

\$15.00

OPERATION & MAINTENANCE MANUAL



**IMPORTANT: CAUTION! TO REDUCE RISK OR
INJURY, READ OPERATING INSTRUCTIONS
CAREFULLY BEFORE USING**

POWER WASHERS

CPK SERIES

HG SERIES

SH SERIES

SK SERIES

SR SERIES

ST SERIES

 **HOT 2 GO**

 **HYDRO BOSS**

HYDRO  **TEK.US**
CLEANING EQUIPMENT MFG.
2353 Almond Avenue Redlands CA 92374
800.274.9376 fx909.799.9888 www.hydrotek.us

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To get the best use of your pressure washer, please read the manual carefully. It contains all the information necessary for you to operate the unit safely and to get the maximum benefit. This manual also contains many helpful hints about pressure washer maintenance.

The following additional accessories can be purchased to make your equipment more flexible for a cleaning effort that is swift and efficient.

ACCESSORIES



TURBO
NOZZLE



ADJUSTABLE
PRESSURE WAND



CHEMICAL
INJECTORS



SAND
BLASTING



HYDRO TWISTER
SURFACE CLEANERS



HOSE
EXTENTIONS



HOSE
REELS

Servicing your Pressure Washer

Should you have any questions or are unable to resolve a problem after using the Troubleshooting section of this manual, call Technical Support at: (909) 799-9222 7:30 – 4:00 PST.

The Technical Support department can solve many problems over the phone. Please have the following information available before calling:

- * The pressure washer model number: _____
(on the product label)
- * The serial number: _____
(located at the base of the machine)
- * The purchase date from your purchase receipt (required for warranty service).
- * A description of the problem.

Ordering Parts and Accessories

To order parts and accessories for your pressure washer, call or visit your local dealer.

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USE ONLY CERTIFIED ORIGINAL EQUIPMENT REPLACEMENT PARTS, FAILURE TO DO SO COULD LEAD TO WARRANTY EXCLUSION AND SEVERE BODILY INJURY

INTRODUCTION:

The employees and management of HYDRO TEK thank you for selecting our products. The production and quality assurance personnel have taken the greatest care in the assembly process to ensure that your new High Pressure Cleaner is of a quality and standard acceptable to both you the customer and us the manufacturer.

This operators manual was compiled for your benefit. By studying and following the safety, installation, operation, maintenance, and troubleshooting information contained within, you can look forward to many years of trouble free service from your equipment.

Upon receipt of the equipment, please inspect for any concealed freight damage. Should you find damage has occurred during shipping, do not return the damaged merchandise to Hydro Tek, but file a claim immediately with the freight carrier involved.

Please locate the enclosed warranty registration card. Fill out and return it to activate the warranty on your machine. Also enclosed are installation instructions.

Please note that the owner/user has certain obligations under the terms of the warranty for this equipment, and as such you are encouraged to always have every person who will operate the equipment, read and become familiar with the contents of this owners manual, prior to their using this equipment.

Contact your **AUTHORIZED HYDRO TEK DEALER** or a trained HYDRO TEK service engineer if problems occur, or if installation is required.

THERE ARE NO USER SERVICEABLE COMPONENTS ON THIS EQUIPMENT.

The equipment is shipped with the fuel tanks empty, the battery cables disconnected, and the pump antifreezed. If you did not order a battery with your unit see page 5 for battery requirements and instructions.

V-LINE LIMITED PARTS WARRANTY:

Hydro Tek warrants the Hydro Boss line and Hot2Go line power washers to be free from defects in material and workmanship for one (1) year, calculated from the date of the original retail purchase. Hydro Tek accessories are warranted for a period of 90 days from the date of their original purchase. Hydro Tek will make the required repairs, or at Hydro Tek's option provide replacement components if found to be defective by the reasonable judgement of Hydro Tek. This warranty only extends to the original retail purchaser, and is subject to the exclusions shown below. Any parts replaced under this warranty will assume the remainder of the parts warranty period.

This Warranty does not apply to and Hydro Tek is not responsible for:

1. Normal wear items such as Unloader Valves, Discharge Hoses, Guns, Wands, Nozzles, Quick Couplers, Brushes, Filters, Belts, Seals, O-rings, and Packings.
2. Labor charges or costs related to the removal of the defective part, field labor charges, transportation to service

ONE YEAR LIMITED PARTS WARRANTY- Provided by Hydro Tek, excluding normal wear items listed below. **Labor excluded.**

ONE YEAR WARRANTY ON ENGINES & ONE YEAR OR LESS ON ELECTRIC MOTORS - Up to two year limited warranty provided by the respective engine manufacturer and up to one year by electric motor manufacturer. **Labor excluded.**

ONE YEAR COIL WARRANTY - one year parts warranty. **Labor, freezing & descaling excluded.**

ONE YEAR PUMP WARRANTY- Up to one year limited warranty on crankcase of the pump provided by the respective pump manufacturer. **Labor excluded.**

center and costs to return it to Hydro Tek, or service charges for scheduled maintenance or any adjustments.

3. Damage due to freezing, abrasive fluids, chemical deterioration, and scale build up.
4. Damage from fluctuation in electrical or water supply.
5. Damage resulting from failure to follow manufacturers maintenance instructions.
6. Damage resulting from misuse, neglect, accidents, modifications, alterations, abuse, or incorrect installation.
7. Products operated outside of specified limits or intended use as specified in the operation manual.
8. Repairs made necessary by the use of parts which are either not obtained from or approved by Hydro Tek.
9. Actions or inactions by any Hydro Tek distributor giving rise to or causing a warranty exclusion or promise of additional warranty.
10. Warranty on engines, motors, and pumps, which are warranted by their respective manufacturers and are serviced through the manufacturer's service centers.

LIMITATION OF LIABILITY

Hydro Tek's responsibility with respect to claims is limited in making the required repairs or replacements, and no claim of breach of warranty shall be cause for any cancellation or rescission of the contract of sale of any Hydro Tek product. Hydro Tek reserves the right to change or improve the design of any of its products or illustrations without assuming any obligation to modify any product previously manufactured.

THERE IS NO OTHER EXPRESSED WARRANTY.

This supersedes any and all previous warranty statements for products purchased after January 1, 2007. Hydro Tek is not liable for indirect, incidental or consequential damages including but not limited to: The cost of substitute equipment, loss of revenue, pecuniary expense or loss, or any damages whatsoever arising out of the use or inability to use a Hydro Tek product. Hydro Tek disclaims all implied warranties, including those of merchantability and fitness for use or a particular purpose. It is the buyer's responsibility to ensure installation and use of Hydro Tek products conforms to local codes. Proof of purchase date required to obtain warranty. Complete warranty information is contained on the warranty card and supersedes all information on this page.

IMPORTANT SAFETY WARNINGS: SAVE THESE INSTRUCTIONS 5

WARNING

THIS EQUIPMENT CAN BE HAZARDOUS TO THE OPERATORS SAFETY AND ONLY AUTHORIZED PERSONNEL WHO HAVE READ AND UNDERSTOOD THE OPERATION MANUAL SHOULD BE PERMITTED TO OPERATE THIS UNIT. NEVER ALLOW CHILDREN TO PLAY ON OR AROUND THIS EQUIPMENT.

ELECTRICAL PRECAUTIONS:

1. Observe all State, Local, and National codes for the installation of your electrically powered washer.
2. For a grounded product rated 250 volts, single phase, or less: This Product Is Provided With A Ground Fault Circuit Interrupter Built Into The Power Cord Plug. If Replacement Of The Plug Or Cord Is Needed, Use Only Identical Replacement Parts.
3. GROUNDING INSTRUCTIONS:
Cord Connected, Grounded Products:
This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.
Danger - Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the product, do not cut off the ground pin - if it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adaptor with this product.
4. To comply with the national electric code, this pressure washer should only be connected to a receptacle that is protected by a ground fault circuit interrupter (GFCI).
5. EXTENSION CORDS:
Use of extension cords is not recommended.
6. NEVER operate an electrically powered washer after it has tripped a breaker or a ground fault device without having the reason for the trip determined by an authorized service engineer or competent electrician.
7. Use only in a dry area. Do not handle electrical cords and plugs when they are wet, when your hands are wet, or when standing in water. **Do not spray high pressure water on to the machine.**
8. Disconnect power supply before making any repairs or adjustments.
9. Transformer on burner is 20,000 volts. Disconnect battery cable before servicing burner or engine on 12 volt systems.

FIRE PRECAUTIONS:

1. DO NOT use improper fuels or solvents in this equipment, and only fill with the correct fluids when the unit is in an OFF condition, main power is disconnected, and engine and burner are cool.
2. Fill the diesel burner fuel tank with #2 diesel fuel or kerosene. NEVER use gasoline. Do not confuse gasoline and fuel oil tanks. Keep proper fuel in proper tank.
3. NEVER operate this equipment in the presence of flammable vapors, dust, gases, or other potentially combustible materials.

4. AVOID contact with the exterior of the coil/heat exchanger assembly, exhaust stack and mufflers to prevent burns.
5. DO NOT store fuel or other flammable materials near the burner or any other open flame.
6. To avoid burns NEVER stand over burner exhaust outlet or in front of engine exhaust. Burner may start at any time once power is turned on.
7. Do not touch burner exhaust port, mufflers, or wands/hoses as contact may cause burns. Use designated gripping areas.
8. Diesel fired or gasoline powered units are designed for outdoor use and installation only.
9. Burner on/off switch must be placed in the OFF position when the pressure washer is not being used. Do not depend on engine run switch to turn the burner off - This may cause a safety hazard.

VENTILATION PRECAUTIONS:

1. DO NOT run engine or burner in an enclosed area. Exhaust gases contain carbon monoxide, an odorless deadly poison.
2. Observe all State, Local, and National codes providing for indoor use or installation of this unit.
3. Provide adequate ventilation to prevent engine overheating and inefficient burner combustion (minimum 2' of air space).

SPRAY INJECTION PRECAUTION:

1. Fluid from high pressure spray or leaks can penetrate the skin and cause serious injury. If any fluid appears to penetrate the skin get emergency medical help at once. DO NOT treat as a simple cut. Tell the physician exactly what fluid was injected. For treatment instructions have the physician call your local poison center. Without proper treatment, complications can develop.
2. WARNING - Risk of injection or severe injury to persons - Keep clear of nozzle. DO NOT direct discharge stream at persons. This machine is to be used by trained operators. Keep operating area clear of all persons.
CAUTION: Hot discharge fluid - DO NOT touch or direct discharge stream at persons. Gun kicks back - Hold with both hands. Stay alert - Watch what you are doing.
3. Always wear protective eye goggles when operating the equipment. Additional protective items such as a rubber suit and boots, gloves, and respirators are advisable, particularly when using cleaning detergents with a corrosive content.
4. Know the detergents you are using. Read and follow the directions on the detergent labels.

PERSONAL HAZARD:

1. DO NOT remove belt guards or electrical covers while engine is operating or when the power is connected.
2. DO NOT move engine powered machinery while the engine is operating.
2. DO NOT lock the trigger on the gun valve in the on position.
3. DO NOT exceed recommended operating pressure or temperature.
4. KEEP HANDS CLEAR OF BELTS AND MOVING PARTS.
5. Do not operate the product when fatigued or under the influence of alcohol or drugs.

BEFORE START UP:

1. Read all instructions before using this product.
2. **CHECK OIL AND FLUID LEVELS:**

Check pump oil by locating the oil view window or dipstick and fill to the red dot. Check fuel levels.



Check engine oil and coolant levels if unit is so equipped. (See the maintenance schedule on page 16).

3. **CONNECT HOSE AND GUN ASSEMBLY.**

4. **CONNECT THE WATER SUPPLY & TURN WATER ON:**

Maintain an adequate supply of water using a 3/4" I.D. hose with a pressure between 25 and 60 PSI. Burner power switches should be off before starting. If tank fed, be sure there is water in the tank and the valve is switched for supply tank feed. Do not run dry for longer than one minute.

5. **BATTERY INFORMATION**
If you did not order a battery with your machine you will have to buy one and fill it with electrolyte (available at local auto parts store).

!WEAR EYE PROTECTION!

If the opening on your battery box measures 9" by 6" we recommend Exides' U1L/GTH 235CCA battery. If the opening measures 8" by 12" we recommend Exides' group 46-60 550 CCA battery. Deep cycle batteries are recommended to extend battery life. Always connect the positive battery cable before the negative and coat the battery terminals with corrosion inhibitor to prevent corrosion.



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recommend Exides' group 46-60 550 CCA battery. Deep cycle batteries are recommended to extend battery life.

Always connect the positive battery cable before the negative and coat the battery terminals with corrosion inhibitor to prevent corrosion.

6. If wheel kit, accessories, or discharge hose are not installed, see your local dealer for instructions & installation.

OPERATION:

1. **STARTING:**

A. Electric Powered Units:

Connect power supply and ensure that all wiring connections and voltages are of sufficient rating to comply with the equipment's requirements. Turn pump power switch on. If unit is equipped with auto-start, keep all power switches off when left unattended. (Unit will only turn on when trigger gun is pulled.)



B. Gasoline Engine Units: To reduce the risk of starter

damage remove spray nozzle from wand and pull spray gun trigger while cranking engine. After start, release trigger and replace spray nozzle. Be sure nozzle is properly positioned in quick disconnect before spraying:

2. **PURGE AIR FROM SYSTEM:**

Squeeze the trigger on the spray gun until a constant stream of water comes out. (Purging works best with nozzle removed from wand and/or dual wand in the low pressure mode.)

3. **SELECT DESIRED NOZZLE**

Connect nozzle securely to spray wand. If equipped, close pressure adjusting knob on dual wand. Hold gun firmly, squeeze trigger for high pressure spray. O-ring should be replaced with 1/4" or 3/8" EPDM.



Lock collar after nozzle is inserted

CAUTION - Gun kicks back - hold with both hands.

WARNING - Risk of explosion - DO NOT spray flammable liquids.

4. **START BURNER:** To create hot water on high pressure washers equipped with heat exchangers, release the trigger on the gun, turn the burner to the on position, and turn the thermostat to the desired temperature.

Squeeze the trigger on the spray gun and the burner will begin heating the water. It will stop firing whenever the water spray is off or if the temperature setting is exceeded.

Warning: Cool down burner before shutting off.

5. **STEAM: (If Equipped)**

Insert steam nozzle and turn thermostat to 250° steam setting. The steam nozzle is sized for approximately 25% less water volume than the hot water mode.

6. **BYPASS MODE:**

System will go into bypass mode when machine is left running and trigger gun is closed. Bypass mode is when the inlet water coming into the pump recirculates through the unloader across the pump head. If left in bypass too long - More Than Five Minutes - friction created by the movement of the water will begin to heat the water at a rapid rate. If equipped with a THERMAL DUMP VALVE, water exceeding 145°F will cause the valve to open allowing the hot water out of the system into the atmosphere and allow cool water in. The valve will reset itself when water temperature comes down to a safe level.

If equipped with a bulk water tank, water can be bypassed back through the tank allowing for a larger volume of water to be recirculated through the pump head thus reducing heat on the pump seals.

!Warning: Do not leave in bypass for longer than five minutes to prevent pump from overheating.



7. SET CHEMICAL INJECTION:

If unit is equipped with inlet chemical injection, place chemical pickup tube in pre-mixed chemical solution and open chemical valve for desired chemical concentration. Rinse and close valve after use, do not use harsh chemicals through the inlet injector system. If unit is equipped with a downstream chemical injector, connect the chemical injection assembly into the high pressure discharge hose quick connects. Place the chemical pickup into chemical solution and turn brass collar to adjust concentration. The chemical will inject only when you drop the outlet pressure by opening the valve on the dual wand or changing to a low pressure nozzle. Soap the surface from the bottom up. Close chemical valve when not in use.

MAINTAIN PH BETWEEN 5 & 9

8. If equipped, AF2 (2) gun operation, select "50%" nozzle from panel and insert into coupler on spray gun for full pressure output when using two guns at the same time. Flow can be reduced by selecting flow reduction nozzles only when one operator is using the machine. Maximum temperature is 200° F.

SHUT DOWN:

1. TURN BURNER SWITCH TO THE OFF POSITION.
2. RINSE & CLOSE CHEMICAL VALVE.
3. SQUEEZE THE TRIGGER ON THE SPRAY GUN UNTIL THE WATER BECOMES COOL.
4. TURN MOTOR/ENGINE SWITCH OFF with the appropriate controls.
5. TURN OFF WATER SUPPLY.
6. SQUEEZE TRIGGER TO RELEASE ANY TRAPPED PRESSURE IN DISCHARGE HOSE.
7. ANTIFREEZE EQUIPMENT:

In the event that the equipment is not to be used for an extended period, store in heated space or antifreeze the unit. Run the machine until the float tank is near empty, fill with a 50% mix of water and antifreeze and run until antifreeze appears at the high pressure outlet. If unit is equipped with a blow out valve, it may be blown out with compressed air in addition to using antifreeze solution. On direct feed units (no float tank), use a 5' garden hose to draw the antifreeze mix from a bucket. Or blow out the unit with compressed air until only air and no water comes out of the discharge.

CHASSIS & TRAILER ASSEMBLY:

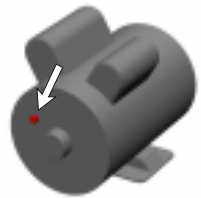
To maintain the appearance of the machine, use stainless steel cleaner on the stainless panels. Check tire pressure. Check all bolts including the lug nuts for tightness and condition periodically. Grease wheel bearings as required and adjust after first month.

TIRE PRESSURE

T200	T300	T400	T500
35psi	35psi	40psi	40psi

POWER SYSTEMS:

ELECTRIC MOTORS: All single phase electric motors contain a manual or automatic thermal overload which will shut down the motor if it overheats. If the overload or starter shuts down the motor, have an electrician or an authorized Hydro Tek distributor check for electrical problems. Voltage reading under load should be +/- 10% of name plate voltage on motor. The motor can be reset by depressing the red overload button located on either the motor or the starter, (as shown above). Use thumb pressure only - DO NOT force. Wait for motor to cool before re-setting. The automatic overload will reset itself after the motor has cooled.



Never spray water on the unit, or damage to the electric motor(s) may occur.

A=TOTAL SYSTEM AMPERES

HORSE POWER	115V 1PH	WIRE SIZE	208V 1PH	WIRE SIZE	208V 3PH	WIRE SIZE	230V 1PH	WIRE SIZE
1.5	15A	12/3	N/A	N/A	N/A	N/A	10A	14
2	20A	12/3	N/A	N/A	N/A	N/A	12A	14
4	N/A	N/A	21A	10/3	N/A	N/A	20A	10/3
5	N/A	N/A	24A	10/3	N/A	N/A	23A	10/3
6.5	N/A	N/A	N/A	N/A	N/A	N/A	27A	10/3
7.5	N/A	N/A	N/A	N/A	N/A	N/A	35A	#8

Consult the factory if running an electric machine from a generator. Three times total system wattage is required.

A fused disconnect switch of sufficient ampere rating should be installed by an electrician to provide power to the machine. Refer to the chart above for electrical requirements: (208 Volt is acceptable, but unit motor must be under nameplate amps; turn psi down). If your unit is equipped with a ground fault interrupter, it will have to be reset whenever it is plugged in, or if a ground fault interruption occurs. Test regularly for proper operation.

GASOLINE ENGINE: With the proper care and maintenance, your gasoline engine will give years of trouble free service. Please follow the Service and Maintenance Guide and the enclosed engine sheet or contact your local authorized engine dealer for maintenance and repairs.

Use unleaded gasoline with an octane rating of 87 or higher in the engine fuel tank. Consult engine manual for proper oil type and capacity. Change oil every 50 hours and the filter every 100 hours (see engine manual). Do not rely on the low oil shutdown (if equipped) as a reminder to add oil. Engine damage from lack of oil will typically not be warranted even if the low oil system failed.

On machines with a 115V generator or a 12V burner, the throttle is preset at the factory (See Generator section on this page for adjustment).

POWER TRANSMISSION:

DIRECT DRIVE: Pump is bolted directly to the motor/engine. If pump needs to be removed, do not force off by prying or damage may occur. When reassembling, coat the entire motor shaft with heavy grease, or a generous amount



of anti-seize and use service removable "lock tight" on mounting bolts.

BELT DRIVE: Check belt condition, alignment and tension periodically. Replace belts when they show signs of wear or cracking. Tighten belts by loosening the mounting bolts on the pump and generator to permit them to slide. Turn the horizontal rail adjusting bolts to tighten belts until they deflect ¼" to ½" inch with finger pressure.

GENERATOR:

Some self-contained Hot Water Units are equipped with a 115 volt generator to power the diesel burner. The generator output voltage must be between 110 to 130 Volts, (or between 59 to 63hz), when the unit is under full load. If the generator voltage falls out of this range the RPM of the engine will need to be adjusted to proper speed. If the engine cannot maintain the proper RPM do not use the burner or any power from the generator until the engine is repaired.

A switch/circuit breaker will need to be reset if the circuit is overloaded.

To extend generator life make sure the burner is off when the engine is started or stopped. Keep generator dry. Do not spray off with trigger gun.

If unit is equipped with auxiliary generator power outlets, they are located on the back of the electrical box. Do not plug in accessories over 1200 watts or 10 amps.

PUMPING SYSTEM:

PUMP: The pump is a positive displacement, oil bath crankcase, triplex plunger type. It contains 3 plungers which move forward and backward in a cylinder to propel water past 3 inlet valves and 3 discharge valves into a high pressure manifold.

The crankcase oil window or dip stick should be checked for oil level and clarity. Check the pump for oil or water leaks before each use. The sight window is located at the rear (opposite the head) of the pump and should be filled to the red dot with AR recommended oil, or Cat Pump recommended oil available at your Hydro Tek dealer. Wobble plate pumps use synthetic oil which only needs to be changed if the oil becomes contaminated. If the oil becomes milky in color, moisture is entering the crankcase. Change the oil and contact your authorized Hydro Tek dealer if the problem persists.

To increase pump life, prevent cavitation (air bubbles), overheating, and dirty water. Cavitation can be prevented by keeping filters clean and checking for air in pump feed lines. Do not run the pump in the bypass mode (pump running with the trigger gun off), for a period of more than 5 minutes or the pump will begin to overheat (maximum water temperature is 145°F). Do not run pump dry. Protect from freezing. Do

not run a frozen pump until it is completely thawed.

UNLOADER AND PRESSURE RELIEF VALVE: The unloader valve is preset at the factory to govern the proper output pressure of your machine. It will release the pressure of the pump output back into the inlet if the trigger on the spray gun is released. NEVER increase the set pressure on the unloader to exceed the specifications for your machine. The unloader should be adjusted only by qualified personnel.



All hot water machines are equipped with a SAFETY PRESSURE RELIEF VALVE. In the unlikely event that your unloader fails, or if the burner overheats and builds excessive pressure, the pressure relief valve will vent the pressure into the atmosphere. If this occurs, turn off the machine and have it checked by an authorized dealer. The pressure relief valve will automatically reset itself.

BURST DISK TECHNOLOGY: This additional safety feature functions to protect the coil and other components from overpressurizing from the heating system and high system spikes of pressure. If this component ruptures, you should take the machine in to an authorized Hydro Tek dealer. Do not plug off and continue to run.

An optional DOWNSTREAM INJECTOR is available if harsh chemicals need to be applied. The downstream injector will apply chemicals only at low pressure. If equipped standard with downstream injection, adjust concentration level by turning brass collar on the injector, or the knob on pump or control panel. Read and follow all safety instructions on the detergent label.



WATER SUPPLY: An adequate water supply must be maintained to the pump at all times. If the inlet flow is too low or if there is air in the water supply, the pump will run rough, pulsate and lose pressure. Maximum inlet water temperature is 145°F. If the pump is run dry, it can quickly overheat.

The water is filtered by a garden hose adapter screen. Clean and replace as required or install a large capacity strainer to insure a clean supply of water.

DIRECT WATER FEED: Maintain an inlet water pressure between 25 PSI and 60 PSI using a ¾" I.D. hose. Install a back flow preventer on your supply hose if State or Local ordinances require it. Install a water regulator if your water pressure exceeds 60 PSI.

FLOAT TANK WATER FEED: A float tank is used on some models to regulate the incoming water supply to the pump and introduce chemicals into the inlet of the pump.



The float tank and filter should be flushed out if debris accumulates in the bottom. If the float tank overflows or

runs out of water, adjust or replace the float valve inside the tank and check the inlet water feed pressure.

WATER TREATMENT: The inlet water can be deionized for spot free rinse or softened to make detergents clean more effectively. Do not use deionized water through the coil on a hot water machine or coil corrosion will result. Water softeners, however, will reduce coil scale deposits and should be installed if your water is especially hard.

HEATING SYSTEM:

COIL/HEAT EXCHANGER SYSTEM: The heat exchanger contains a continuous coil of pipe which forms a cold water jacket around the outside of the heating area. It is double wrapped with ceramic blanket insulation and a stainless steel cover.



The inside of the coil assembly can become covered with soot if it is fired with diesel fuel and the burner is out of adjustment. This can be cleaned by removing both end caps of the heat exchanger enclosure and brushing or spraying off debris or by adding a soot removal agent (Part # CB200) to the diesel fuel.

When the water is heated, scale (calcium) will begin to form on the inside of the coil pipe depending upon the hardness of the water in your area. The coil can be **DESCALED** by using a scale remover (Part # CB105) available at your authorized Hydro Tek dealer. It is necessary to perform this service only when a noticeable pressure drop is detected across the coil. Follow directions to avoid damage. Wear safety glasses.



TEMPERATURE SWITCH: The burner is equipped with a high temperature limit switch which will shut off the burner when the water temperature becomes too hot. Some units come with an adjustable thermostat.

STEAM INSTRUCTIONS:
If your unit is steam - capable, install the green steam nozzle, turn thermostat to 250° F.

PRESSURE/VACUUM/FLOW SWITCH: The burner is equipped with either a pressure switch, flow and/or a vacuum switch to control the burner. When the trigger on the spray gun is squeezed, water begins to move through the coil and pressurize. The vacuum/flow/pressure switch turns the burner on and begins to heat the water. Whenever the water spray stops or if the water is shut off, the burner will shut off.

⚠️ WARNING: Burner should fire only when the trigger is squeezed and spraying water, if it comes on at any other time, shut off machine and have it serviced.



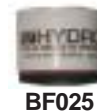
DIESEL FIRED BURNER: The diesel fired burner is a forced draft pressure atomizing burner. Diesel fuel is sprayed out of an atomizing nozzle, mixed with air, and ignited by a high voltage spark. The flame is directed towards the coils of pipe which, in turn, heats the water flowing through it. Use clean #2 DIESEL FUEL for the burner or substitute #1 diesel, light fuel oil, or

Kerosene if diesel is not available.

AIR BAND adjustments may need to be made to compensate for higher elevations, or if more than a trace of smoke is observed in the burner exhaust. The **ELECTRODES** may need to be cleaned and adjusted periodically. These adjustments have to be made precisely and should be performed only by qualified personnel. Set between #1 & #2 on smoke gauge.

The **FUEL PUMP** is a self priming, low volume pump which is propelled by the burner motor. The fuel pump pressure is typically set at 100 PSI but can be turned as high as 140 PSI during the winter when the incoming water temperature is lower. Before adjusting the fuel pressure, connect a fuel pressure gauge and an outlet water temperature gauge, turn the pump and burner on, and turn the fuel pressure screw clockwise until the desired water temperature is obtained. Be sure not to exceed the recommended specifications of the machine.

The **FUEL FILTER** will need to be cleaned often if the



diesel fuel quality is poor. A fuel filter with a water separator is recommended if the fuel quality is consistently poor.

The **FUEL SOLENOID** is an electric fuel valve which shuts off the fuel whenever the trigger on the spray gun is released or if the set temperature on the heat switch is exceeded.



The **IGNITION TRANSFORMER** provides a high voltage spark which travels down the electrodes to ignite the diesel fuel. Disconnect all power before servicing.

The **12 VOLT BURNER** operates from the battery on the ST/SM/SR Series. The engine has a 15 to 16 amp charging system which keeps the battery charged which runs the burner. The burner motor and transformer stops when the trigger gun is released. Its best to release the trigger gun periodically, and also cool down the burner before shutting off the engine to keep the battery fully charged. Shut off burner & engine switch when unattended.

PRESSURE DELIVERY SYSTEM:

TRIGGER GUNS: The trigger gun is merely a valve that turns water spray on and off. If it begins to leak or fails to shut off, replace or repair the valve assembly. **Never lock the gun in the on position or point it at any person or any part of the body.**

Machines that spray steam only are equipped with an open gun that does not shut off the water spray.

SPRAY WAND: Wands are available in 2 to 6 foot lengths for various cleaning applications. If the unit is equipped with a dual wand you can adjust the pressure by turning the knob on the valve to divert part of the water through the low pressure nozzle.

NOZZLES: The spray nozzle is a precisely machined orifice made of hardened stainless steel. The orifice size is matched to the

output of your machine to attain the proper flow and pressure that your machine was designed for. The orifice or, hole, of the nozzle will begin to get larger as the nozzle becomes worn. For optimum performance, replace the spray nozzle to maintain the full output pressure of your machine. The nozzle installed in your machine from the factory is designed to allow only about 90% of the water being pumped to discharge out of the nozzle. The remaining 10% is bypassed back into the inlet water supply by the unloader/regulator valve. If an incorrect nozzle size is used the maximum flow and pressure of the machine cannot be achieved and the pressure unloader valve can wear prematurely. When replacing the nozzle match to one size under the flow and pressure output of the pump.

The nozzle is usually connected to the wand with a quick coupler. Be sure the collar on the quick coupler snaps back to the locked position, or the nozzle could be lost when the trigger on the spray gun is squeezed. Never connect the spray nozzle directly to the trigger gun without a wand or injury could result. Never place hands or fingers over the nozzle tip.

The nozzles generally come in four different spray angles, 0°, 15°, 25° and 40°. The different spray angles of a given size of nozzle do not change the output pressure of the machine, just the impact force and surface coverage of the water spray.

The 0° nozzle sprays a straight stream which impacts the surface very hard but does not cover a very wide area. Use the 0° nozzle with care because it can damage the surface you are spraying with its high impact and long reaching spray.

The 15° nozzle sprays out a flat stream at a 15° width. It gives you less impact power but covers a wider area with one pass of the spray wand. As you back away the spraying nozzle from the surface, the spray impact will decrease.

The 25° is wider than the 15° and is most commonly used to indicate the steam nozzle

The steam nozzles are sized to spray less water than the other high pressure nozzles, so the water is discharged at a higher temperature. (Up to 250° F).

The 40° nozzle spreads the water stream over an even wider area to give you less impact for delicate surfaces.

Some machines come with one 15° nozzle which covers most cleaning applications. Additional nozzles can be added and fitted with quick couplers so that the nozzles can be interchanged for various applications.

TURBO NOZZLE (OPTIONAL)



The turbo nozzle multiplies the power of your machine by rotating the spray jet and making the water impact the surface harder to give better cleaning results. Simply replace the spray nozzle with the turbo nozzle and squeeze the trigger on the spray gun with the burner off for high pressure spray. Do not point the turbo nozzle upward when starting. "Turbo Laser" type nozzles cannot be used with water over 190° or life of the turbo nozzle will be greatly decreased and the warranty voided. The "Rotomax" type nozzle can be used up to 170° F.

EXTENSION HOSES AND HOSE REELS (OPTIONAL)

The high pressure discharge hose can be extended by

connecting additional hose lengths by means of twist couplers. Hose extensions generally come in 50 and 100 foot lengths. Specify maximum pressure and temperature of your machine when ordering. Low pressure inlet garden hose is available in 50 and 100 foot lengths. Premium quality, 200 PSI rated hose is recommended to be used and is available at your local dealer. Hose reels are available for convenient and quick storage of both discharge and inlet hoses. To keep the hose from unreeling, lock the drum in place and secure the gun or the end of the hose or it may drag on the road. If the reel begins to leak, replace the seal kit in the swivel, or connect the hose directly to the machine until the leak is repaired. The high pressure hose should be completely unreeled before use or it can contract on the drum and cause damage to the hose reel. The low pressure hose should be of sufficient quality that it will not flatten out when reeled up, or the supply of water to the machine will be cut off. **⚠ WARNING:** Replace discharge hose with original equipment hose rated for 250°F available at Hydro Tek dealer.



HYDRO TWISTER (OPTIONAL)

The Hydro Twister is a surface cleaner that connects to a pressure washer and uses two nozzles rotating at a high RPM within 1" of the ground. It can clean concrete up to 10 times the speed of an operator using a wand, and with more consistency and less operator fatigue. The Hydro Twister can be used with up to 4000PSI, 10 gallons per minute, and up to 250°F. The 17" diameter Hydro Twister is designed for use in confined areas and the 27" for large expanses of concrete or decks. An adjustable pressure knob is included for use in sensitive areas. Instructions: To set clearance on the seal in the swivel, remove top allen head plug; with flat head screw driver turn in screw until it bottoms out then back off screw 1/8 turn. The spray nozzles in the Hydro Twister will have to be sized according to the output of your machine.



TRAILERS:

Trailers are designed to match to your washer to increase productivity. They have been field-tested to prove their reliability in the toughest applications.

The unique torsion axle suspension provides the smoothest ride available and prevents damage to the pressure washer from a harsh ride. The enhanced wheel travel keeps road vibration and rattle to a minimum.

Trailers outfitted with electric brakes require a properly installed electric brake controller. Light wire harnesses are provided for all trailers (flat 4 pole type). Alternate types of adapters are available at auto or trailer parts supply stores.



ST40004 Series trailers offer a 190 gallon water tank with an integrated hot water pressure washer system. This package employs a direct drive pump and 12 volt diesel fired water heating system. Optional hose reels can be installed on the rear deck of the trailer for added storage convenience. Torsion axle suspension is a standard feature on this model. Optional Stainless Steel weather guard panels for the lower burner system and upper pressure system are also available.

Systems equipped with optional hose reels provide the user with added benefit of side discharge for quick hose use. Hose reels also increase the hose life and reduce risk of damage due to kinking or dragging. Use hose reel latches or appropriate tie downs to prevent road damage to guns, hoses, and wands while trailering.

Lunette Eye assemblies are also available for the hook trailering hitch.

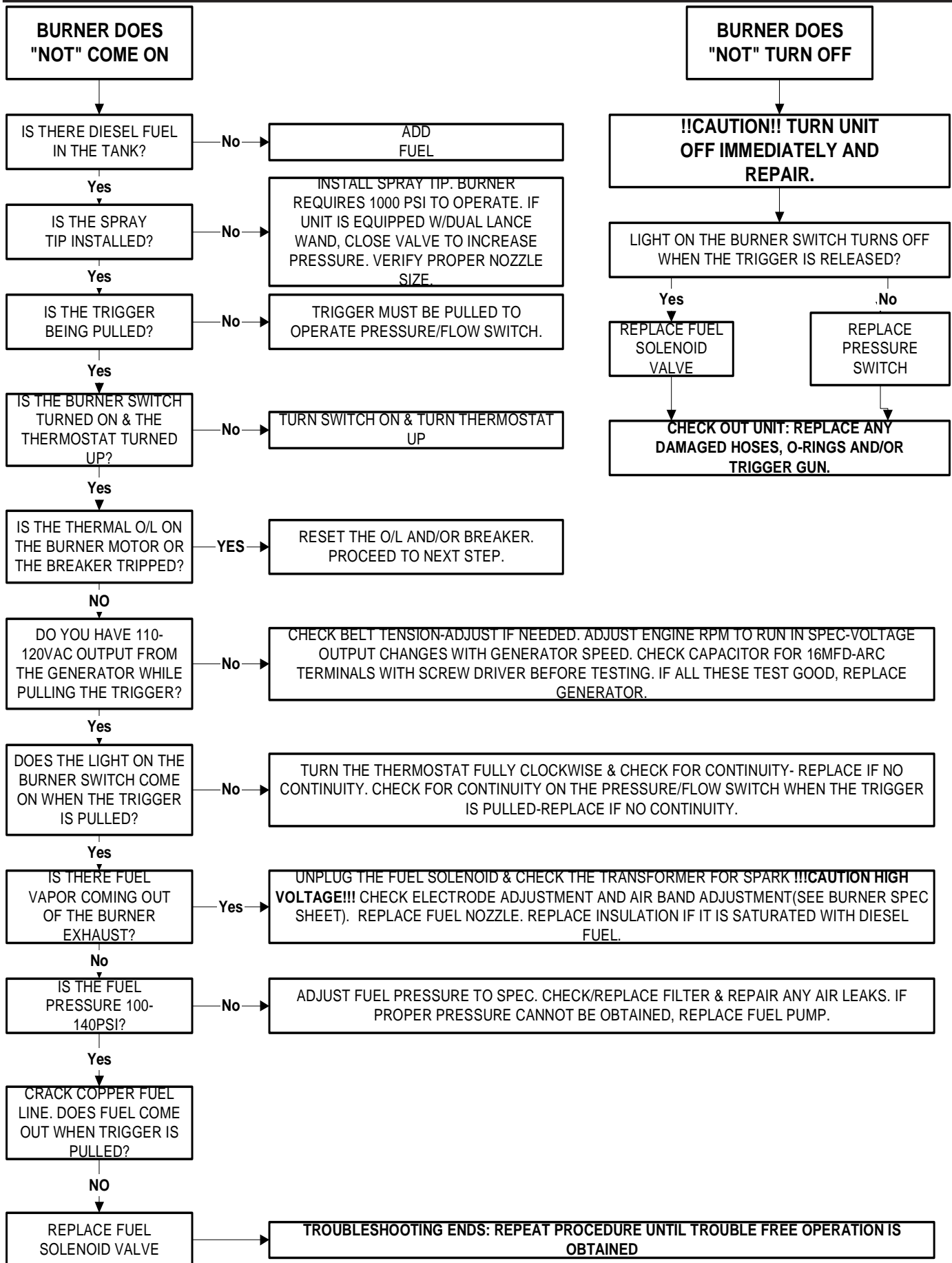
Special maintenance and trailering considerations: Check with local and state vehicle codes to confirm your brake configuration is compliant. Some states require electric and/or surge brakes on all trailers. Never tow without properly adjusted rear view mirrors, brake actuators, or lights. Tire pressure and wheel lug nuts must also be checked on a regular basis. Trailer tongue weight on the tow vehicle hitch should never be under 8% of the total trailer (loaded) weight. Insufficient tongue weight can result in "fishtailing" and loss of control of the trailer AND tow vehicle.

TRAILER MAINTENANCE SCHEDULE				
ITEM	FUNCTION REQUIRED	3 MTH. OR 3000 MILES	6 MTH. OR 6,000 MILES	12 MTH. OR 12,000 MILES
Brakes	Test that they are operational	Before every use		
Brake Adjustment	Adjust to proper operating clearance	X		
Brake Magnets	Inspect for wear and current draw		X	
Brake Linings	Inspect for wear and contamination			X
Brake Controller	Check for correct amperage, modulation		X	
Brake Cylinders	Check for leaks / sticking			X
Brake lines	Inspect for cracks leaks or kinks			X
Trailer Brake Wiring	Inspect for bare spots, fray, ect.			X
Breakaway Systems	Check battery charge and switch operation	Before every use		
Hub/Drum	Check for abnormal wear or scoring			X
Wheel Bearings & Cups	Inspect for corrosion or wear. clean & repack			X
Seals	Inspect for leakage; replace if removed			X
Springs	Inspect for wear / loss or arch			X
Suspension Parts	Inspect for bending loose fasteners/ wear		X	
Hangers	Inspect welds			X
Wheel Nuts & Bolts	Tighten to specified Torque value (Lug = 70-90 ft lbs)		X	
Wheels	Inspect for cracks, dents or distortion	X		
Tire Inflation Pressure	Inflate to tire manufacturer's specs.	Before every use		
Tire Condition	Inspect for cuts, wear, bulging, ect.	X		

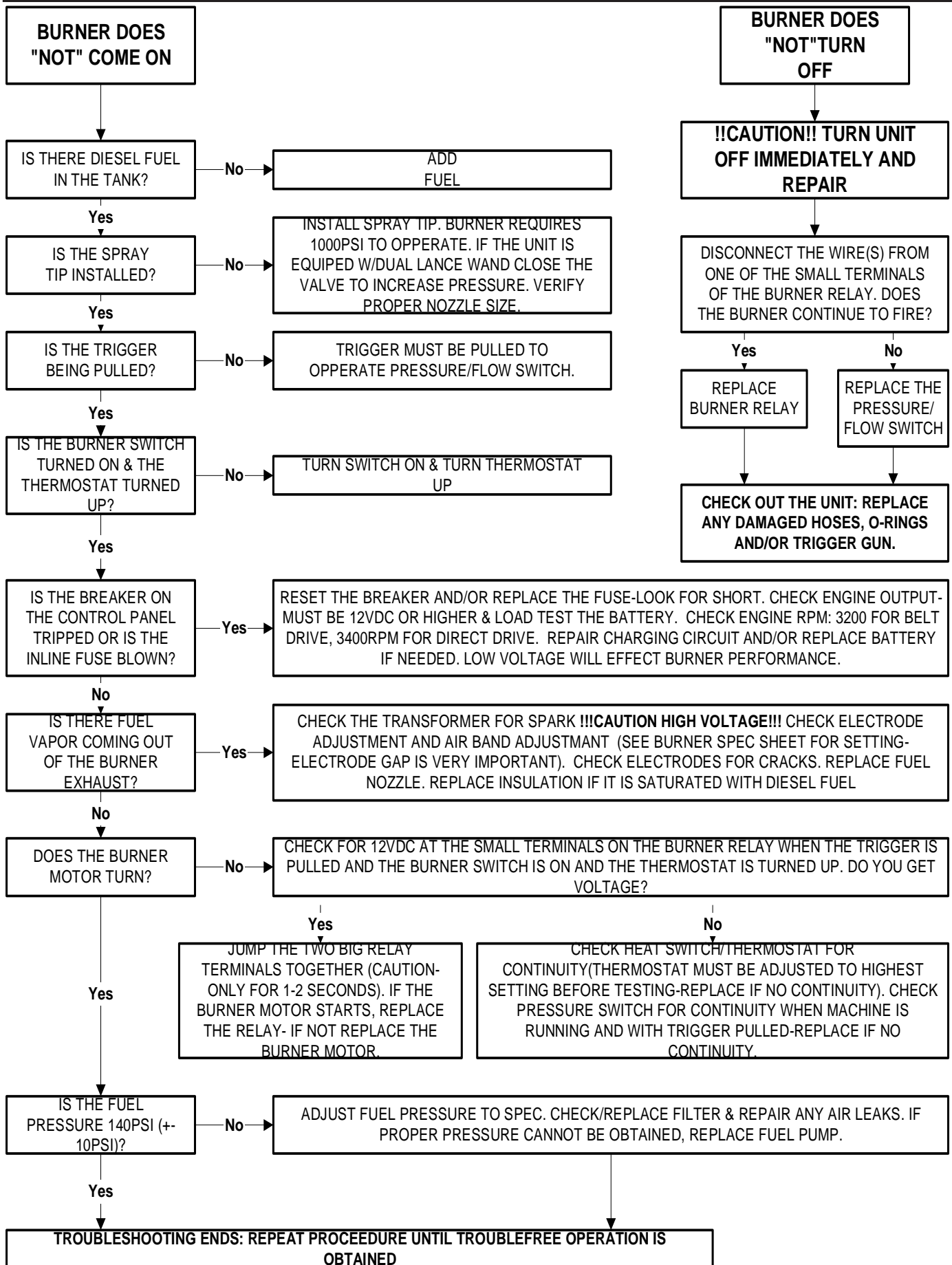
PROBLEM	PROBABLE CAUSE*	REMEDY
Power System: Gasoline Engine Driven		
Engine will not start or crank over.	Battery dead. Dirty battery connection. Battery cables disconnected. Engine, pump, or gearbox is seized. Keyswitch, solenoid and starter on engine defective.	Charge or replace battery, add electrolyte if battery is new. Clean connections. Connect or replace damaged cables. Replace or repair seized part. Repair or replace.
Engine will not start but will crank over.	Engine power switch is off or defective. Low oil shut down is activated. Low on fuel. Fuel filter is clogged. Engine flooded or starved.	Check engine power switch. Add oil to engine, check more frequently. Fill with the appropriate fuel. Replace or clean fuel filter. Choke only as required.
Engine bogs down under load, whenever spray gun is triggered.	Engine needs to be repaired or replaced. Operating in high elevation. Carbon deposits on cylinder head.	See engine manual or engine dealer. Lower the pressure on the unit and check for correct engine speed (RPM). Remove head and wire brush deposits.
Power System: Electric Motor Driven		
Electric motor does not start.	No electric power. Thermal overload in the motor or starter has been tripped. Power switch inoperative. Electric motor or wiring failure. No water to inlet.	Check cord, plug, socket, and breaker. Reset manual overload by depressing the thermal switch on the outside of the motor or starter after the motor has cooled. CAUTION! Automatic overload will restart the motor automatically when it has cooled. Check power switch. Replace or repair motor and/or wiring. Connect water Supply.
Machine will not auto-start (if equipped).	Must have adequate water supply. Coil scale build up. Check filter screen & inlet pressure. Inlet flow switch defective or jammed with debris.	25 psi minimum. Descale coil for better water flow. Remove spray nozzle and pull trigger to check auto-start function Check mechanical function & electrical signal to relay.
Pumping System		
Trigger gun leaks or will not shut off.	Debris in gun valve assembly.	Clean valve assembly or replace gun.
Pump runs but there is no spray pressure.	Water turned off. Nozzle is plugged. Inlet chemical injection valve is open, without the end of the pickup tube inserted into detergent. Coil on hot water machines is obstructed. Priming of pump after run dry.	Turn water on. Clean or replace with proper size. Close soap valve or submerge detergent pickup tube into solution. Clean obstruction or scale deposits from coil with coil cleaner. Crack open fitting on high pressure outlet of pump.
Pump runs but has low spray pressure.	Nozzle not installed. Dual wand valve is open. Leaky discharge hose or quick coupler. Water sprays out around nozzle. Inlet strainer clogged. Worn or wrong size nozzle. Belt slippage. Unloader valve worn or improperly adjusted. Air leak in inlet plumbing.	Install Nozzle. Dual wand valve must be closed and high pressure nozzle installed. Replace hose, quick coupler, or o-ring in the quick coupler. Clean and check more frequently. Replace with nozzle of proper size. Tighten or replace with correct belt. Install pressure gauge on pump head to adjust pressure. Check valve seat on unloader. Reseal fittings and inspect inlet hoses for air leaks.
Pump runs but there is erratic, fluctuating pressure.	Inadequate incoming water supply. Stuck inlet or discharge valves. Restricted inlet or air entering the inlet plumbing on the pump. Leaking H.P. seals. Leaking L.P. seals.	Increase water supply flow. Clean out or replace worn valves. Check fittings and hose for air tight seal, clean inlet strainer screen. Replace seals. Pressure feed the pump and replace L.P. seals if water leaks from the pump head.
Excessive crankshaft play or loud, knocking noise in pump.	Broken or worn bearing or connecting rod in crankcase.	Replace pump or bearing.
Oil leaking from pump.	Loose drain plug or damaged seal.	Locate point of oil leakage and replace damaged O-ring or seal.

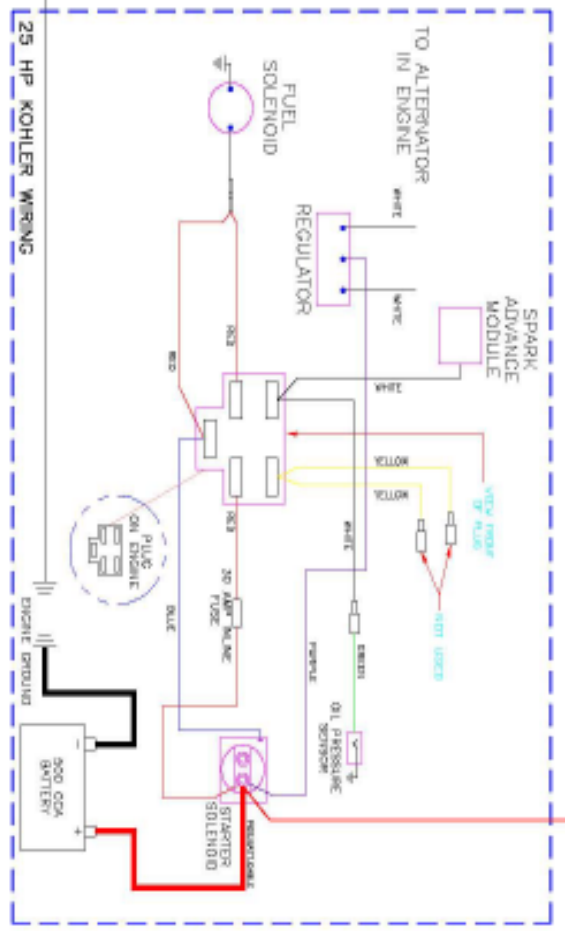
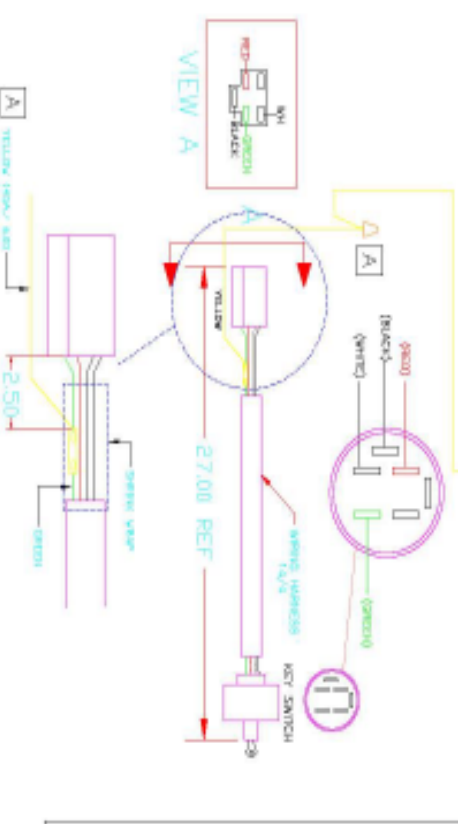
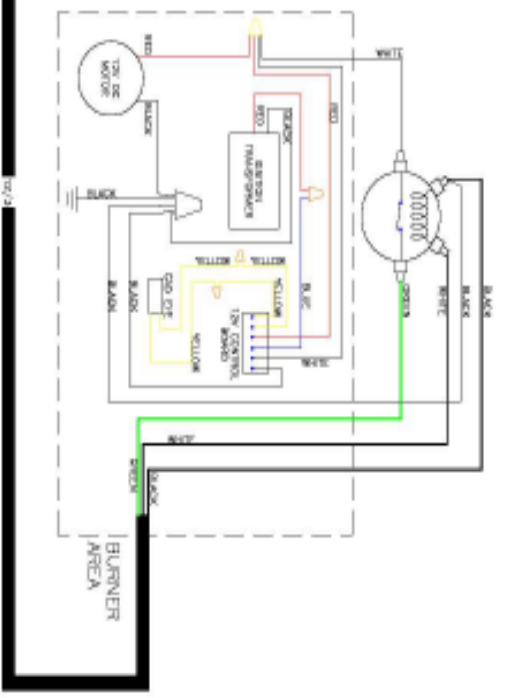
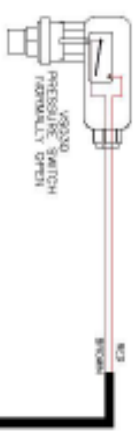
* The most recurring probable cause is listed first. Repairs should be made only by a qualified technician.

PROBLEM	PROBABLE CAUSE*	REMEDY
Inlet injection will not siphon chemical.	Check valve in strainer clogged. Chemical valve not open or clogged. Strainer not submerged in solution. Detergent hose cut or kinked.	Clean or replace. Rinse after each use. Open chemical valve or clean. Submerge strainer and replenish chemical. Inspect hose, replace as necessary.
Water is emitted from the chemical pickup tube.	Check valve malfunctioning.	Repair or replace check valve.
Downstream injector will not siphon chemical.	Brass knob on injector is closed. Unit not in low pressure mode. Detergent hose cut or kinked. Strainer plugged or not submerged. Internal injector parts corroded or stuck. Outlet water temperature too high.	Open by turning counter clockwise. Open dual wand or install low pressure tip. Inspect hose, replace as required. Check screen on strainer pickup tube. Disassemble, clean or replace. Use with cold water (150° Maximum) If installed on discharge side of coil.
Pressure relief relieving water.	Unloader failure/Coil overheating/Excessive pressure	Turn machine off, wait a few minutes and restart. If problem continues, take in for repair.
Burst disk relieving water.	Excessive overpressurizing and system spikes.	Take in for system check.
Heating/Burner System-Diesel Fired		
Burner will not fire. ⚠️ WARNING: High voltage on ignitor can cause electrical shock. Disconnect power before servicing.	Burner switch not on. Diesel fuel level low. Trigger on spray gun not pulled. Fuel filter plugged or loose. Spray nozzle plugged. Overload on burner motor tripped. Nozzle not in wand. Low water pump pressure. Fuel pump or nozzle stopped. Vacuum/Flow/Pressure or thermostat switch faulty. Fuel solenoid valve faulty. Low generator voltage output. Burner relay faulty (12-V Burner only)	Turn switch on; Thermostat on if equipped. Fill burner tank with #2 diesel. Squeeze trigger to fire burner. Clean or tighten fuel filter. (Check fuel pressure) Clean spray nozzle. Reset overload, locate source of overload. Install nozzle in wand. See pumping systems trouble shooting. Check fuel pressure, filter, fuel lines. Replace fuel pump and/or nozzle. Check electrical continuity with pump spraying and burner on. Replace fuel valve if it does not open when power is applied. Adjust generator RPM for proper voltage under full load conditions. Replace burner relay.
Burner will not fire, plus diesel fumes are emitted from the exhaust port. ⚠️ WARNING: Replace insulation. Unburned fuel can saturate it and cause a fire.	Fuel to air ratio out of adjustment. Fuel nozzle partially clogged. Ignition transformer not providing spark to fuel.	Set air band and fuel pressure to specs. Replace nozzle of proper size. Replace ignition transformer, clean and adjust electrodes.
Burner fires and smokes.	Fuel to air ratio out of adjustment. Excessive soot on coils. Improper voltage at burner.	Set air band and fuel pressure to specs. Clean soot off to improve air flow. Adjust RPM of generator (if equipped)
Discharge water temperature exceeds recommended operating temperature.	Burner input too high for conditions. Water flow restricted. High temperature limit switch faulty or set too high.	Decrease fuel pump pressure and/or fuel nozzle size. Clean or replace nozzle of proper size. Descale coil and clear obstructions. Replace or reset temperature limit switch.
Burner continues to fire even when trigger on spray gun is released	Faulty Flow / Pressure / Vacuum switch. Faulty fuel solenoid.	Replace switch. Replace solenoid.
Discharge water temperature not reaching maximum operating temperature.	Burner input too low for conditions.	Increase fuel pump pressure and/or fuel nozzle size.
Battery keeps losing voltage. (For 12 volt burner systems)	Battery voltage Low. RPM too low. Engine charging system faulty. Electrodes misadjusted. Air band too far open. Burner amp draw too high.	Have battery checked and load test, replace if necessary. Engine RPM should be 3400-3600 RPM w/no load. Check engine charging system - Must have 16 Amp output. Adjust electrodes to maximum 1/8" gap. Adjust for proper burn. Check amp draw of burner motor - should be 13 amp or less. Check amp draw of transformer should be 4.2 or less.



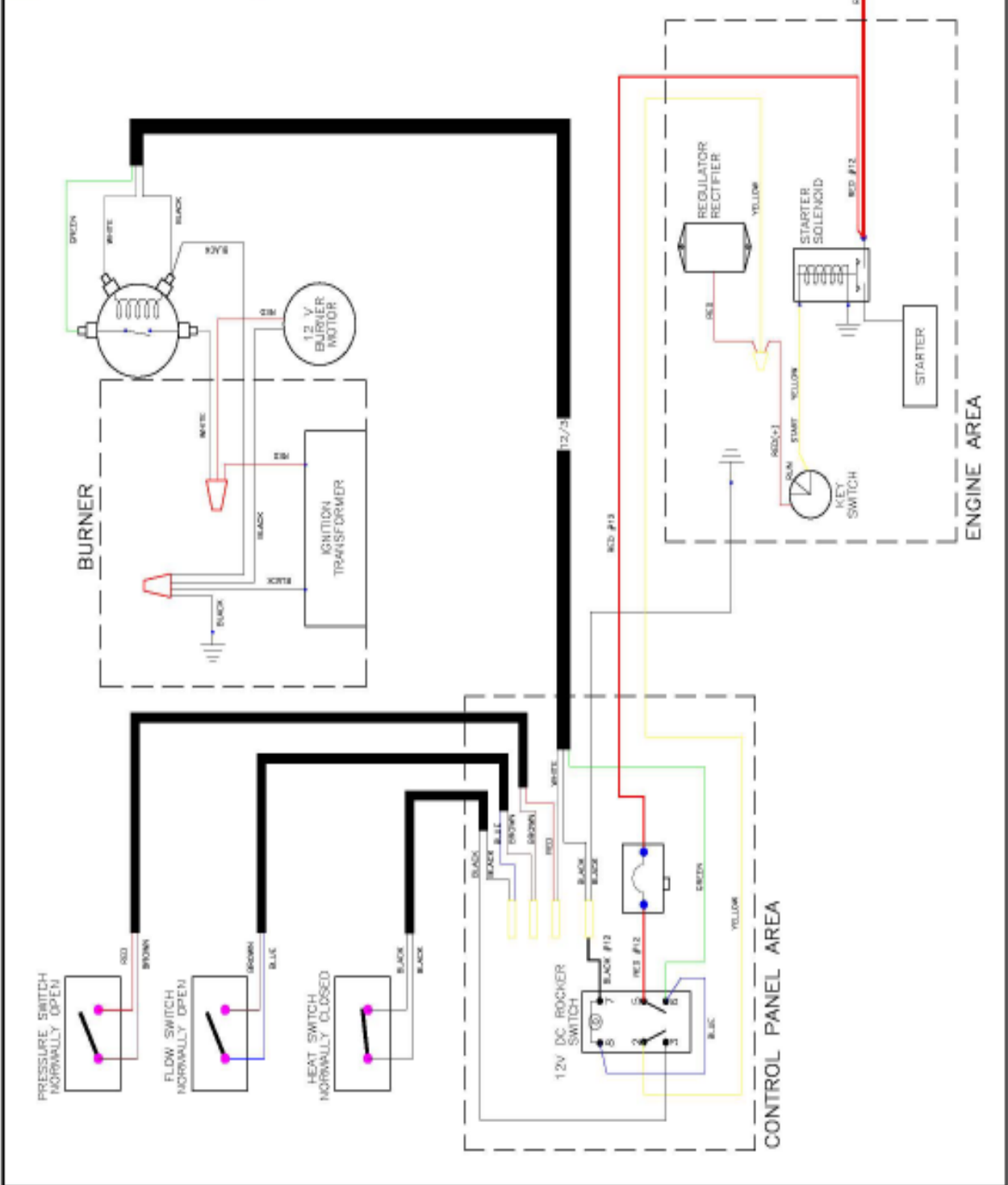
12VDC BURNER TROUBLE SHOOTING FLOW CHART



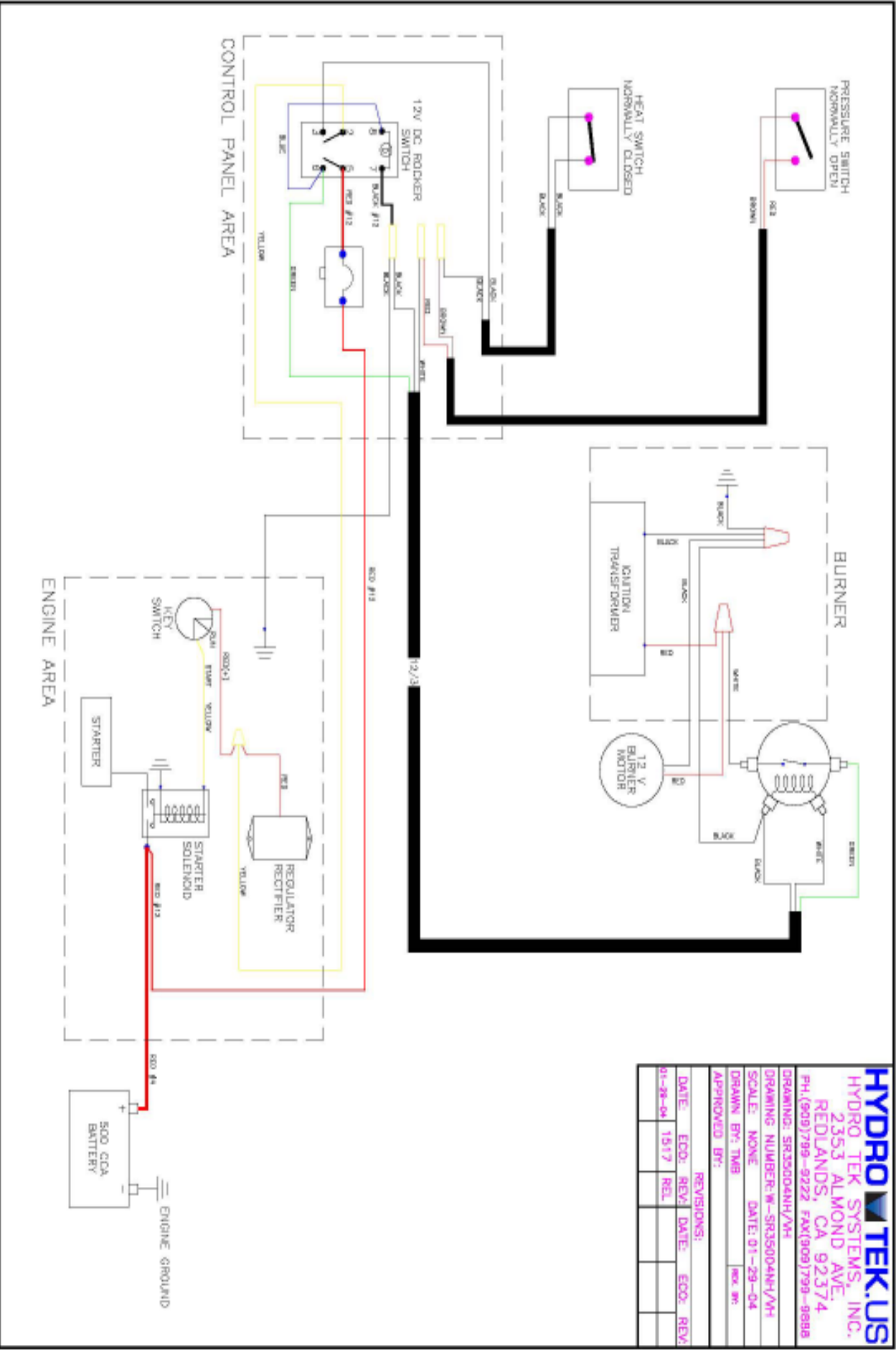


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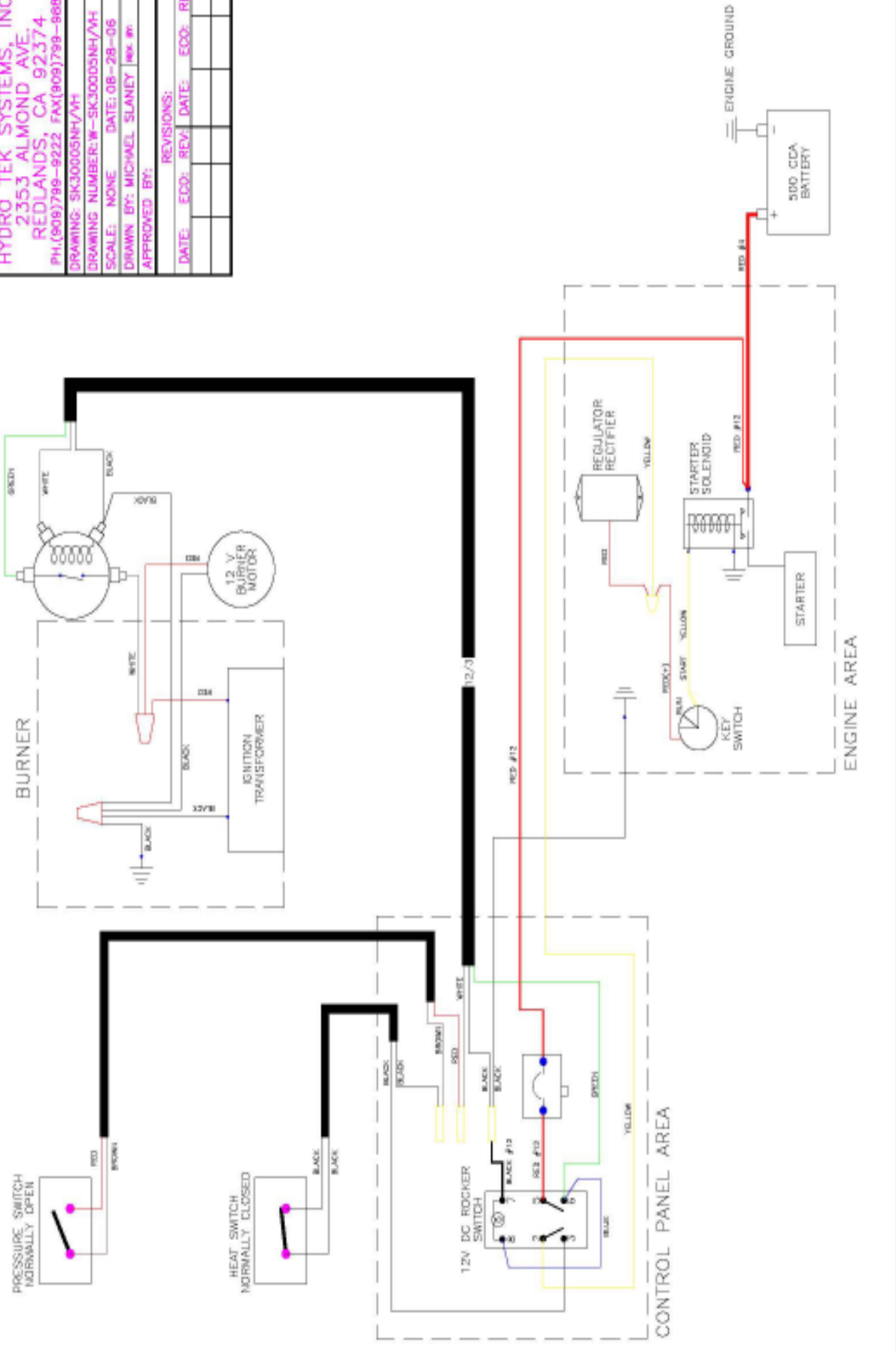
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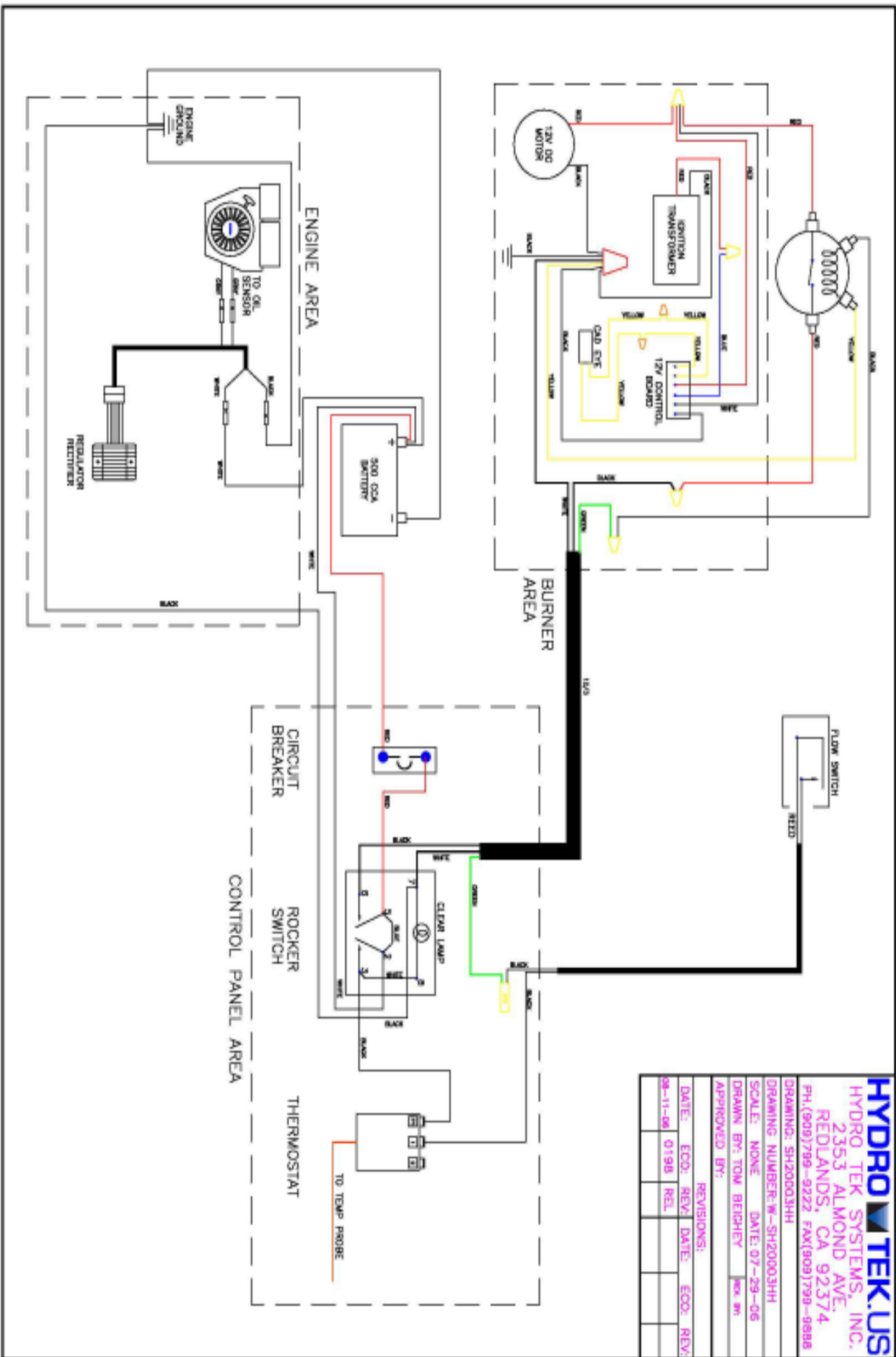


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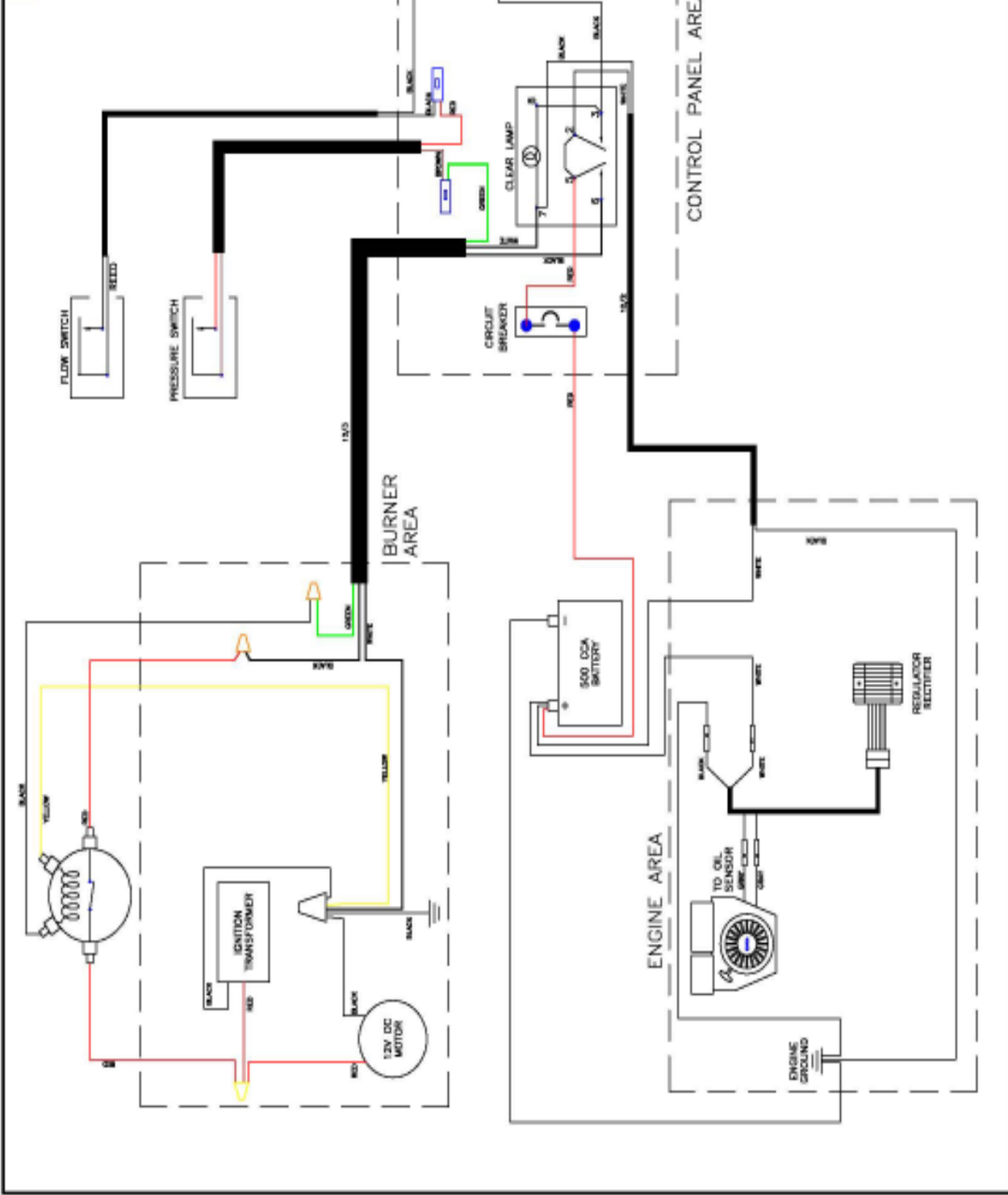
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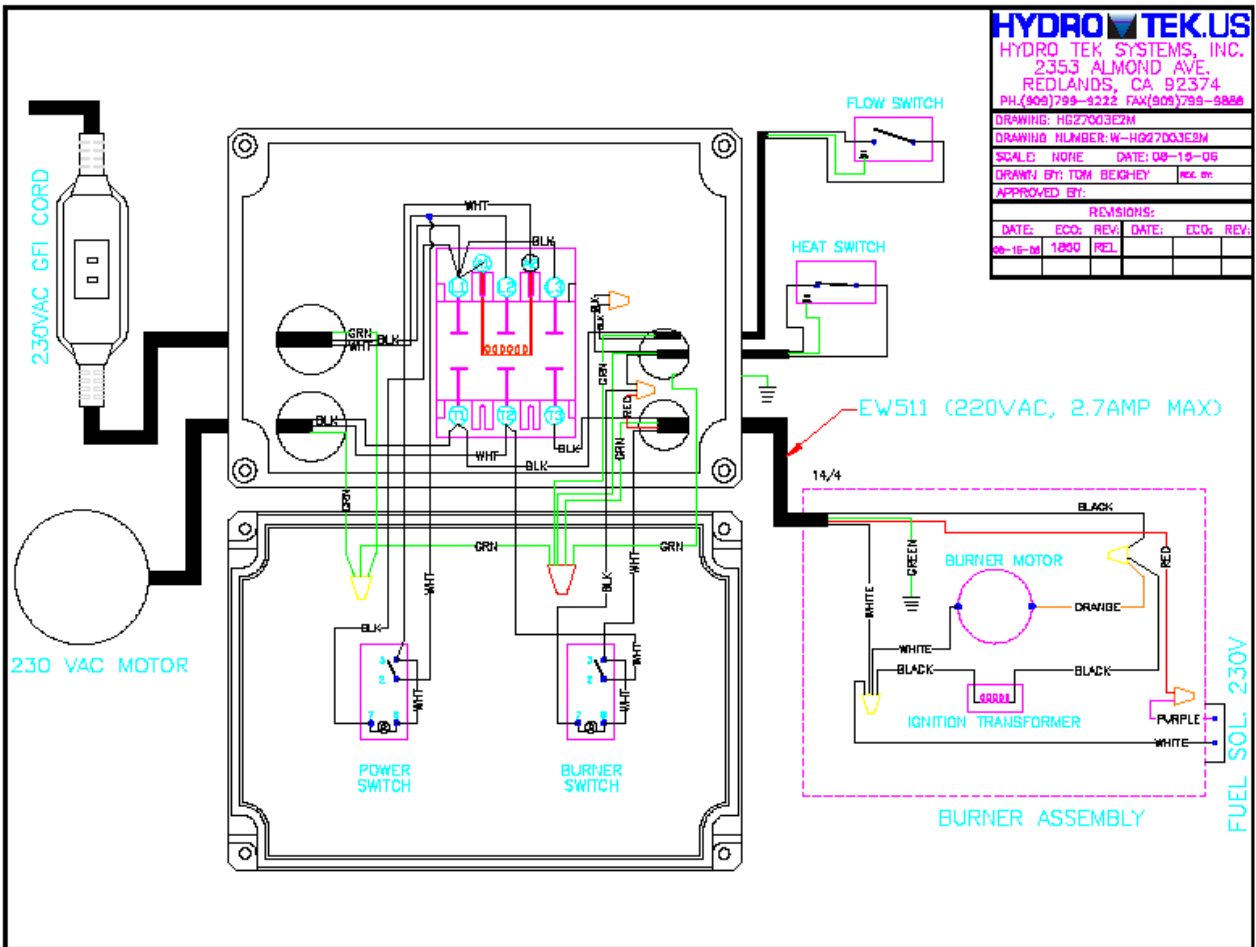
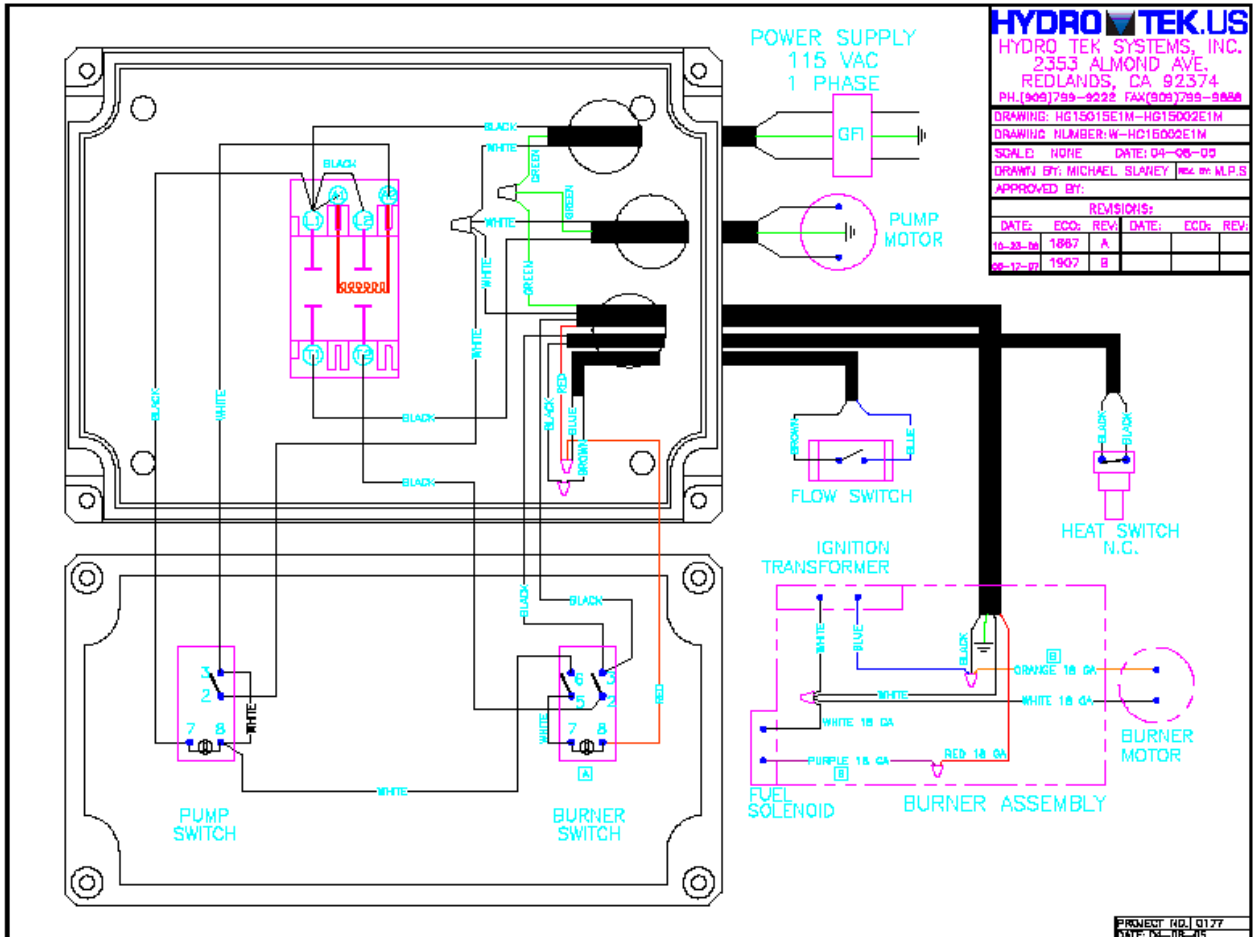
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PREVENTATIVE MAINTENANCE:

While your power washer has been produced with quality materials and craftsmanship, you as the owner have certain responsibilities for the correct care of the equipment. Attention to regular preventative maintenance procedures will assist in preserving the performance of your

equipment. Contact your dealer for maintenance. A small investment in preventative maintenance will add many hours to the life of your pressure washer. Perform maintenance more often under severe conditions. Do not spray high pressure water onto the machine. **Not all maintenance items apply to all machines.**

MAINTENANCE SCHEDULE**

Engine Oil	Inspect	Daily
	Change	After first 8 hours then every 50 hours. Every 25 hours in high ambient temperature
	Filter	Every 100 hours
Air Cleaner	Inspect	Every 50 hours
	Clean	Every 3 months
Battery Level		Check monthly. 12VDC burner systems; replace battery every 2 years
Engine Fuel Filter		500 hrs or 6 months
Spark Plug Maint.		500 hrs or 6 months
Clean Fuel Tank(s)		Annually
Replace Fuel Lines		Annually
Pump Oil	Inspect	Daily
	Change	After first 50 hours, then every 3-5 months or 500 hours
		Axial pumps come filled with synthetic oil which does not require changing.
Replace Burner Filter		Monthly-(More often if fuel quality is poor)
Remove Burner Soot		Annually
Burner Adjustment/Cleaning		Annually
Descale Coil		Annually-(More Often If Required)
Replace Spray Nozzle		6 months
Rplc Quick Connects		Annually
Clean Water Screen/Filter		Weekly
Clean Float/Supply Tank		Every 6 months
Replace HP Hose		Annually
Belts		Tighten 6 months
	Inspect/Replace	Annually

MAINTENANCE INFORMATION

DESCRIPTION	OILTYPE	CAPACITY	FUEL	CAPACITY
Gas Engine	10w30 Motor Oil	.63 to 3qt	Gasoline	8qt to 7 gal
Pump, General	Non detergent SAE 30w	34-41oz		
Pump, AR	Non Detergent SAE 30w	10-41oz		
Pump, Cat	Cat Hydraulic, non-detergent 10w-40 ISO 68	11-25oz		

**Check the engine manufacturer's service guide for additional maintenance items.