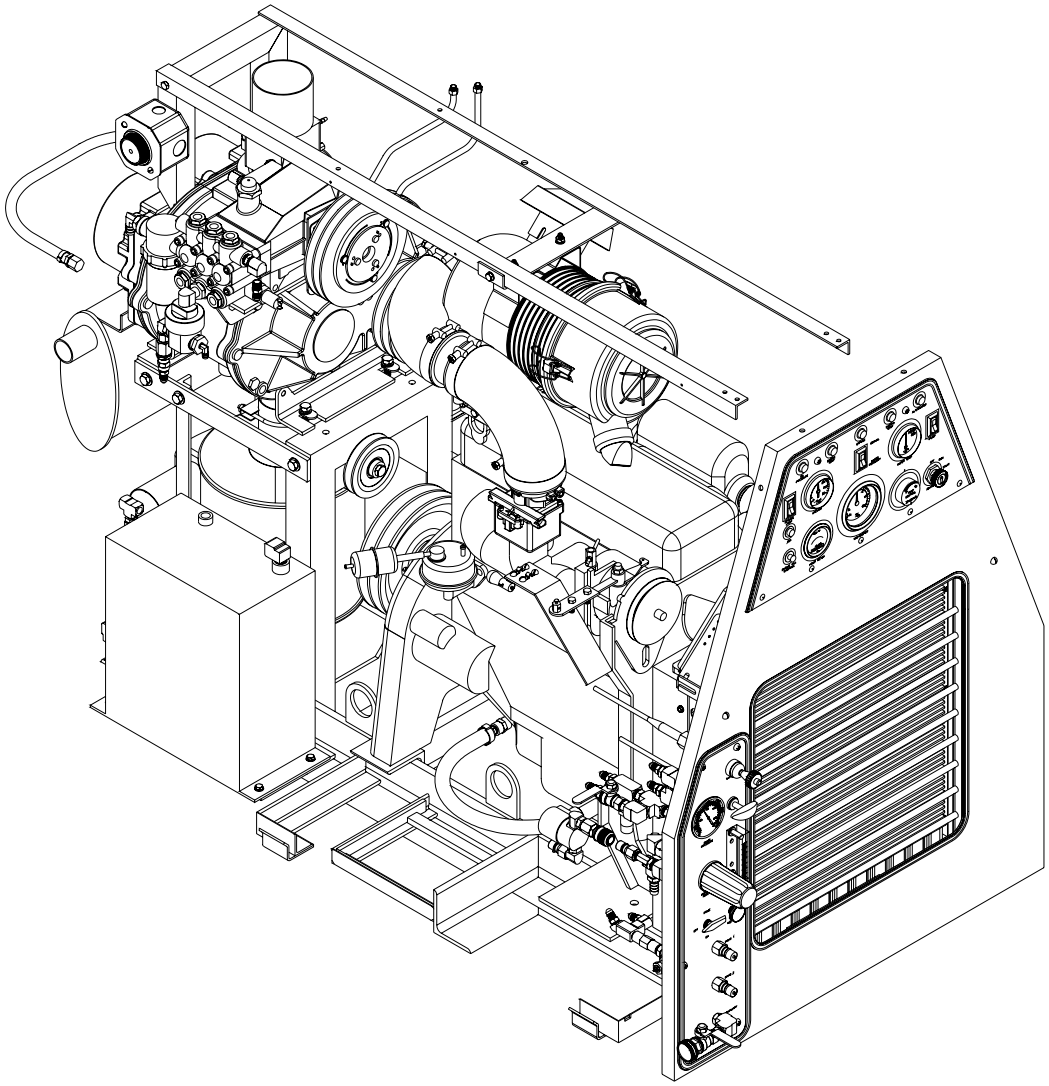
 White Magic Inc. 11 Main Street, Salisbury, MA. 01952

PRO-1900
COMPLETE CARPET CLEANING SYSTEM



MAIN ASSEMBLY	FA1900 - MAIN ASSEMBLY HOUSES PUMPS, BLOWER, ENGINE, HEAT EXCHANGERS, CONTROLS **AND GAUGES.**	see Section: A
RECOVERY TANK	TA-130 - STORES WASTE WATER.	see Section: B
FRESH WATER TANK	TA-100B - HOLDS FRESH WATER.	see Section: C
FILTER BOX	TARFS3-A - REMOVES COARSE DEBRIS.	see Section: D
WANDS	TL015 - STANDARD CLEANING TOOL. TL031 - STAIR TOOL.	see Section: E
HOSE REEL	HOLDS LOOSE HOSE.	see Section: F
MISC. ITEMS	ALL ARE USED TO EASE OPERATION.	see Section: G

PRO-1900
COMPLETE CARPET CLEANING SYSTEM



FP1900A - **Lower Face Panel Assembly**, complete with all plumbing & adjustments see Section: 6-A2,3

FP1900B - **Upper Face Panel Assembly**, complete with all gauges & wiring. see Section: 6-A4
Monitors and displays the performance of the machine.

PA1900 - **Cat (5CP2120W) Pump Assembly**, complete with pulse pump, clutch, see Section: 6-A5
and plumbing. Supplies the high pressure water and chemical.

BA1900 - **Roots (59) Blower Assembly**, complete with silencer, sweeps & pulley. see Section: 6-A8,9
Supplies the vacuum for recovery.

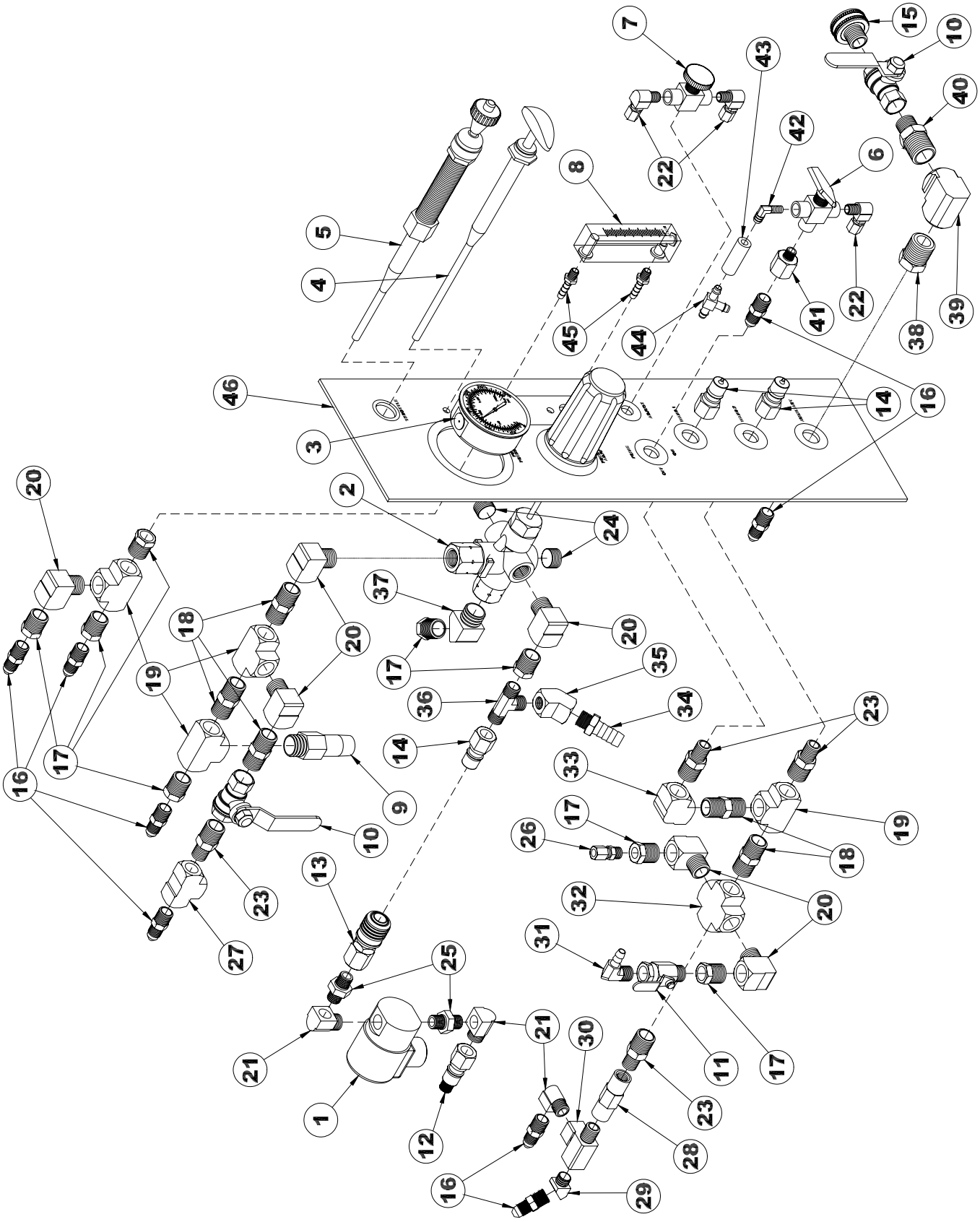
EA1900 - **Ford 54HP Engine Assembly**, Complete with pulleys, and exhaust. see Section: 6-A10,11
Provides the power and heat source.

HE1900 - **Heat Exchanger Assembly**, complete with all plumbing and diverter. see Section: 6-A12
Transfers heat from hot exhaust gasses to the fresh water

PH1900 - **Pre Heater Assembly**, complete with all plumbing. Pre heats the fresh water see Section: 6-A13
utilizing the hot engine coolant

MF1900 - **Main Frame Assembly**. Holds all of the components together. see Section: 6-A14,15

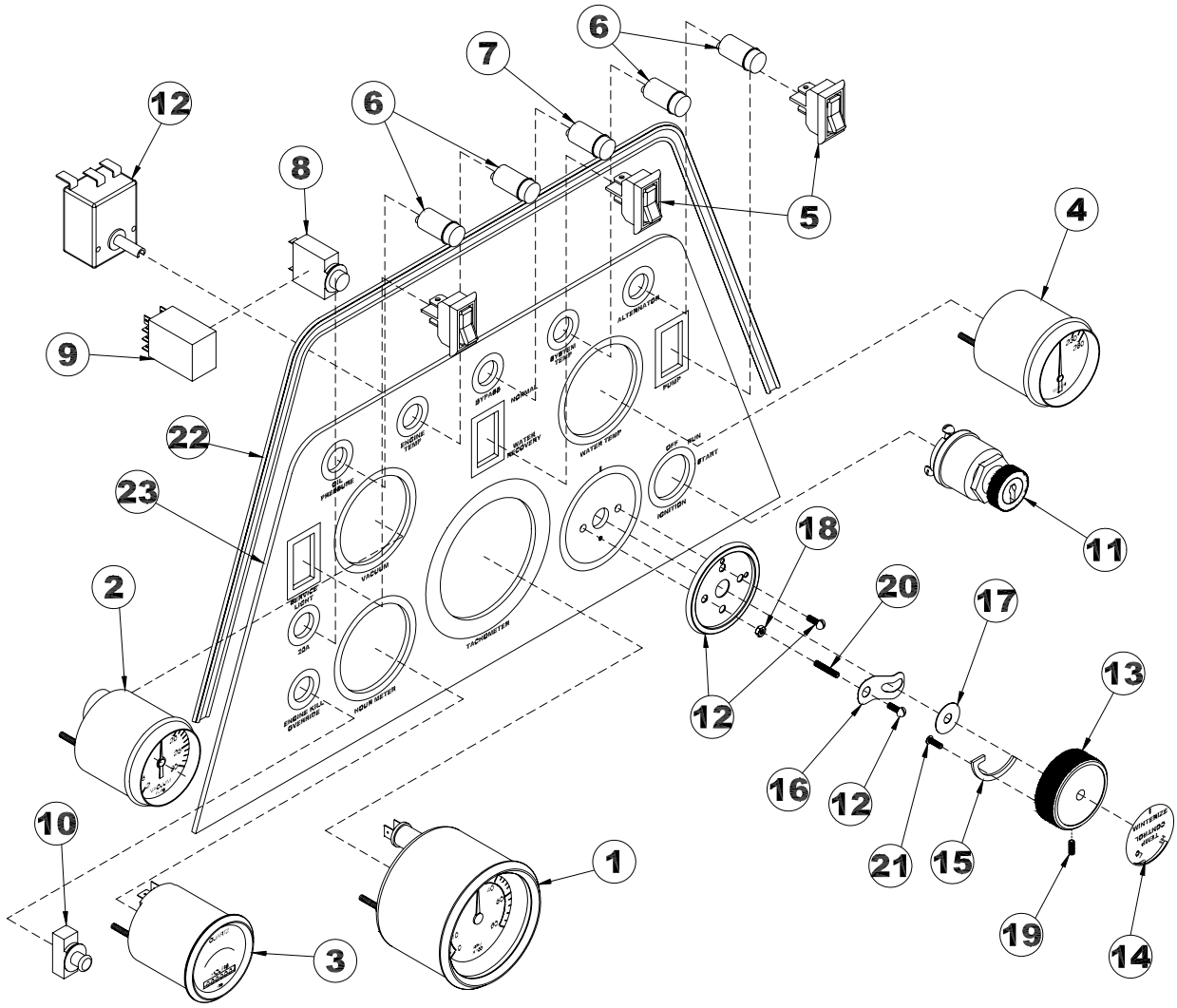
FP1900A – LOWER FACE PANEL ASSEMBLY



FP1900A – LOWER FACE PANEL ASSEMBLY

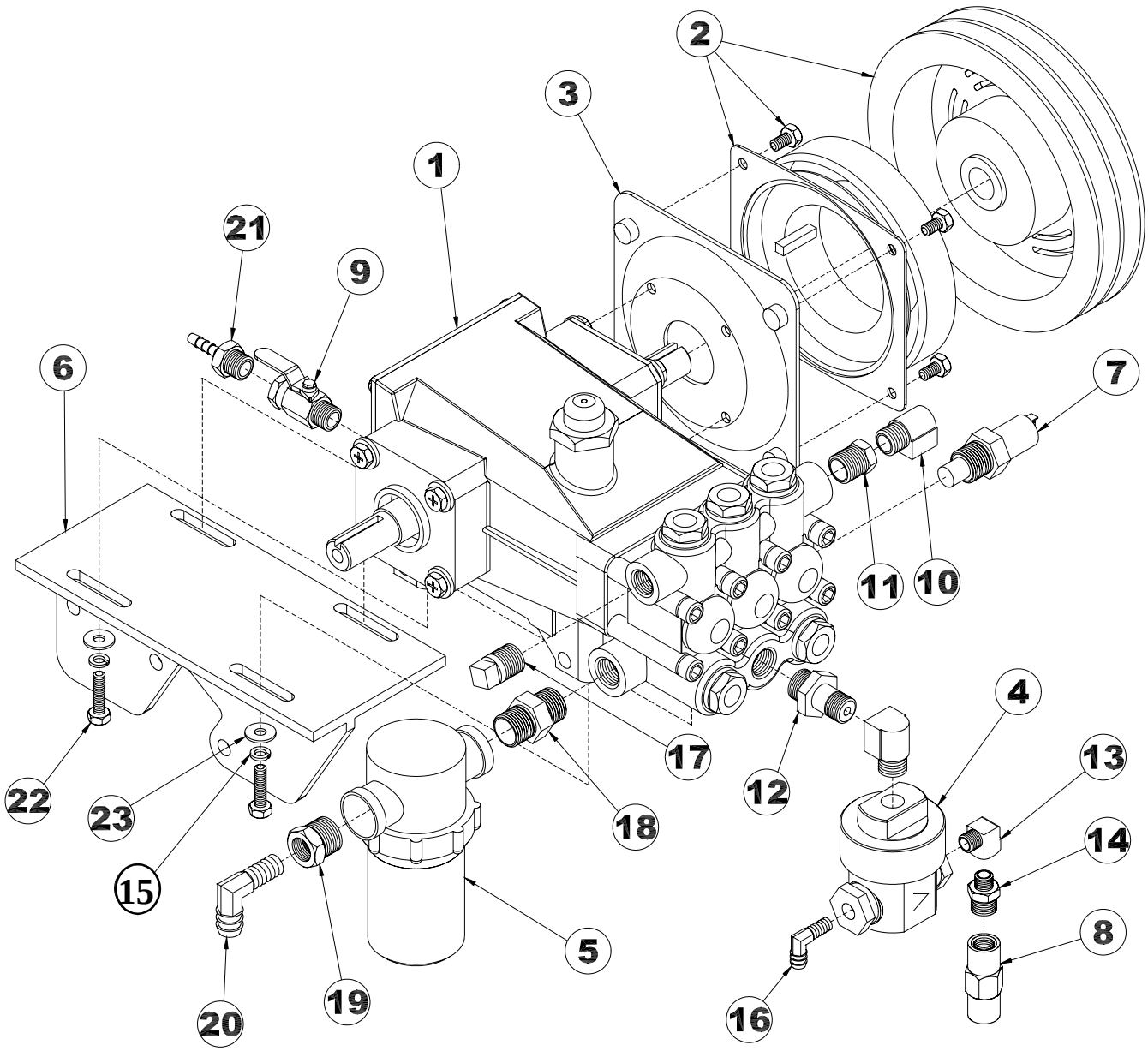
ITEM#	P/N	DESCRIPTION
1	J0285	12V ELECTRIC SOLENOID
2	A151	UNLOADER VALVE 4000 PSI
		see Section: 6-A7
3	A109	PRESSURE GAUGE 3000 PSI
4	CY047	MANUAL CHOKE CABLE
5	CY046	MANUAL THROTTLE CABLE
6	B085	3 WAY CHEMICAL SWITCH
7	B086	CHEMICAL ADJUST KNOB
8	A019	FLOW METER
9	B135	POP OFF VALVE
10	B097	3/8” BAL VALVE
11	B142	1/4” TWO WAY BALL VALVE
12	B001-1M	1/4” MALE Q-CONNECT MOD
13	B003-1	1/4” FEMALE Q-CONNECT SS
14	B001-1	1/4” MALE Q-CONNECT SS
15	E007	3/8” MPT X 3/4” FGH
16	E195	1/4” MPT X 1/4” 37° JIC
17	E016	3/8” X 1/4” REDUCING BUSHING
18	E014	3/8” HEX NIPPLE
19	E019	3/8” EXTRUDED TEE
20	E017	3/8” STREET 90° ELBOW
21	E024	1/4” STREET 90° ELBOW
22	E0506	1/8” MPT X 1/4” 90° COMPRESSION
23	E015	3/8” MPT X 1/4” MPT HEX NIPPLE
24	E066	3/8” MPT MALE PLUG
25	E050	1/4” HEX NIPPLE
26	B190	1/8” MPT X 1/4” COMPRESSION
27	E061	1/4” EXTRUDED TEE
28	B221	1/4” INLINE CHECK VALVE
29	E040	1/4” STREET 45° ELBOW
30	E250	1/4” STREET TEE
31	E063	1/4” MPT X 1/4” BARB 90°
32	E125	3/8” EXTRUDED CROSS
33	E021	3/8” EXTRUDED 90° ELBOW
34	E0755	1/4” MPT X 1/2” BARB
35	E033	1/4” EXTRUDED 45° ELBOW
36	E251	1/4” EXTRUDED TEE
37	E135	3/8” STREET 45° ELBOW
38	E081	1/2” MPT X 1/4” FPT BUSHING
39	E0035	1/2” EXTRUDED 90° ELBOW
40	E068	1/2” MPT X 3/8” MPT NIPPLE
41	E248	1/8” MPT X 1/4” FPT BUSHING
42	B023	1/8” MPT X 1/4” BARB 90°
43	B154	1/4” PUSH ON HOSE
44	E155	1/4” BARB TEE
45	E026	1/8” MPT X 1/4” BARB
46	FP1900A	LOWER LABEL W/ METAL

FP1900B – UPPER FACE PANEL ASSEMBLY



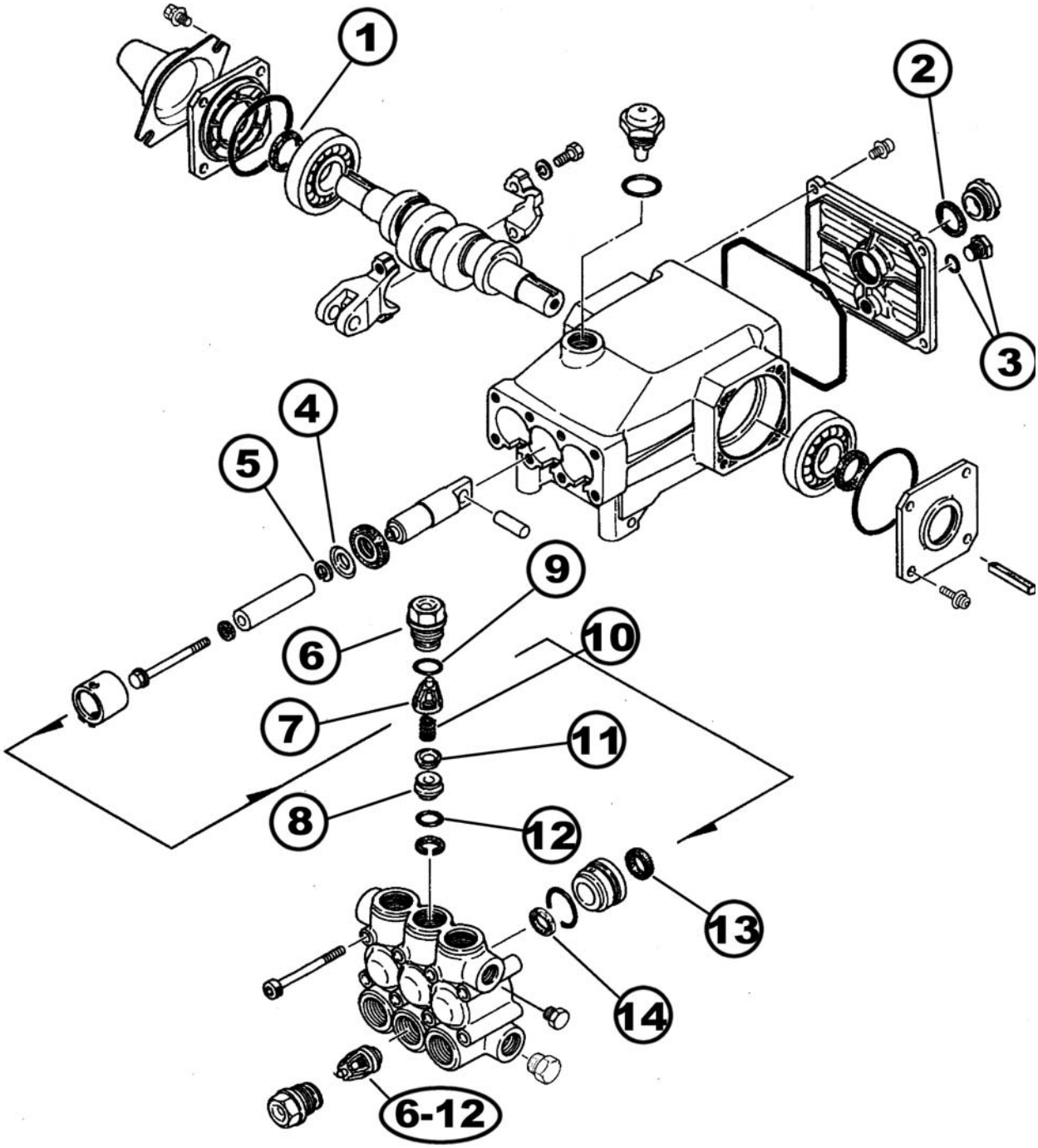
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	A013F	TACHOMETER 7000RPM	12	A139	TEMPERATURE CONTROL UNIT
2	A015	VACUUM GAUGE	13	A139-1	TEMPERATURE CONTROL KNOB
3	A014	HOUR METER	14	A139-2	TEMPERATURE CONTROL LABEL
4	A0305	TEMPERATURE GAUGE	15	A139-5	KNOB ROTATION LIMITER
5	MP005	ROCKER SWITCH SPST	16	A139-3	TENSION SPRING
6	A094A	RED INDICATOR LAMP	17	A139-4	FRICTION WASHER
7	A094	GREEN INDICATOR LAMP	18	D042	#10-32 HEX NUT
8	B073	20A CIRCUIT BREAKER	19	D114	#10-32 X 5/16” SET SCREW
9	CY052	12V ELECTRIC RELAY	20	D113	#10-32 X 5/8” SET SCREW
10	J032-3	MOMENTARY PUSH BUTTON	21	D171	#4-40 X 1/4” BUTTON SCREW
11	J413	IGNITION SWITCH	22	J216	DECORATIVE TRIM LOC
			23	A077-1	UPPER FACE PANEL LABEL

PA1900 - CAT PUMP ASSEMBLY

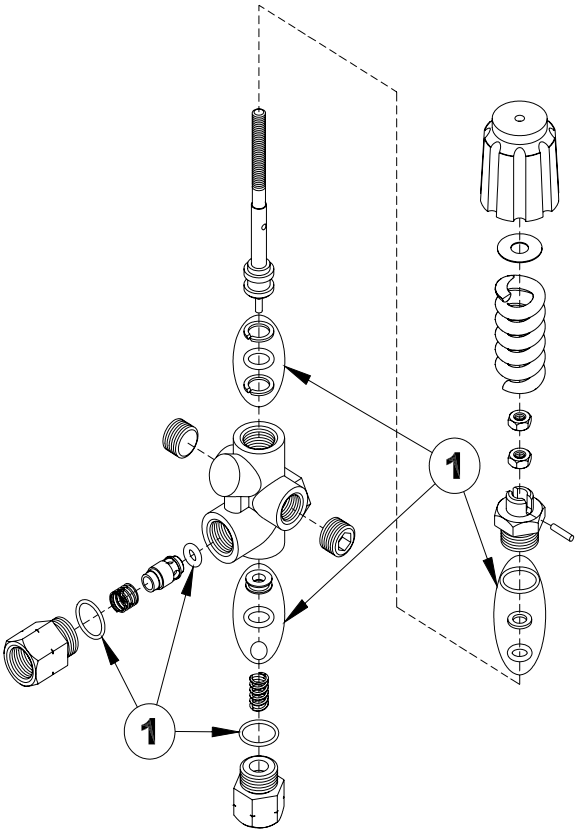


ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	A103	TRIPLE PLUNGER PUMP see Section: 6-A6	12	A005P-1	PULSE PUMP MOUNT FITTING
2	A103-50	CAT PUMP CLUTCH	13	E018	1/8” STREET 90° ELBOW
3	A103-41	CAT TO CLUTCH ADAPTOR PLATE	14	E0495	1/4” X 1/8” HEX NIPPLE
4	A005P	PULSE PUMP see Section: 6-A7	15	D065	5/16” LOCK WASHER
5	E132	IN LINE STRAINER	16	B023	1/8” MPT X 1/4” BARB 90°
6	J276	PUMP MOUNT TRAY	17	E066	3/8” SQUARE HEAD PLUG
7	J0349	140° KILL SWITCH	18	E010	1/2” HEX NIPPLE
8	B221	1/4” INLINE CHECK VALVE	19	E027	1/2” MPT X 3/8” MPT HEX NIPPLE
9	B142	1/4” TWO WAY BALL VALVE	20	E100	3/8” MPT 1/2” BARB 90°
10	E024	1/4” STREET 90° ELBOW	21	E075	1/4” MPT X 1/4” BARB
11	E016	3/8” MPT X 1/4” FPT BUSHING	22	DM005	M8 X 25MM HEX BOLT
			23	D064	5/16” FLAT WASHER

A103 - CAT PUMP EXPLODED ASSEMBLY

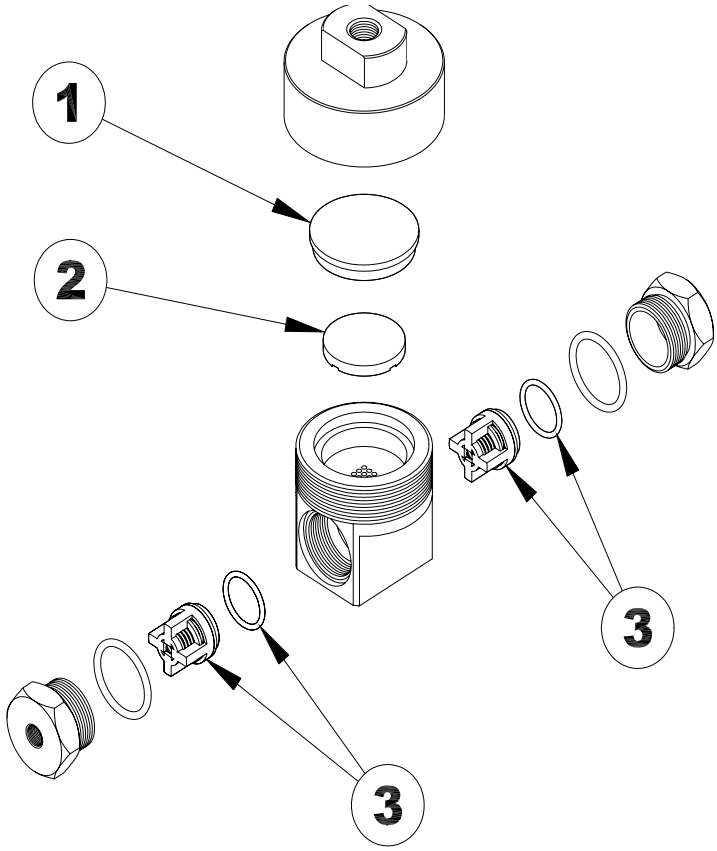


ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	A103-17	OIL SEAL – CRANK SHAFT	8	A103-44	VALVE SEAT
2	A103-40	GASKET – FLAT OIL GAUGE	9	A103-48	“O”-RING VALVE PLUG
3	A103-19	DRAIN PLUG W/ “O”-RING	10	A103-46	VALVE SPRING
4	A103-26	BARRIER SLINGER	11	A103-45	VALVE
5	A003-2	KEY HOLE WASHER	12	A103-43	“O”-RING – VALVE SEAT
6	A103-49	VALVE PLUG	13	A103-40	LOW PRESSURE SEAL W/ SPRING
7	A103-47	VALVE SPRING RETAINER	14	A103-47	HI PRESSURE SEAL



A151 - UNLOADER ASSEMBLY

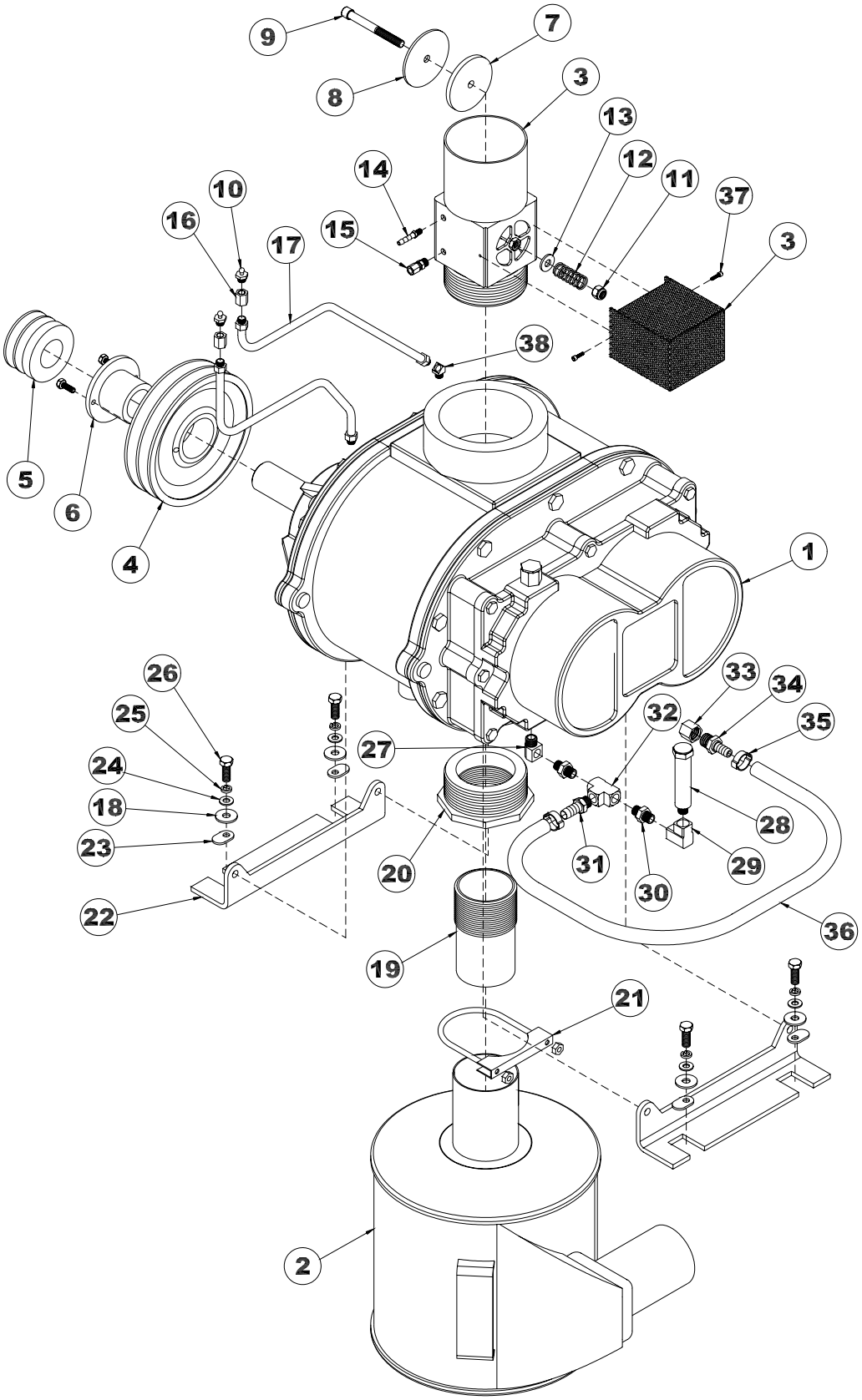
A151-1 - COMPLETE SEAL AND VALVE REPLACEMENT KIT



A005P - PULSE PUMP ASSEMBLY

ITEM#	/ P/N /	DESCRIPTION
1	A005P-2	RUBBER DIAPHRAGM
2	A005P-5	HARD PLASTIC WAFER
3	A005P-3	CHECK VALVE

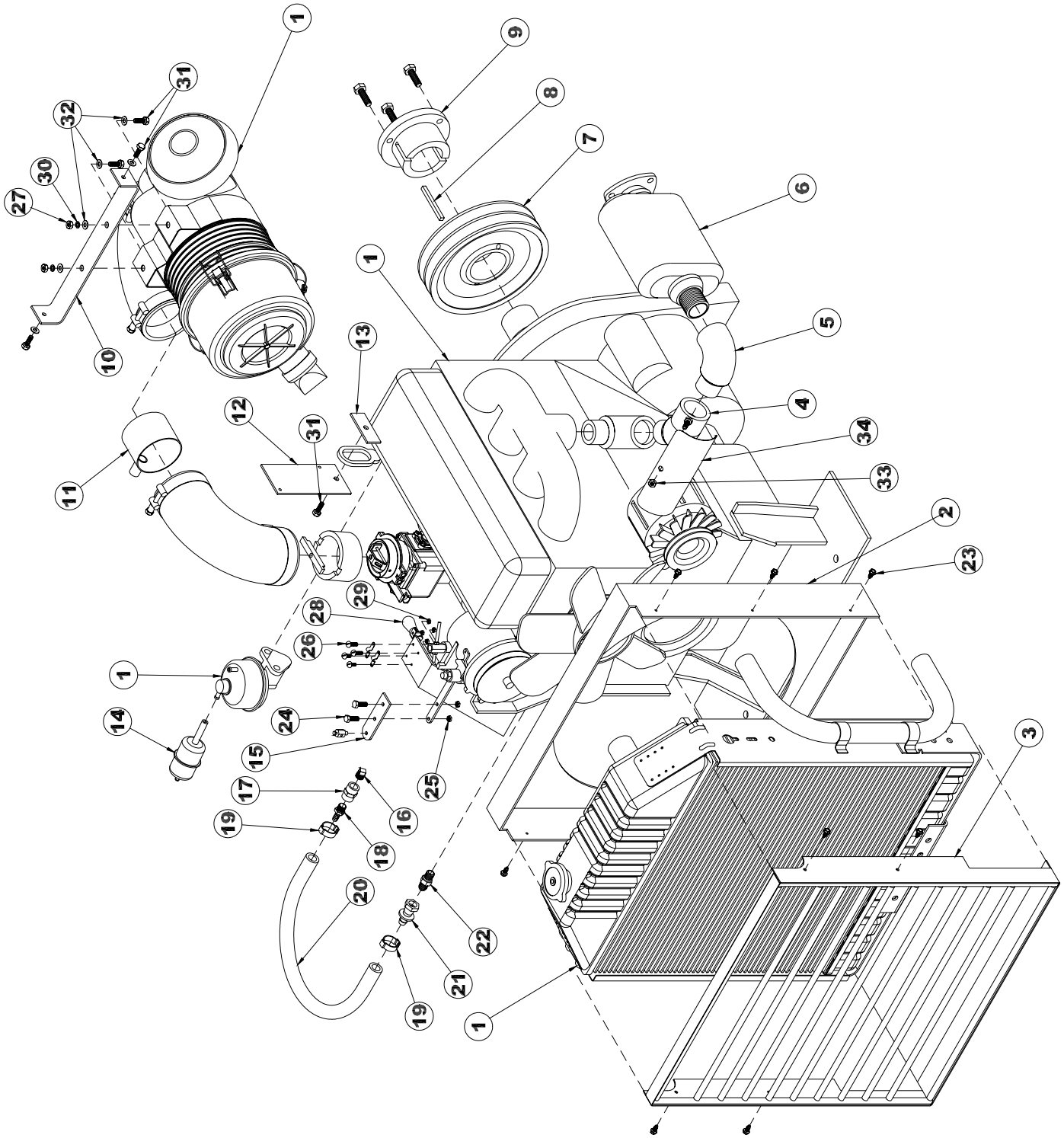
BA1900 - BLOWER ASSEMBLY



BA1900 - BLOWER ASSEMBLY

ITEM#	/ P/N /	DESCRIPTION
1	A004	#59 ROOTS BLOWER
2	A065	3” COWL SILENCER
3	A216	VACUUM RELIEF WELDED ASSEMBLY
4	J218	6.9” P.D. DOUBLE GROOVE PULLEY
5	J219	2.9” P.D. DOUBLE GROOVE PULLEY
6	J227	B1 1/8 X 1/4 TAPERED PULLEY BUSHING
7	A053-5	VACUUM RELIEF GASKET
8	A053-4	VACUUM RELIEF WASHER
9	D190	3/8-16 X 3-1/2” SOCKET HEAD CAP SCREW
10	N/A	1/8” MPT ZIRK GREASE FITTING W/ BLOWER
11	D012	3/8-16 NYLOCK NUT
12	A053-1	VACUUM RELIEF SPRING
13	D004	3/8” FLAT WASHER
14	E026	1/8” MPT X 1/4” BARB
15	E244	1/8” MPT X 1/8” COMPRESSION
16	E018	1/8” COUPLING
17	H015	29” SS BRAIDED HOSE ASSEMBLY
18	D004	3/8” FLAT WASHER
19	E154	3” STRAIGHT BLOWER SWEEP
20	E152	4” X 3” REDUCING BUSHING
21	B0785	3” MUFFLER CLAMP
22	N/A	BLOWER FEET, SUPPLIED W/ BLOWER
23	N/A	OVAL WASHER, SUPPLIED W/ BLOWER
24	D064	5/16” FLAT WASHER
25	D005	3/8” LOCK WASHER
26	D026	3/8-16 X 1” HEX BOLT
27	E024	1/4” STREET 90° ELBOW
28	A018A	OIL LEVEL SIGHT GAUGE
29	E023	1/4” EXTRUDED 90° ELBOW
30	E050	1/4” HEX NIPPLE
31	E0755	1/4” MPT X 1/2” BARB
32	E061	1/4” EXTRUDED TEE
33	E120	1/2” FPT CAP
34	E047	1/2” MPT X 1/2” BARB
35	D049	7/8” OD “O” CLAMP
36	B104	1/2 X 1/8 WALL BLACK NEO. HOSE

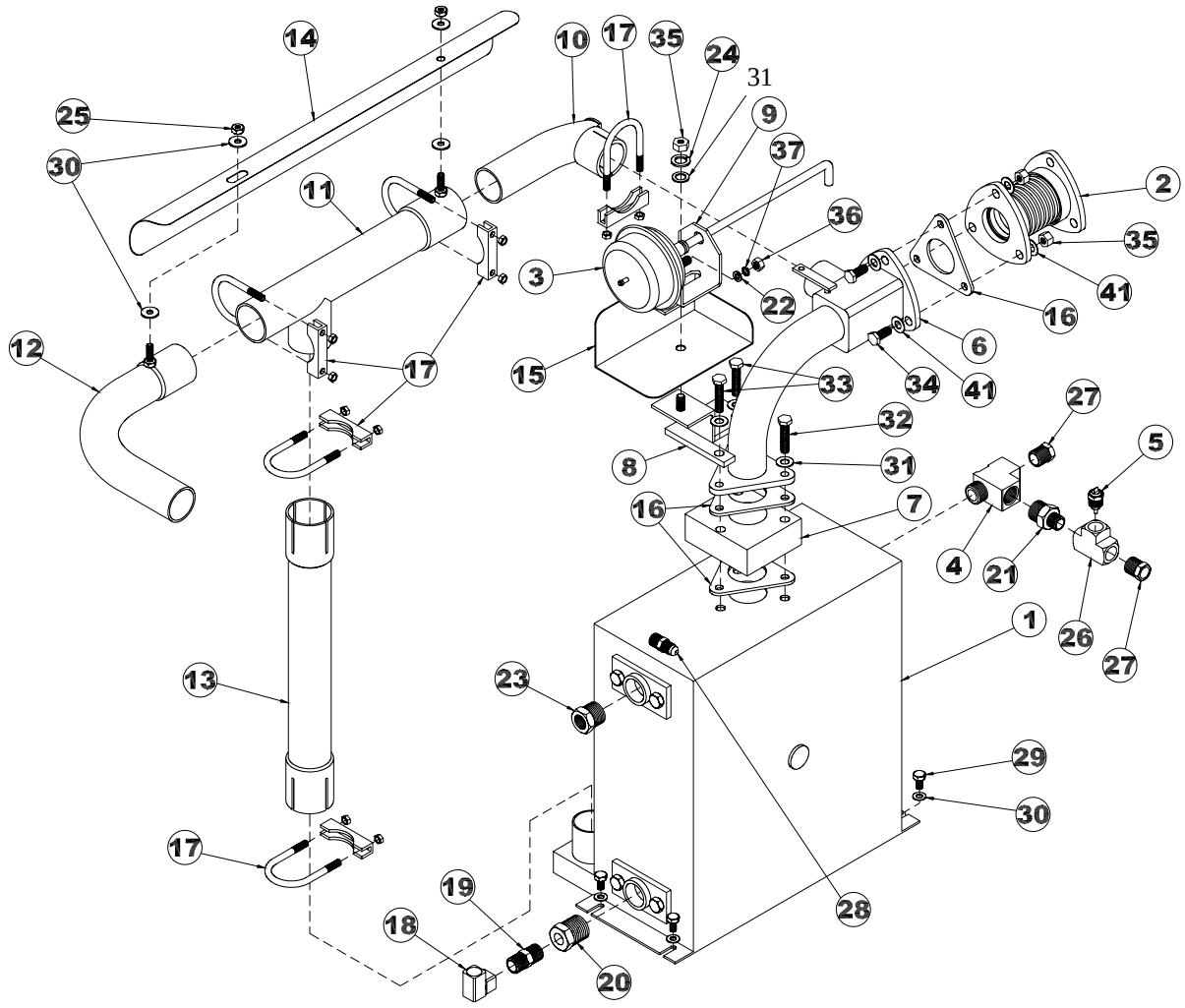
EA1900 – FORD ENGINE ASSEMBLY



EA1900 – FORD ENGINE ASSEMBLY

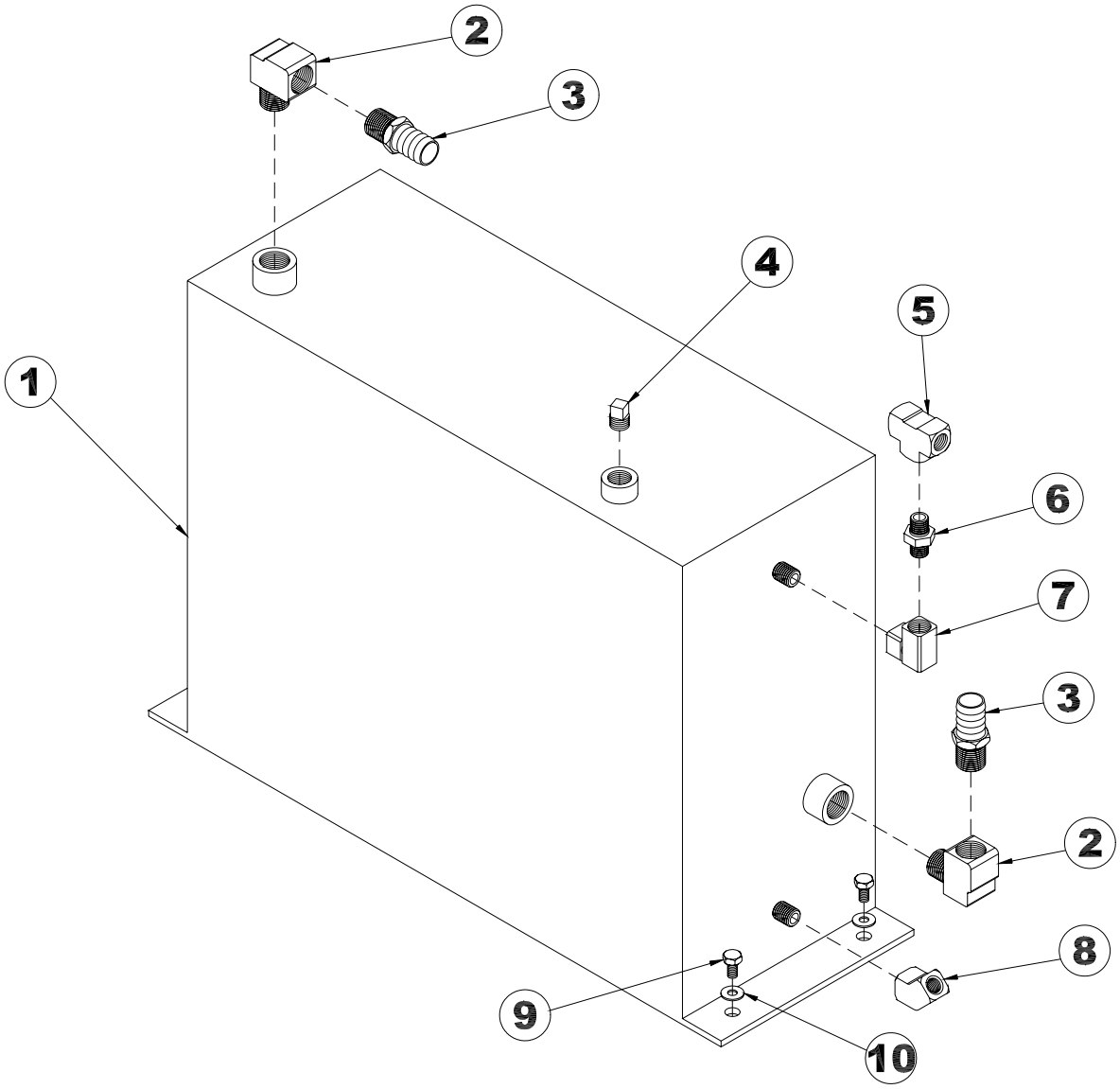
ITEM#	/ P/N /	DESCRIPTION
1	CY001	ENGINE – FORD 4 CYL 53 HP
2	A127	ENGINE FAN SHROUD
3	J277	ENGINE RADIATOR SHIELD
4	E239-1	1.25” STREET 45° ELBOW B.I. MOD
5	E238	1.25” STREET 90° ELBOW B.I.
6	A126-1	CATALYTIC CONVERTER MOD
7	J218	6.9” P.D. DOUBLE GROOVE PULLEY
8	A136	5/16 X 2-3/4” SQUARE KEY
9	J226	B1-3/8 5/16 PULLEY BUSHING
10	J279	AIR CLEANER SUPPORT BRACKET
11	J042	AIR INTAKE CONNECTOR
12	B087	ENGINE ESC MOUNT
13	J423	FLAT CLAMP NUT 1/4-20
14	CY044	INLINE FUEL FILTER
15	CY016	THROTTLE EXTENSION BRACKET
16	E029	1/4” SQUARE HEAD PLUG
17	E085	1/4” COUPLING NUT
18	BX021A	1/4” MPT X 3/8” BARB
19	GX050C	7/8” OD “O” CLAMP
20	J044	3/8” BLACK FUEL HOSE
21	E233	3/8” BARB X 9/16” FEMALE 37° JIC SWIVEL
22	E232	M14 X 1.5 “O”-RING BOSS X 9/16” 37° JIC M
23	D029	#10 X 1/2” TEK SCREW
24	D032	1/4-20 X 3/4” HEX BOLT
25	D040	1/4-20 LOCK NUT
26	D089	10-32 X 5/8” ROUND HEAD SCREW
27	D034	1/4-20 HEX NUT
28	A096	CONSOLE LAMP
29	D040A	#10-32 LOCK NUT
30	D009	1/4” LOCK WASHER
31	D054	1/4-20 X 1/2” HEX BOLT
32	D010	1/4”: FLAT WASHER

HE1900 - HEAT EXCHANGER ASSEMBLY



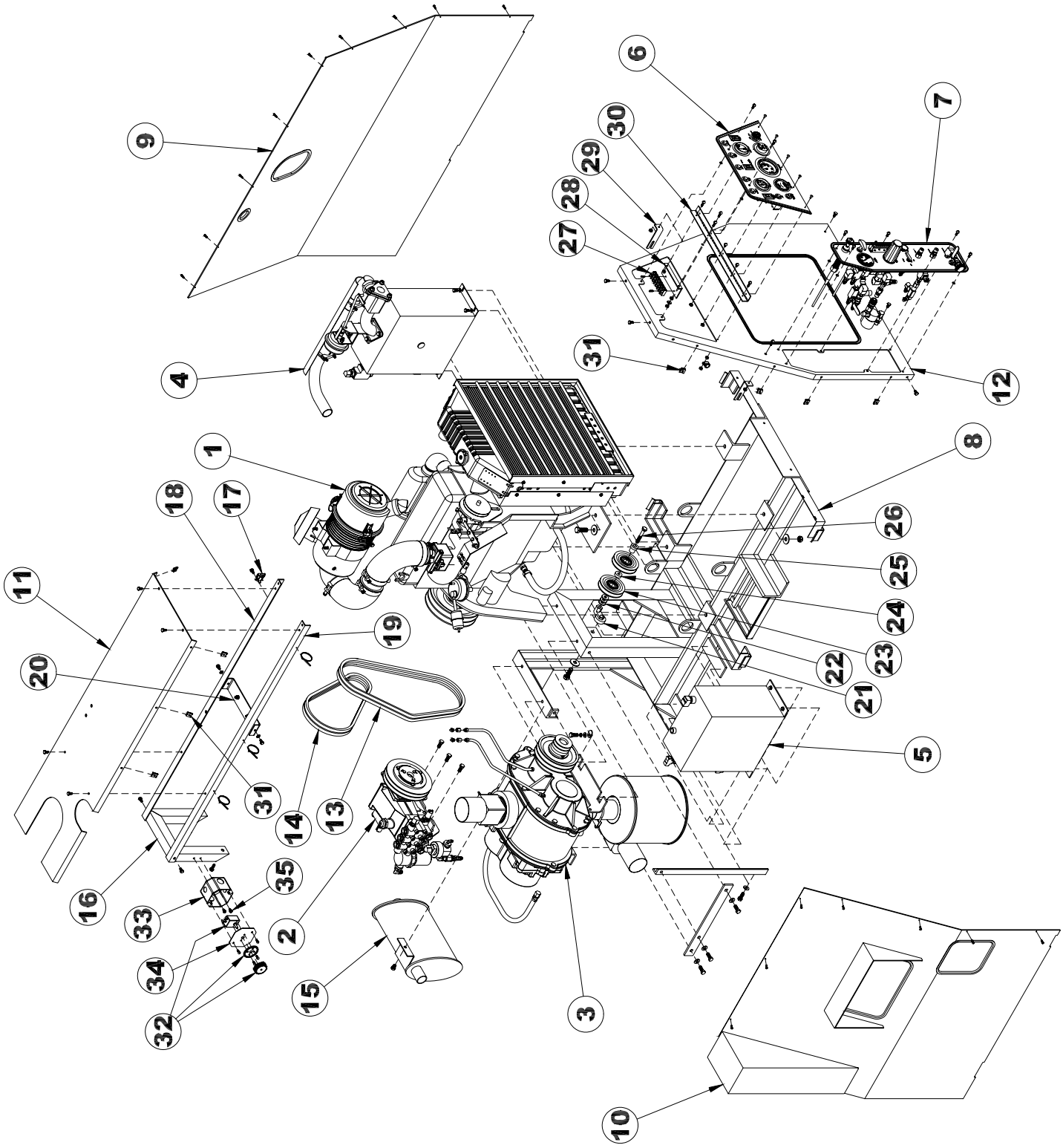
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	HE1900	HEAT EXCHANGER WELDED ASSEMBLY	19	E050	1/4” HEX NIPPLE
2	J261	FLEX EXHAUST COUPLING	20	E081	1/2” MPT X 1/4” FPT BUSHING
3	A044	VACUUM ACTUATOR ASSEMBLY	21	E068	1/2” X 3/8” HEX NIPPLE
4	E252	1/2” EXTRUDED STREET TEE	22	D052	ALUMINUM RIVET WASHER
5	A038	TEMPERATURE SENSOR VDO 120°-300°	23	E027	1/2” MPT X 3/8” FPT BUSHING
6	J404	EXHAUST DIVERTER	24	D065	5/16” LOCK WASHER
7	HE1900-S	1.25” HEAT EXCHANGER SPACER	25	D034	1/4-20 HEX NUT
8	J402	ACTUATOR SUPPORT BRACKET	26	E019	3/8” EXTRUDED TEE
9	B054	VACUUM ACTUATOR BRACKET**	27	E016	3/8” MPT X 1/4” FPT BUSHING
10	J213	ENGINE EXHAUST SWEEP	28	E195	1/4” MPT X 1/4” 37° JIC
11	J211	EXHAUST MANIFOLD COLLECTOR	29	D054	1/4-20 X 1/2” HEX BOLT
12	L010	1-1/2” MUFFLER 90° SWEEP	30	D010	1/4” FLAT WASHER
13	J242	DOUBLE FLARED EXHAUST CONNECTOR	31	D064	5/16” FLAT WASHER
14	J212	EXHAUST HEAT SHIELD	32	D181	5/16-18 X 2” HEX BOLT
15	J229	ACTUATOR HEAT SHIELD	33	D180	5/16-18 X 2-1/4” HEX BOLT
16	D0026	EXHAUST MANIFOLD GASKET	34	D053	5/16-18 X 1” HEX BOLT
17	B036	1-1/2” MUFFLER CLAMP	35	D075	5/16-18 HEX NUT
18	E023	1/4” EXTRUDED 90° ELBOW	36	DM003	M5 X .8 HEX NUT
			37	D044	#10 LOCK WASHER

PH1900 – PRE-HEATER ASSEMBLY



ITEM#	/ P/N /	DESCRIPTION
1	HE1000-1	PREHEATER WELDED ASSEMBLY
2	E003	1/2” STREET 90° ELBOW
3	E114	1/2” MPT X 3/4” BARB
4	E029	1/4” SQUARE HEAD PLUG
5	E061	1/4” EXTRUDED TEE
6	E050	1/4” HEX NIPPLE
7	E023	1/4” EXTRUDED 90° ELBOW
8	E033	1/4” EXTRUDED 45° ELBOW
9	D054	1/4-20 X 1/2” HEX BOLT
10	D010	1/4” FLAT WASHER

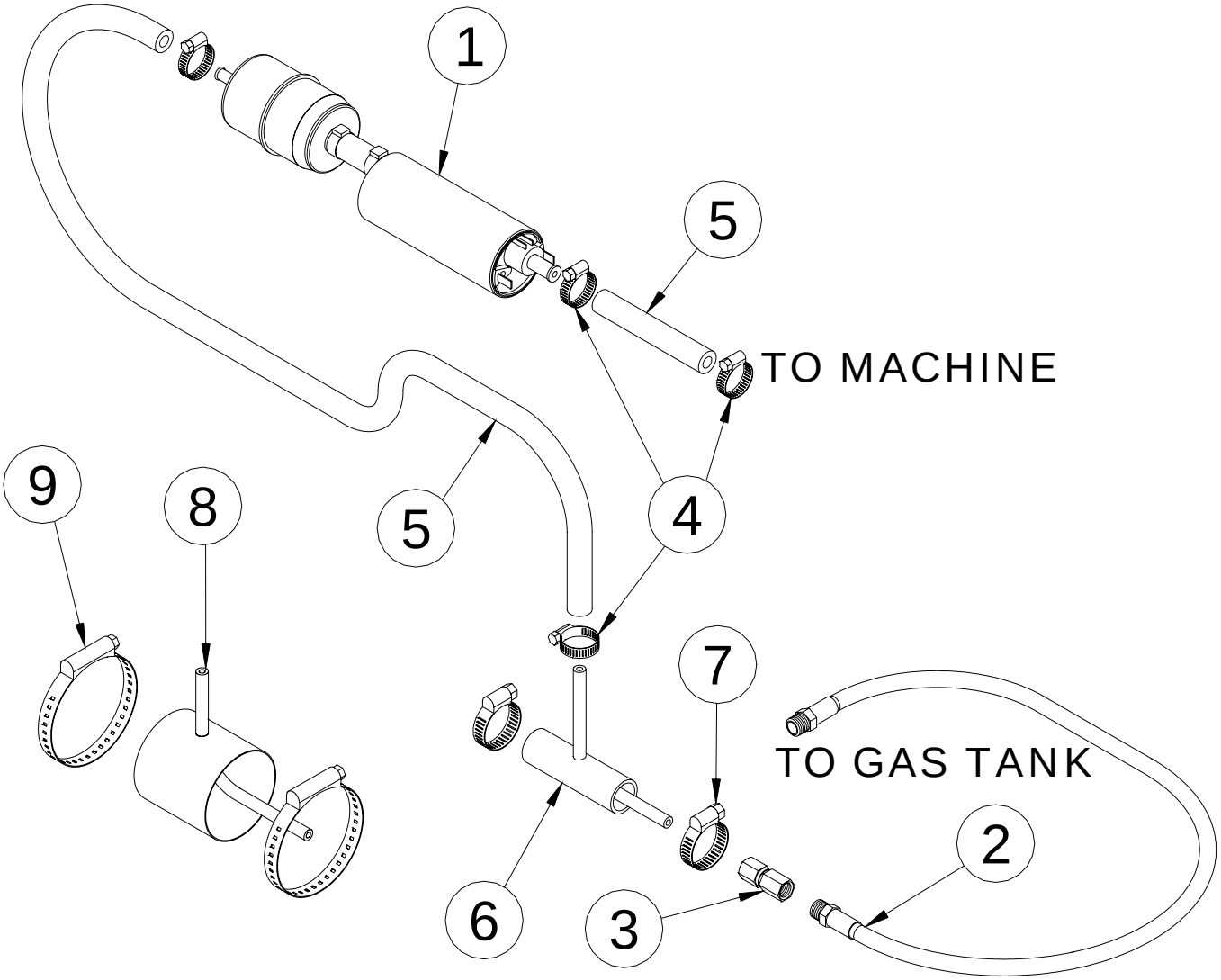
FA1900 – PRO-1900 MAIN FRAME ASSEMBLY



FA1900 – PRO-1900 MAIN FRAME ASSEMBLY

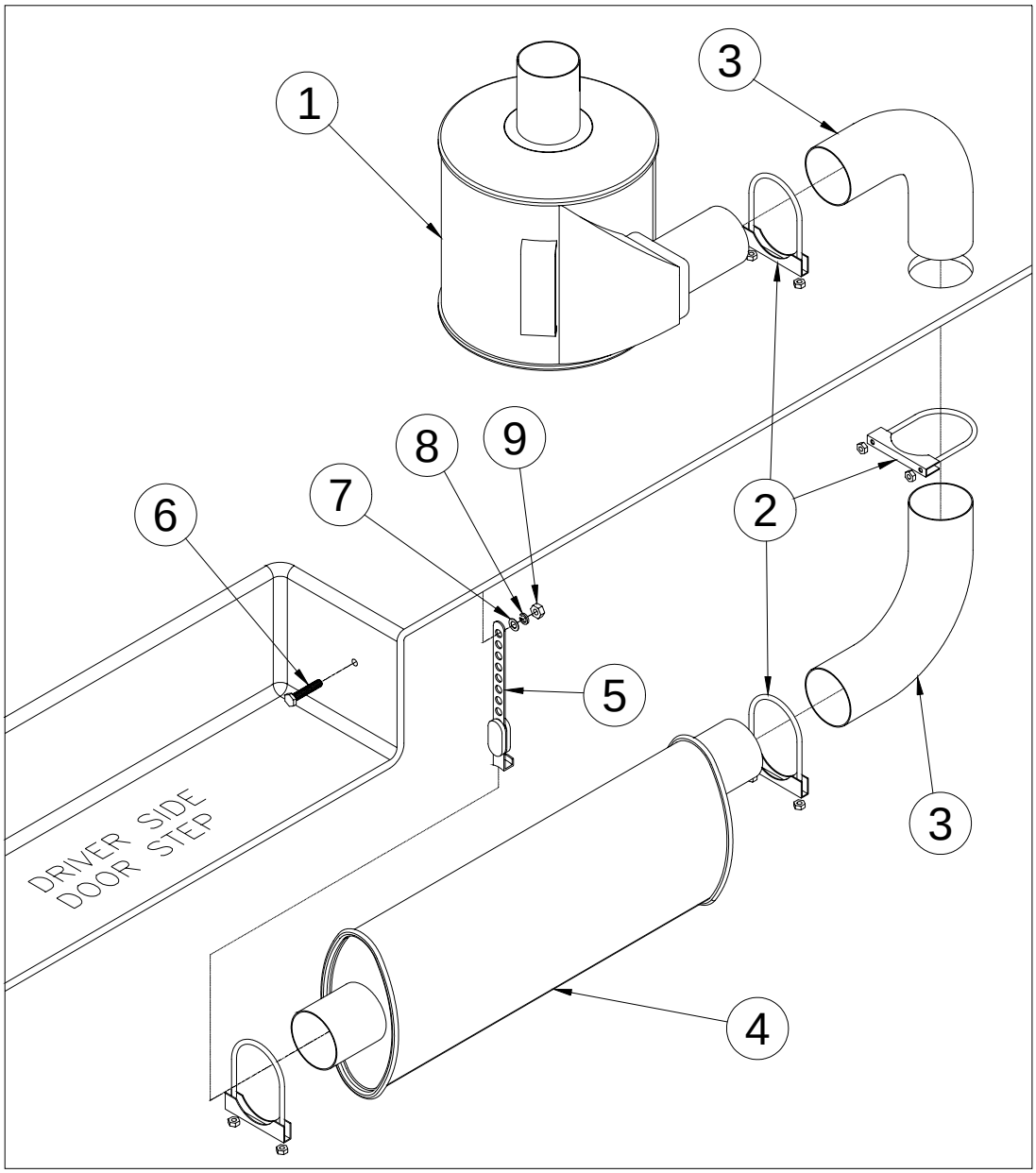
ITEM#	/ P/N /	DESCRIPTION
1	EA1900	FORD ENGINE ASSEMBLY see Section: 6-A10,11
2	PA1900	CAT PUMP ASSEMBLY see Section: 6-A5
3	BA1900	59 FOOTS BLOWER ASSEMBLY see Section: 6-A8,9
4	HE1900	HEAT EXCHANGER ASSEMBLY see Section: 6-A12
5	PH1900	PRE-HEATER ASSEMBLY see Section: 6-A13
6	FP1900B	UPPER FACE PANEL ASSEMBLY see Section: 6-A4
7	FP1900A	LOWER FACE PANEL ASSEMBLY see Section: 6-A2,3
8	MF1900	MAIN FRAME WELDED ASSEMBLY
9	A122	RIGHT SIDE CONSOLE COVER
10	A123	LEFT SIDE CONSOLE COVER
11	A121	TOP CONSOLE COVER
12	A120	FRONT CONSOLE COVER
13	G053-5V	53” V BELT 5V
14	G037	37” TOP COG V BELT
15	J436	WELDED MUFFLER MOD
16	J228	UPPER CONSOLE MOUNT
17	A140M	VACUUM SOLENOID
18	J231	RIGHT SIDE CONSOLE SUPPORT
19	J232	LEFT SIDE CONSOLE SUPPORT
20	J279	AIR CLEANER SUPPORT
21	B041	1-1/2” ECCENTRIC IDLER ARM
22	D004	3/8” FLAT WASHER
23	A088	SINGLE GROOVE IDLER PULLEY
24	A070	TENSIONER SPACER
25	A071	IDLER PULLEY BUSHING
26	D116	7/16-20 X 21/2” HEX BOLT
27	J0425	TERMINAL BARRIER STRIP
28	J278	TERMINAL STRIP MOUNT
29	A120-1	FRONT PANEL SUPPORT
30	D038	1-1/2” CONTINUOUS HINGE
31	D128	#10 U-NUT – STANDARD
32	A139	ADJUSTABLE KILL SWITCH
33	J450	4” OCTAGONAL ELECTRICAL BOX
34	J451	4” OCTAGONAL ELEC BOX COVER
35	D028	#10 X 3/4” TEK SCREW

FUEL LINE HOOK-UP KIT



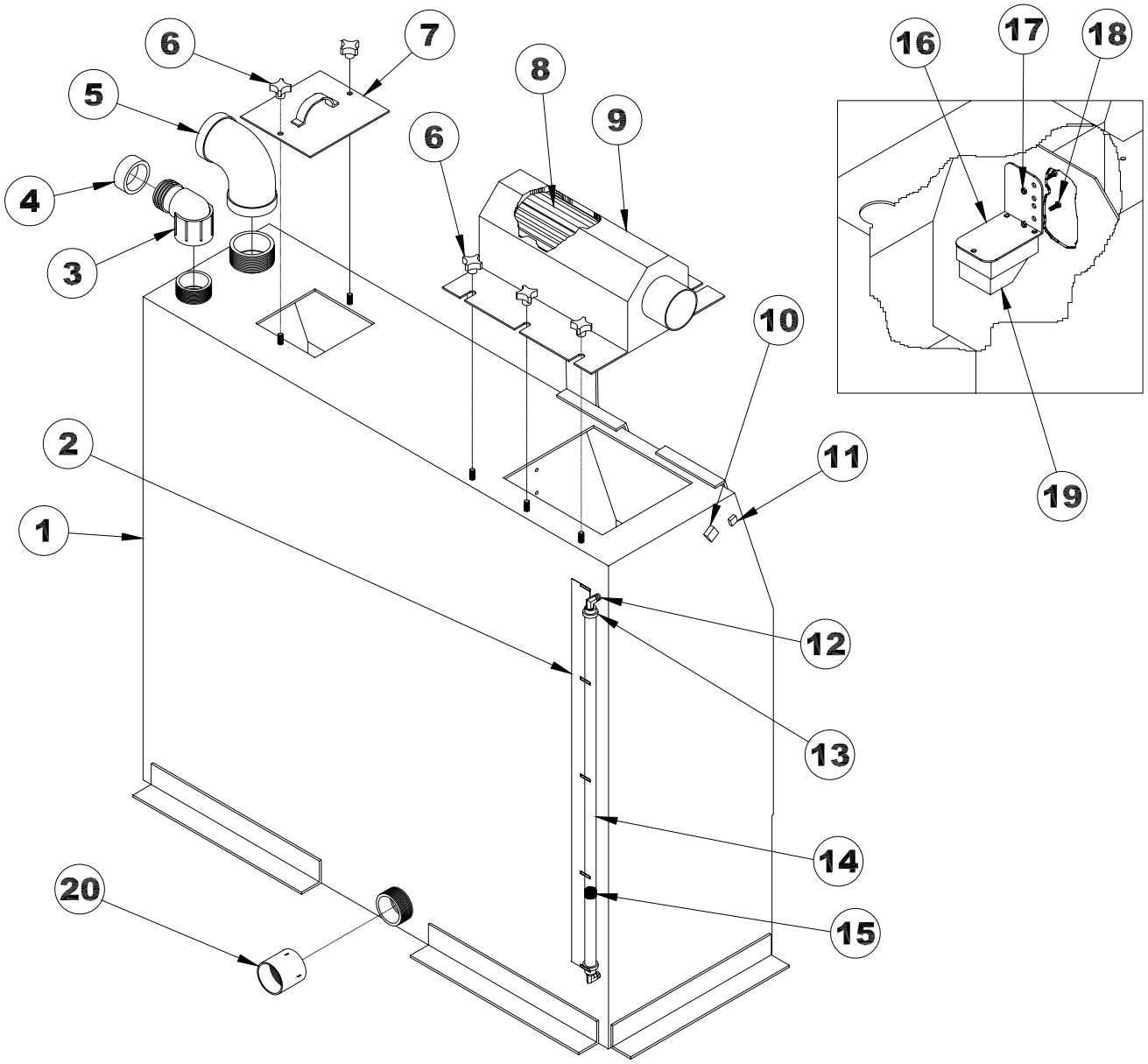
ITEM#	/ P/N /	DESCRIPTION
1	J038	12V FUEL PUMP
2	H014	3/16” HOSE ASSY W/ 1/4” CONNECTOR
3	B089-1	1/8” FPT X 1/4” COMPRESSION
4	B029	HOSE CLAMP 1/4” - 5/8”
5	J041	Ø1/4” FUEL HOSE
FOR **FORD**		
6	A080-3	FUEL LINE CONNECTOR
7	B031	HOSE CLAMP 1/2” - 1-1/4”
FOR CHEVY & DODGE		
8	A080-2	FUEL LINE CONNECTOR
9	B094	HOSE CLAMP # 28

AD069 – EXTERNAL MUFFLER ASSEMBLY



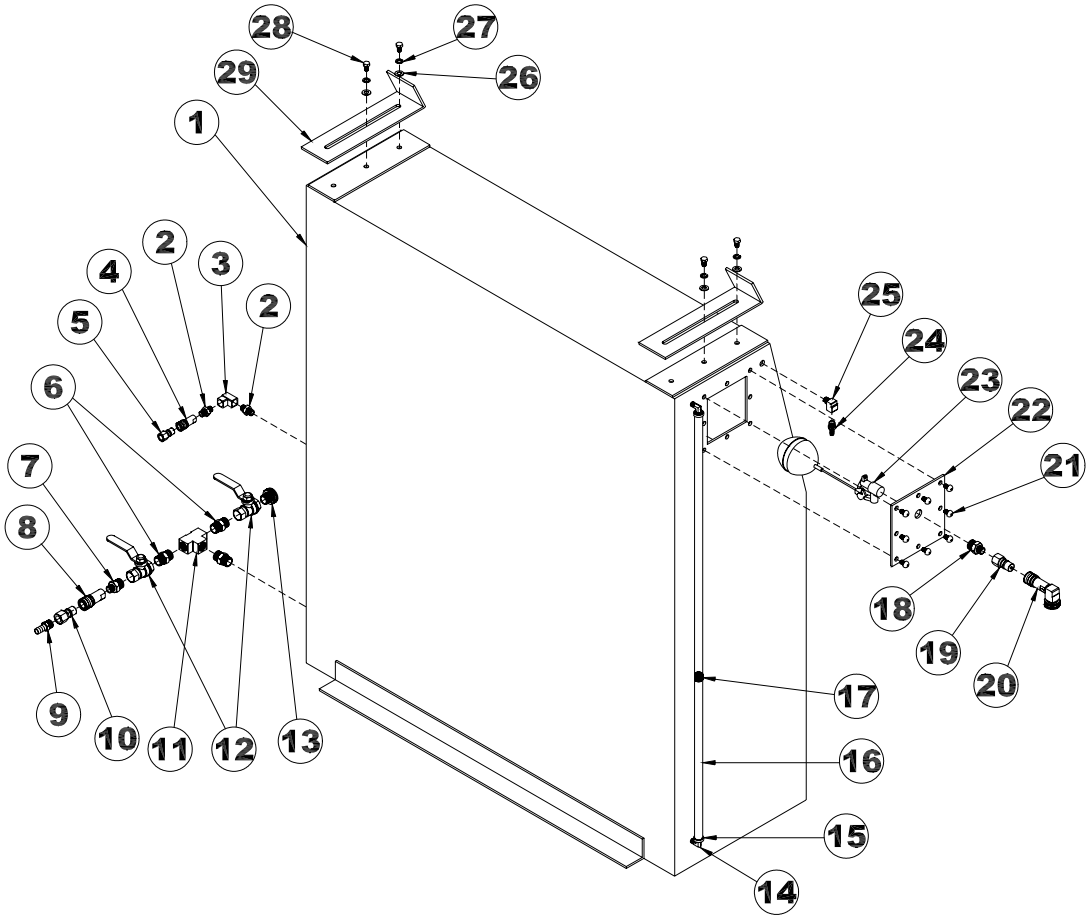
ITEM#	/ P/N /	DESCRIPTION
1	A065	3” COWL SILENCER
2	B0785	Ø3” MUFFLER CLAMP
3	E111	Ø3” MUFFLER 90° SWEEP
4	A072	3” X 24” EXHAUST MUFFLER
5	B046	MUFFLER HANGER
6	D080	3/8-16 X 2” HEX BOLT
7	D004	3/8” FLAT WASHER
8	D005	3/8” LOCK WASHER
9	D045	3/8-16 HEX NUT

TA-130 - 130 GALLON RECOVERY TANK



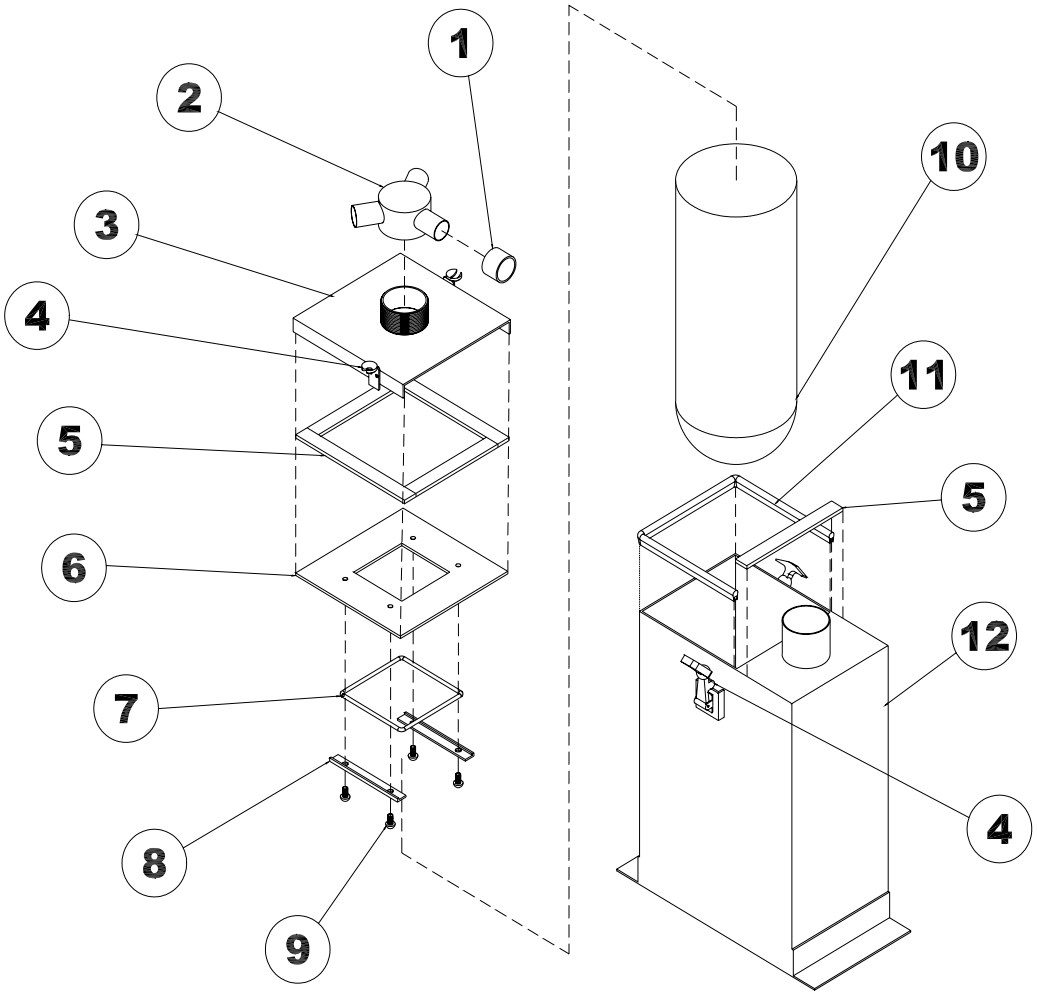
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	TA130	130 GALLON WELDED RECOVERY TANK	11	E080	1/2” SQUARE HEAD PLUG
2	A092	FLOAT LEVEL SIGHT GAUGE	12	E100	3/8” MPT X 1/2” BARB 90°
3	E109	2” FPT X 2” BARB 90°	13	B0315	3/4” PLASTIC HOSE CLAMP
4	E109C	2” RUBBER VACUUM CAP	14	B105	1/2” X 1/8” POLYVINANCE TUBE
5	E103	3” BI 90° ELBOW	15	D048	3/8” X 1” POLYESTER FLOAT
6	D130	3/8-16 BLACK PLASTIC KNOB	16	A028B	FLOAT SWITCH BRACKET
7	A220-9	8” TANK COVER	17	D015	1/4-20 HEX NUT
8	E131	3” 100 MICRON SS FILTER	18	D124	1/4-20 X 3/4” HEX BOLT
9	A217	FILTER HOUSING	19	A028	FLOAT SWITCH
10	E025	3/4” SQUARE HEAD PLUG	20	E070	2” FEMALE X 2” SLIP ADAPTOR

TA-100B - 100 GALLON FRESH WATER TANK



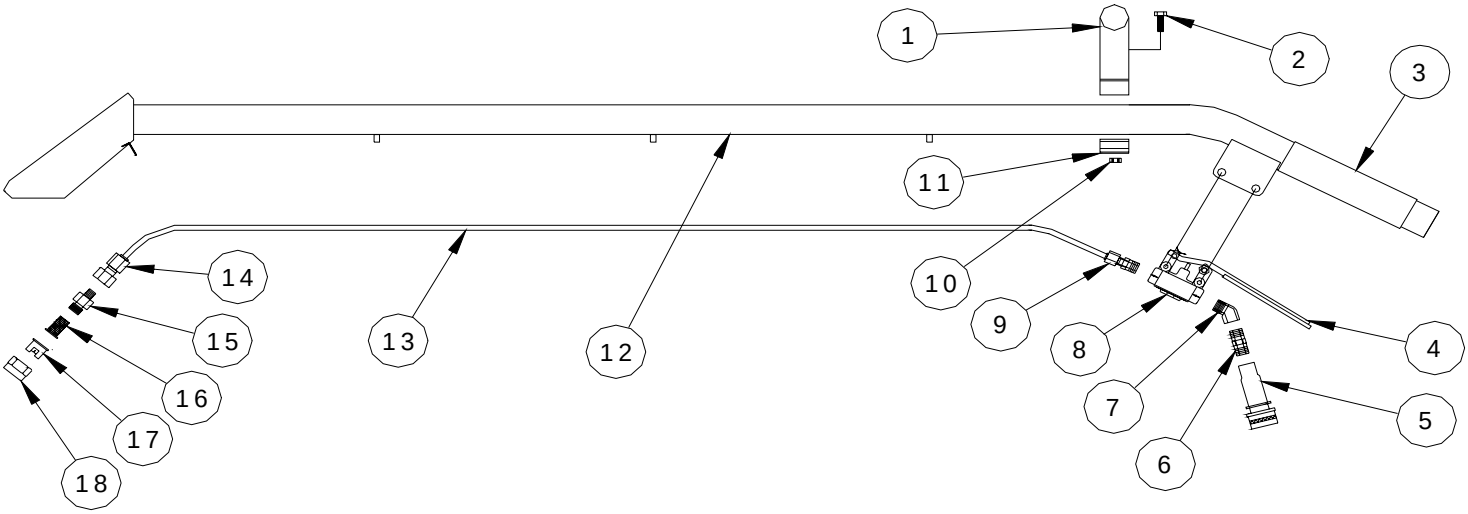
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	TA100B	100 GALLON WELDED WATER TANK	15	B029	1/2” PLASTIC CLAMP
2	E0495	1/4” MPT HEX NIPPLE	16	B008	1/2” POLYVINANCE TUBE
3	E023	1/4” EXTRUDED 90° ELBOW	17	D047	1/4” X 1” POLYESTER FLOAT
4	B003-1M	1/4” FEMALE Q-CONNECT MOD	18	E068	1/2” MPT X 3/8” MPT HEX NIPPLE
5	B001-1M	1/4” MALE Q-CONNECT MOD	19	B002	3/8” MALE Q-CONNECT
6	E010	1/2” MPT HEX NIPPLE	20	B077B	WATER HOSE ADAPTOR
7	E068	1/2” X 3/8” HEX NIPPLE	21	D001	5/16-18 X 1/2” SS BUTTON HEAD
8	B005-M	3/8” FEMALE Q-CONNECTOR MOD	22	A023-10	ACCESS COVER PLATE
9	E048	3/8” MPT X 1/2” BARB	23	J396	FLOAT VALVE UNIT
10	B002-M	3/8” MALE Q-CONNECTOR MOD	24	E004	1/2” MPT X 5/8” BARB
11	E009	1/2” EXTRUDED TEE	25	E003	1/2” STREET 90° ELBOW
12	B038	1/2” BALL VALVE	26	D004	3/8” FLAT WASHER
13	E083	1/2” MPT X 3/4” FGH SWIVEL	27	D005	3/8” LOCK WASHER
14	E002	3/8” MPT X 3/8” BARB 90°	28	D026	3/8-16 X 1” HEX BOLT
			29	J430B	WATER TANK BRACKET

TARFS3-A - FILTER BOX



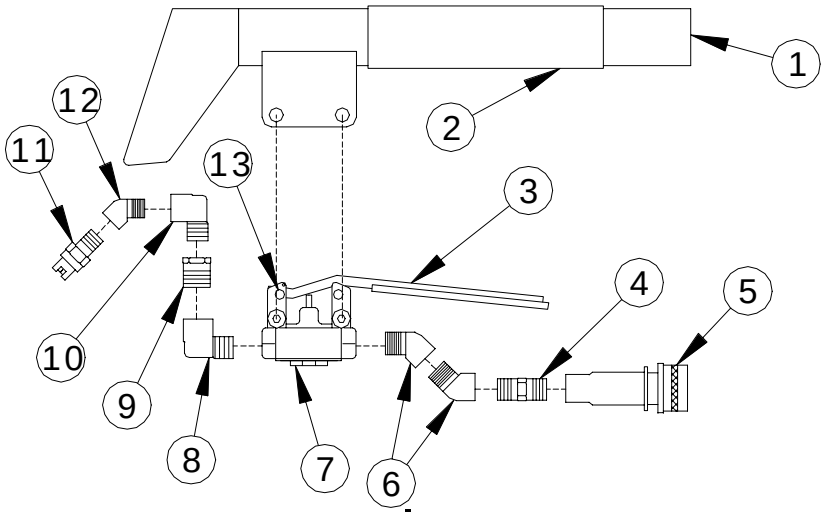
ITEM#	/ P/N /	DESCRIPTION
1	E109C	VACUUM END CAP
2	K013-1	VACUUM TRI PORT
3	K013-2	FILTER BOX LID
4	K012	RUBBER TEE CLAMP
5	D002	1/4 X 1” SELF ADHESIVE FOAM TAPE
6	K013-3	FILTER MOUNTING PLATE
7	K016A	FILTER RING - SS
8	K013-4	RING CLAMP
9	D121	5/16-18 X 5/8” LG BUTTON HEAD CAP SCREW
10	K016	FILTER BAG ELEMENT
11	D0025	EDGE TRIM GASKET
12	TARFS3-1	FILTER BOX MAIN BODY

TL015 - STANDARD 11” WAND



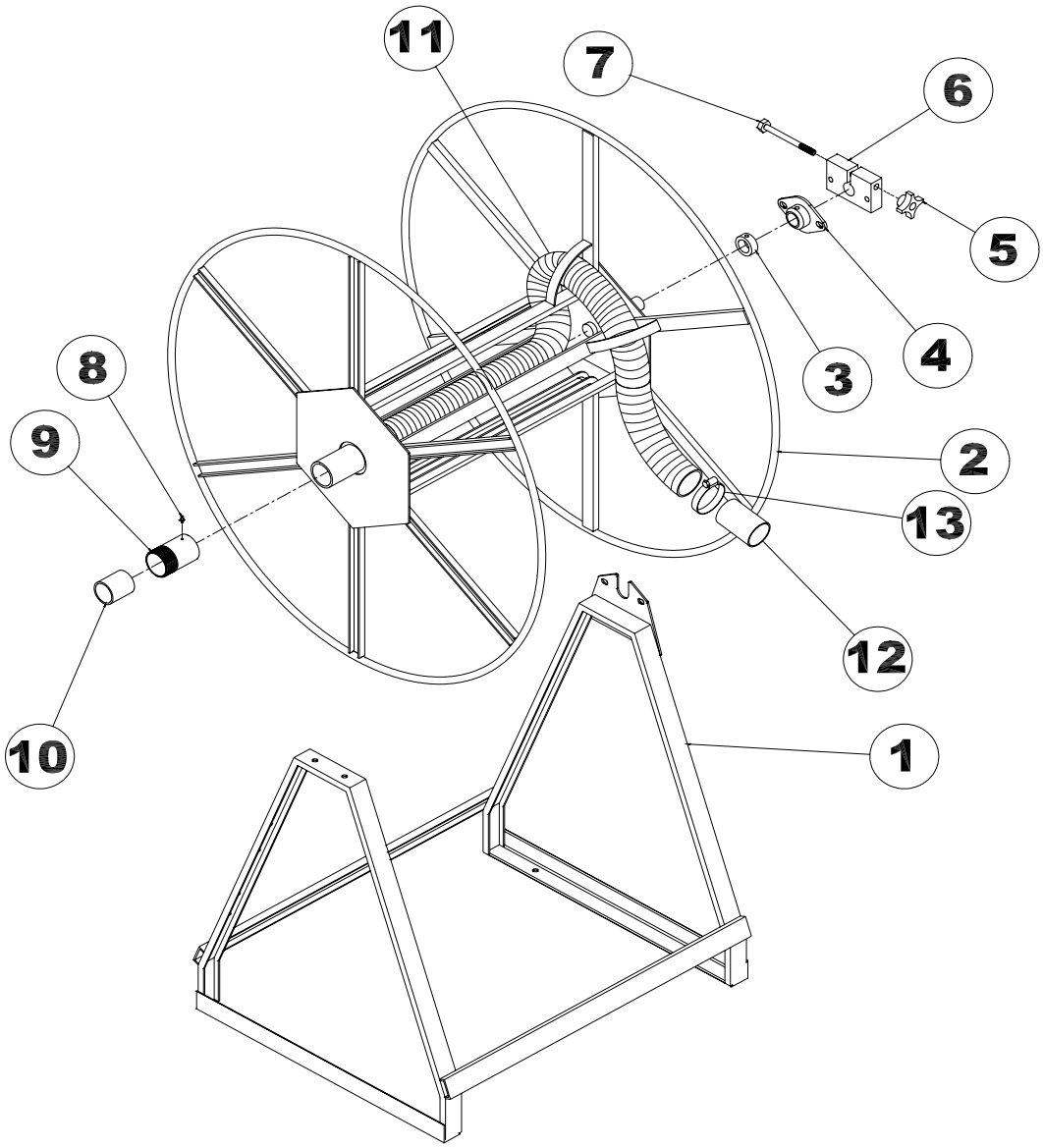
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	B040-3	HANDLE TOP SS	10	D015	1/4-20 HEX NUT SS
2	D072	1/4-20 X 1/2” HEX BOLT SS	11	B040-3B	HANDLE BOTTOM SS
3	B028	1-1/2” BLACK WAND GRIP	12	TL015-1	WAND WELDED UNIT
4	B042	WAND VALVE TRIGGER	13	W009	1/4” SS TUBING
5	B003	1/4” FEMALE QUICK DISC.	14	B089	1/4” FPT X 1/4” COMP.
6	E050	1/4” HEX NIPPLE	15	B071	NOZZLE BODY
7	E040	1/4” EXTRUDED STRT 45°	16	B070	IN LINE SCREEN
8	B039-3	PARAPLATE VALVE	17	B069	SPRAY NOZZLE
9	B088	1/4” MPT X 1/4” COMP.	18	B071-1	NOZZLE CAP

TL031 - STAIR TOOL



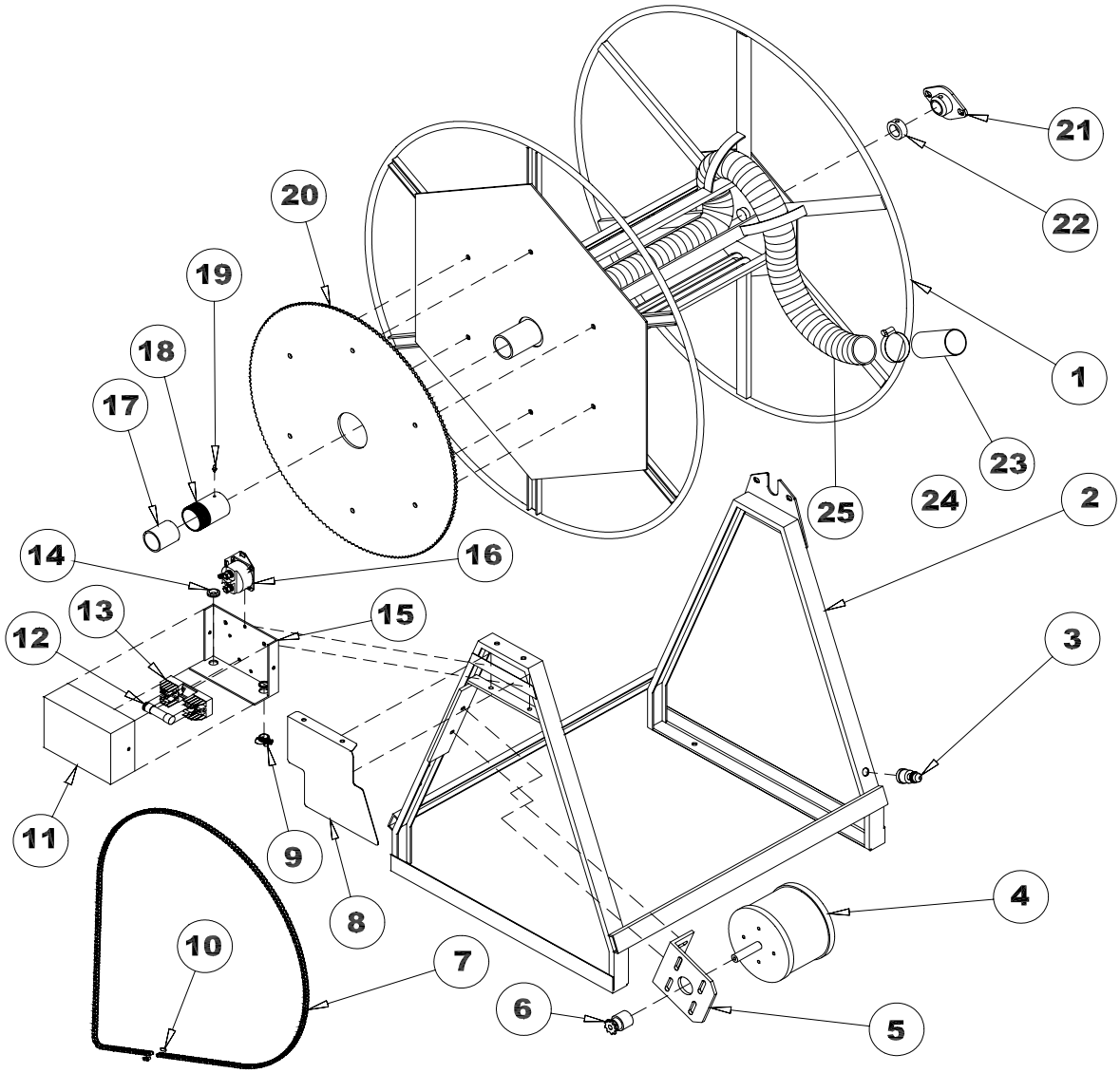
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	TL032-1	STAIR TOOL WELDED ASSY	7	B039-3	PARAPLATE VALVE
2	B028	1-1/2” BLACK WAND GRIP	8	E024	1/4” EXTRUDED STREET 90°
3	B042	WAND VALVE TRIGGER	9	E020	1/4” X 1/8” BUSHING
4	E050	1/4” HEX NIPPLE	10	E018	1/8” EXTRUDED STREET 90°
5	B003	1/4” FEMALE QUICK DISC.	11	B080	VEE JET NOZZLE
6	E040	1/4” EXTRUDED STRT. 45°	12	E134	1/8” EXTRUDED STREET 45°
			13	D001	5/16-18 X 1/2” B.H.C.S. SS

RE600 - MANUAL HOSE REEL

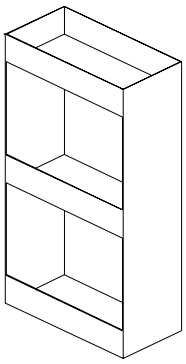


ITEM#	/ P/N /	DESCRIPTION
1	RE602	REEL BASE - 28” WIDE
2	RE601	WINDING HOOP - Ø35” X 22” WIDE
3	RE007	SHAFT COLLAR
4	RE006	BRONZE BUSHING
5	D130	3/8-16 PLASTIC KNOB
6	RE009	FRICTION BRAKE
7	D102	3/8-16 X 4-1/2” HEX BOLT
8	A100	ZIRK GREASE FITTING 1/4-20
9	B044-1	2” NIPPLE
10	S071	Ø2” COPPER BEARING
11	B012A	Ø2” ASMS VACUUM HOSE
12	S106	Ø2” ALUMINUM TUBING 4”
13	B100	#36 HOSE CLAMP

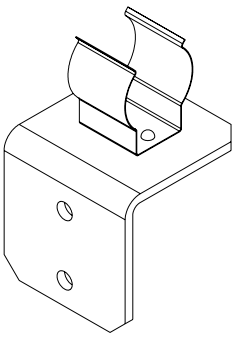
RE500 - ELECTRIC HOSE REEL



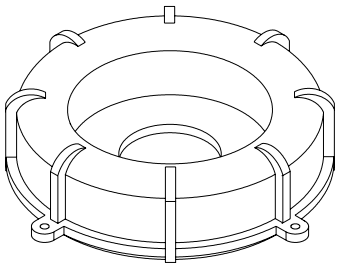
ITEM#	/ P/N /	DESCRIPTION	ITEM#	/ P/N /	DESCRIPTION
1	RE501	WINDING HOOP - Ø35” X 22” WIDE	14	A020A	RUBBER HOLE GROMMET
2	RE502	REEL BASE - 28” WIDE	15	RE525	ELECTRICAL BOX
3	RE002	PUSH BUTTON SWITCH	16	RE003	ELECTRIC STARTER SOLENOID
4	RE001	12V REEL MOTOR	17	S071	Ø2” COPPER BEARING
5	RE507	MOTOR MOUNT	18	B044-1	2” NIPPLE
6	RE004	PINION SPROCKET	19	A100	ZIRK GREASE FITTING 1/4-20
7	CX011B	#35 CHAIN W/ LINKS	20	RE008	LARGE SPUR SPROCKET
8	RE524	MOTOR GUARD	21	RE006	BRONZE BUSHING
9	MP011	ROMEX WIRE CONNECTOR	22	RE007	SHAFT COLLAR
10	DX029	MASTER CHAIN LINK	23	S106	Ø2” ALUMINUM TUBING 4”
11	RE525-1	ELECTRICAL BOX COVER	24	B100	#36 HOSE CLAMP
12	DX032	40AMP HEAVY DUTY FUSE	25	B012A	Ø2” ASMS VACUUM HOSE
13	DX033	HEAVY DUTY FUSE HOLDER			



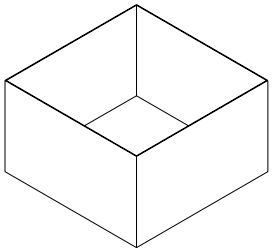
A272 TRIPLE CHEM RACK SS



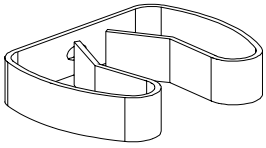
B056 WAND HOLDER CLIP



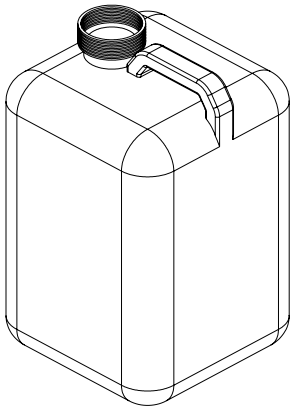
A054-1 CHEMICAL JUG CAP



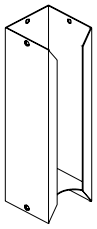
B148 SINGLE CHEM TRAY SS



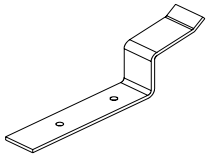
B200 GRIPPER CLIP



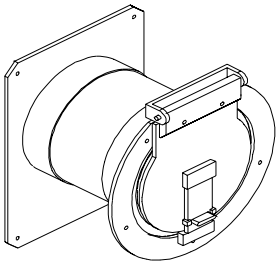
A054 5 GALLON CHEMICAL JUG



A200 3" FURNITURE PAD
A202 4" DISPENSER SS

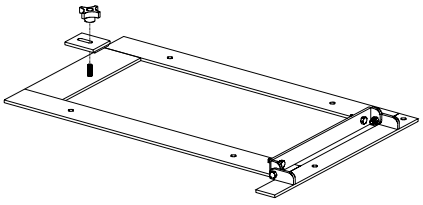


B047 WAND MOUNTING BRACKET

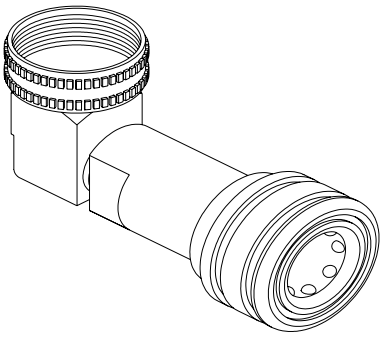


A056A DELUXE SECURITY ACCESS HATCH

A056 STANDARD ACCESS HATCH

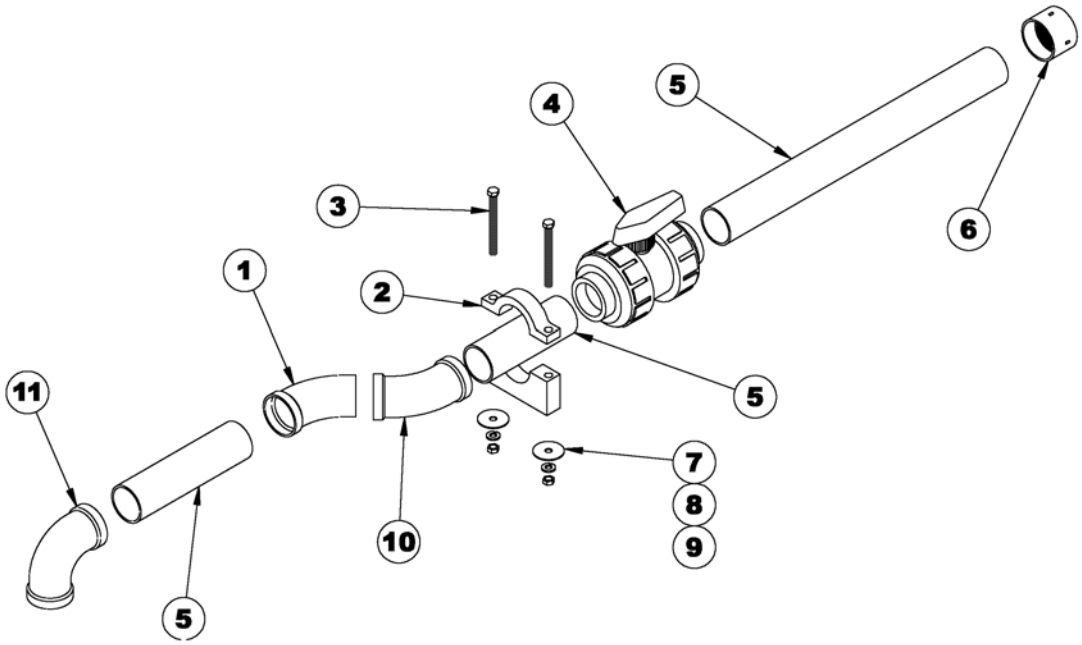


RE025 HOSE REEL HINGE MOUNT



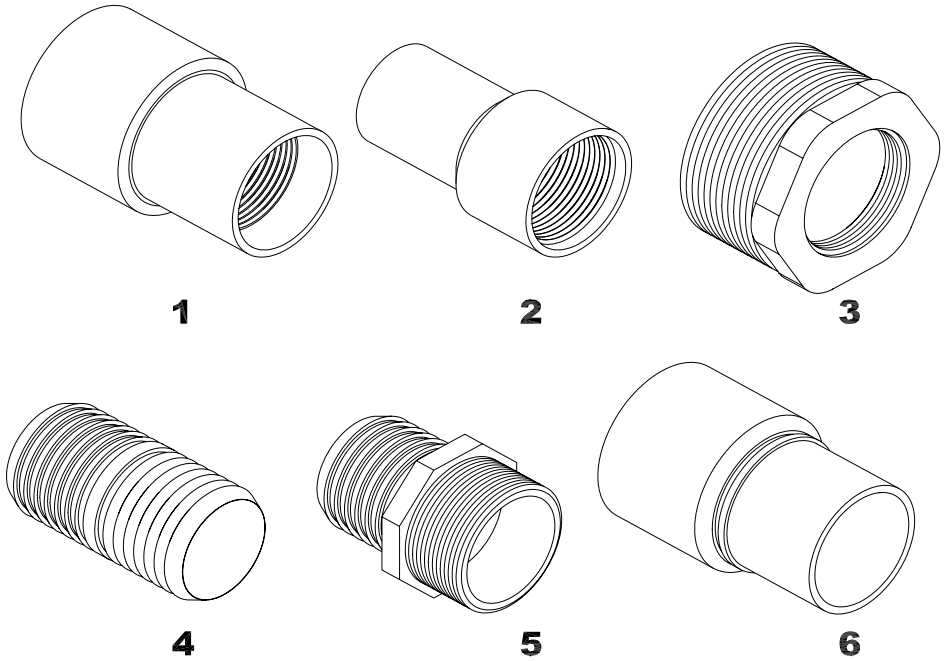
B077B WATER HOSE ADAPTER

DRAIN ASSEMBLY



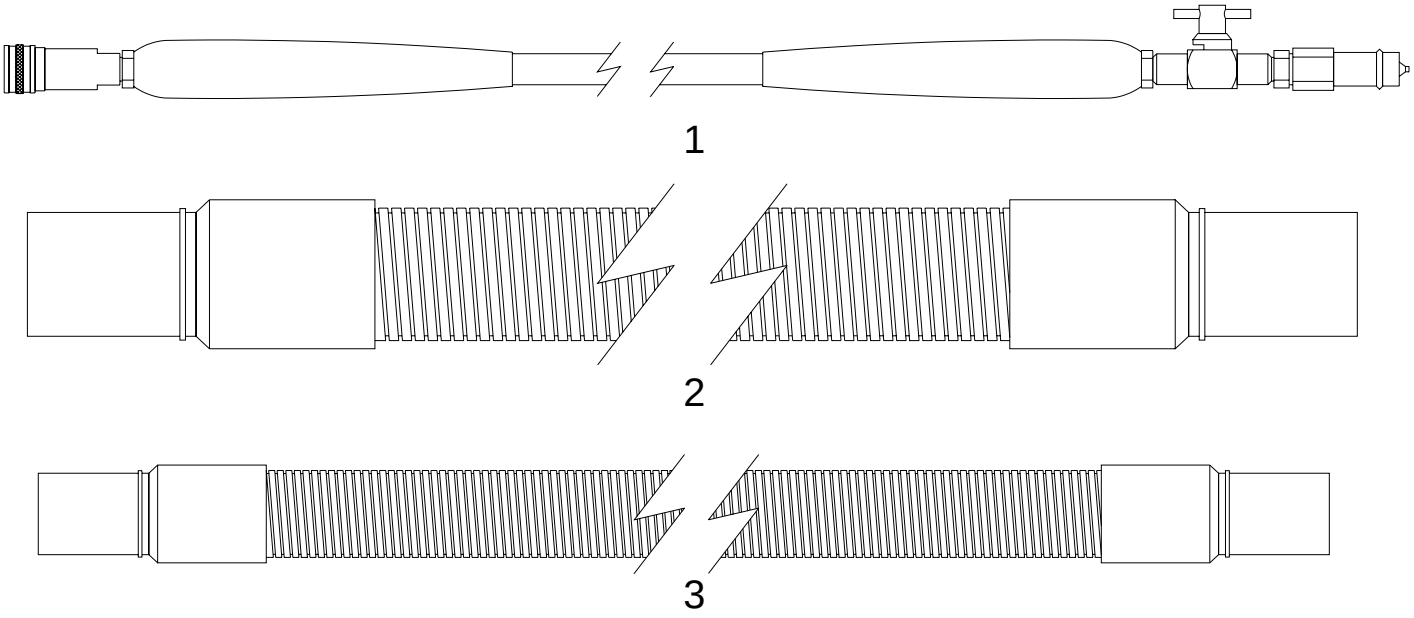
ITEM#	P/N	DESCRIPTION	ITEM#	P/N	DESCRIPTION
1	E136	2” ABS STREET 45° ELBOW	7	D078	3/8” FENDER WASHER
2	B210	2” DRAIN CLAMP	8	D005	3/8” LOCK WASHER
3	D022	3/8-16 X 4” HEX BOLT	9	D045	3/8-16 HEX NUT
4	B145	DUO BLOCK 2” BALL VALVE	10	E139	2” ABS 45° ELBOW
5	E074	2” BLACK ABS PIPE	11	E138	2” ABS 90° ELBOW
6	E070	2” FPT X 2” SLIP ABS			

CONNECTORS



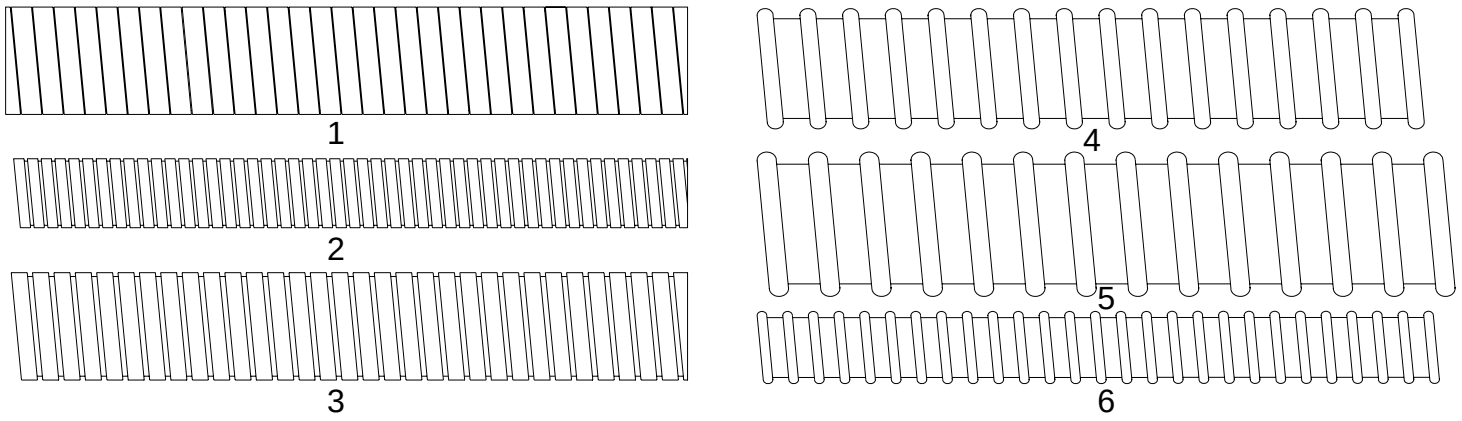
ITEM#	P/N	DESCRIPTION	ITEM#	P/N	DESCRIPTION
1.	B0165	2” - 1-1/2” VAC. HOSE CUFF GRAY RUBBER	4.	B018	2” VACUUM HOSE CONN GRAY PLASTIC
2.	B017	1-1/2” VACUUM HOSE CUFF GRAY RUBBER	5.	E039	2” MPT X 2” BARB GRAY PLASTIC
3.	E104	3” TO 2” REDUCER BLACK IRON	6.	B016	2” VACUUM HOSE CUFF GRAY RUBBER
			7.	B0161	1-1/2 X 2” VACUUM CUFF

HOSES W/ CONNECTORS



ITEM#	/ P/N /	DESCRIPTION
1	HP150	150’ SOLUTION HOSE WITH S.S. DISCONNECTS AND SHUT OFF VALVE
2	H002	2” X 50’ VACUUM HOSE - GRAY WITH END CONNECTORS
3	B015	1-1/2” X 10’ VACUUM HOSE LEADER - GRAY WITH END CONNECTORS

HOSES

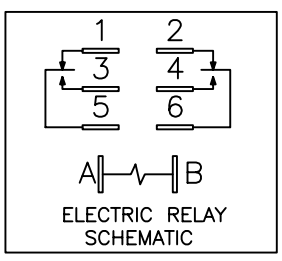


ITEM#	/ P/N /	DESCRIPTION
1	B092-1	2-1/2” FLEX TUBE - S.S. (BLOWER OUTPUT)
2	B015	1-1/2” VACUUM HOSE - GRAY (LEADER HOSE)
3	H002-1	2” VACUUM HOSE - GRAY (MAIN VACUUM HOSE / HOSE REEL SPINDLE TO RECOVERY (TANK INPUT)
4	B012	2-1/2” ASMS VACUUM HOSE - CLEAR W/ GRAY (HOSE REEL SPINDLE TO VACUUM HOSE)
5	B013	3” ASMS VACUUM HOSE - CLEAR W/ GRAY (FILTER BOX TO REC. TANK IF INCLUDED
6	B012A	2” ASMS VACUUM HOSE - CLEAR W/ GRAY (HOSE REEL SPINDLE TO VACUUM HOSE)

PRO–1900 ELECTRICAL SCHEMATIC

COLOR KEY	DESCRIPTION
A061–13	3/16" MALE INSULATED SPADE CONN BLUE
A061–2	1/4" FEMALE INSULATED SPADE CONN BLUE
A061–3	1/4" MALE INSULATED SPADE CONN BLUE
A061–12	3/16" FEMALE INSULATED SPADE CONN BLUE
A061–5	1/8" INSULATED SNAP SPADE RED
A061–6	3/8" RING CONN YELLOW
A061–7	3/16" RING CONN BLUE
A061–8	1/4" FEMALE INSULATED SPADE CONN YELLOW

NOTE: DASHED LINES REPRESENT WHITE WIRES



ELECTRIC RELAY SCHEMATIC

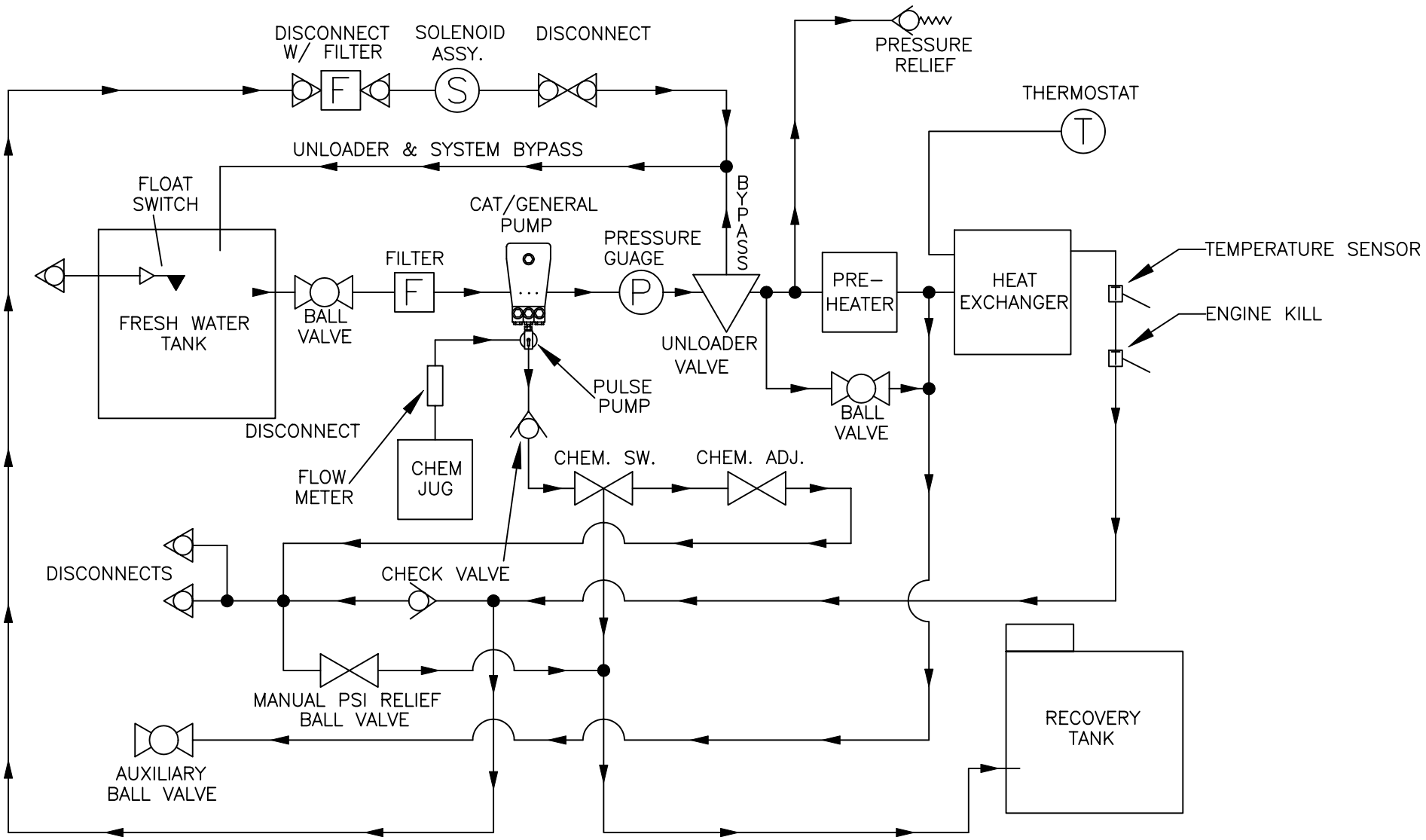
PRO–1900
JIM NESKEY
3/29/00
REV B PAGE 1–2
A GAGE LABELS

PRO-1900 ELECTRICAL SCHEMATIC

#	COLOR	GA.	FROM	A061-	TO	A061-	LENGTH"
1	BROWN	14	TERMINAL P1	BARE	CLUTCH FIELD	-3	45
2	BROWN	18	TERMINAL P1	BARE	PUMP SWITCH	-2	13
3	BLUE	18	TERMINAL P2	BARE	THERMOSTAT POST 2	-2	8
4	WHITE	18	TERMINAL P3	BARE	WIRE 56/61	-2	13
5	WHITE	18	TERMINAL P3	BARE	SOLENOID	-2	73
6	BLACK	18	TERMINAL P3	BARE	VACUUM SOLENOID	N/A	10
7	BLACK	18	TERMINAL P4	BARE	SYSTEM LIGHT	-3	12
8	BLACK	18	TERMINAL P4	BARE	CAT TEMP SWITCH NO	-7	66
9	YELLOW	18	TERMINAL P5	BARE	ENGINE TEMP LIGHT	-3	10
10	YELLOW	18	TERMINAL P5	BARE	ENG TERM - TEMP	-7	60
11	YELLOW	18	TERMINAL P6	BARE	BYPASS MOM	-5	17
12	RED	18	TERMINAL P7	BARE	ENG TERM - PRESS	-7	60
13	RED	18	TERMINAL P7	BARE	OIL LIGHT	-3	13
14	BLACK	18	TEMP GAUGE G	-6	TACHOMETER LIGHT LEFT	-2	6
15	YELLOW	14	TEMP GAUGE S	-7	HEAT SENSOR MANIFOLD	-7	89
16	RED	18	TEMP GAUGE I	-6	TACHOMETER LIGHT LEFT	-2	5
17	RED	18	TEMP GAUGE I	-6	ALT LIGHT	-3	6
18	RED	18	TEMP GAUGE I	-6	SYSTEM TEMP LIGHT	-2	6
19	RED	18	TACH LIGHT LEFT	-2	TACHOMETER POST 2	-2	4
20	BLACK	18	TACH LIGHT LEFT	-2	TACHOMETER POST 3	-2	4
21	BLACK	18	TACH POST 3	-2	TACHOMETER LIGHT RIGHT	-2	4
22	RED	18	TACH LIGHT RIGHT	-2	TACHOMETER POST 2	-2	4
23	RED	18	TACH LIGHT RIGHT	-2	WATER/RECOVERY SWITCH	-2	6
24	BLACK	18	TACH LIGHT RIGHT	-2	VACUUM GAUGE LIGHT	-2	6
25	GREEN	14	TACH POST 4	-2	ENG TERM - TACH	-7	74
26	RED	18	HOUR METER +	-2	RELAY POST 7	-13	4
27	BLACK	18	HOUR METER GD	-2	RELAY POST 4	-12	6
28	RED	18	VAC GAUGE LIGHT	-2	OIL LIGHT	-2	4
29	RED	18	VAC GAUGE LIGHT	-2	ENGINE TEMP LIGHT	-2	4
30	BLACK	18	VAC GAUGE LIGHT	-2	RELAY POST 4	-12	6
31	BLACK	18	TEMP GAUGE G	-6	GROUND	-7	11
32	BLACK	18	TEMP GAUGE G	-6	BYPASS LIGHT	-3	4
33	RED	18	OIL LIGHT	-2	LIGHT SWITCH	-2	5
34	RED	18	ENG TEMP LIGHT	-2	WATER/RECOVERY SWITCH	-2	4
35	RED	18	LIGHT SWITCH	-3	ACC LIGHT 1	-2	34
36	RED	18	LIGHT SWITCH	-3	ACC LIGHT 2	-2	63
37	RED	18	KEY - ING	-5	RELAY POST 5	-12	19
38	WHITE	14	ENG TERM - ING	-7	RELAY POST 1	-12	77
39	RED	18	RELAY POST 7	-12	SERVICE LIGHT SW	-2	3
40	YELLOW	18	RELAY POST 6	-12	RELAY POST 8	-12	3
41	YELLOW	18	RELAY POST 8	-12	BYPASS MOM	-5	5
42	RED	14	20A BREAKER	-2	KEY - BAT	-5	20
43	RED	14	20A BREAKER	-2	ENG TERM - BAT	-7	76
44	BLUE	18	KEY - ST	-5	ENG TERM - ST	-7	67
45	RED	14	KEY - ACC	-5	THERMOSTAT - P1	-8	5
46	RED	14	THERMOSTAT P1	-8	PUMP SWITCH	-8	6
47	WHITE	14	ENG TERM - ING	-7	ENG TERM - ACC	-7	4
48	RED	18	SERVICE LIGHT SWITCH	-2	HOUR METER	-13	4
49	RED	18	PUMP SWITCH	-8	ALT LIGHT	-3	4
50	BLACK	N/A	VACUUM SOL	N/A	GROUND	-7	6
51	BLACK	18	CAT TEMP SWITCH NO	-7	ADJUSTABE KILL SWITCH	-7	65
52	BLACK	N/A	OIL LIGHT	-3	WIRE 33/28	N/A	1.5
53	BLACK	18	CAT TEMP SWITCH C	-7	GROUND	-7	7
54	BLACK	18	SOLENOID	-2	GROUND	-7	13
55	WHITE	18	ALT LIGHT	-2	ENG TERM - ALT	-7	70
56	WHITE	18	WATER/RECOVERY SWITCH	-2	TERM 3 / BYPASS LIGHT	-2	3
57	BLACK	N/A	OIL LIGHT	-2	WIRE 13	N/A	6
58	BLACK	N/A	ENGINE TEMP LIGHT	-3	WIRE 34/29	N/A	1.5
59	BLACK	N/A	ENGINE TEMP LIGHT	-2	WIRE 9	N/A	6
60	BLACK	N/A	BYPASS LIGHT	-2	WIRE 32	N/A	5
61	BLACK	N/A	BYPASS LIGHT	-3	WIRE 4/56	N/A	3.5
62	BLACK	N/A	SYSTEM TEMP LIGHT	-2	WIRE 7	N/A	5.5
63	BLACK	N/A	SYSTEM TEMP LIGHT	-3	WIRE 18	N/A	1.5
64	BLACK	N/A	ALT LIGHT	-2	WIRE 17/49	N/A	1.5
65	BLACK	N/A	ALT LIGHT	-3	WIRE 55	N/A	6
66	WHITE	18	ENGINE KILL	-3	FLOAT SWITCH	N/A	88

DWG NO.:F:\ACAD\WM\PRES19.dwg

REVISIONS			
REV	DESCRIPTION	DATE	APPD
A	ADDED PSI RELIEF VALVE	1/5/01	

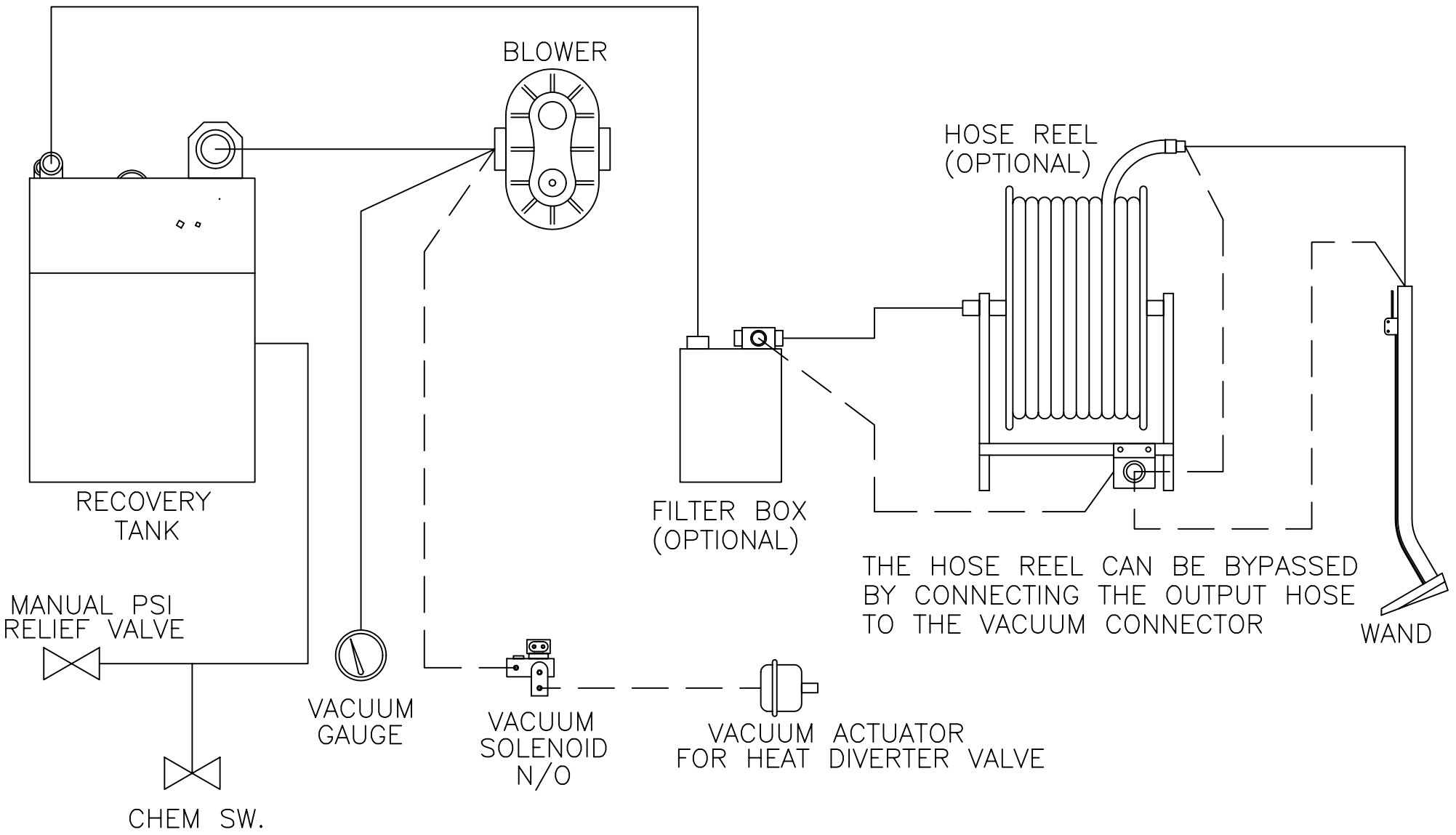


NOTES:
1.

FA1900	PRO-1900			APPROVALS	DATE	TITLE: HIGH PRESSURE SCHEM. PRO-1900	
			DRAWN BY:	JAMES NESKEY	9/6/00		
NEXT ASSY	USED ON		CHECKED:			PART NO: PRES19	REV: A
APPLICATION			APPROVED:			SIZE: A	SCALE: NTS	SHEET: 1 OF 1

DWG NO.:F:\ACAD\WM\VAC-SCHEM.dwg

REVISIONS			
REV	DESCRIPTION	DATE	APPD
A	ADDED MANUAL PSI RELIEF	1/5/01	



	PRO-1900	White Magic Inc.		APPROVALS	DATE	TITLE: VACUUM SCHEMATIC PRO-1900	
			DRAWN BY:	JAMES NESKEY	9/6/00	PART NO: VAC-SCHEM	REV: A
NEXT ASSY	USED ON		CHECKED:				
APPLICATION			APPROVED:			SIZE: A	SCALE: NTS / SHEET: 1 OF 1