

# BE

## ELECTRIC HOT WATER PRESSURE WASHER



User Manual

HW152EMD  
HW204EMD

**BEPOWEREQUIPMENT**

**.COM**



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**Attention: Read through the complete manual prior to the initial use of your Pressure Washer**

### Using the Operator's manual

The operating manual is an important part of your Pressure Washer. It should be read thoroughly before initial use, and referred to often to make sure adequate safety and service concerns are being addressed.

Reading the owner's manual thoroughly will help avoid any personal injury or damage to your pump. By knowing how best to operate this machine you will be better positioned to show others who may also operate the unit.

You can refer back to the manual at any time to help troubleshoot any specific operating functions, so store it with the machine at all times.

### Record Identification Numbers

#### Pressure Washer

If you need to contact an Authorized Dealer or Customer Service line (1-866-850-6662) for information on servicing, always provide the product model and identification numbers.

You will need to locate the model and serial number for the pump and record the information in the places provided below.

<b>Date of Purchase:</b>
<b>Dealer Name:</b>
<b>Dealer Phone:</b>

<b>Product Identification Numbers</b>
<b>Model Number:</b>
<b>Serial Number:</b>

Save these Instructions

SAFETY RULES












This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

The safety alert symbol (▲) is used with a signal word (DANGER, CAUTION, WARNING), a pictorial and/or a safety message to alert you to hazards.

<b>DANGER</b> indicates a hazard which, if not avoided, will result in death or serious injury.
<b>WARNING</b> indicates a hazard which, if not avoided, could result in death or serious injury.
<b>CAUTION</b> indicates a hazard which, if not avoided, might result in minor or moderate injury.
<b>NOTICE</b> indicates a situation that could result in equipment damage. Follow safety messages to avoid or reduce the risk of injury or death.

Hazard Symbols and Meanings

 EXPLOSION	 FIRE	 HOT SURFACE	 MOVING PARTS
 FLYING OBJECTS	 ELECTRIC SHOCK	 TOXIC FUMES	 INJECTION

<b>▲ WARNING</b>	
	Serious injury or death could occur if the pressure washer is not properly grounded. Your pressure washer is powered by electricity and may cause electric shock or electrocution if not used properly.
	Electrical shock may occur from electrical cord.
	Electrical shock may occur if pressure washer is not operated properly.
<p>Serious injury or death may occur if electrical repairs are attempted by unqualified persons.</p> <ul style="list-style-type: none"> <li>▪ This product must be grounded. Make sure the pressure washer is equipped with a GFCI built into the power supply cord. If this is not available, the pressure washer must be plugged into a receptacle that is protected by a GFCI. Disconnect when not in use.</li> <li>▪ If your unit is equipped with a GFCI, DO NOT drop the GFCI as damage could result. If the GFCI is accidentally dropped, be certain to test the GFCI before using to ensure it is working properly. (Follow instructions on GFCI for test procedures.) Always be certain the unit is receiving proper voltage. Before plugging the unit into a compatible power source, be certain the switch is in the "OFF" position. Disconnect when not in use.</li> <li>▪ Do not modify plug provided with the product. If it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adapter.</li> <li>▪ Check power cord for signs of crushing, cutting or heat damage. If replacement of plug or cord is needed, use only identical replacement parts.</li> <li>▪ Do not use extension cords with this pressure washer.</li> <li>▪ Keep all connections dry and off the ground. Do not allow electrical cords to lay in water or in such a position where water could come in contact with them. Do not touch plug with wet hands.</li> <li>▪ Do not pull on the electrical cord to disconnect from the outlet.</li> <li>▪ Do not direct spray on or into electrical installations of any kind! This includes electrical outlets, light bulbs, fuse boxes, transformers, the unit itself, etc.</li> <li>▪ Do not allow metal components of the pressure washer to come in contact with live electrical components.</li> <li>▪ Never operate the pressure washer with safety guards/covers removed or damaged.</li> </ul>	

- Any electrical wiring or repairs performed on this pressure washer should be done by Authorized Service Personnel in accordance with National and Local electrical codes.
- Before opening any electrical enclosure, always shut off the pressure washer, relieve pressure and unplug the pressure washer from the power source. Allow the pressure washer to cool down. Never assume the pressure washer is safe to work on just because it is not operating. It could restart at any time! Service in a clean, dry, flat area.

**⚠ WARNING**



Serious injury or death may occur from normal sparks in the multiple ignition sources or burner exhaust.



Injury or death may occur as a result of improper fueling.

Serious injury or death may occur if system safety's are not properly maintained.

- Always operate pressure washer in a well ventilated area free of flammable vapors, combustible dust, gases or other combustible materials.
- Do not store the pressure washer near an open flame or any equipment such as a stove, furnace, water heater, etc., which utilizes a pilot light or sparking device.
- Do not use this pressure washer to spray flammable material!
- Do not smoke while filling burner fuel tank.
- Never fill the burner fuel tank while the pressure washer is running or hot. Allow to cool two minutes before refueling.
- Always refuel slowly to avoid the possibility of spilled fuel which may cause a risk of fire.
- Do not refuel indoors or in a poorly ventilated area.

**Burner Fuel Tank:**

- Use No. 1 or No. 2 fuel oil/diesel or kerosene. Do not use gasoline, crankcase drainings or oil containing gasoline or solvents.
- Do not operate the unit if diesel fuel is spilled. Wipe the pressure washer clean and move it away from the spill. Avoid creating any ignition until the diesel fuel has evaporated.
- This pressure washer has a Safety Relief device which should never be altered, modified, removed or made inoperative. If the device fails, replace immediately with only genuine manufacturer replacement part.

**⚠ WARNING**



Serious injury or death may occur from inhaling burner exhaust or dangerous vapors.


- Never operate this pressure washer in an enclosed area. Always make certain there is adequate ventilation (fresh outside air) for breathing and combustion. This will prevent the buildup of dangerous carbon monoxide gases. Beware of poorly ventilated areas, or areas with exhaust fans which can cause poor air exchange.
- Follow all safety instructions provided with the materials you are spraying. Use of a respirator may be required when working with some materials. Do not use this pressure washer to dispense hazardous detergents.


**⚠ WARNING**





Serious injury or death could occur from high pressure spray penetrating the skin.

- Keep clear of nozzle and spray! Never put your hand, fingers or body directly over the spray nozzle.
- Do not direct discharge stream at persons or self.
- This product is to be used only by trained operators.
- Always keep operating area clear of all persons.
- Close supervision is necessary when used near children. **DO NOT** allow children to operate this unit!
- **SEEK EMERGENCY MEDICAL CARE** if the spray appears to have penetrated the skin! **DO NOT TREAT AS A SIMPLE CUT!!**
- High pressure hoses and fuel lines should be inspected daily for signs of wear. If evidence of failure exists, promptly replace all suspect hoses and fuel lines to prevent the possibility of injury from the high pressure spray. If a hose or fitting is leaking, **NEVER PLACE YOUR HAND DIRECTLY ON THE LEAK.**
- **NEVER** operate the gun with the trigger wired in the open position. To prevent accidental discharge, the trigger gun should be securely locked when not in use.
- Before removing the spray nozzle or servicing the unit, **ALWAYS** shut off the unit and trigger the gun to release trapped pressure. (Even after you shut off the unit, there is high pressure water left in the pump, hose and gun until you release it by triggering the gun.)

<b>⚠ WARNING</b>	
	Serious injury may occur from touching the heat exchanger. This area can remain hot for some time after the pressure washer is shutdown.
<ul style="list-style-type: none"> <li>▪ Never allow any part of your body to contact the heat exchanger.</li> <li>▪ Do not leave unit unattended after shutdown until it is completely cooled down as described in the "SHUTDOWN" procedures listed on page 25 of this manual.</li> </ul>	

<b>⚠ WARNING</b>	
	<p>Serious injury may occur from a pressure washer malfunction or exploding accessories if incorrect system components, attachments or accessories are used.</p> <p>Serious injury or death may occur if attempting to start the pressure washer when the pumping system is frozen.</p>
<ul style="list-style-type: none"> <li>▪ Never make adjustments to the factory set pressures.</li> <li>▪ Never exceed manufacturers maximum allowable pressure rating of attachments.</li> <li>▪ Do not allow any hoses to make contact with heat exchanger to prevent the possibility of bursting. Avoid dragging the hoses over abrasive surfaces such as cement.</li> <li>▪ Use only manufacturer recommended repair parts for your pressure washer.</li> <li>▪ In freezing temperatures, the unit must always be warm enough to ensure there is no ice formation in the pump. Do not start the pressure washer if it has been transported in an open or under heated vehicle without first allowing the pump to thaw.</li> </ul>	

<b>⚠ WARNING</b>	
	Serious injury may occur to the operator from moving parts on the pressure washer.
<ul style="list-style-type: none"> <li>▪ Never make adjustments to the unit while it is connected to the power source.</li> <li>▪ Do not operate the unit without all protective covers in place.</li> <li>▪ Follow the maintenance instructions specified in the manual.</li> </ul>	

<b>⚠ WARNING</b>	
	<p>Serious injury or death may occur from detergents contacting the skin.</p> <p>Serious injury can occur from loose debris being propelled at a high speed from the spray gun.</p> <p>Injury may occur if the operator loses his balance caused by the thrust of water traveling through the spray nozzle.</p> <p>Injury may occur from the pressure washer.</p>
<ul style="list-style-type: none"> <li>▪ <b>SEEK EMERGENCY MEDICAL CARE</b> if you are using cleaning agents and the spray appears to have penetrated the skin! <b>DO NOT TREAT AS A SIMPLE CUT!</b> Be prepared to tell a physician exactly what kind of detergents you were using by reading the Material Safety Data Sheet (MSDS) provided with your detergent.</li> <li>▪ Never use any solvents or highly corrosive detergents or acid type cleaners with this pressure washer.</li> <li>▪ Protective equipment such as rubber suits, gloves and respirators are advisable, especially when using cleaning detergents.</li> <li>▪ Keep all detergents out of the reach of children!</li> <li>▪ <b>ALWAYS</b> wear protective goggles when operating the unit to shield the eyes from flying debris and detergents.</li> <li>▪ <b>DO NOT</b> direct spray toward fragile materials such as glass for shattering could occur.</li> <li>▪ If the pressure washer is equipped with an Auto start/stop feature, the unit will shutdown until the gun is triggered. To prevent accidental high pressure discharge, do not leave unit unattended while in this mode.</li> <li>▪ Stay alert-watch what you are doing. Do not operate the unit when fatigued or under the influence of alcohol or drugs.</li> <li>▪ <b>NEVER</b> squeeze the trigger unless securely braced.</li> <li>▪ <b>DO NOT</b> overreach or stand on unstable support. Keep good footing and balance at all times.</li> <li>▪ Wet surfaces can be slippery, wear protective foot gear and keep good footing and balance at all times.</li> <li>▪ <b>NEVER</b> trigger the gun while on a ladder or roof.</li> <li>▪ <b>ALWAYS</b> hold on firmly to the gun/lance assembly when starting and operating the unit. Failure to do so can cause the lance to fall and whip dangerously.</li> </ul>	

### WARNING

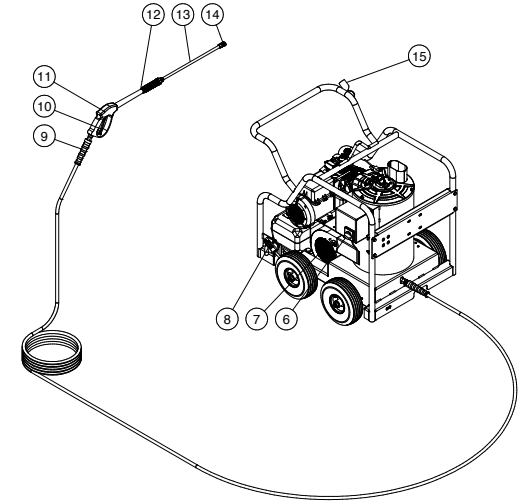
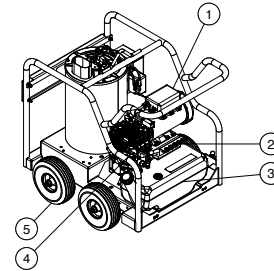
- Know how to stop the pressure washer and bleed pressures quickly. Be thoroughly familiar with controls.
- DO NOT leave pressurized unit unattended. Shut off the pressure washer and release trapped pressure before leaving.
- DO NOT operate the unit if you see any fuel, oil or water leaks from the machine. DO NOT resume operation until the unit has been inspected and repaired by a qualified service person.
- Place unit in a clean, dry, flat area for servicing. Before servicing the unit: turn the unit off, relieve the water pressure from the trigger gun, and allow the unit to cool down. Service in clean, dry, flat area. If applicable, block wheels to prevent unit from moving.
- Do not move the unit by pulling on the hose.



## WARNING

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov). Wash hands after handling.

### Features



1. TEFC Pump Motor
2. Spray Nozzle Holder
3. Burner Fuel Tank
4. High Pressure Pump w/Unloader
5. Flat Free Wheels
6. Switch-On/Off/Burner
7. Burner Air Regulation
8. Brake

9. High Pressure Hose
10. Trigger Safety Lock
11. Trigger Gun
12. Insulated Lance
13. Lance
14. Spray Nozzle
15. Wand Holder

**Installation & Preparation**

**ATTIRE**

Proper attire is essential to your safety. It is advised to utilize whatever means necessary to protect eyes, ears, and skin. Additional safety attire (such as respiratory mask) may be required when using detergent cleaning agents with this washer.

**SET-UP**

1. This unit should only be placed on a level surface to ensure proper lubrication for the water pump while operating. NEVER spray water directly on the unit.
2. Do not use unit in an area:
  - a. with insufficient ventilation.
  - b. where there is evidence of oil or fuel leaks.
  - c. where flammable gas vapors may be present.
3. Engage brake to prevent the unit from moving while operating.
4. Do not allow the unit to be exposed to rain, snow or freezing temperatures. If any part of the unit becomes frozen, excessive pressure may build up in the unit which could cause it to burst resulting in possible serious injury to the operator or bystanders.
5. Pump oil level should be checked before each use. Make certain the oil is on the "Full" mark on the dipstick or in the center of the oil sight glass. If the level appears to be low, fill with SAE20 or 30 non-detergent pump oil.

<b>DANGER</b>	
	DO NOT PLACE UNIT IN AN AREA WHERE FLAMMABLE GAS VAPORS MAY BE PRESENT. A SPARK COULD CAUSE AN EXPLOSION OR FIRE! DO NOT STORE/OPERATE UNIT IN FREEZING ENVIRONMENTS!

<b>WARNING</b>	
	DO NOT OPERATE IN AN ENCLOSED AREA. USE THIS PRODUCT ONLY IN WELL VENTILATED AREAS! THE EXHAUST CONTAINS CARBON MONOXIDE, A POISONOUS, ODORLESS AND INVISIBLE GAS. BREATHING THIS GAS CAN CAUSE SERIOUS INJURY, ILLNESS & POSSIBLE DEATH.

**POWER CORD CONNECTION**

<b>DANGER</b>	
	THIS UNIT MUST BE CONNECTED TO A PROPERLY GROUNDED OUTLET. DO NOT USE AN ADAPTER OR REMOVE THE THIRD GROUNDING PRONG.

1. Make certain the motor switch is in the "OFF" position.
2. Ensure electrical supply is identical to the specifications listed on the pressure washer data plate.
3. **GROUNDING INSTRUCTIONS:** 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 and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.
4. **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 - 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.
5. **GROUND FAULT CIRCUIT INTERRUPTER PROTECTION:**
  - a. **SINGLE PHASE:** If this pressure washer is provided with a Ground Fault Circuit Interrupter (GFCI) built into the plug or the power supply cord, test the GFCI each time it is plugged into an outlet according to instructions on the GFCI. DO NOT use the pressure washer if the test fails! The GFCI provides additional protection from the risk of electric shock. Should replacement of the plug or cord become necessary, use only identical replacement parts that include GFCI protection.
  - b. **SINGLE PHASE:** If this pressure washer is not provided with a GFCI, this pressure washer should only be connected to a receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI) to comply with the National Electric Code (NFPA 70) and to provide additional protection from the risk of electric shock.
  - c. **THREE PHASE:** These pressure washers are not provided with GFCI protection.

6. **EXTENSION CORDS:THE MANUFACTURER DOES NOT RECOMMEND THE USE OF EXTENSION CORDS!** If use of an extension cord is unavoidable, it must be plugged into a GFCI found in circuit boxes or protected receptacles. When using an extension cord, consult a qualified electrician to determine the proper wire gauge needed for the length of the extension cord.  
**SINGLE PHASE:** Use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from the product.  
**THREE PHASE:** Use only 4 wire extension cords that have 4-prong grounding type plugs and 4-pole cord connectors that accept the plug from the product.  
 Use only extension cords that are intended for outdoor use. These extension cords are identified by a marking "Acceptable for use with outdoor appliances; store indoors while not in use." Use only extension cords having an electrical rating not less than the rating of the product. Do not use damaged extension cords. Examine extension cord before using and replace if damaged. Do not abuse extension cord and do not yank on any cord to disconnect. Keep cord away from heat and sharp edges. Always connect and disconnect the extension cord from the receptacle before connecting and disconnecting the product from the extension cord.
7. Ensure the area between the pressure washer cord and outlet is kept dry.
8. Insert the male plug into a grounded AC outlet. **DO NOT** use an adapter **OR** remove the grounding plug!!

<b>WARNING</b>	
	TO REDUCE THE RISK OF ELECTROCUTION, KEEP ALL CONNECTIONS DRY AND OFF THE GROUND. DO NOT TOUCH PLUG WITH WET HANDS.

**BURNER FUEL TANK**

<b>DANGER</b>	
	DO NOT SMOKE WHILE FUELING! DO NOT FILL THE FUEL TANK WHILE UNIT IS RUNNING OR HOT. ALLOW UNIT TO COOL FOR TWO MINUTES BEFORE RE-FUELING. DO NOT FILL FUEL TANK TO POINT OF OVERFLOWING. ALLOW APPROXIMATELY 1/4" OF TANK SPACE FOR FUEL EXPANSION. ALWAYS STORE FUEL AWAY FROM THE WASHER WHILE THE UNIT IS RUNNING OR HOT.

1. Review "Risk of Explosion or Fire" pg. 8, before fueling.
2. Locate the Safety Decals on your unit and heed their warnings.
3. Fill the burner fuel tank with good quality, clean No. 1 or No. 2 fuel oil diesel or kerosene. Do not use gasoline!

**NOZZLE REVIEW**

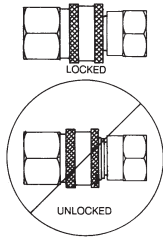
Various nozzles may be quick-connected into the end of the wand to change the spray pattern or use the detergent feature. When using Quick Connects (Q.C.), be certain the connection is securely locked. If not, the high pressure water may shoot the nozzle from the wand, causing severe injury or serious damage. To determine spray fan, refer to the actual number stamped on the nozzle. The first two digits indicate the spray fan in degrees, i.e.; 00=0°, 15=15°, 40=40°.

1. The 0° nozzle (RED): This is a blasting nozzle. It delivers a very concentrated stream of water. Be cautious when using the straight narrow stream. It is not recommended for use on painted or wood surfaces, or items attached with adhesive backings. Uses: Removing weeds from sidewalk cracks, stubborn stains from concrete, masonry, aluminum and steel, caked mud from equipment, and cleaning lawn mower undersides.
2. The 15° nozzle (YELLOW): This is a chiseling nozzle. The spray should be directed at a 45° angle to the surface and used like a scraper to remove paint, grease and dirt. Uses: Surface preparation (removing mildew stains and paint chips).
3. The 40° nozzle (WHITE): This is a wash nozzle. This wide spray pattern disperses the water pressure over a large area and is recommended for moderate washing. Uses: Washing aluminum siding, cleaning windows, washing vehicles, spraying sidewalks, driveways, and patios.

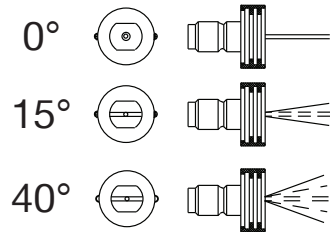
**⚠ WARNING**

NEVER LOOK DIRECTLY AT THE NOZZLE ORIFICE UNLESS IT IS DISCONNECTED FROM THE GUN/WAND ASSEMBLY!

**CONNECTION OF Q.C. NOZZLES**

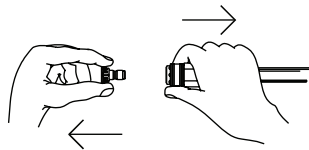


**QUICK-CONNECT (Q.C.)**



**NOZZLE CONNECTION**

1. Be certain the trigger gun is locked in the “OFF” position.
2. The nozzle assembly should be disconnected from the gun/wand assembly at this by retracting the locking ring on the quick-connect fitting to remove the nozzle.



**WATER SUPPLY**

**⚠ WARNING**

THE TRIGGER GUN SHOULD ALWAYS BE LOCKED IN THE OFF POSITION WHEN NOT IN USE!

1. Select a water supply hose which is a quality grade of garden hose measuring at least 3/4” ID and no longer than 50 feet.
2. Check the water inlet strainer to ensure it is clean and free of any obstructions. As a strainer becomes obstructed, it restricts proper flow of water to the pump. This can result in cavitations which will prematurely cause failure of pump packings.
  - a. Using a screwdriver, remove the screen from the water inlet.
  - b. Clean or replace if necessary.
3. Connect the hoses.
  - a. Connect one end of the water supply hose to the water inlet of the unit.
  - b. Connect the other end of the hose to your pressurized water supply.

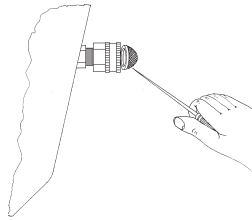
**NOTICE**

- Do not use a non-pressurized water supply (i.e. from a pond or well) with this unit.
- When connecting the water inlet to the water supply mains, local regulations of your water company must be observed. In some areas, the unit must not be connected directly to the public drinking water supply. This is to ensure there is no feedback of detergents into the water supply. (Direct connection is permitted if a back flow preventer is installed. Check with local authorities for approval.)
- If there is a high mineral content in your water, it is highly recommended that a water softener and an additional water strainer be added to the water inlet to help prevent the possibility of excessive scale buildup inside the heat exchanger coil. Clean both strainers before starting your pressure washer.

4. Follow the incoming water requirements listed below:
  - a. Water pressure must be a minimum of 20 pounds per square Inch (PSI) and a maximum of 125 PSI. (A typical outdoor faucet will generally supply this PSI if turned completely “ON”.)
  - b. Incoming GPM must be approximately one gallon more than the outgoing GPM stated on the pressure washer nameplate. (You can check GPM by timing how long it takes to fill a 5 gallon container.)
  - c. Incoming water temperature must not exceed 125°F. Excessive pump damage may result if the water temperature exceeds this acceptable level.

- Never allow the unit to operate without the incoming water line attached and the water supply is completely turned on.

### WATER INLET STRAINER



### UNLOADER

Standard Models: The unloader has been preset at the factory.

### THERMAL RELIEF VALVE

To ensure the water temperature does not exceed acceptable levels, never allow the pressure washer to operate in the bypass mode (with the unit running and the trigger closed) for more than three minutes. A thermal relief valve has been added to this unit to protect the pump. This valve will open and release water if the water temperature in the pump has exceeded 140° F. This will allow fresh, cool water to enter the system, therefore preventing premature failure of pump packings.

### PRE-START INSPECTION PROCEDURES

Before starting the unit, perform the following procedures:

- Inspect the electrical cords for cuts. If a cut is found, **DO NOT TOUCH OR USE CORD!** Replace cord before starting unit.
- Check the oil level in the pump.
- Inspect the water inlet strainer. Clean or replace if necessary. See “Water Supply”, #2.
- Check all hose connections to ensure they are securely tightened.
- Inspect for system water leaks, oil leaks and fuel leaks. If a fuel leak is found, **DO NOT START UNIT!** See “Risk of Explosion or Fire”, pg. 8. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.
- Inspect high pressure hoses for kinking, cuts and leaks. If a cut or leak is found, **DO NOT USE HOSE!** Replace hose before starting unit. See “Risk of Injection or Severe Cutting Injury”, pg. 9. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.

### Operating Instructions

#### FLUSHING THE SYSTEM

This unit has a steel coil which, after setting, will cause the water remaining in the coil from the previous usage to turn brown or black. This water must be flushed from the system before start-up. This procedure should be performed without the high pressure hose, gun and lance assembly installed.

- Turn on the water supply.
- Low pressure water will begin flowing from the water outlet. This allows the unit to flush any particles from the system. The unit is flushed when the water is clear.
- Once the system is flushed, turn off the water supply and connect the high pressure hose to the water outlet of the unit.
- Connect the trigger gun and lance assembly to the high pressure hose.
- Turn on the water supply.

#### **CAUTION**

BE CERTAIN THE HOSE, GUN & LANCE ASSY. ARE NOT CONNECTED TO THE UNIT WHILE PRIMING THE PUMP. PRIMING ALLOWS MINERAL DEPOSITS TO BE RELEASED FROM THE SYSTEM WHICH WOULD OBSTRUCT OR DAMAGE THE GUN AND NOZZLE ASSEMBLY RESULTING IN COSTLY REPAIRS.

#### START-UP/COLD WATER OPERATION

#### **WARNING**

KEEP CLEAR OF NOZZLE! NEVER PLACE HAND OR FINGERS IN FRONT OF NOZZLE!  
DO NOT DIRECT DISCHARGE STREAM AT PEOPLE OR PETS!  
AUTO START/STOP FEATURE WILL SHUTDOWN THE PRESSURE WASHER UNTIL GUN IS TRIGGERED. TO PREVENT ACCIDENTAL HIGH PRESSURE DISCHARGE, DO NOT LEAVE UNIT UNATTENDED WHILE IN THIS MODE.

1. Refer to the "Safety Precautions" pgs. 7-12 before starting the unit.
2. Locate the Safety Decals on your unit and heed their warnings.
3. Ensure that the switch is in the "OFF" position.
4. Pointing the trigger gun in a safe direction, unlock the trigger gun and squeeze the trigger. Brace yourself for possible gun kickback when the pump starts.
5. Move the switch to the "Pump" position.
6. Once the unit has started, perform the following procedures with the gun open:
  - a. Inspect for system water leaks, oil leaks and fuel leaks. If a fuel leak is found, **TURN UNIT OFF IMMEDIATELY!** See "Risk of Explosion or Fire", pg. 8. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.
  - b. Inspect high pressure hoses for kinking, cuts and leaks. If a cut or leak is found, **DO NOT TOUCH HOSE AT LEAK!!! TURN UNIT OFF IMMEDIATELY!** Replace hose before starting the unit. See "Risk of Injection or Severe Cutting Injury" pg. 9. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.
7. At this point, the unit is operating as a cold water pressure washer. Trigger the gun several times and try adjusting the water pressure by rotating the grip on the lance. **NEVER** place hand or fingers in front of the nozzle or look directly into the nozzle! High pressure water creates a risk of severe injury!
8. Do not allow unit to operate in bypass mode (with trigger closed) for more than three minutes without triggering the gun. Failure to follow this simple rule can cause premature failure of pump packings.
9. Your pressure washer can deliver high pressure spray and a variety of spray patterns using cold water. If you wish to use the Hot Water, Steam application or Cleaning with Detergents, for the correct procedures.

**⚠ CAUTION**

DO NOT ALLOW SPRAY PATTERN TO REMAIN ON A FIXED AREA FOR AN EXTENDED PERIOD OF TIME. POSSIBLE DAMAGE MAY OCCUR TO THE AREA.

**HOT WATER OPERATION**

**⚠ WARNING**

THE WATER TEMPERATURE COULD BECOME VERY HOT DURING HOT WATER OPERATION. BE CAUTIOUS WHEN ADJUSTING PRESSURE OR CONTROLLING THE TRIGGER GUN/ LANCE ASSEMBLY.

1. Follow the steps 1-8 outlined for "START-UP/COLD WATER OPERATION".
2. Move the switch to the "Burner" position. On initial start-up, water will begin turning hot in approximately 20 seconds and will reach maximum temperature in approximately 2-1/2 minutes, provided the trigger remains squeezed. The burner will stop firing when the trigger is released.

At this point, the unit is operating as a hot water pressure washer. Be extremely cautious when adjusting the pressure and controlling the trigger gun/ lance assembly to avoid the possibility of burns.

**NOTICE**

While spraying, it is normal for the burner to fire intermittently. The high limit switch will cause combustion to cease when the temperature of the discharged water exceeds the temperature setting of the switch. Combustion will begin again when the water temperature drops below the minimum setting .

**STEAM OPERATION (IF APPLICABLE)**

1. Follow steps 1-8 outlined for "STARTUP/COLD WATER OPERATION".
2. Ensure the quick-connect at the end of the lance is cool enough to touch, then remove the high pressure nozzle and replace it with the steam nozzle. Remove the high pressure hose and replace it with the steam hose.
3. Turn unloader knob completely counterclockwise to the minimum setting.
4. Turn the switch to "Steam".

At this point, the unit is operating as a steam pressure washer. Be extremely cautious when adjusting the pressure and controlling the trigger gun/ lance assembly to avoid the possibility of burns.

**NOTICE**

The burner will shut down if the switch is moved to “Steam” without first setting the unloader to minimum or operating in the high pressure mode.)

**CLEANING WITH DETERGENTS UNDER LOW PRESSURE****NOTICE**

This feature is designed for use with mild detergents only. Since the cleaning solution travels through the heat exchanger coil, DO NOT use corrosives as they will cause extensive damage as well as pose a considerable safety hazard.

1. Prepare detergent solution according to label directions. Never pump acids, alkaline, abrasive fluids or solvents through the unit.
2. Adjust the amount of detergent desired by locating the adjustment knob at the end of the clear vinyl hose. Turn the knob completely counterclockwise to set at maximum siphon rate.
3. Fully immerse the detergent strainer into the detergent solution.
4. With the trigger gun locked in the “OFF” position, securely quick-connect the detergent spray nozzle (#65 40° BLACK) into the end of the wand.
5. To apply solution; unlock the trigger gun and squeeze the trigger. In a few moments a detergent/water mixture will exit the nozzle. Start spraying the lower portion of the surface being cleaned and move up, using long overlapping strokes. Applying from the bottom up helps avoid streaking. Allow to soak briefly. (Avoid working on hot surfaces or in direct sunlight to minimize the chances of the detergent drying, which may result in damaging painted surfaces.) Be certain to rinse a small section at a time.
6. To rinse; lock the trigger gun in the “OFF” position, securely quick-connect the desired high pressure nozzle into the end of the wand. Unlock the trigger gun and spray. It will take about 30 seconds to purge all detergent from the line. For best rinsing results, start at the top and work down.
7. Siphon a gallon of water through the low pressure detergent injection system after each use. This prevents the possibility of corrosion or detergent residue causing mechanical problems during the next use.

**NOTICE**

This injection system is designed to apply detergents under low pressure only. It will not allow detergent solutions to be introduced into the system unless the adjustable nozzle is set in the low pressure mode.

**SHUTDOWN****⚠ WARNING**

TO PREVENT ACCIDENTAL HIGH PRESSURE DISCHARGE, DO NOT LEAVE UNIT UNATTENDED UNTIL “OFF/PUMP/BURNER/STEAM” SWITCH IS IN THE OFF POSITION.

1. Move the switch to the “Pump” position.
2. Squeeze the trigger and discharge the water for a period of three minutes to cool the heat exchanger and high pressure hose. (Insufficient cool down period of the high pressure hose will cause excessive wear and eventual rupturing of the hose.)
3. Move the switch to the “OFF” position.
4. Turn off the water supply and trigger the gun momentarily to relieve trapped pressure.
5. Disconnect and drain the high pressure hose, gun, and lance. Wipe the unit clean and store in a non-freezing environment.

## Storage & Maintenance Instructions

### SPECIFIC MAINTENANCE

**PUMP:** Change the pump oil after the first 50 hours of operation. After initial change, every 3 months or 250 hour intervals are recommended. If oil appears dirty or milky, changes may be required in greater frequency. Use pump oil SAE20 or 30 and fill only to the center of the oil sight glass. **DO NOT** overfill.

**QUICK COUPLERS:** There are o-ring seals inside the couplers which will deteriorate. To replace, simply install a replacement o-ring to correct the leak. (Additional o-rings can be purchased from your dealer.)

**NOZZLE:** Water flow through the spray nozzle will erode the orifice, making it larger, resulting in a pressure loss. Nozzles should be replaced whenever pressure is less than 85% of the maximum. The frequency of replacement will depend upon such variables as mineral content in the water and number of hours the nozzle is used.

**BURNER AIR ADJUSTMENT:** The air shutter has been factory preset for proper operation between sea level and 2000 feet elevation at standard conditions (60°F ambient water and air temperatures). To assure maximum combustion efficiency at colder temperatures and higher altitudes, it will be necessary to adjust the air supply to the combustion chamber. A smoke spot test is recommended during any air shutter adjustment. This will aid in maximizing the burner efficiency and avoid the inefficient operation and excessive sooting of the combustion chamber.

1. The machine must be running and the burner on.
2. Take a smoke spot test to determine if more or less air is required for proper combustion.
  - a. If the test is greater than a #3 smoke, turn the shutter arm counterclockwise to increase the air flow into the combustion chamber.
  - b. If the test is yellowish in color, turn the shutter arm clockwise to decrease the air flow into the combustion chamber.
3. Hold onto the air shutter adjusting arm and loosen the locking nut. Move the shutter in 1/8" increments and retighten the locking nut after each 1/8" movement.
4. Trigger the gun on and off slowly to make sure there is proper ignition. Slight or no puffing on the ignition, and a smoke spot test of 0-3 is good.
5. Repeat steps 2 and 3 until step 4 is attained.

**LEAKS:** Promptly eliminate any leaks found in the pumping system by removing suspect parts, applying thread sealant to the threads and reinstalling.

### NOTICE

If using Teflon tape, be certain no tape gets inside any plumbing to prevent the possibility of a plugged spray nozzle.

### WINTERIZING

1. For storage and transportation purposes in subfreezing ambient temperatures, it will be necessary to winterize this unit. This unit must be protected to the lowest incurred temperature for the following reasons:
  - a. If any part of the pumping system becomes frozen; excessive pressure may build up in the unit which could cause the unit to burst resulting in possible serious injury to the operator or bystanders.
  - b. The pumping system in this unit may be permanently damaged if frozen. **FREEZE DAMAGE IS NOT COVERED BY WARRANTY.**

If you must store your unit in an area where the temperature may fall below 32°F, you can protect your unit by following the procedure outlined below.

1. Gather the following items:
  - a. Two 5 gallon containers.
  - b. One gallon of antifreeze. (Use an environmentally safe antifreeze.)
  - c. Water supply.
  - d. Three foot hose, 1/2-3/4 I.D. with a 3/4 inch male garden hose fitting.
2. Procedure:
  - a. To start winterizing, unit must be run according to the "Start-up Cold Water Operation".
  - b. After running, shut off the unit and water supply.
  - c. Relieve system pressure by pointing the trigger gun in a safe direction and squeezing the trigger until water flow ceases to exit the Lance Assy.
  - d. Lock the trigger gun in the OFF position and adjust the Lance to the low pressure mode.
  - e. Remove the water supply hose from the unit and attach the 3 foot hose securely to the inlet connection.
  - f. Shut off the detergent injector (if applicable).
  - g. Fill one 5 gallon container with water.
  - h. Holding the 3 foot hose in an upright position, completely fill the hose with water. Then plug the open end of the hose with your thumb or finger. Place the plugged end into the 5 gallon container of water.
  - i. Start the unit. Trigger the gun several times until all the air is worked out of the system (unit is primed).

- j. With the trigger gun held open, siphon enough water out of the 5 gallon container until there is just enough water left to mix with the antifreeze.
- k. Point the trigger gun into the empty container. (Be certain to wear safety attire for protection from splashing.)
- l. Trigger the gun until the antifreeze begins to exit the trigger gun. Release the trigger for 3 seconds, then trigger the gun for 3 seconds. Continue cycling the trigger gun several times until all the antifreeze mixture is siphoned from the container.
- m. Stop the unit.
- n. Detach the 3 foot hose from the unit and drain any excess antifreeze back into the 5 gallon container storage & maintenance
- o. Disconnect the hose and trigger gun from the unit and drain any excess antifreeze back into the 5 gallon container.
- p. Drain hose, trigger gun and lance assembly and store with the unit in a safe non-freezing area.
- q. Store antifreeze solution for next use or dispose of according to state EPA laws.

**NOTICE**

Proper winterizing is based on the recommended manufacturer's instructions listed on the "Protection Chart" shown on the back label of most antifreeze containers.

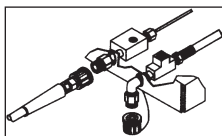
3. OPTIONAL PROCEDURE:

- a. Shut the unit and water supply off.
- b. Relieve system pressure by pointing the trigger gun in a safe direction and squeezing the trigger until water flow ceases to exit the nozzle.
- c. Disconnect and drain the hose, trigger gun and lance assembly.
- d. Remove the coil drain plug from the heat exchanger inlet.
- e. Start the unit and allow it to run until all the water exits the unit. Once the water has stopped flowing from the unit, turn off.

**NOTICE**

When using this procedure, use caution as ice chips can form from drops of water which could cause the unit to burst if starting before completely thawed.

COIL DRAIN PLUG



**MAINTENANCE CHART**

PROCEDURE	DAILY	3 MONTHS	6 MONTHS	9 MONTHS	12 MONTHS
Inspect electrical cord	X				
Test GFCI	X				
Test voltage and amp draw					X
Check water pump oil level	X				
Change water pump oil **		X	X	X	X
Oil leak inspection	X				
Fuel leak inspection	X				
Water leak inspection	X				
Hose inspection	X				
Water inlet filter inspection	X				
Check fuel filter/water separator	X				
Inspect belt		X	X	X	X
Replace high pressure nozzle***		X	X	X	X
Replace fuel filter/water separator					X
Inspect fuel pump filter*					X
Replace fuel nozzle*					X
Check burner air adjustment		X	X	X	X
Check burner electrodes*					X
Test water pressure*		X	X	X	X
Test fuel pressure*		X	X	X	X
Test water temperature*		X	X	X	X
Descale coil****					X

\* Must be performed by an authorized service technician.  
 \*\* The pump oil must be changed after the first 50 hours of operation and every 250 hours or 3 months, whichever comes first.  
 \*\*\* High pressure nozzle should be replaced whenever pressure is less than 85%.  
 \*\*\*\* Scale build-up will vary with mineral content in the water and amount of usage. Descaling can range from weekly to yearly maintenance.

Troubleshooting

TROUBLESHOOTING CHART

SYMPTOM	PROBABLE CAUSE	REMEDY
Pump motor will not run.	Circuit overload.	Check wall breaker or fuse.
	GFCI tripped.	Reset.
	Motor overload.	Reset thermal overload button on pump motor or inside electrical control panel.
	Auto Start/Stop Option in use.	Point gun in a safe direction and squeeze trigger.
No discharge at nozzle when trigger mechanism is squeezed.	Inadequate water supply.	Ensure hose is 3/4" diameter and incoming water supply is turned on.
Low or fluctuating pressure.	Kink in water inlet hose.	Remove kink.
	Kink in high pressure discharge hose.	Replace kinked high pressure hose.
	Water inlet screen obstructed.	Remove screen, clean or replace.
	Pump sucking air. (Prime eliminated)	Tighten all water intake connections Eliminate leaks in intake line.
	Adjustable Grip on Lance is not in high pressure mode.	Turn grip counterclockwise to move to high pressure.
	Obstructed or worn spray nozzle.	Remove, clean or replace.
	Damaged or obstructed valve assy. on pump.	Remove, clean or replace.
	Pump packings worn.	Replace packings.
	Unloader/Bypass valve not operating correctly.	Repair or replace.
	Scale build-up in heat exchanger coil.	Descale coil.
Water is leaking from Thermal Relief Valve.	Water inlet temperature is too high.	Incoming water temperature must be less than 125°.
	Water temperature is too high.	Do not allow unit to operate in bypass mode (with the trigger gun closed) for more than three minutes.
	Defective valve.	Replace.
Oil appears milky or foamy.	Water in oil.	Change pump oil. Fill to proper level.

SYMPTOM	PROBABLE CAUSE	REMEDY
Oil leaking from unit.	Worn seals or o-rings.	Contact Customer Service.
Detergent will not siphon .	Detergent strainer is not completely submerged in detergent solution.	Check, submerge if necessary.
	Detergent strainer obstructed.	Inspect, clean or replace.
	Detergent hose cut, obstructed or kinked.	Inspect, clean or replace.
	Detergent adjusting knob turned to closed position.	Open adjusting knob. Refer to "Cleaning with Detergents".
Detergent will not siphon into the Low Pressure Mode	Adjustable grip on lance is not in low pressure mode.	Turn grip clockwise to move to low pressure
	Too many high pressure hose extensions attached to the water outlet.	Use one extension maximum.
	Nozzle assembly is plugged.	Clean or replace.
	Ball & Spring in Venturi stuck.	Remove, clean or replace.
Water flows back into detergent container.	Check valve missing or corroded.	Remove, clean or replace.
Water flows from the nozzle when the trigger gun is locked in the "OFF" position	Trigger gun is malfunctioning.	Repair or replace.
Water is leaking under heat exchanger coil.	Coil drain plug is not installed.	Install.
	Safety Relief device is relieving caused by an unloader or pressure switch malfunction.	1. Detect and correct unloader or pressure switch problem. 2. Replace safety relief device. NEVER run unit without safety relief device. Doing so can cause an explosion!
Burner will not ignite	Switch is not in "Burner" position.	Check switch position.
	No voltage.	Contact Customer Service.
	Out of fuel.	Refuel. (Reset burner primary control on cad cell options.)
	Fuel pickup screen obstructed.	Consult Service.

SYMPTOM	PROBABLE CAUSE	REMEDY
Burner will not ignite	Trigger gun is closed.	Open trigger gun for pressure.
	Pressure switch override.	Pressure should be over 250 PSI to allow burner to come on.
	High limit switch override.	Unit will automatically reignite when cool.
	Flexible coupler broken.	Replace.
	Dirty or clogged fuel filter/ water sep.	Drain or replace as necessary.
	Fuel pump sucking air.	Tighten all fuel intake connections. Eliminate leaks in intake line.
	Fuel pump inoperative.	Check pressure, replace if needed.
	Dirty or clogged fuel nozzle.	Replace.
	Improper burner air adjustment.	Adjust as explained on page 26.
	Ignition transformer failure.	Replace.
	Ignition electrodes damaged or worn.	With unit running and trigger gun closed, look through burner sight glass to ensure there is sparking across electrodes.
	Fuel solenoid valve failure.	Replace.
	High PSI mode.	Verify Burner/Steam switch is in "Steam" mode.
	Steam Option: Steam Mode.	Verify Burner/Steam switch is in "Steam" mode.
	Cad Cell Option: Steam mode: Pump Head PSI too high.	Reduce pressure to 350PSI.
Burner motor will not run.	Switch is not in "Burner" position.	Check switch position.
	No voltage.	Consult Customer Service.
	Motor overload.	Motor automatically resets when cool.
	Fuel pump seized.	Allow motor to cool. Repair or replace.
	Blower Fan seized.	Allow motor to cool. Repair or replace.

SYMPTOM	PROBABLE CAUSE	REMEDY
Burner runs erratically.	Water in the fuel oil.	Drain fuel filter/water separator. Drain fuel tank, and replace with clean fuel.
	Dirty fuel filter/water separator.	Replace element.
	Dirty fuel nozzle.	Replace.
	Fuel pickup screen obstructed.	Consult Customer Service.
	Improper air adjustment setting.	Adjust as explained on page 26.
	Fuel pump malfunctioning.	Replace.
	Burner runs, but will not heat.	Poor or improper fuel supply.
Low fuel pump pressure.		Check fuel pump pressure, adjust or replace if needed.
Dirty fuel nozzle.		Replace.
Fuel pickup screen obstructed.		Consult Customer Service.
Improper air adjustment setting.		Adjust as explained on page 26.
Scale build up in heat exchanger coil.		Consult your Customer Service.
Burner discharges white smoke.		Low on fuel.
	Poor or improper fuel supply.	Check fuel pump pressure, adjust or replace if needed.
	Dirty fuel nozzle.	Replace.
	Fuel pickup screen obstructed.	Consult Customer Service.
	Improper air adjustment setting.	Adjust as explained on page 26.
	Cold combustion chamber start-up.	Run burner for several minutes.
Burner discharges black smoke.	Excessive air supply.	Adjust as explained on page 26.
	Insufficient air supply.	Adjust as explained on page 26.
	Combustion chamber loaded with unburned fuel.	Consult Customer Service.



## Parts List

## SPECIFICATIONS

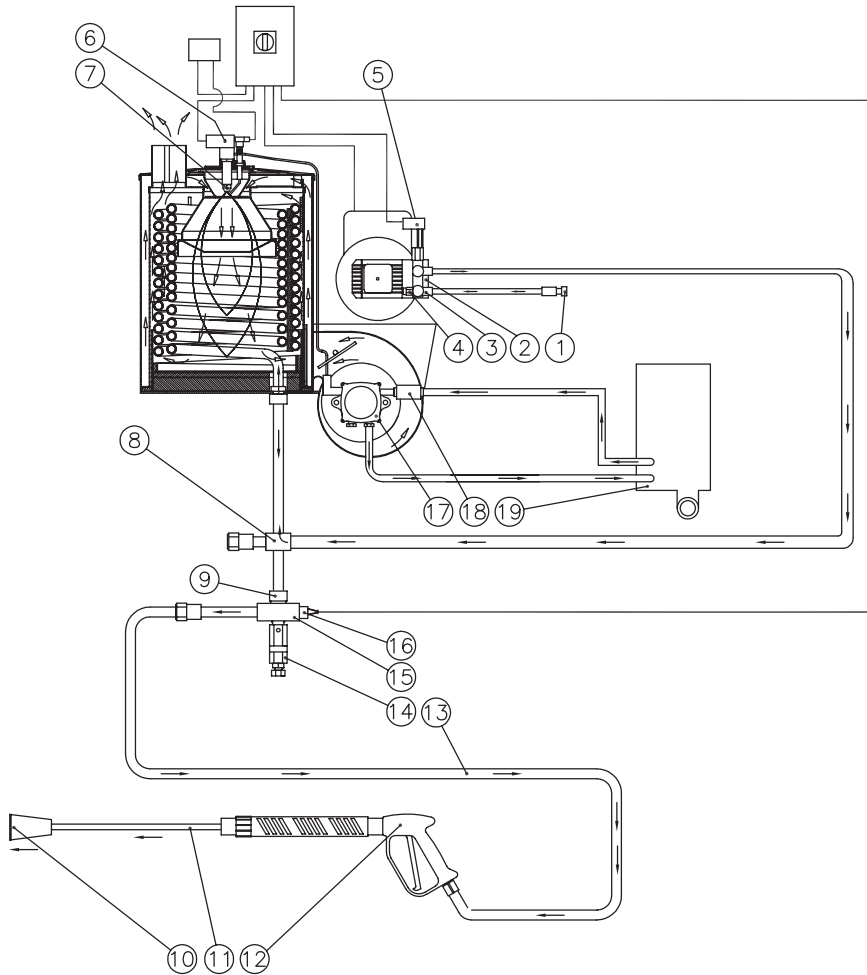
MODEL NUMBER	HW152EMD	HW204EMD
Operating Pressure (PSI/Bar)	1500/103 (+/- 5%)	2000/138 (+/- 5%)
Water Volume (GPM/lpm)	2.0/ 7.6 (+/- 5%)	2.8/ 10.6 (+/- 5%)
Outlet Water Temperature (F/C)	140°F / 60°C (+/- 10°F) rise above inlet ambient (210°F / 99°C maximum)	
Motor:	TEFC	
Horsepower	2.0	4.0
Phase	Single	
Voltage	120	240
Amperage	17.0	16.0
High Pressure Pump:	Direct Driven, Oil Bath, Triplex Piston	
Oil Type	15W20 Detergent	
Oil Capacity (oz./liter)	16.9 / 0.50	
Plungers	Ceramic	
Manifold	Forged Brass	
Valves	Stainless Steel	
Unloader	Preset	
Heat Dump Valve	Relieves heated water during unloader bypass stage	
Detergent Injector:	Adjustable High Pressure	
Burner Fuel System		
Fuel Type	No. 1 or No. 2 Fuel Oil, Diesel or Kerosene	
Fuel Capacity (gal./liters)	4.46 / 16.9	
Fuel Filter	Inline Filter	
Fuel Pump	Two Line, Single Stage	
Fuel Pressure (PSI/BAR)	145 / 10	
Fuel Nozzle	1.00 60° B Delavan	1.25 60° B Delavan
Fuel Consumption	1.21 / 4.58 Cont. Burner	1.48 / 5.54 Cont. Burner
Voltage	120	240
Amps	1.6	0.9
Heat Exchanger:	Vertical, Top Fired, Dual Spiral Coil	
BTU Input	169.000	207.000
Efficiency	86% with #2 Fuel Oil / Diesel	
Smoke Density	0-3 per ASTM D2156	



## SPECIFICATIONS CONT.

MODEL NUMBER	HW152EMD	HW204EMD
Controls:		
On/Off Switch	Industrial grade cam switch	
Pressure Switch	Shuts off burner fuel supply upon trigger release	
High Limit Switch	Shuts off burner fuel supply when outlet water temp. exceeds 210°F / 99°C	
Fuel Solenoid:	120 Volt	240 Volt
Safety Relief:	Relieves excess system pressure	
Unit Net Weight (Lbs/Kg)	299 / 136	316 / 143
Unit Shipping Weight (Lbs/Kg)	422 / 191	439 / 199
Unit Net Dimensions (In/Cm)	43L x 29.5W x 36.5H / 109.5L x 75W x 93H	
Unit Shipping Dimensions (In/Cm)	46.5L x 31.5W x 48.5H / 118L x 80W x 123H	

**FLOW CHART**



**GENERAL THEORY OF OPERATION**

**WATER FLOW:** Connect a pressurized water source to the inlet GARDEN HOSE CONNECTION (1) and turn on the water supply.

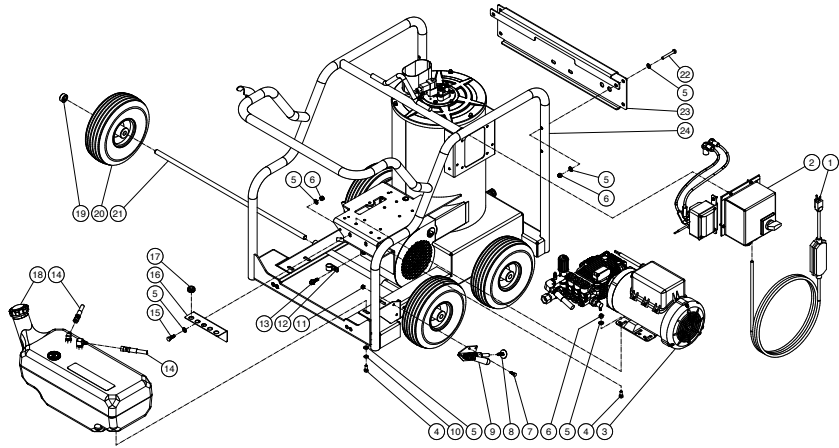
The water then travels into the TRIPLEX HIGH PRESSURE PUMP (2) which has an UNLOADER (3) that bypasses the water when the trigger gun is closed. To protect the pump from heated water during this bypass stage, a HEAT DUMP VALVE (4) will open at 140°F/60°C allowing the heated water to escape. The heat dump valve automatically resets when the water cools. The PRESSURE SWITCH (5) controls the fuel supply to the burner.

From there, the water will flow into the HEAT EXCHANGER INLET (8) where it is heated when the burner is on. As the water exits the HEAT EXCHANGER OUTLET (9), it enters a safety system which protects the operator from danger. The safety system contains a HIGH TEMPERATURE LIMIT SWITCH (16) which senses the water temperature and shuts off the fuel supply to the burner if it gets too hot. If the unloader fails to bypass the water or the burner remains on when the trigger gun is closed, the SAFETY RELIEF (14) will relieve and allow water to exit safely.

The heated water then flows through the HIGH PRESSURE HOSE (13) and to the TRIGGER GUN ASSEMBLY (12) which allows the operator to control the water spray. When the trigger gun is open, the water flows through the LANCE (11) and exits the NOZZLE (10).

**FUEL FLOW:** The fuel pump draws fuel from the FUEL TANK (19) through a replaceable FUEL FILTER (18) and into the FUEL PUMP (17). Fuel exits the fuel pump, into a FUEL SOLENOID VALVE (6) which controls fuel flow to the FUEL NOZZLE (7) where it ignites and burns in the heat exchanger.

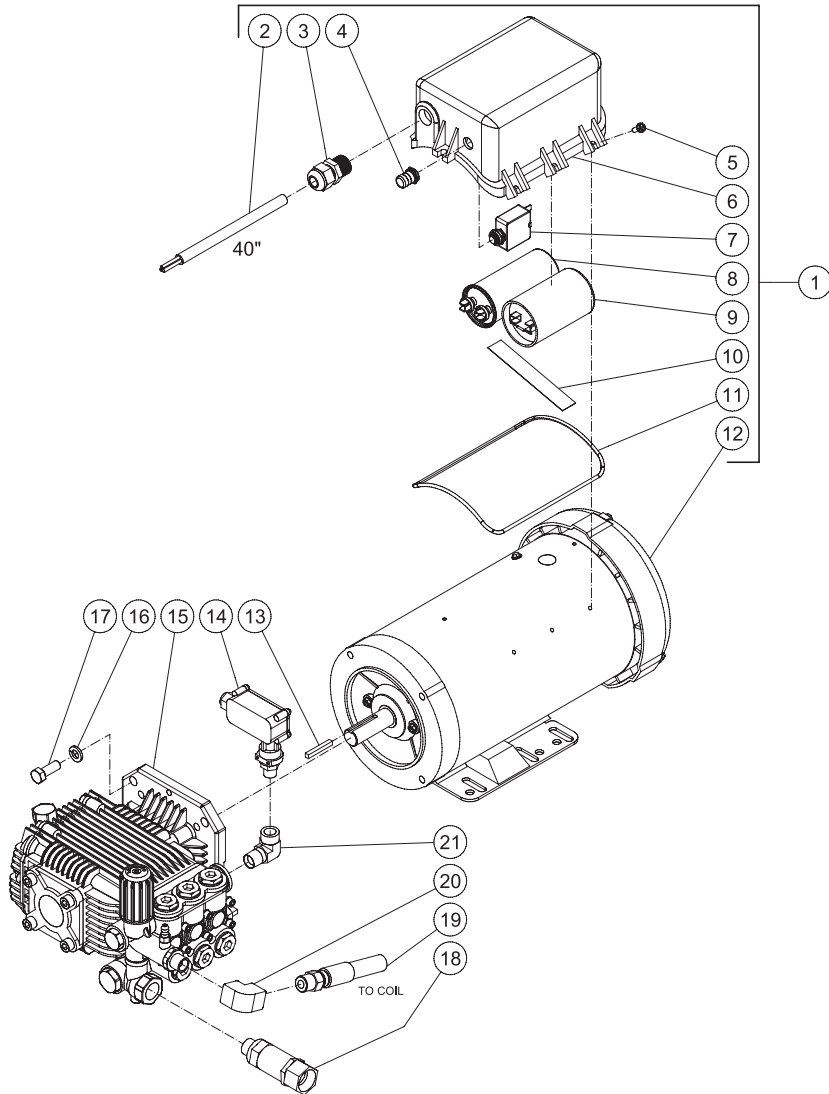
**FRAME ASSEMBLY**



**FRAME ASSEMBLY SPECS**

ITEM	DESCRIPTION	PART #	QTY
1	Electric Cord (1500 PSI)	32-0215	1
-	Electric Cord (1000 PSI)	32-0268	1
-	Electric Cord (2000 PSI)	32-0333	1
2	Electric Box Assembly	N/A	1
3	Motor Pump Assy	N/A	1
4	Bolt	27-0066	8
5	Washer	28-0003	20
6	Locknut	30-0157	10
7	Bolt	27-0015	2
8	Bolt	27-9550	1
9	Push/Pull Toggle Clamp	33-0400	1
10	Lockwasher	29-0007	4
11	Locknut	30-0155	2
12	Hose Clip	42-0052	1
13	Bolt	27-1201	1
14	Fuel Hose	15-0147	2
15	Bolt	27-0067	2
16	Nozzle Holder	20-1276A01	1
17	Grommet	33-0001	5
18	Fuel Tank Assembly	N/A	1
19	Collar	33-0351	4
20	Wheel	14-0130	4
21	Axle	20-0524	2
22	Bolt	27-0072	4
23	Hose Reel Mounting Bracket	20-1395A42	1
24	Heat Exchanger/Blower Motor Assembly	N/A	1

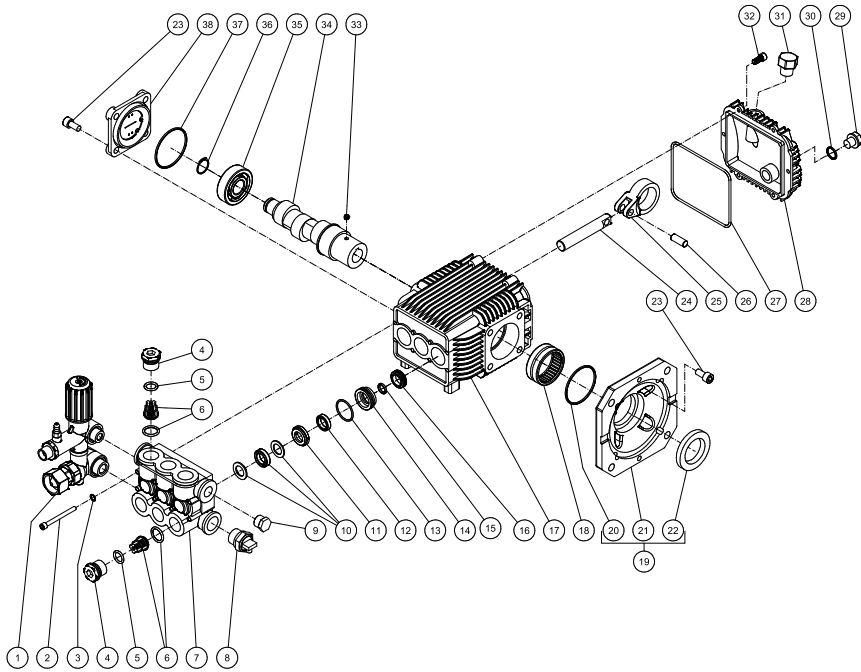
MOTOR/PUMP ASSEMBLY



MOTOR/PUMP ASSEMBLY

ITEM	DESCRIPTION	PART #	QTY
1	Motor Assembly - 1.5Hp (Inc 2-12) (1002)	850-0213	1
-	Motor Assembly - 2.0Hp (Inc 2-12) (1502)	850-0215	1
-	Motor Assembly - 4.0Hp (Inc 2-12) (2000)	850-0216	1
2	Cord *(Four Feet Required)	32-0440	1
3	Strain Relief	32-0437	1
4	Boot, Circuit Breaker	32-0441	1
5	Hwhs-Type F-Zinc #10-32 X 1/2	27-8389	8
6	Motor Conduit & Capacitor Box	52-0041A01	1
7	Circuit Breaker - 25A (1502, 2000)	32-0439	1
-	Circuit Breaker - 20A (1002)	32-0438	1
8	Capaciter - Run 3.0 & 4.0 Hp (W/ Motor) (2000)	32-0450	1
-	Capaciter - Run 1.5 & 2.0 Hp (W/ Motor) (1002, 1502)	32-0413	1
9	Capaciter - Start 3.0 & 4.0 Hp (W/ Motor) (2000)	32-0449	1
-	Capaciter - Start 2.0 Hp (W/ Motor) (1502)	32-0412	1
-	Capaciter - Start 1.5 Hp (W/ Motor) (1002)	32-0411	1
10	Strap - Motor Box	52-0042	1
11	O-Ring	25-0338	1
12	Motor 4.0 Hp Tefc 230V (2000)	N/A	1
-	Motor 1.5 Hp UI-1776 Tefc 120V (1002)	N/A	1
-	Motor 2.0 Hp UI-1776 Tefc 120V (1502)	N/A	1
13	Key 3/16" X 1-3/8"	43-0072	1
14	Press Switch 14 Bar	22-0171	1
15	Pump - Dd Elec 2.5Gpm @ 3000Psi (2000)	3-0420	1
-	Pump - Dd Elec 2.0Gpm @ 2500Psi (1002, 1502)	3-0419	1
16	Lockwasher - Zi Med 3/8	29-0008	4
17	Bolt - Hhcs 3/8-16 X 1	27-0117	4
18	Filter-Inlet 1/2Mx3/4F Garden	19-0206	1
19	Hp Hose - 3/8" X 38" 3000Psi	15-0090	1
20	Elbow 3/8Fnpt	23-0307	1
21	Elbow - 3/8 Mnpt X 1/4 Fnpt	24-0004	1
*MUST ORDER IN ONE FOOT LENGTHS			

**PUMP ASSEMBLY**



TORQUE SPECS.	
Position	FT-LBS
2	11
3	37
22	18
31	7.4

**PUMP ASSEMBLY**

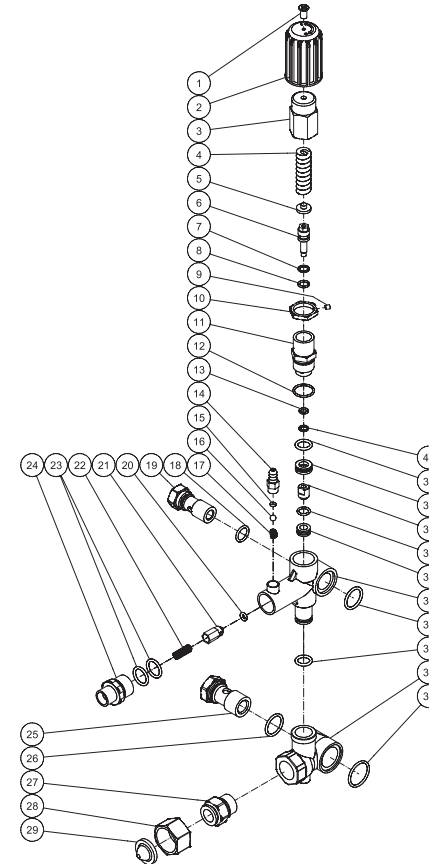
ITEM	DESCRIPTION	PART #	QTY
1	Danau Unloader With Chem Inj.	8-0628	1
2	Bolt	27-0898	8
3	Washer	28-0203	8
4	Valve Plug	39-0231	6
5	O-Ring	25-0622	6
6	Valve Assembly	70-0502	6
7	Manifold Head	46-1503	1
8	Relief Valve	22-0005	1
9	Plug	39-01-0102	1
10	High Pressure Packing (see 70-0501)	SEE KIT	3
11	Seal Compaction Ring	46-1311	3
12	Low Pressure Seal (see 70-0501)	SEE KIT	3
13	O-Ring (see 70-0501)	SEE KIT	3
14	Retainer Ring	46-1312	3
15	O-Ring	25-0663	3
16	Oil Seal	46-1313	3
17	Crankcase	46-1617 N/A	1
18	Needle Bearing	48-0096	1
19	Danau Flange-Pump	38-0070	1
20	O-Ring	25-0603	1
21	Flange	N/A	1
22	Oil Seal	26-0385	1
23	Bolt	27-8431	8
24	Piston - Coated	46-1504	3
25	Connecting Rod	46-1595 N/A	3
26	Piston- Pin	46-1505	3
27	O-Ring	25-0604	1
28	Crankcase Cover	46-1594	1
29	Drain Plug	39-0376	1
30	O-Ring	25-0606	1
31	Oil Cap	46-1593	1
32	Bolt	27-8401	6
33	Set Screw	27-8886	1
34	Crankshaft	N/A	1
35	Ball Bearing	48-0102	1

**PUMP ASSEMBLY CONT.**

ITEM	DESCRIPTION	PART #	QTY
36	Snap Ring	46-1596	1
37	I-Ring	25-0634	1
38	Sight Glass Assembly	46-1597	1

REPLACEMENT KITS				
	DESCRIPTION	ITEMS	# OF ASSEMBLIES	# OF CYLINDERS
70-0501	KIT-Packings	10, 12, 13	3, 3, 3	3
70-0502	KIT-Valves W/ O-Ring	6	6	3

**UNLOADER**



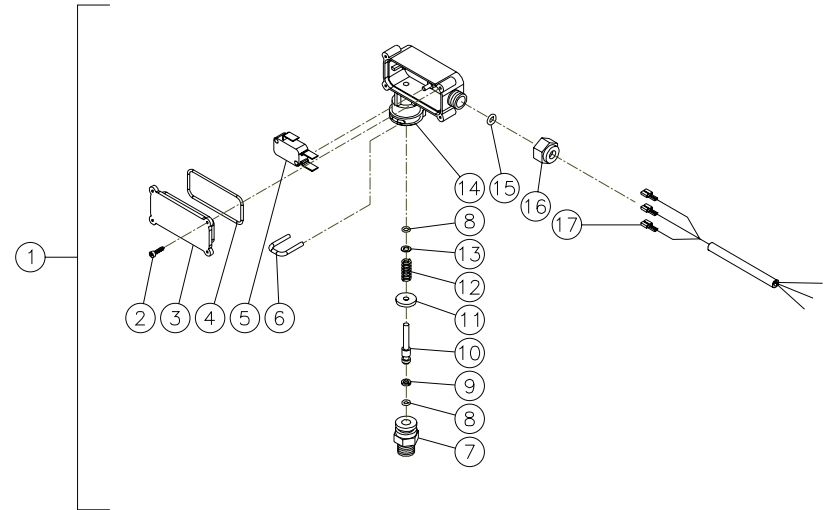
ITEM	DESCRIPTION	PART #	QTY
1	Screw	N/A	1
2	Plastic Knob	N/A	1
3	Knob	N/A	1
4	Spring	N/A	1
5	Spring Seat	N/A	1
6	Valve Rod	N/A	1
7	Support Ring	N/A	1
8	O-Ring	25-0651	1
9	Set Screw	8-0479	1
10	Jam Nut	N/A	1

ITEM	DESCRIPTION	PART #	QTY
11	Unloader Valve Body	N/A	1
12	O-Ring	25-0652	1
13	O-Ring	25-0163	1
14	Hose Barb	46-0869	1
15	O-Ring	SEE KIT	1
16	Stainless Steel Ball	SEE KIT	1
17	Spring	SEE KIT	1
18	O-Ring	25-0169	1
19	Outlet Banjo Bolt	8-0594	1
20	O-Ring	25-0653	1
21	Checking Valve	SEE KIT	1
22	Spring	SEE KIT	1
23	O-Ring	N/A	2
24	Outlet Connector	N/A	1
25	Inlet Banjo Bolt	8-0595	1
26	O-Ring	25-0602	1
27	Inlet Connector	SEE KIT	1
28	Swivel Nut	SEE KIT	1
29	Filter	19-0001	1
30	O-Ring	25-0654	1
31	By Pass Housing	N/A	1
32	O-Ring	N/A	1
33	O-Ring	25-0664	1
34	Valve Housing	N/A	1
35	Valve Seat	N/A	1
36	O-Ring	25-0656	1
37	Bullet	N/A	1
38	By Pass Jet Unloader	N/A	1
39	O-Ring	25-0655	1
40	Support Ring	N/A	1

### REPLACEMENT KITS

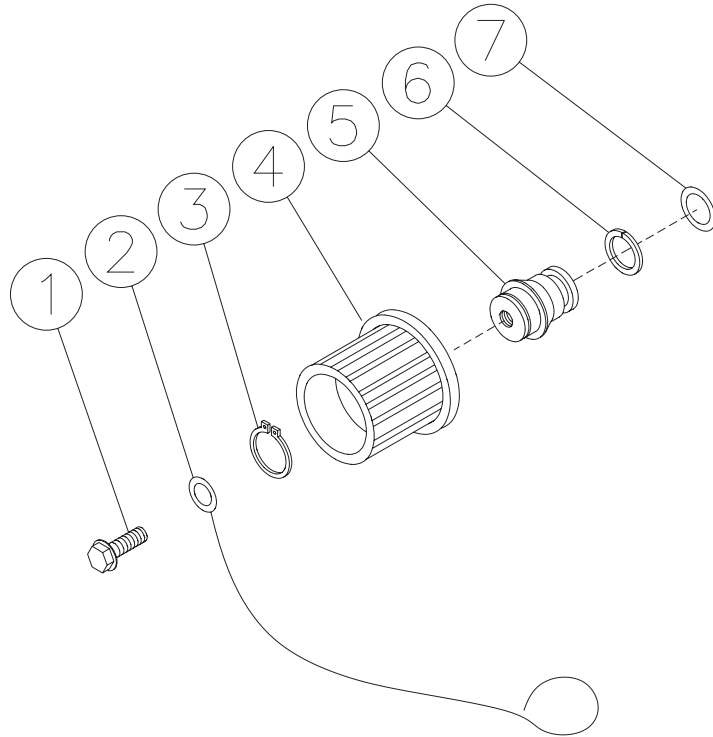
	DESCRIPTION	ITEMS	# OF ASSEMBLIES
70-0293	Injector Repair	15-17	1
70-0500	Non-Return Valve	20-22	1
23-0095	Garden Hose Inlet Assy	27-29	1

### PRESSURE SWITCH (22-0171)



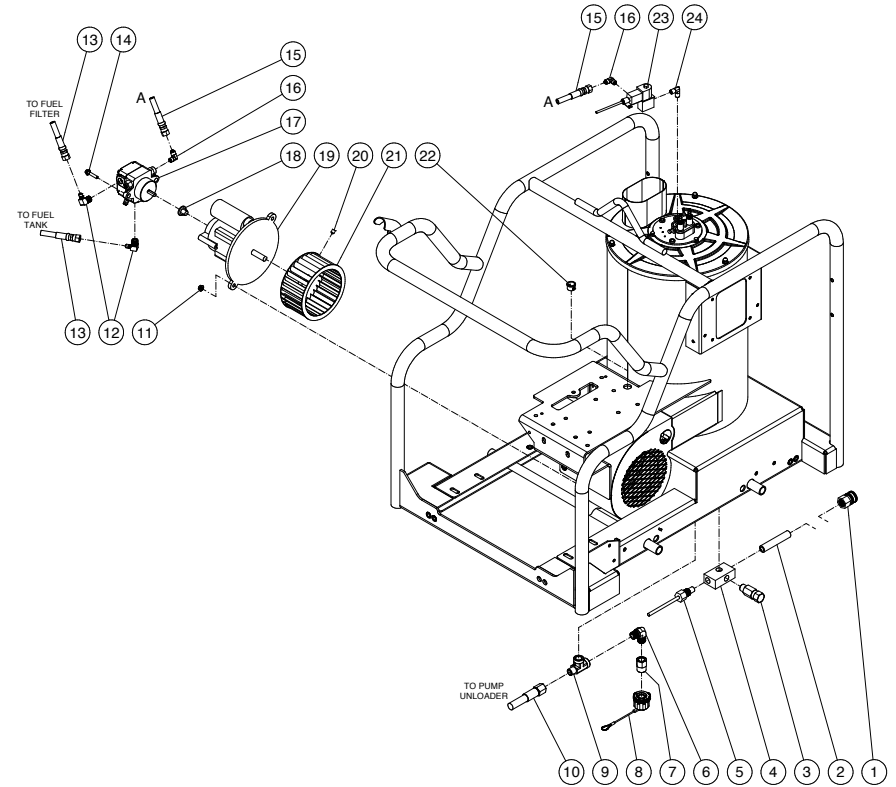
REF. #	DESCRIPTION	PART #	QTY
1	Pressure Switch	22-0171	1
2	Screw	N/A	4
3	Cover	N/A	1
4	O-Ring (See 70-0306)	N/A Sep.	1
5	Micro Switch	N/A	1
6	Retainer Clip	N/A	1
7	Body	N/A	1
8	O-Ring (See 70-0306)	N/A Sep.	2
9	Back-Up Ring (See 70-0306)	N/A Sep.	1
10	Piston	N/A	1
11	Washer	N/A	1
12	Spring	49-0144	1
13	Washer	N/A	1
14	Plastic Housing	N/A	1
15	O-Ring (See 70-0306)	N/A Sep.	1
16	Nut	N/A	1
17	Wire Assembly	N/A	1
	O-Ring Repair Kit (inc. 4, 8-9, 15)	70-0306	

COIL DRAIN PLUG (850-0218)



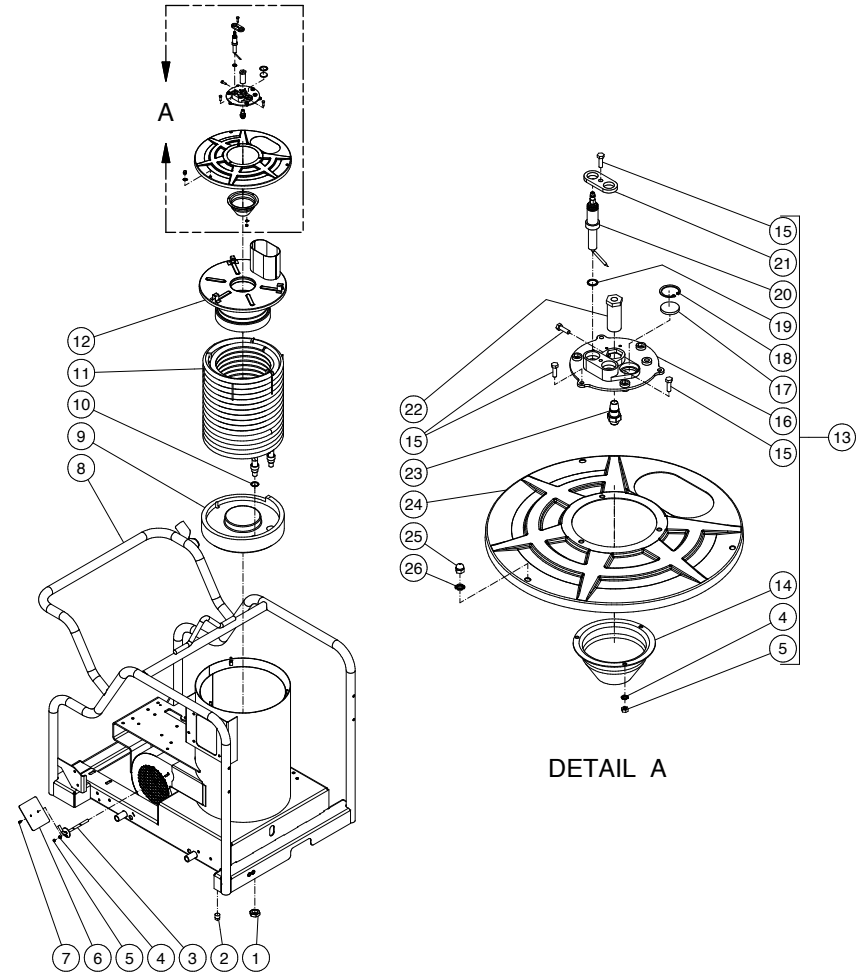
REF. #	DESCRIPTION	PART #	QTY
1	Bolt	27-9526	1
2	Retaining Cable	33-0260	1
3	Snap Ring	33-0261	1
4	Hand Wheel	16-0239	1
5	Plug	24-0147	1
6	Back-Up Ring	25-0424	1
7	O-Ring	25-0423	1

HEAT EXCHANGER/BLOWER MOTOR



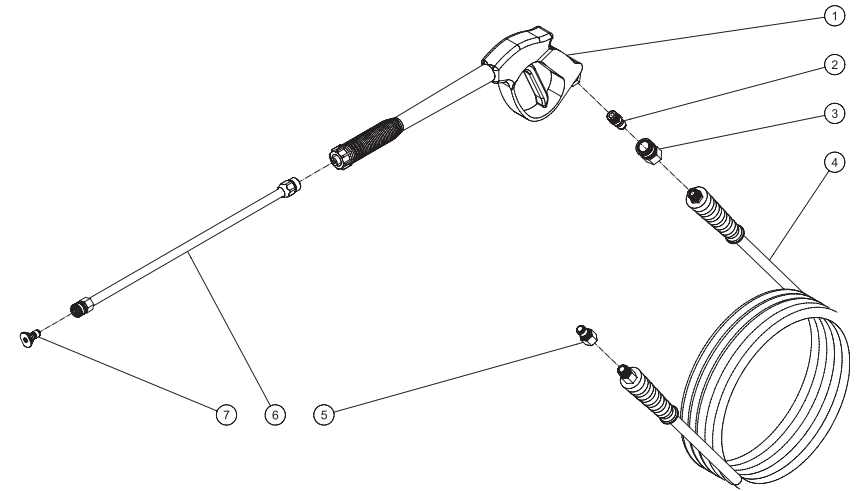
ITEM	DESCRIPTION	PART #	QTY
1	QC Socket	17-0004	1
2	Pipe Nipple	24-0165	1
3	Pressure Relief Valve	22-0272	1
4	Outlet Connector	24-0138	1
5	HI Limit Switch	32-0798	1 </td
6	Elbow	24-0131	1
7	Adapter	23-0279	1
8	Drain Plug Assembly	850-0218	1
9	Street Tee	23-0058	1
10	High Pressure Hose	15-0090	1
11	Nut	30-3022	2
12	Elbow	23-0237	2
13	Fuel Hose	15-0147	2
14	Elbow	27-8898	2
15	Fuel Hose	15-0333	1
16	Elbow	23-0287	2
17	Fuel Pump	3-0020	1
18	Coupler (W/ Blower Motor)	33-0265	1
19	Blower Motor 120v (1000, 1500)	2-0085	1
-	Blower Motor 240v (2,000)	2-0086	1
20	Set Screw (W/ Blower Fan)	30-3031	1
21	Fan/ Blower	44-0103	1
22	Cord Bushing	32-0465	1
23	Fuel Solenoid	44-0101	1
24	Elbow	23-0249	1

**BOILER ASSEMBLY**



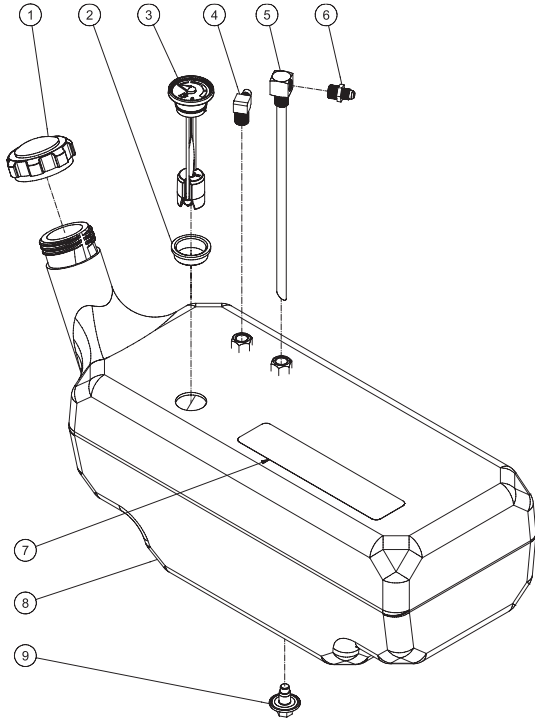
ITEM	DESCRIPTION	PART #	QTY
1	Nut	30-0121	2
2	Plug	24-0034	1
3	Air Diverter Stem	20-0377A01	1
4	Star Washer	28-1009	4
5	Nut	30-6001	4
6	Air Diverter	20-0378A01	1
7	Bolt	27-8879	2
8	Frame	5-0343A42	1
9	Insulation	33-0267	1
10	Washer	28-0521	2
11	Heat Exchanger Coil	66-0009	1
12	Exhaust Chimney	20-1264	1
13	Electrode Assembly-No Wires (Inc 4, 5, 14-21)	850-0411	1
-	Electrode Assembly (Inc 5, 20-26)	850-0415	1
14	Cone	20-0373	1
15	Bolt	27-8878	8
16	Electrode Plate	38-0065	1
17	Sight Glass	33-0252	1
18	Snap Ring	33-0254	1
19	Washer	28-0523	2
20	Electrode	32-0987	2
21	Electrode Bracket	20-1094A01	1
22	Fuel Nozzle Holder	23-0292	1
23	Fuel Nozzle 1.10 60DEG B (1000)	18-0268	1
-	Fuel Nozzle 1.00 60DEG B (1500)	18-0321	1
-	Fuel Nozzle 1.25 60DEG B (2000)	18-0310	1
24	Top Pan	20-1263	1
25	Acorn Nut	30-6002	3
26	Lockwasher	28-1028	3

**GUN/WAND/HOSE ASSEMBLY**



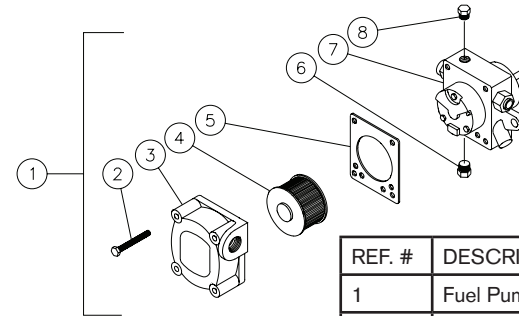
ITEM	DESCRIPTION	PART #	QTY
1	Gun	16-0445	1
2	Quick Connect	17-0005	1
3	QC Socket	17-0004	1
4	Hose	15-0145	1
5	Quick Connect	17-0006	1
6	Lance Assembly	16-0366	1
7	Nozzle 00040 (1000)	18-0397	1
-	Nozzle 15040 (1000)	18-0399	1
-	Nozzle 40040 (1000)	18-0401	1
-	Nozzle 00030 (1500)	18-0387	1
-	Nozzle 15030 (1500)	18-0388	1
-	Nozzle 40030 (1500)	18-0391	1
-	Nozzle 00035 (2000)	18-0392	1
-	Nozzle 15035 (2000)	18-0393	1
-	Nozzle 40035 (2000)	18-0396	1

### FUEL TANK



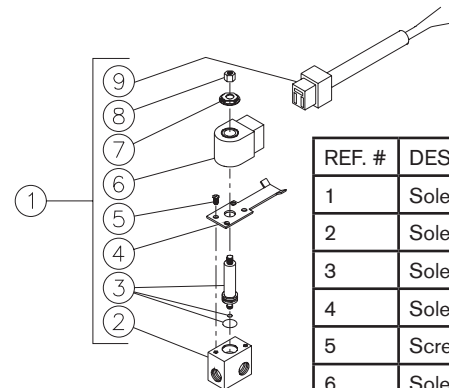
ITEM	DESCRIPTION	PART #	QTY
1	Fuel Cap	12-0033	1
2	Fuel Gauge Grommet	33-0255	1
3	Fuel Gauge	22-0475	1
4	Elbow	23-0237	1
5	Fuel Pick Up	33-0296	1
6	Nipple	23-0247	1
7	Decal-CAUTION: Risk of Fire (see 71-0058)	N/A	1
8	Fuel Tank	12-0242	1
9	Drain Plug	68-3204	1

### FUEL PUMP



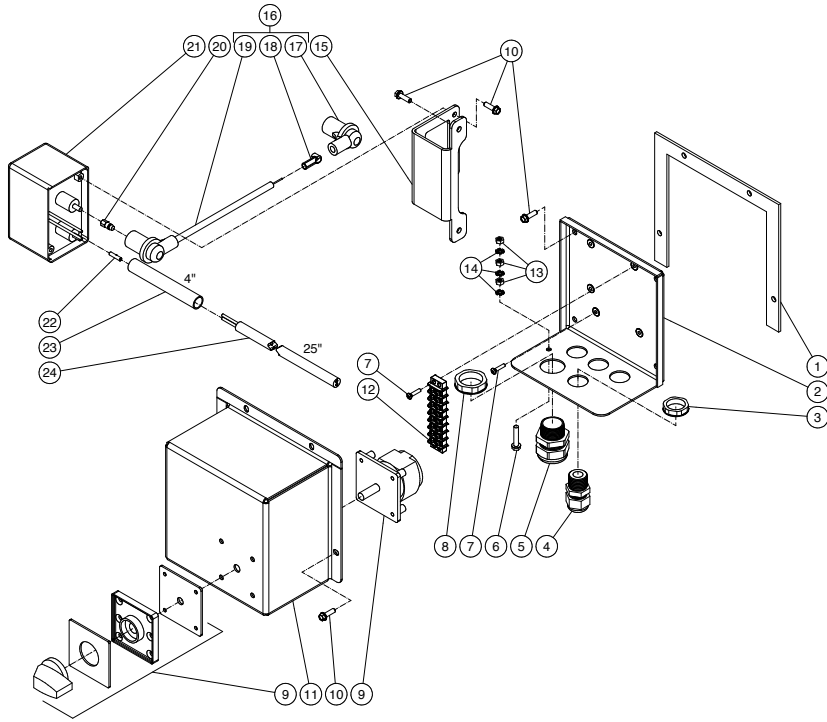
REF. #	DESCRIPTION	PART #	QTY
1	Fuel Pump Complete	3-0020	1
2	Cover Screw	46-1006	4
3	Cover	46-1005	1
4	Strainer	19-0034	1
5	Cover Gasket	26-0109	1
6	Plug	24-0044	2
7	Body	N/A	1
8	Plug	24-0082	1

### FUEL SOLENOID



REF. #	DESCRIPTION	PART #	QTY
1	Solenoid Complete-120V	44-0101	1
2	Solenoid Body	46-1013	1
3	Solenoid Pistol	46-1012	1
4	Solenoid Base	46-1014	1
5	Screw (see 44-0101)	N/A Sep.	2
6	Solenoid Coil-120V	46-1020	1
7	Spring (see 44-0101)	N/A Sep.	1
8	Piston Nut	46-1016	1
9	Din Connector Cord	32-0443	1

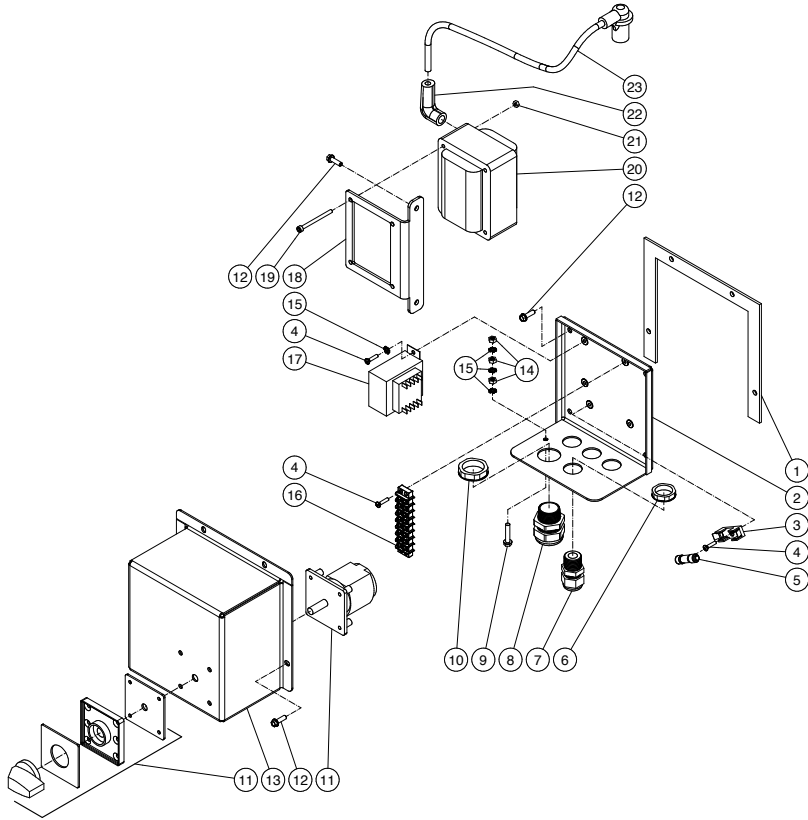
**ELECTRIC BOX ASSEMBLY FOR HW152EMD**



**ELECTRIC BOX ASSEMBLY FOR HW152EMD**

ITEM	DESCRIPTION	PART #	QTY
1	Gasket	26-0384	1
2	Electric Box Back	20-1308A01	1
3	Electrical Locknut	32-0108	4
4	Strain Relief	32-0437	4
5	Cord Relief	9-0046	1
6	Bolt	27-8807	1
7	Screw	27-8881	5
8	Electrical Locknut	32-0292	1
9	Cam Switch (1500)	32-0679	1
-	Cam Switch - Off/On/Burner (1000)	32-0434	1
10	Bolt	27-9526	10
11	Electrical Box Cover	20-1309A01	1
12	Terminal Strip	32-0436	1
13	Nut	30-6001	3
14	Star Washer	28-1009	3
15	Igniter Bracket	20-1307A01	1
16	Spark Plug Wire Assy	850-0427	1
17	Electrode Boot	32-0999	2
18	Spark Plug Terminal	44-0119	2
19	Electrode Wire	32-0988	2
20	Terminal	32-1163	2
21	Ignitor	44-0166	1
22	Butt Splice	32-0402	2
23	Heat Shrink	33-0219	1
24	Cord	32-0075	1

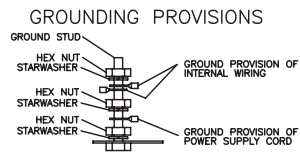
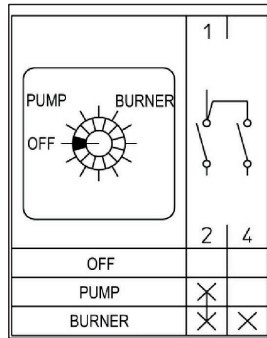
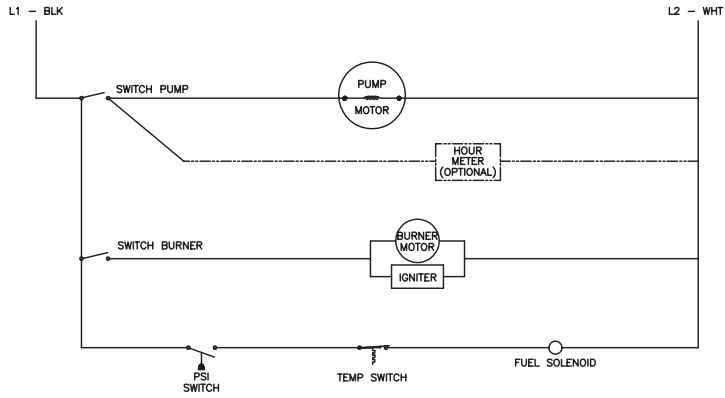
**ELECTRIC BOX ASSEMBLY FOR HW204EMD**



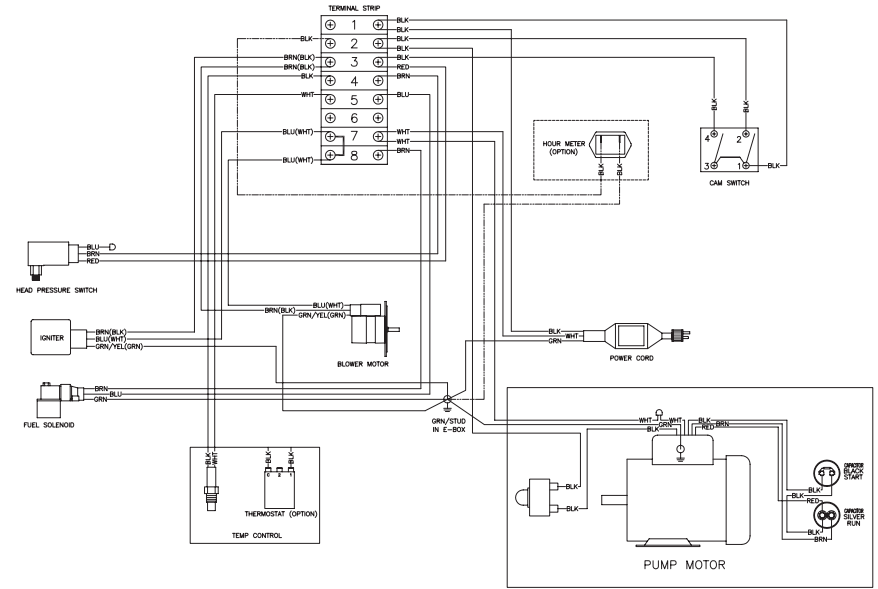
**ELECTRIC BOX ASSEMBLY FOR HW204EMD**

ITEM	DESCRIPTION	PART #	QTY
1	Gasket/ Electric Box	26-0384	1
2	Electric Box Back	20-1308A01	1
3	Fuse Holder	32-0710	1
4	Pphms-BI Oxide #6-32x3/4	27-8881	5
5	Fuse-0.15 AMP	32-0711	1
6	Electrical Locknut	32-0108	4
7	Strain Relief	32-0437	4
8	Cord Relief	9-0046	1
9	Hhcs Zinc Gr8.8 M5 - 0.80p X 25mm	27-8807	1
10	Electrical Locknut	32-0292	1
11	Cam Switch	32-0435	1
12	Hhcs - Gr8.8 M5-0.8p X 16mm Black	27-9526	10
13	Electric Box Cover	20-1309A01	1
14	Hex Nut	30-6001	3
15	External Tooth Lockwasher	28-1009	5
16	Terminal Strip	32-0436	1
17	Transformer 240v To 120v	32-0704	1
18	Igniter Bracket	20-1306A01	1
19	Shcs - Gr12.9 M4-0.7p X 50mm	27-8899	4
20	Ignitor 220v/60hz	44-0081	1
21	Nut - Zinc M4-0.7	30-0137	4
22	90 Degree Spark Plug Boot	44-0118	2
23	Wire Assy - Electrode	32-0988	2

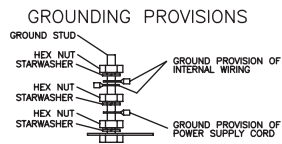
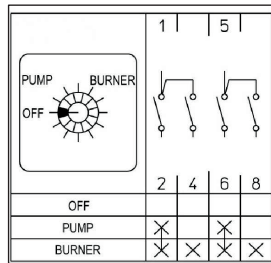
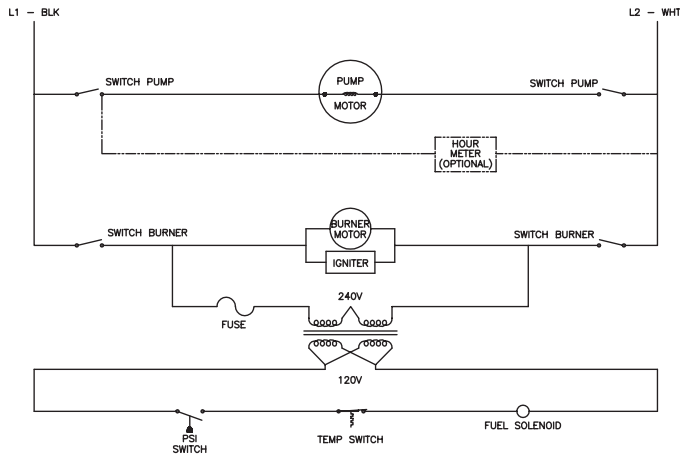
### WIRE SCHEMATIC FOR HW152EMD



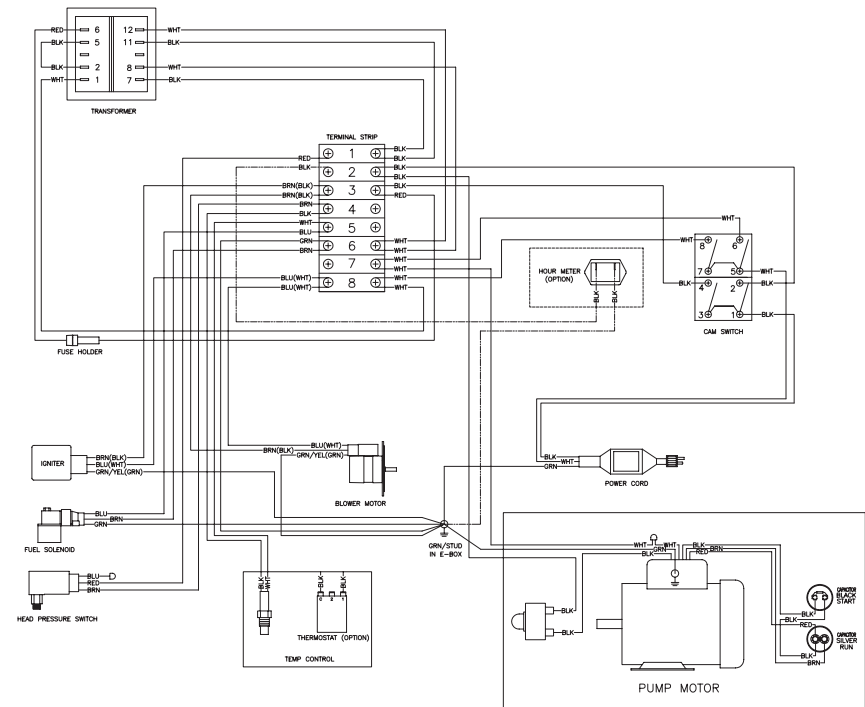
### WIRE DIAGRAM FOR HW152EMD



### WIRE SCHEMATIC FOR HW204EMD



### WIRE DIAGRAM FOR HW204EMD





**STATEMENT OF WARRANTY**

The manufacturer warrants all parts, (except those referred to below), of your new pressure washer to be free from defects in materials and workmanship during the following periods:

- For Lifetime against freezing and cracking:
  - Pump Manifold
- For Seven (7) Years from the date of original purchase:
  - High Pressure Pump
- For Three (3) Years from the date of original purchase:
  - Heat Exchanger Coil
- For Two (2) Years from the date of original purchase:
  - Frame                      Plumbing
  - Guard or Shields      Pulleys
- For One (1) Year from the date of original purchase:
  - Adjustable Thermostat    GFCI Cord
  - Selector switch            Starter Contactor
  - Overload
- For Six (6) months from the date of original purchase:
  - Ignition Transformer      Burner Motor
- For Ninety (90) days from the date of original purchase:
  - Unloader Valve            Electrodes
  - Fuel solenoid                High Limit thermostat
  - Fuel Pump                    Pressure Switch
  - Safety Relief Valve
- For Thirty (30) days from the date of original purchase:
  - High Pressure Hose        Trigger Gun
  - Strainers / Filters           Wand

Defective parts not subject to normal wear and tear will be repaired or replaced at our option during the warranty period. In any event, reimbursement is limited to the purchase price paid.



**WARRANTY EXCLUSIONS**

1. The motor is covered under separate warranty by its respective manufacturer and is subject to the terms set forth therein.
2. Normal wear parts:
  - Pump Packings            Spray Nozzles
  - Pump Valves                Detergent Valves
  - Fuel Filters                 Quick Couplers/screw connects
  - O-rings                      Belts
3. This warranty does not cover parts damaged due to normal wear, misapplication, misuse, operation at other than recommended speeds, pressures or temperature. Parts damaged or worn because of the use of caustic liquids or by operation in abrasive or corrosive environments or under conditions causing pump cavitation are not warranted. Failure to follow recommended operating and maintenance procedures also voids warranty.
4. The use of other than Genuine Repair Parts will void warranty. Parts returned, prepaid to our factory or to an Authorized Service Center will be inspected and replaced free of charge if found to be defective and subject to warranty. There are no warranties which extend beyond the description of the face hereof. Under no circumstances shall the manufacturer bear any responsibility for loss of use of the unit, loss of time or rental, inconvenience, commercial loss or consequential damages.

**BE**

**BE**

# **BE**

**THE POWER YOU NEED.**

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If you need assistance with the assembly or operation of your Pressure Washer please call

**1-866-850-6662**