

POWER & HORSE™

HOT WATER HIGH PRESSURE WASHER Owner's Manual

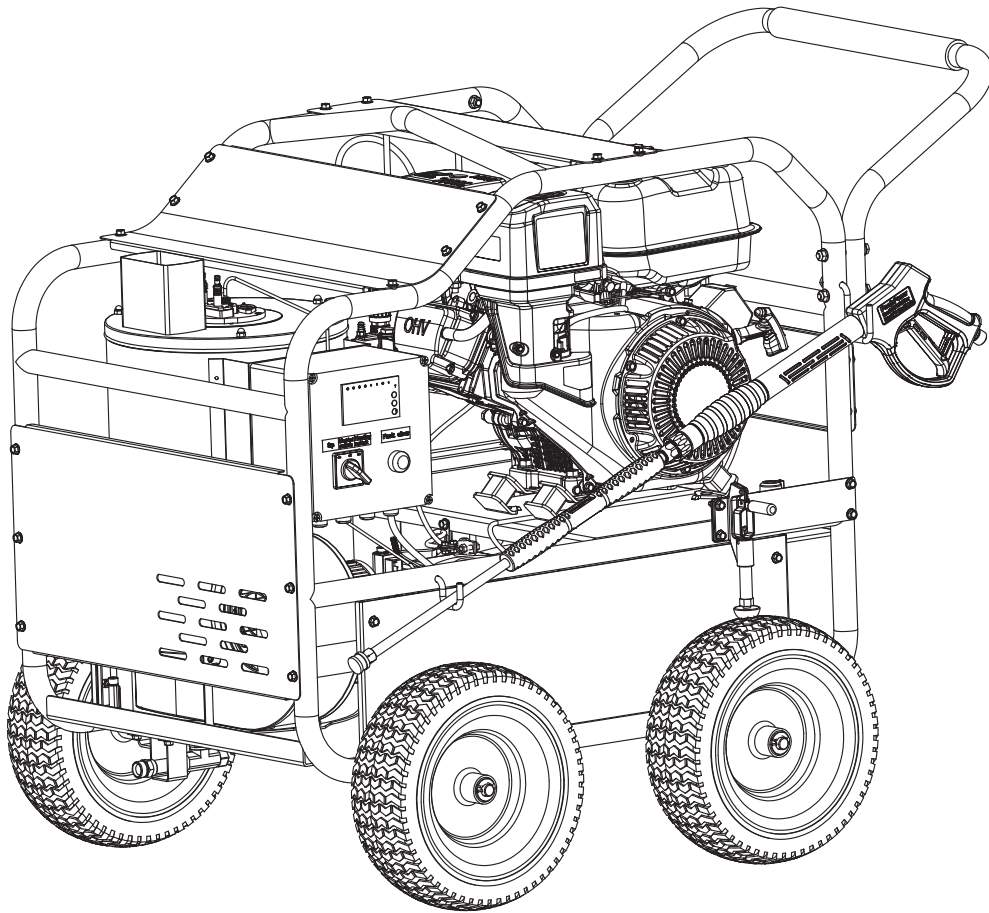


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FUNCTIONS INTRODUCTION

Diesel/gasoline powered hot and cold water pressure washer, which pressurizes the high-pressure cold water pump into the diesel heater and heats the water with diesel fuel. It can be turned on immediately without waiting, making it convenient and fast. It has independent stainless steel heater with 90% high efficiency and low fuel consumption. It also has 12V control panel with adjustable knob temperature controller, which is safe and convenient, suitable for animal husbandry cleaning and disinfection, oil stains cleaning of agricultural military and industrial machinery and equipment, swimming pool cleaning and high-temperature disinfection, property cleaning, etc. The working pressure of this device is from 0 bar to 250 bar. The high-pressure washer produced by our company has excellent performance with low fuel consumption and fast heating, and gas emissions can meet European standards. The frame is made of stainless steel and carbon steel sprayed with plastic, which is sturdy, durable, and aesthetically pleasing. The circuit board control is safe and reliable.

Warning symbols and relevant markings used on equipment



Warning: Pay attention to safety



Warning: High temperature



Warning: Beware of electric shock.



Please use goggles



Please use protective gloves



Please wear protective shoes



Please wear protective clothing.



Please contact a professional for



In order to avoid injury, do not use this heater when there are children nearby!



Do not operate this heater when you are tired, taking drugs or alcohol.



This equipment uses diesel and gasoline fuel, and smoking is strictly prohibited in the workplace.



Note: This equipment has exhaust emissions, it is strictly prohibited to use in confined Spaces, there is a danger of poisoning. This equipment must be used in a well-ventilated area

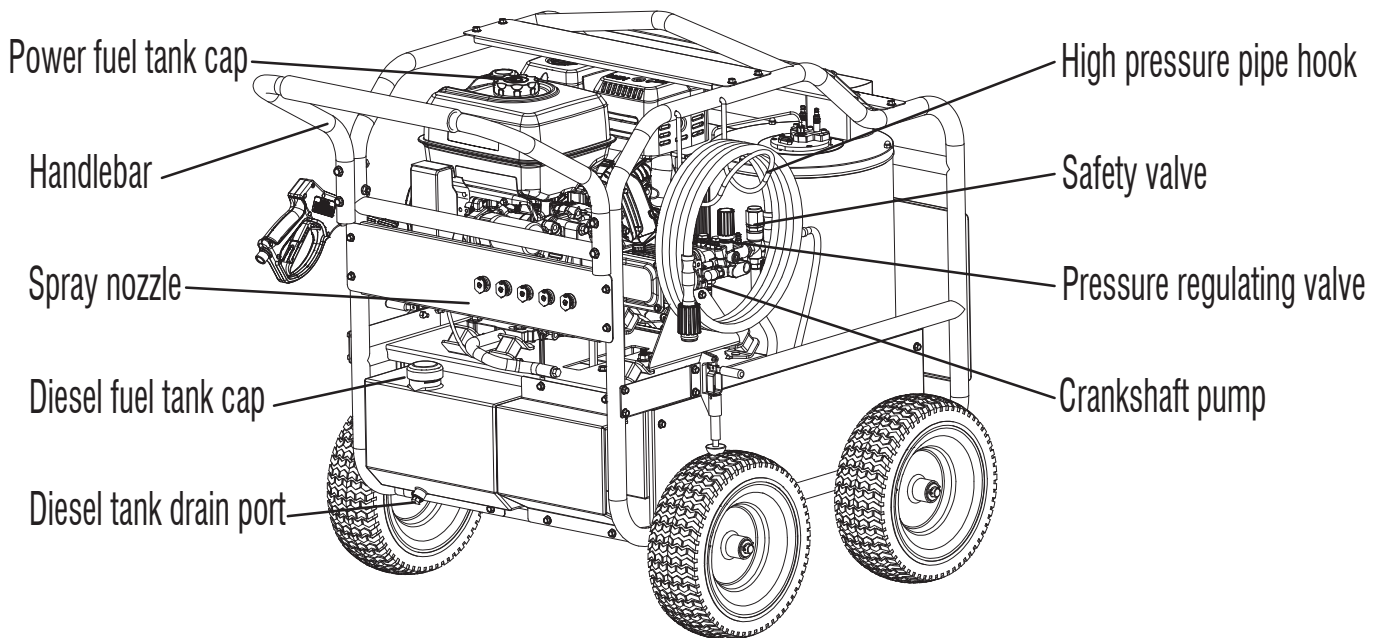
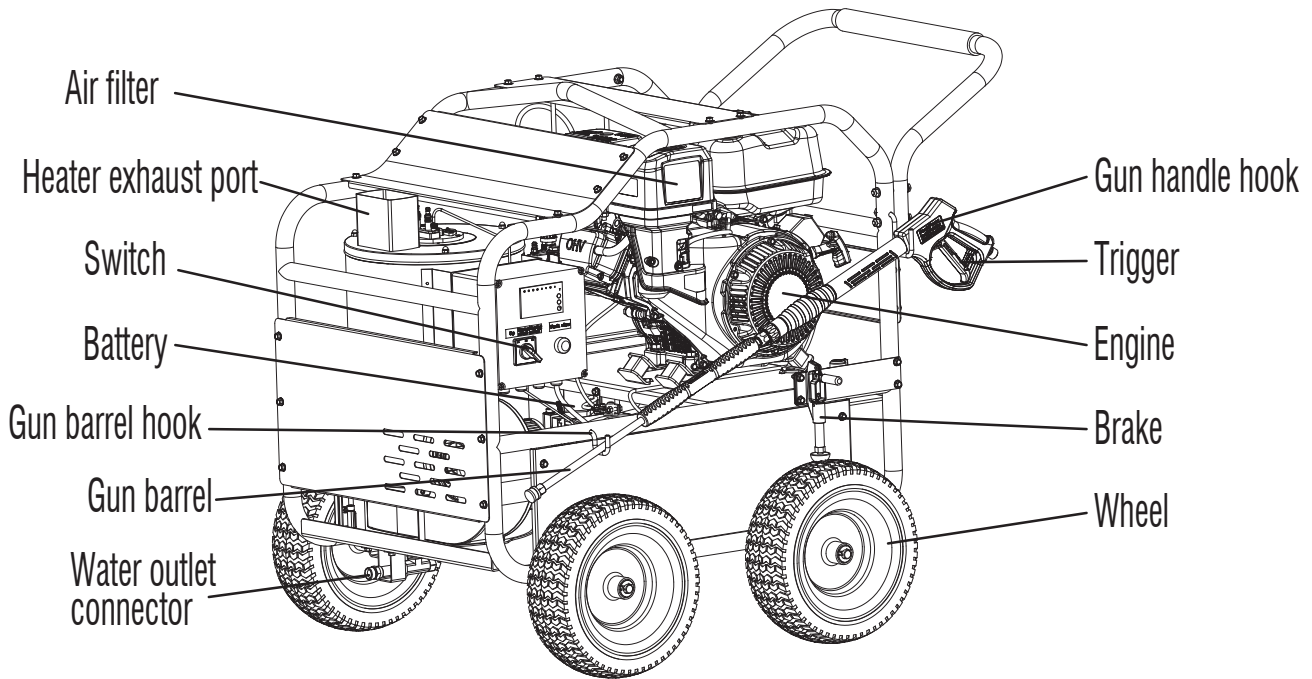


In line with the principle of safe production and safe work, please be equipped with dry powder fire extinguishers in the use place.

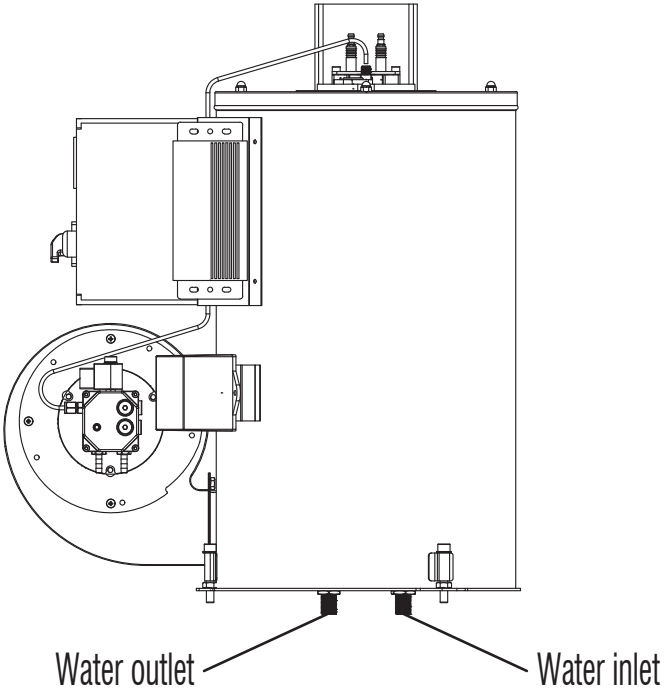
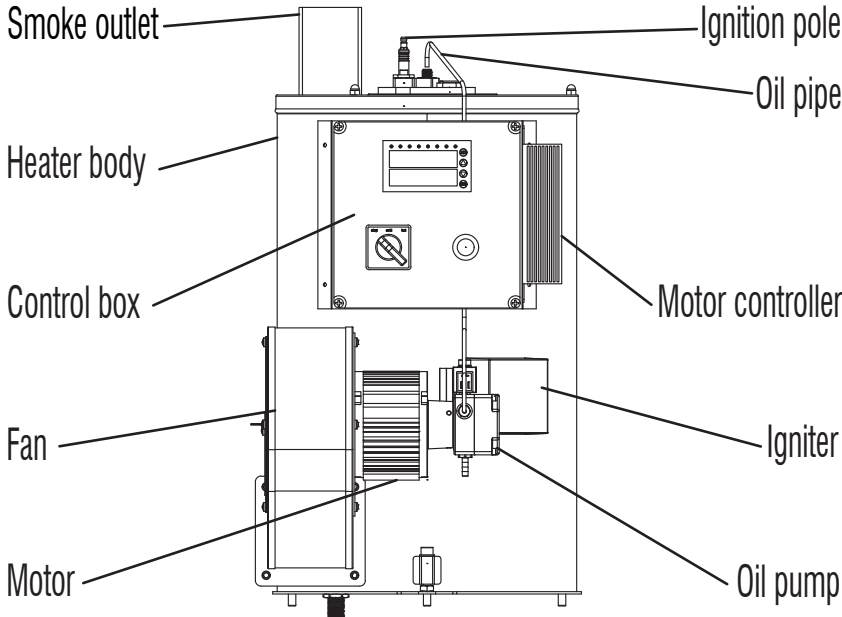


The equipment is not equipped with a backflow prevention device, and is not suitable for direct connection to the source of water.

CONTROLS AND FEATURES



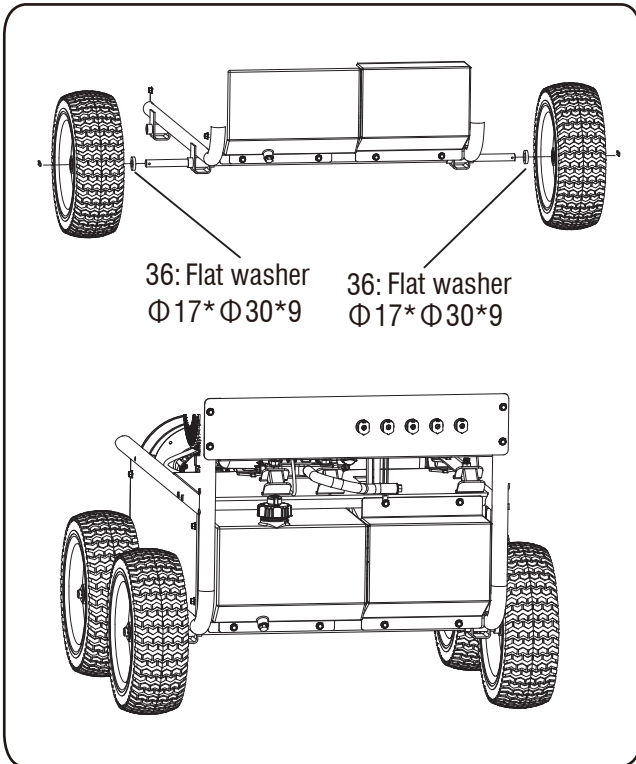
CONTROLS AND FEATURES



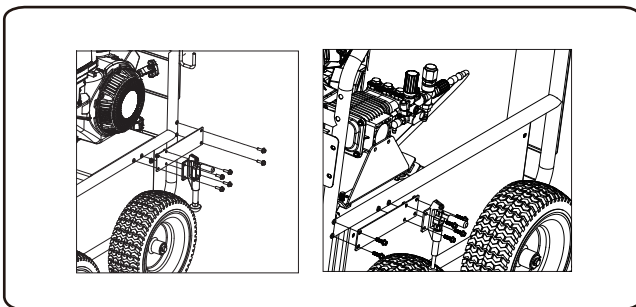
SET UP

Assembly

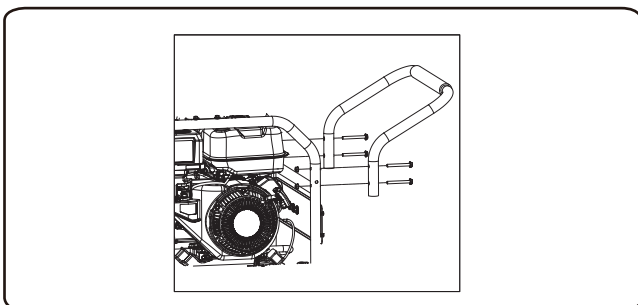
1. First, pass the wheel axle through the wheel axle hole on the frame, then install the wheel and lock it with the R pin.



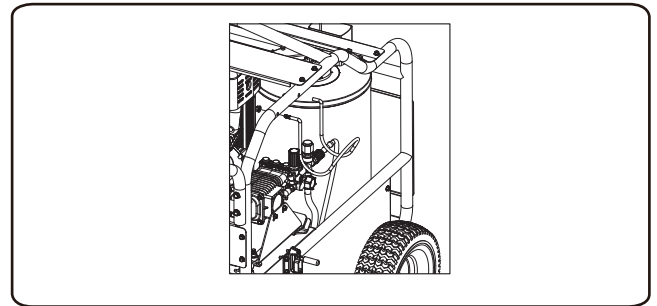
2. Install the brake and brake mounting plate onto the frame.



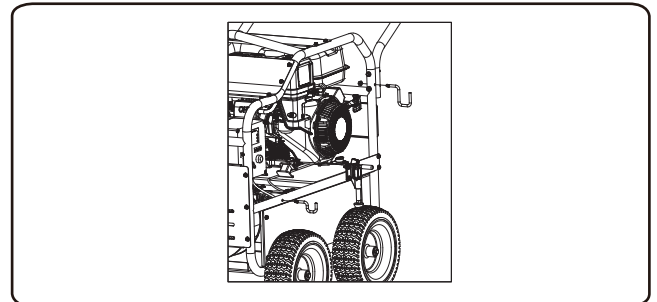
3. Install handle.



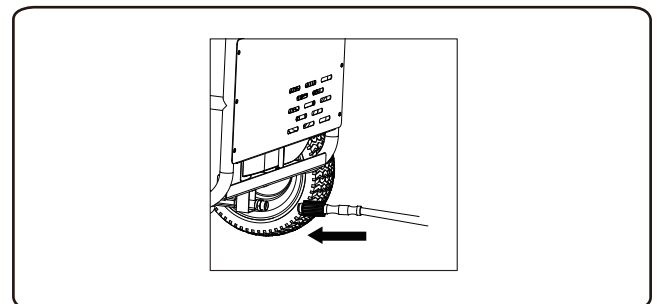
4. Install high-pressure pipe hooks.



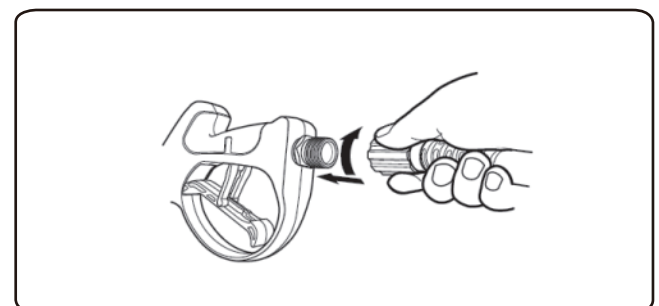
5. Install the high-pressure gun hook.



6. The high-pressure pipe is connected to the outlet below the heater.

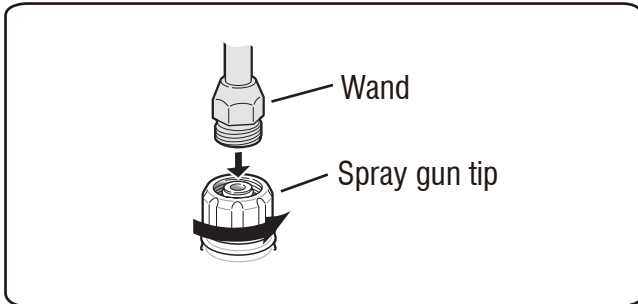


7. Connect the Pressure Hose to the handle of the Spray Gun and tighten the nut firmly by hand.

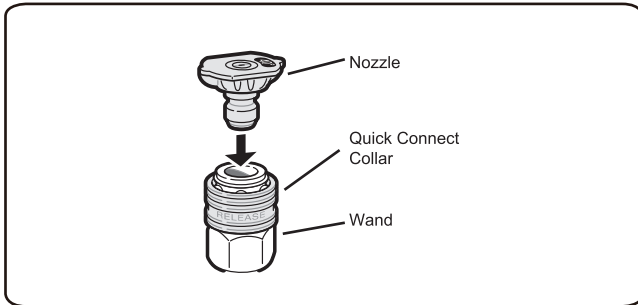


SET UP

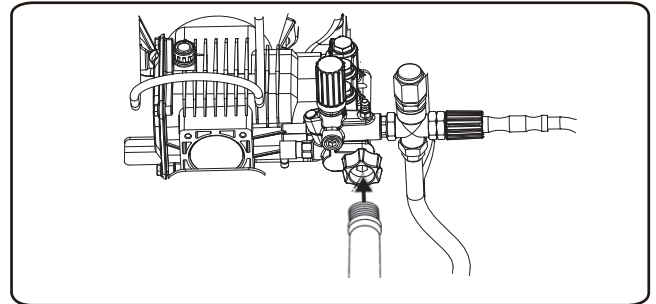
8. Remove the protective cap on the Wand inlet. Insert the Wand into the Spray Gun tip and tighten the nut firmly by hand.



9. Attach the nozzle to the wand by pulling back the quick connect collar and pushing the nozzle onto the end of the wand. Make sure the quick connect collar locks the nozzle in place.



10. Connect the water supply hose to the water inlet connection on the Pump and tighten the Inlet Fitting firmly by hand. The water source must be able to provide a minimum of five gallons of clean, cold water per minute at 20PSI. Only use a 5/8" inner diameter, or larger hose that is rated to meet this capacity.



SAFETY NOTICE



Warning

- Minors or untrained adults are strictly prohibited from operating this device.
- It is strictly prohibited to aim the high pressure gun at the machine to spray to prevent accidents caused by machine electricity leakage.
- It is strictly prohibited to aim the high-pressure gun at people or animals to spray to prevent fatal safety accidents.
- Please carefully check whether the high-pressure hose is damaged before each use, and it is strictly prohibited to use damaged high-pressure hoses for operation.
- It is strictly prohibited to forcibly start the heater and ignite it for heating in the shortage of water.
- When operating the machine, please wear high-temperature protective gloves, goggles, and protective clothing.
- When refueling, please turn off the machine; Flammable, explosive, and other hazardous materials are not allowed to be stacked around the machine.



Warning

- The cleaning operation must maintain a safe spraying distance of at least 11.8in (the distance between the nozzle and the surface of the object being cleaned).
- The operator must wear protective clothing and goggles to prevent personnel injury caused by splashing dust particles and wastewater.



Notice

- After long-term storage, please remove the high-pressure gun and nozzle, and turn on the high-pressure washer to clean the stains inside the coil before starting up for use, in order to avoid blocking the high-pressure gun and nozzle.
- Ensure the use of our company's original parts and accessories. The manufacturer shall not be liable for any equipment damage or other losses caused by the use of non original parts and accessories.
- After the machine is turned off, the trigger switch of the water gun must be turned on to release the high-pressure water inside the coil.



DANGER: Incorrect connection of the power supply may pose a risk of electric shock. If you have any doubts about whether the power supply is connected correctly, stop operating immediately. Please consult a licensed electrician or local dealer. Do not modify the power wiring of the machine without authorization. If the electrical components of the equipment are damaged, they must be replaced by a professional electrician.

MAIN WARNING

Main Warnings

- The equipment can only be used outdoors and is prohibited from being used in enclosed or poorly ventilated areas.
- The warning signs on the machine body provide important information for safe use, please read them carefully.
- Always follow the relevant safety instructions in the manual and wear goggles, high-temperature protective clothing, and high-temperature protective gloves when using.
- After each use, please be sure to disconnect the main power and use an air gun to drain the water left in the device. After winter use, inject low-temperature antifreeze into the water pump and coil to avoid freezing and cracking the water pump and heater.
- Please place the outer packaging of the device properly in an area out of reach of children.
- If there is damage to cables or other important components such as heaters, high-pressure pipes, high-pressure water guns, etc., do not use the equipment until new components are replaced.
- This device can only use cleaning agents provided or recommended by the manufacturer, as well as biodegradable neutral cleaning agents. Damage to the equipment caused by the use of any other type of cleaning agent or chemical containing corrosive agents is not covered by the warranty.
- Do not operate this device in areas with high pedestrian traffic, as high temperature splashes can easily burn others.
- Within a 197in diameter range of the operating area of the device, it is strictly prohibited for people or animals to appear.
- Suitable protective equipment must be worn to prevent objects falling from high-temperature hot water jets from rebounding and causing injury.
- Do not touch the power plug of the device with bare feet or wet hands.
- Please wear high-temperature protective clothing made of rubber material, protective gloves, and goggles.
- When cleaning tires and air valves, a minimum safe distance of 11.8in should be maintained between the nozzle and the target object. Otherwise, high-pressure and high-temperature water jets can cause damage to the cleaned object, and the most direct manifestation of damage is tire discoloration.
- Warning: Do not direct the high-pressure water jet towards people, animals, live devices, or the high-pressure washer body.
- High pressure water guns, high-pressure water pipes, nozzles, pump heads, heaters and other components may wear and age over long-term use. Please regularly maintain and replace new parts. Please use original factory components for replacement and maintenance.
- Be sure to turn off the power supply of the high-pressure washer before leaving.
- Each high-pressure washer undergoes testing before leaving the factory, so it is normal for some water in the high-pressure pump and high-pressure hose.
- Please be careful not to damage the cable. If the cable is damaged, it must be replaced by the manufacturer or a licensed professional electrician to avoid danger.
- Please note that the equipment flow rate and pressure are calculated by professional engineers from the manufacturer, and only the high-pressure nozzle model and related parts provided by the manufacturer can be used. Please do not use externally purchased parts as they may cause equipment damage.
- The equipment must be operated and used by personnel who have received professional training and are qualified. Untrained personnel and children are strictly prohibited from using the equipment.
- It is strictly prohibited to use this equipment in flammable and explosive areas.
- The high-temperature hot water generated by this device shall not be used for human and animal consumption.
- Do not spray water onto human or animal due to high temperature hazards.

SAFETY DEVICE



- It is prohibited to forcibly start the heater for ignition and combustion in the shortage of water. Forcefully starting the heater for heating in the shortage of water will cause dry burning, and the water stored in the internal coil pipe of the heater will produce excessive steam that cannot be released, resulting in coil bursting and injuring others.
- If the battery is out of power during use, for safety, please turn the main power switch of the machine to the off state, charge the battery separately or replace it with a battery of the same brand and capacity (a qualified battery charger specified by the country must be used when charging the battery).
- When performing maintenance on the device, please turn off the main power supply.

Safety device

- The locking device on the gun handle
This device is not locked during normal operation and is only used to prevent accidental triggering of the gun. When stopping the use of the high-pressure washer, it is recommended to activate this locking device to avoid accidents.
- Flow switch installed at the inlet of the heater
This device is used to protect the heater and stop its operation in case of water shortage.
- Flame detection system
This system can detect whether there is accidental diesel leakage or accidental flameout during the heating process, and stop the machine for protection in a timely manner.
- Temperature adjustment switch
The desired outlet temperature can be adjusted freely, which is convenient and reliable.
- Oil level switch
When the fuel tank is short of fuel, stop the heater in time and the low oil indicator light in the control panel will light up. Prevent the oil pump from being in a vacuum state.

WATER SOURCE CONNECTION

- Connect the inlet pipe with a filter to the inlet of the equipment, and use a clean water source. Do not use turbid water sources or sewage with high sediment content.
- Place one end of the inlet pipe with a filter into the water tank for water absorption.
- Start the high-pressure cleaning machine without connecting the high-pressure hose until water flows out from the outlet of the high-pressure washer. Wait until the water flow is stable before connecting the high-pressure water hose for the outlet.
- The external water supply must be greater than or equal to twice the maximum flow rate of the high-pressure water pump to prevent water shortage caused by insufficient water supply.
- The external water source temperature is not higher than 104°F.
- Strong acids, alkalies, and other chemical agents must not be added to the water source.

Add diesel fuel

- The first time, the fuel tank must be filled with #0 or below clean diesel from a formal gas station.
- Be aware that using inappropriate fuel may pose a danger and may cause serious damage to the diesel fuel pump.

Descaling agent

- After the heater working for a long time, scale is easily generated inside the coil pipe. Please regularly add water softener to the water tank to remove the scale.

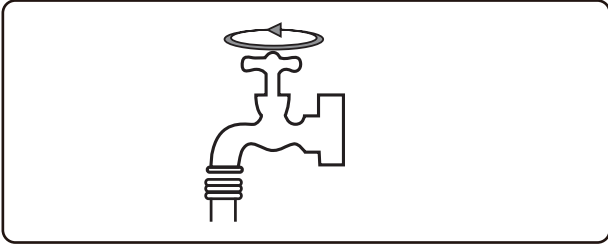
Maintenance and upkeep

- Timely maintenance and periodic inspection to ensure the efficient and safe operation of the equipment.
- Before performing any maintenance work
 - > Disconnect the water source connection and cut off the external main power supply.
 - > Press the trigger of the gun handle and hold for a few seconds to ensure that the equipment has been fully depressurized.
 - > Activate the locking device on the gun handle.
- Weekly (or 50 hours)
 - > Clean the inlet filter element.
 - > Clean the diesel filter element.
 - > Check whether the wires are aged or broken, and whether the connecting wires are loose or detached,.
 - > After the first 50 hours of operation, and every 50 hours thereafter, change the high-pressure water pump oil. Change engine oil every 70 hours of operation (oil grades: 5w30, 5w40, 0w30, 0w40)
 - > Clean the carbon deposits on the outside of the heater coil every 100 hours or 3 months, and replace the fuel injector and fuel filter.
 - > Replace the high-pressure pump water seal, oil seal, sealing ring, pressure regulating valve, flow switch, and ignition electrode every year.

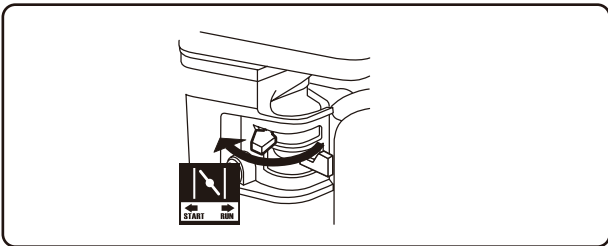
STARTING AND STOPPING

STARTING

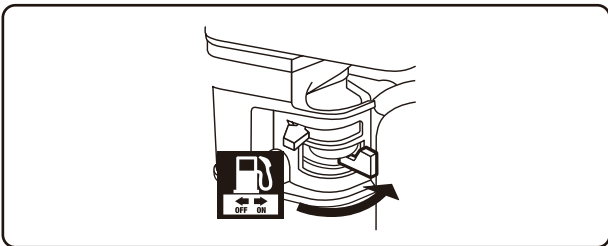
1. Connect the water supply system and turn on or connect to a clean water source.



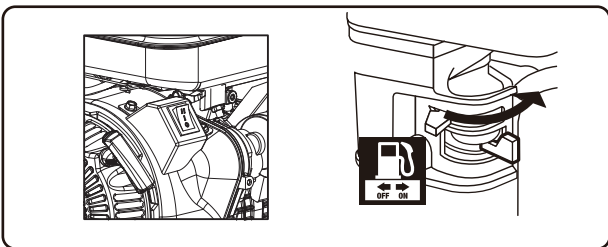
2. To start a cold engine, move the Choke to the "START" position. To restart a warm engine, leave the Choke in the RUN position.



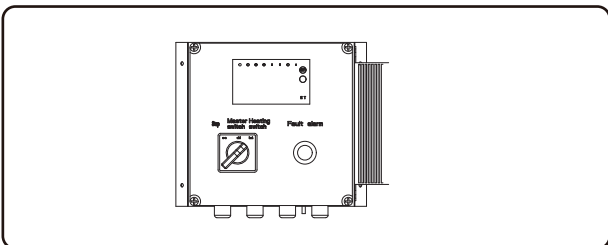
3. Move the Fuel Valve to the "ON" position.



4. Press the "II" gear on the switch until the engine starts, and then open the damper to the maximum.

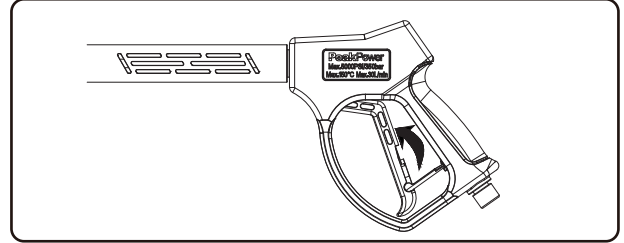


5. Pull the trigger of the spray gun, turn the heater control knob to the "Heating switch" position after water is supplied, and start the heater.

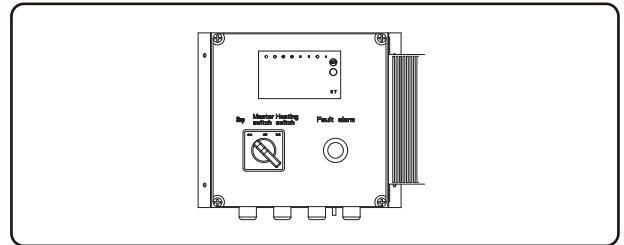


STOPPING

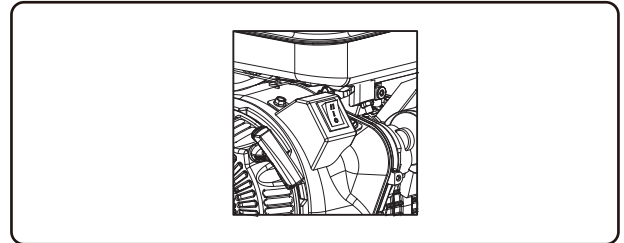
1. Secure the trigger lock of the spray gun in the position shown in the diagram to prevent accidental injury.



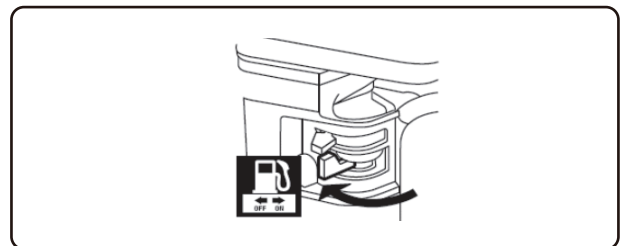
2. Turn the heater control knob to the "STOP" position and turn off the heater.



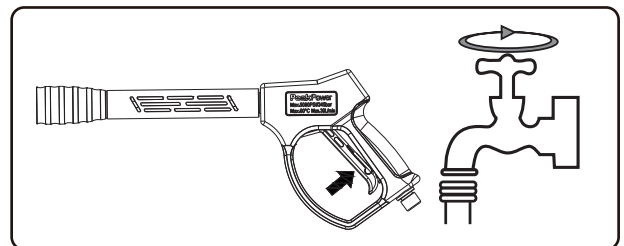
3. Use the key to rotate the hip opening position to the "0" position and turn off the engine.



4. Turn the throttle switch to the "OFF" position.

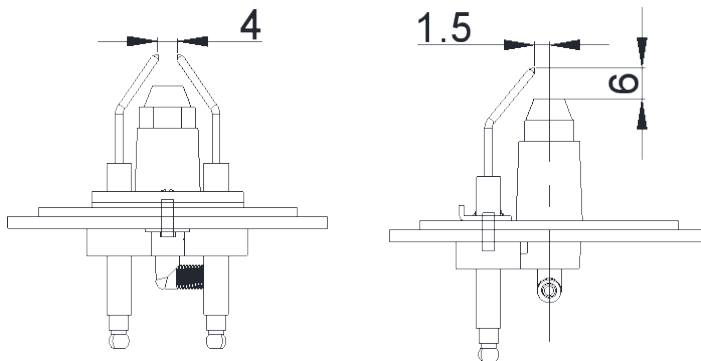


5. After turning off the machine, the gun is fired to relieve pressure and turn off the water source.



MAINTENANCE OPERATION METHOD

- Clean the inlet filter: The inlet filter is located in the water tank and connected to the inlet pipe. Remove the filter element and clean it with compressed air. If there is any damage, please replace it promptly.
- Replace the diesel heater filter: Remove the clamp of the diesel heater inlet filter, pull out the oil pipe, and replace the fuel filter.
- High pressure pump oil inspection and replacement: Check the oil level through the oil observation window on the high-pressure water pump, unscrew the oil cap at the top of the pump head, observe the color of the oil, and if the oil appears milky white (oil ingress), seek maintenance from a dealer or manufacturer engineer. Unscrew the oil drain nut on the side of the water pump, drain the oil completely, and add new oil.
- Clean the internal coil pipe of the heater: The descaling treatment should be carried out regularly using designated descaling agents. The frequency of operation depends on the hardness of the local water. Pour at least 7.93 us gal of water into a container and put descaling agent into the water based on the ratio of 1:15 (0.264 us gal descaling agent, 3.96 us gal water). Remove the gun handle from the high-pressure tube and place the outlet end of the high-pressure tube into the container to form a circuit. Let the descaling agent diluent circulate in the high-pressure washer for at least 10 minutes. It is recommended to install a filter bag on the outlet end of the high-pressure pipe to prevent the removed scale from entering the high-pressure cycle again. After completion, run the high-pressure washer with clean water for at least 10 minutes to remove any residual descaling agents from the system. It is recommended that authorized personnel carry out descaling work on the coil pipe, as descaling work may cause damage to the coil. Please handle the descaling agent residue properly in accordance with local environmental requirements. Do not dispose of it indiscriminately, which may cause environmental pollution.
- Anti freezing: Do not place this device in an environment below 32°F. During storage, to prevent equipment from freezing, please add antifreeze to the water pump and heater coils. Please select qualified antifreeze and follow the relevant instructions provided by the antifreeze manufacturer. This can ensure achieving the desired antifreeze effect.
- Equipment ignition electrode: Remove the nozzle assembly, remove the diesel fuel supply pipe and ignition connection wire, take out the ignition electrode, and clean the carbon deposits in the ignition electrode. If there is damage or wear, please replace it promptly. (Refer to the ignition electrode position diagram below) .



MAINTENANCE OPERATION METHOD

● **Fuel pump:** Adjust the fuel pressure by using an Allen wrench to rotate the adjustment knob. Clockwise increases the pressure, counterclockwise decreases the pressure. Attention: Adjusting the oil pressure must be done by authorized professional engineers. The damage caused by user's adjustment of the oil pressure at will is not covered by warranty services.

Oil pump exhaust: Use an Allen wrench to unscrew the P plug on the front of the oil pump, start the heater fan, wait for a few seconds, and diesel will flow out. After the diesel flows out without interruption, unscrew the P plug.



● All maintenance related to heaters, high-pressure water pumps, and high-pressure cleaning machines needs to be carried out by professional personnel or by contacting our authorized maintenance center.

● If there are any issues not mentioned in this manual, please contact our authorized maintenance center or local distributor.

● During maintenance, please use original parts to avoid affecting the efficiency and safety of the equipment. Equipment damage caused by unauthorized use of other parts is not covered by warranty services.

WARRANTY

● All products of our company undergo 100% strict testing before leaving the factory. We provide a one-year warranty for equipment problems caused by production defects, and the warranty terms should comply with relevant industry rules. The warranty period starts from the day of purchase. If your equipment or accessories are returned to the factory for repair, please also provide relevant invoice vouchers for the purchased equipment.

● Warranty repairs must meet the following conditions:

- > Damage is caused by material or processing defects.
- > Users should carefully read this manual and strictly follow the relevant guidelines and operating procedures before use.
- > The equipment was not attempted to be repaired by unauthorized maintenance personnel, and damage to the equipment was not caused by the use of unauthorized parts.
- > The equipment has not been abused, such as knocking, colliding, using strong acid, strong alkali chemical agents, or freezing cracks.
- > Use clean water sources and do not use turbid water sources with sediment.

The following situations will not be covered by the warranty:

- > Vulnerable parts that require regular replacement.
- > High pressure hose and other optional spare parts or accessories.
- > Intentional human damage, transportation, operational negligence, lack of regular maintenance, improper operation, or installation and setting not following the instructions in this manual.
- > The warranty is limited to replacing defective components and does not include packaging, transportation, and other costs.
- > The warranty does not include replacement of the machine, and the warranty period will not be extended after the warranty.
- > The manufacturer is not responsible for any damage caused by improper installation or operation.



● Warning: The following situations, such as nozzle blockage, valve blockage, mechanical damage caused by scale, and damaged cleaning machine accessories (such as high-pressure pipe wear, coil blockage, frost cracking, oil pump blockage, unqualified oil, etc.), as well as other components that usually do not have problems, are not covered by warranty.

● The packaging material can be reused, please do not dispose of the packaging material at will.

● Relevant old parts can be sent to the recycling center for recycling. Do not dispose of batteries, engine oil, and other waste that can pollute the environment at will.

Fault diagnosis and troubleshooting



Danger: The main power must be cut off before checking for faults.



Danger: inspecting and repairing electrical circuits must be done by electricians or maintenance personnel who have received professional training.

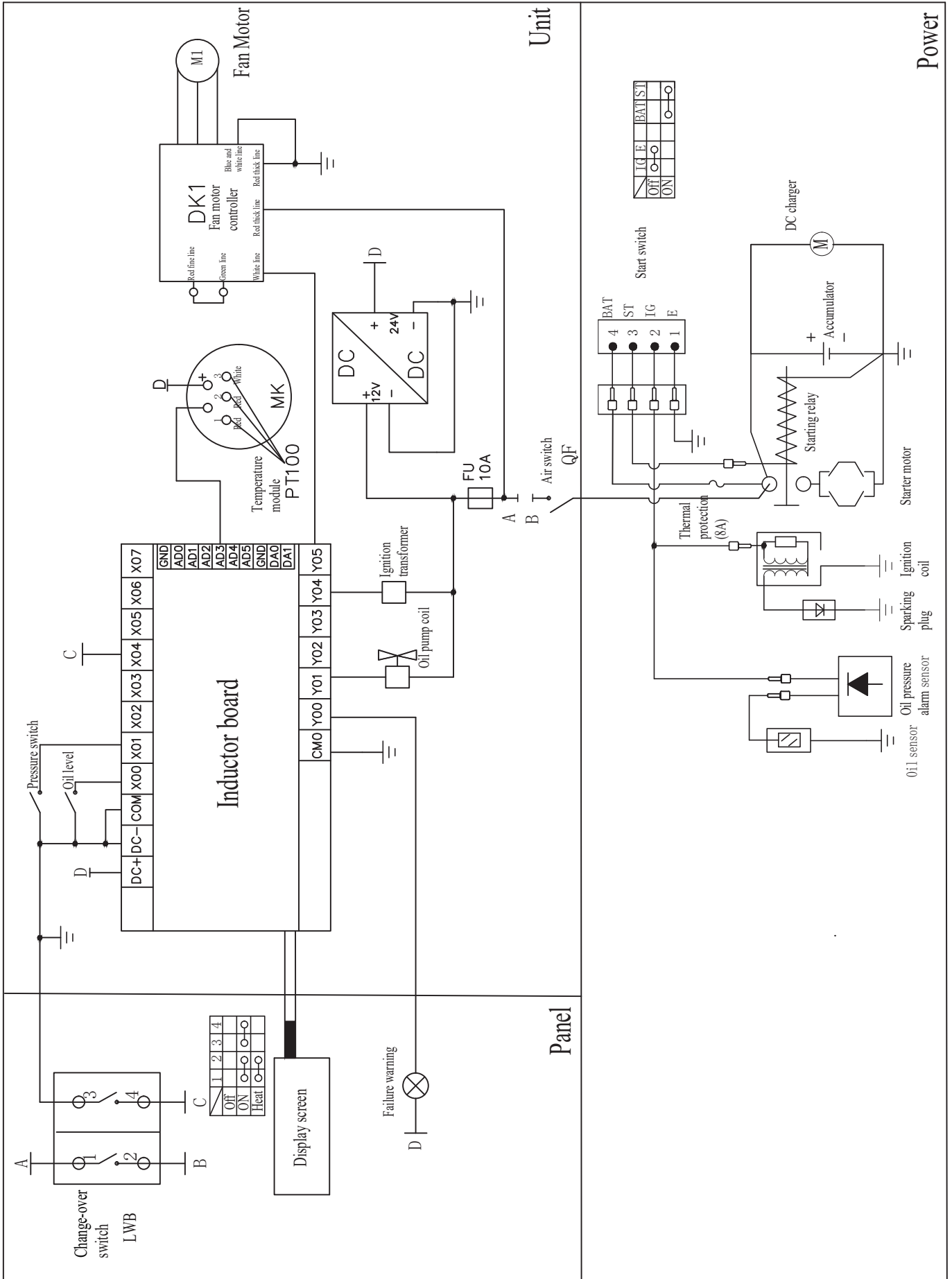
FAULT DIAGNOSIS AND TROUBLESHOOTING

Fault	Causes	Troubleshooting
The heater does not start.	<ol style="list-style-type: none"> 1. The power connection cable is not properly connected. 2. Motor switch damaged. 3. No water flows through. 4. The main switch is disconnected. 	<ol style="list-style-type: none"> 1. Check the power supply, plug in the plug properly. 2. Replace the motor start switch. 3. Check. 4. Close the main switch.
When the power is turned on, there is no wind blowing out from the smoke outlet.	<ol style="list-style-type: none"> 1. Turn off the main switch. 2. The fan is not turning. 3. Air duct detachment. 4. The fan got stuck due to foreign objects being trapped in it. 	<ol style="list-style-type: none"> 1. Check the main switch and close it. 2. Check the circuit and check if the wire ends are loose. 3. Reinstall on. 4. Turn off the power and remove any foreign objects.
The fuel injector and ignition needle do not ignite.	<ol style="list-style-type: none"> 1. Fuel depletion. 2. Filter blockage. 3. Oil pump coupling detachment. 4. Oil nozzle blockage. 5. Oil pump damaged. 	<ol style="list-style-type: none"> 1. Add fuel. 2. Replace the filter. 3. Reinstall the coupling. 4. Remove the oil nozzle and clean it. 5. Replace.
The ignition needle ignites and the fuel nozzle sprays oil, but the combustion head does not ignite and burns.	<ol style="list-style-type: none"> 1. The oil pump is damaged, resulting in poor fuel atomization. 2. Wear of fuel nozzle and poor fuel atomization. 3. Ignition targets ground (shell) discharge. 4. The relative position between the ignition needle and the oil nozzle is unreasonable. 	<ol style="list-style-type: none"> 1. Replace. 2. Replace. 3. Adjust the corresponding position and clean the ignition needle. 4. Reasonable adjustment.
White smoke is emitted from the smoke outlet	<ol style="list-style-type: none"> 1. There is water in the fuel. 2. The fuel injection did not ignite. 3. Fuel depletion. 4. Wear of oil nozzle. 5. Oil pump wear and poor atomization. 	<ol style="list-style-type: none"> 1. Replace fuel. 2. Check the reason. 3. Add fuel. 4. Replace. 5. Replace.
Blue smoke emitted from the smoke outlet accompanied by a pungent odor.	<ol style="list-style-type: none"> 1. The air door is too large. 2. Wear of oil nozzle. 3. The fuel injection pressure regulation is too low. 	<ol style="list-style-type: none"> 1. Reduce the air door. 2. Replace. 3. Readjust the fuel injection pressure.
Black smoke is emitted from the smoke outlet.	<ol style="list-style-type: none"> 1. The air door is too small. 2. Wear of oil nozzle. 3. Oil pump wear and poor atomization. 4. Severe carbon deposition inside the heating furnace. 	<ol style="list-style-type: none"> 1. Adjust the air door. 2. Replace. 3. Replace. 4. Remove carbon deposits as required.

FAULT DIAGNOSIS AND TROUBLESHOOTING

Fault	Causes	Troubleshooting
Green light flashes twice	<ol style="list-style-type: none"> 1. Flame detection damage (no repeated ignition). 2. The lens of the flame detector is blackened or deformed (no repeated ignition). 3. The ignition transformer is damaged. 	<ol style="list-style-type: none"> 1. Replace the flame detector. 2. Clean or replace lenses. 3. Replace the ignition transformer or ignition needle.
Yellow light on	1. The fuel tank is short of oil	Fill up with #0 diesel fuel
Green light flashes 3 times	<ol style="list-style-type: none"> 1. The oil pump is blocked or not receiving oil. 12 2. Damaged oil pump solenoid valve or poor contact of oil pump plug wire (repeated ignition three times). 3. Fuel nozzle blockage. 	<ol style="list-style-type: none"> 1. Clean the oil pump filter or replace the oil pump assembly. 2. Check if the oil pump solenoid valve is powered on and if the oil pump plug wire is conductive. 3. Clean or replace the fuel nozzle.
Green light flashes 4 times	<ol style="list-style-type: none"> 1. There is air in the oil inlet pipe 2. Oil pump solenoid valve damaged (repeated ignition). 3. Flame detection damage or lens blackening. 	<ol style="list-style-type: none"> 1. Check if the oil pump inlet is securely installed. 2. Replace the oil pump solenoid valve and replace the oil pump plug wire. 3. Clean the lens or replace the flame detector.
Green light flashes 5 times	1. Lack of water.	<ol style="list-style-type: none"> 1. Check if there is water entering the water pump; Check if the flow switch is damaged
Green light flashes 6 times	<ol style="list-style-type: none"> 1. Main motor overheating protection 2. The temperature of the water pump oil tank is too high. 	<ol style="list-style-type: none"> 1. Manually reset the thermal overload in the control box and check if the motor is damaged. 2. Check if there is emulsification in the engine oil tank, replace the water seal and oil seal, and change the engine oil.

CIRCUIT DIAGRAM



WARRANTY CARD

Model No.: _____

Customer: _____

Address: _____

Phone No.: _____

Sales phone number: _____

POWER@HORSE™