



# HOT WATER PRESSURE WASHER



HW3524HEGD

User Manual

**BEPOWEREQUIPMENT**

**.COM**



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

## 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.









**DANGER** indicates a hazard which, if not avoided, will result in death or serious injury.

**WARNING** indicates a hazard which, if not avoided, could result in death or serious injury.

**CAUTION** indicates a hazard which, if not avoided, might result in minor or moderate injury.

**NOTICE** 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

### ▲ WARNING





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



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

Serious injury or death may occur from the battery.



- 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 fuel tanks 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.
- Engine Fuel Tank: If using a Gasoline Engine, refuel with gasoline only. Do not use diesel or fuel oil.
- Diesel Fuel Tank: If using a Diesel Engine, refuel with diesel only. Do not use gasoline.
- Burner Fuel Tank (Black): When refueling the Burner Fuel Tank, use No. 1 or No. 2 fuel oil/diesel or kerosene. Do not use gasoline.
- Do not operate the unit if gasoline or diesel fuel is spilled. Wipe the pressure washer clean and move it away from the spill. Avoid creating any ignition until the gasoline or diesel fuel has evaporated.
- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.
- Be certain to disconnect the battery ground terminal before servicing. When disconnecting the cable from the battery, start with the negative terminal, and when connecting them, start with the positive cable.
- When charging the battery, remove the battery vent plugs.
- Use only a voltmeter or hydrometer to check a battery charge.
- DO NOT jump start the battery unless both batteries are of equal voltage and amperage.



⚠ WARNING	
	Serious injury or death may occur from a ground fire caused by a muffler spark.
	Serious injury or death may occur if system safety's are not properly maintained.
<ul style="list-style-type: none"> <li>A spark arrester must be added to the muffler of this engine when using on land covered with any flammable agricultural crop (hay and grain), and if they are used in or near brush or forested areas. The arrester must be maintained in effective working order by the operator. In the state of California, the above is required by law. (Section 4442 and 4443 of the California Public Resources Code.) Other states may have similar laws. Federal laws apply on Federal lands.</li> <li>This pressure washer has a Safety Relief Valve which should never be altered, modified, removed or made inoperative. If the device fails, replace immediately with genuine manufacturer replacement part.</li> </ul>	
⚠ WARNING	
	Serious injury or death may occur from inhaling engine/ burner exhaust or dangerous vapors. The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.
	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>







## 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.

⚠ WARNING	
	Serious injury or death could occur from high pressure spray penetrating the skin.
	<ul style="list-style-type: none"> <li>Keep clear of nozzle and spray! Never put your hand, fingers or body directly over the spray nozzle.</li> <li>Do not direct discharge stream at persons or self.</li> <li>This product is to be used only by trained operators.</li> <li>Always keep operating area clear of all persons.</li> <li>DO NOT allow children to operate this unit!</li> <li>SEEK EMERGENCY MEDICAL CARE if the spray appears to have penetrated the skin! DO NOT TREAT AS A SIMPLE CUT!!</li> <li>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.</li> <li>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.</li> <li>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.)</li> </ul>
⚠ WARNING	
	Serious injury or death may occur from contact with electricity.
	<ul style="list-style-type: none"> <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> </ul>

 <b>WARNING</b>	
	Serious injury may occur from touching the gasoline engine, muffler or heat exchanger. These areas 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 gasoline engine, muffler or heat exchanger.</li> </ul>	

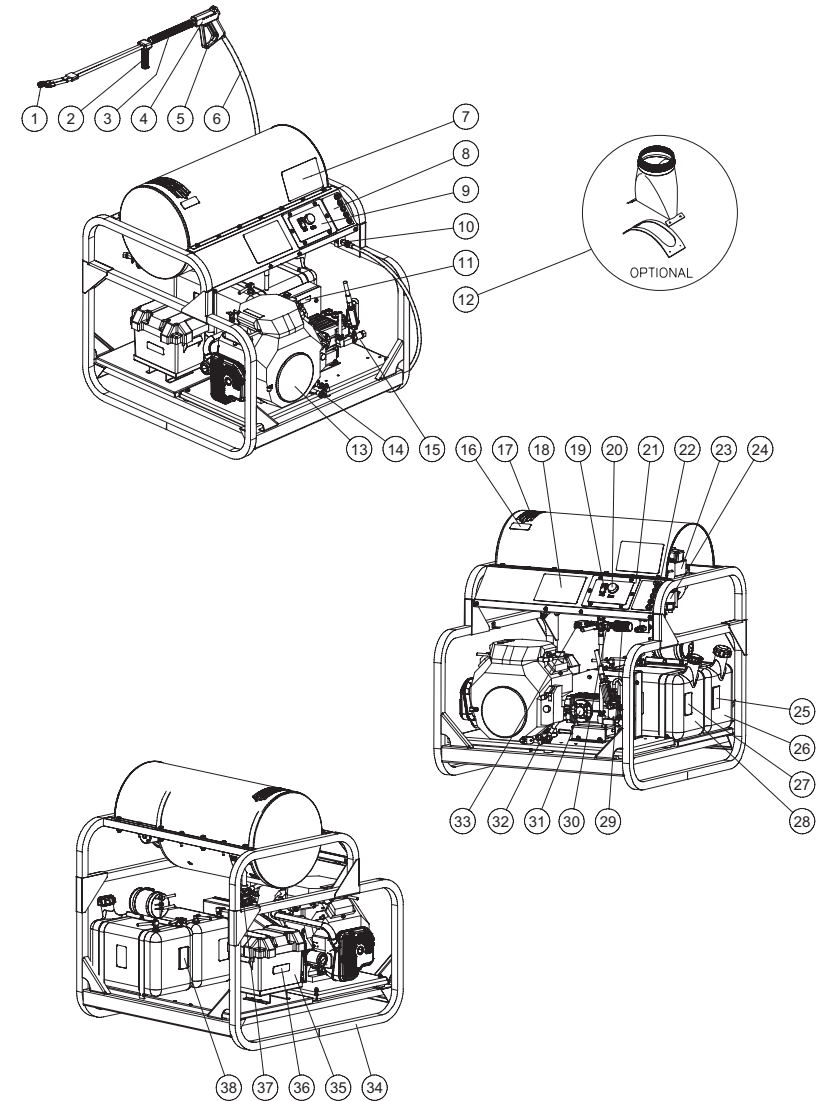
 <b>WARNING</b>	
	<p>Serious injury may occur from a pressure washer malfunction or exploding accessories if incorrect system components, attachments or accessories are used.</p> <p>Serious injury or death may occur if attempting to start the pressure washer when the pumping system is frozen.</p>
<ul 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>Before making any adjustments, be certain the engine is turned off and the ignition cable(s) is removed from the spark plug(s). Turning the machinery over by hand during adjustment or cleaning might start the engine and machinery with it.</li> <li>Do not operate the unit without all protective covers in place.</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>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.</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> <li>Know how to stop the pressure washer and bleed pressures quickly. Be thoroughly familiar with controls.</li> <li><b>DO NOT</b> leave pressurized unit unattended. Shut off the pressure washer and release trapped pressure before leaving.</li> <li><b>DO NOT</b> operate the unit if you see any fuel, oil or water leaks from the machine. <b>DO NOT</b> resume operation until the unit has been inspected and repaired by a qualified service person.</li> </ul>	

- Follow the maintenance instructions specified in the manual.
- NEVER run the engine with the governor disconnected or operate at excessive speeds.
- 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.

### HS Features





## HS Features

1. High Pressure Nozzle
2. Adjustable Pressure Dual Lance
3. Insulated Lance
4. Trigger Gun
5. Trigger Safety Lock
6. High Pressure Hose
7. Decal- Warning/Caution/Operation
8. Decal- Nozzles
9. Decal- Control Panel
10. Water Outlet
11. Decal - Do Not Operate without Beltguard
12. Stack Adapter Kit- AW-9400-0000  
Stack Adapter- 50-0177  
Insulation Gasket- 850-0324
13. Engine
14. Engine Oil Drain
15. Water Inlet
16. Decal- Warning: Hot Surfaces
17. Heat Exchanger Outlet
18. Decal - Operation
19. Burner Rocker Switch
20. Adjustable Thermostat
21. Control Panel
22. Quick Connect Nozzle Holder
23. Burner Air Adjustment
24. Fuel Filter / Water Separator
25. Decal-Caution: Risk of Fire- Do not use Diesel or Fuel Oil (Gasoline Driven Units Only)
26. Gas Tank- Red / 10 Gallon (Gasoline Driven Units Only)
27. Decal- Caution: Risk of Fire- Do not use Gasoline
28. Fuel Tank- Green / 10 Gallon
29. Unloader Valve
30. Heat Dump Valve
31. High Pressure Pump
32. Pump Oil Drain
33. Pressure Switch
34. Power Coated Roll Cage Frame Assembly
35. Battery and Battery Box
36. Decal- Caution: Disconnect Battery
37. Pressure Relief Valve
38. Decal- Data Plate

**HS Options Listing:** Float Tank and Detergent Valve - HX-0247



## 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.
 This unit has multiple ignition sources that could cause an explosion or fire.
3. If using a wheel kit, be certain to block the wheels 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 SAE30W non-detergent pump oil.
6. Your pressure washer is equipped with an Electric Starter. On initial start-up, wear proper eye and skin protection when filling the battery with acid. Fully charge the battery to allow Electric Starter to function.

<div style="text-align: center;">  <b>DANGER</b> </div>	
	<ul style="list-style-type: none"> <li>▪ WHEN CHARGING BATTERIES, THEY GENERATE A HIGHLY EXPLOSIVE HYDROGEN GAS. A SPARK COULD CAUSE AN EXPLOSION OR FIRE!</li> <li>▪ DO NOT JUMP START BATTERY UNLESS BOTH BATTERIES ARE OF EQUAL VOLTS &amp; AMPS.</li> <li>▪ DO NOT SMOKE OR ALLOW SPARKS OR FLAMES NEAR THE BATTERY.</li> <li>▪ DO NOT PLACE UNIT IN AN AREA WHERE FLAMMABLE GAS VAPORS MAY BE PRESENT. A SPARK COULD CAUSE AN EXPLOSION OR FIRE!</li> <li>▪ DO NOT STORE/OPERATE UNIT IN FREEZING ENVIRONMENTS!</li> </ul>



 <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.

### ENGINE/BURNER FUEL TANK

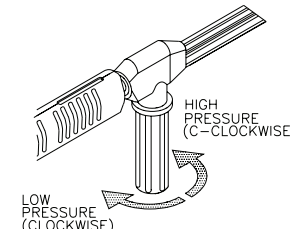
 <b>DANGER</b>	
 	DO NOT SMOKE WHILE FUELING! DO NOT FILL THE FUEL TANK WHILE UNIT IS RUNNING OR HOT. ALLOW UNIT TO COOL FOR TWO MINUTES BEFORE RE-FUELING. DO NOT FILL FUEL TANK TO POINT OF OVERFLOWING. ALLOW APPROXIMATELY 1/4" OF TANK SPACE FOR FUEL EXPANSION. ALWAYS STORE FUEL AWAY FROM THE WASHER WHILE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

1. Review "Risk of Explosion or Fire" warnings, before fueling.
2. Locate the Safety Decals on your unit and heed their warnings.
3. Engines: See Engine Owner's Manual for fuel requirements.  
Burner Fuel: When filling tank, use No. 1 or No 2 fuel oil/diesel or kerosene.
4. Check the engine oil level before starting the engine. (See Engine Manual.)
5. Refer to the Engine Manual supplied with this unit for proper engine adjustment procedures.
6. Review the Engine Manual accompanying this pressure washer for correct engine start-up and maintenance procedures.

### DUAL LANCE ASSEMBLY WITH ADJUSTABLE PRESSURE

This unit features a dual lance assembly with adjustable pressure which allows the user to select a high or low pressure spray. Simply rotate the adjustable grip on the dual lance to achieve the desired pressure selection.

1. Selection of high pressure can be achieved by turning the adjustable grip on the Dual Lance assembly counterclockwise.
2. Selection of low pressure can be achieved by turning the adjustable grip on the Dual Lance clockwise.



### NOZZLE REVIEW

Various nozzles may be quick-connected into the end of the dual lance to change the spray pattern. The detergent nozzle has been pre-installed at the factory. When using quick-connects (Q.C.), be certain the connection is securely locked as shown at right. If not, the high pressure water may shoot the nozzle from the lance, 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 degree: 00=0°, 15=15°, 40=40°, 65=65°.

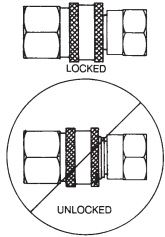
1. The 0° nozzle (RED): This is a blasting nozzle. It delivers a very concentrated stream of water. Be cautious when using the straight narrow stream. It is not recommended for use on painted or wood surfaces, or items attached with adhesive backings. Uses: Removing weeds from sidewalk cracks, stubborn 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.

4. The 65° nozzle: (included in dual lance.) This is a detergent nozzle. The broad spray pattern distributes solution over vast areas. Uses: Detergent application, misting or rinsing.

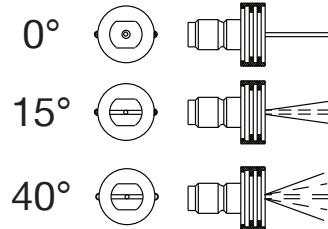
### ⚠ WARNING

THE TRIGGER GUN SHOULD ALWAYS BE LOCKED IN THE OFF POSITION WHEN NOT IN USE!  
NEVER LOOK DIRECTLY AT THE NOZZLE ORIFICE UNLESS IT IS DISCONNECTED FROM THE GUN/WAND ASSEMBLY!

#### CONNECTION OF Q.C. NOZZLES

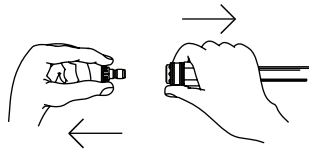


#### QUICK-CONNECT (Q.C.)



#### 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

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.

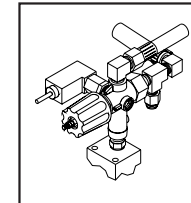
### NOTICE

- 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.

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

#### UNLOADER

The unloader has been preset at the factory.





## PRE-START INSPECTION PROCEDURES

Before starting the unit, perform the following procedures:

1. Check the oil level in the pump and engine.
2. Inspect the water inlet strainer. Clean or replace if necessary. See "Water Supply", #2, pg 18.
3. Check all hose connections to ensure they are securely tightened. See "Water Supply", #3, pg. 18.
4. 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. 7. 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.
5. 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" 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.



## 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.

1. Turn on the water supply.
2. Start engine on unit. 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.
3. Once the system is flushed, turn off engine and connect the high pressure hose to the water outlet of the unit.
4. Connect the trigger gun and dual lance assembly to the high pressure hose.
5. Install desired nozzle into dual lance assembly.

#### 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

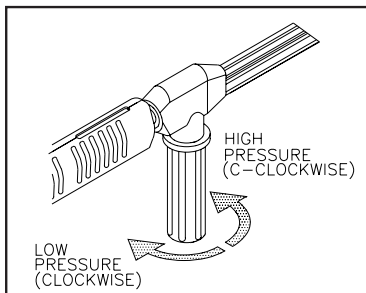
KEEP CLEAR OF NOZZLE! NEVER PLACE HAND OR FINGERS IN FRONT OF NOZZLE!  
DO NOT DIRECT DISCHARGE STREAM AT PEOPLE OR PETS!

#### 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.

1. Refer to the "Safety Precautions" pgs. 7-11 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. Perform the following engine start-up procedures.
  - a. Point the trigger gun in a safe direction, disengage the safety lock on the gun and squeeze the trigger.
  - b. Brace yourself for kickback from the high pressure created by the pump once the engine has started.
  - c. Hold the trigger gun open while starting the engine according to the manufacturer's instructions in the engine manual accompanying this unit.
5. 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. 7. 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. 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.
6. The unit is now operating as a cold water pressure washer. Trigger the gun several times. Rotate adjustable grip on the dual lance for high and low pressure application. **NEVER** place hand or fingers in front of the nozzle or look directly into the nozzle!
7. Do not allow the machine to operate in the bypass mode (with the trigger gun closed) for more than three minutes without triggering the gun. Failure to follow this simple rule can cause premature failure of the pump packings.

### ADJUSTABLE GRIP



### 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 outlined for "START-UP/COLD WATER OPERATION".
2. Move the Burner Switch to the ON position.
3. Recheck the system for fuel leaks. If a fuel leak is found, **TURN MACHINE OFF IMMEDIATELY!** See "Risk of Explosion or Fire" warnings. Be sure that all damaged parts are replaced and that all mechanical problems have been corrected prior to operation of the unit. Contact Customer Service if necessary.

#### NOTICE

Upon initial start-up, water will begin turning hot in approximately 20 seconds and will reach maximum temperature within 2-1/2 minutes providing that the trigger gun remains open. The burner will not fire when the trigger is released.

### SHUTDOWN

1. Move the Burner switch to the OFF 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 periods for the high pressure hose will cause excessive wear and eventual rupture of the hose.
3. Do not close the choke to stop the engine. Backfire or engine damage may occur.
4. Move the engine key switch to the OFF position.
5. Turn off the water supply and trigger the gun momentarily to relieve trapped pressure.

Disconnect and drain the high pressure hose, gun, and lance. Wipe the unit clean. Store in a non-freezing environment.

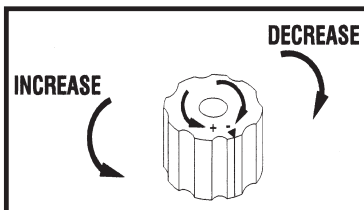
### OPTIONS: HIGH PRESSURE DETERGENT

#### 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. Refer to "Risk of Bodily Injury / Detergents" pg. 11-12. Be certain to wear protective safety attire as stated on pg. 15.
2. Prepare detergent solution according to label directions. (Never pump acids, alkalines, abrasive fluids or solvents through the unit. Due to the unknown and often corrosive characteristics of many detergents commonly used in the pressure washer cleaning industry, it is recommended to use only mild detergents with this unit.)
3. Fully immerse the detergent strainer into the detergent solution.
4. 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.
5. 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.
6. 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.

#### DETERGENT METERING VALVE



### Storage & Maintenance Instructions

#### SPECIFIC MAINTENANCE

**ENGINE:** The engine instructions that accompany your unit detail specific procedures for maintenance of the engine. Following the engine manufacturer's recommendations will extend engine work life.

**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 SAE20 or 30 non-detergent pump oil and fill only to the center of the oil sight glass. **DO NOT** overfill.

**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.

#### MAINTENANCE - EVERY 3 MONTHS

**CHANGE WATER PUMP OIL:** Ensure unit is off. Change the pump oil after the first 50 hours of operation. After initial change, every 3 months or 500 hour intervals are recommended. If oil appears dirty or milky, changes may be required in greater frequency. Use SAE20 or 30 non-detergent pump oil and fill only to the center of the oil sight glass. **DO NOT** overfill.

**REPLACE HIGH PRESSURE 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.

**BELT INSPECTION:** Ensure unit is off and remove the beltguards. Inspect the v-belt for wear and tightness. If the v-belt needs to be replaced or tightened, follow the procedures listed below:

Replacement:

1. Loosen the four pump mounting bolts (A).
2. Loosen the two alignment nuts approximately one inch on the alignment bolts (B1 & B2).
3. Slide the pump toward the engine to loosen belts.
4. Remove and replace belt.





**BELT TENSION ADJUSTMENT:** To maintain peak performance of your pressure washer, it may be necessary to adjust the belt tension on occasion. Follow the procedure outlined below.

1. Remove the belt guard and loosen the two nuts on each side of the pump (Reference A). There are a total of 4 nuts.
2. Turn the cap screw (Reference B) clockwise until a 1/4 inch belt deflection is noticed between the pulleys.
3. Tighten the side nuts (Reference A).
4. Put a straight edge across both pulleys. Pulley alignment is critical for proper performance and service life. If necessary, loosen one set of pulley screws and adjust in or out to properly align. Tighten the pulley screws and check the tension again.
5. Replace the beltguard and tighten the fasteners securely.

**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). In colder temperatures or higher altitudes, it may be necessary to adjust the air supply to the combustion chamber. This adjustment will maximize burner efficiency and avoid inefficient operation or excessive sooting of the heat exchanger coil. A smoke spot test is recommended during any air shutter and band adjustment. If you do not have the equipment to perform a smoke spot test, follow the procedures listed below.

1. The machine must be running and the burner ON.
2. Loosen the Locking Screw (#3 at left) on the shutter.
3. Check for smoke from the heat exchanger exhaust. If smoke is not present, slowly close the Air Shutter (#1 at left) by moving the dial counterclockwise to a lower number. Continue moving the dial until smoke appears.
4. Record this setting.
5. Open Air Shutter (#1 at left) two increments. Example: If Air Shutter was set at 2, move it to 4.
6. Slowly trigger the gun on and off. This will cause the burner to turn on and off. Look for a smoke puff when the burner ignites.
7. Repeat steps 5 and 6 until a smoke puff is noticed. Record the Air Shutter Setting.
8. The difference between the recorded settings in steps 4 and 7 is the combustion window. Set the dial 1/2 way between these settings.

If you are unable to detect a setting on either step 3 or 7, more or less air may be needed to achieve a proper combustion window. Loosen the Bolt (#4 at left) and open the Air Band (#2 at left) in 1/4" increments. Repeat steps 3-8 until proper combustion window is achieved.



**TEST WATER & FUEL PRESSURE:** These procedures should be performed by an authorized service technician.

**TEST WATER TEMPERATURE:** This procedure should be performed by an authorized service technician.

### **MAINTENANCE - EVERY 6 MONTHS**

**REPLACE FUEL FILTER** – Follow the instructions specified on the fuel filter for correct procedure.

### **MAINTENANCE - EVERY 12 MONTHS**

**DELIME COIL** – A loss in pressure may signify that the coil needs to be delimed. Do this procedure on a periodic basis.

1. Mix non-caustic deliming powder/solution in float tank (optional) according to package directions.
2. Remove the nozzle from the wand. Place a nylon stocking over the wand assembly to collect debris, then place the wand assembly into the float tank.
3. Ensure the trigger gun is open and start the engine to allow water to circulate through the system. Allow process to continue for 2-4 hours (Consult deliming agent package directions for exact time).
4. Once process is complete, turn off engine. Drain and clean the float tank, remove the nylon stocking, and clean the gun and wand assembly.
5. Flush the entire system with clean, fresh water and place the nozzle in the wand assembly.
6. Dispose of deliming solution according to local, state, and federal regulations.

**TEST VOLTAGE AND AMP DRAW** - Use a voltmeter and amp meter to test the machine for correct voltage and amperage. If you do not have these instruments or are unsure of how to perform these tests, this procedure should be performed by an authorized service technician.

**INSPECT BURNER FUEL PUMP INTERNAL FILTER** – This procedure should be performed by an authorized service technician.

**CHECK BURNER ELECTRODES** - This procedure should be performed by an authorized service technician.

**REPLACE FUEL NOZZLE** - This procedure should be performed by an authorized service technician.

### SEASONAL MAINTENANCE

**WINTERIZING:** 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:

1. 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.
2. 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 one of the procedures listed below.

#### AIR BLOWOUT:

1. Remove the nozzle from the wand assembly. Squeeze the trigger until water ceases to exit the wand assembly.
2. Connect an air fitting from an air hose to the strainer fitting in the float tank.
3. Run compressed air into the system to remove all water from the system.

#### ANTIFREEZE SOLUTION:

1. Pour a mixture of antifreeze and water into the float tank.
2. Place the detergent strainer into 100% antifreeze solution
3. Turn the switch to the "Pump" position. Allow antifreeze to siphon throughout the system until antifreeze solution exits the outlet. (To ensure the coil is winterized, antifreeze solution must exit the outlet. Add more antifreeze solution mixture to the float tank if necessary.)
4. Store antifreeze solution for future 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.

#### ⚠ WARNING

**DO NOT STORE/OPERATE UNIT IN A FREEZING ENVIRONMENT!**

### MAINTENANCE CHART

PROCEDURE	DAILY	3 MONTHS	6 MONTHS	9 MONTHS	12 MONTHS
Check engine oil level	X				
Change engine oil*****		X	X	X	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 screen inspection	X				
Check fuel filter		X	X	X	X
Replace fuel filter			X		
Inspect belts		X	X	X	X
Replace high pressure nozzle***		X	X	X	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.

\*\*\*\*\* The engine oil must be changed after the first 8 hours of operation and every 50 hours or 3 months, whichever comes first.



## Troubleshooting

### TROUBLESHOOTING CHART

SYMPTOM	PROBABLE CAUSE	REMEDY
Engine will not start	Various engine problems	Refer to the Engine Manual accompanying your unit.
	Unit components are frozen.	Allow to thaw. If any part of the unit 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.
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.
	Water inlet screen obstructed.	Remove screen, clean or replace.
	Pump sucking air. (Prime eliminated)	Tighten all water intake connections Eliminate leaks in intake line.
	Eliminate leaks in intake line.	Insert high pressure nozzle.
	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.
Water is leaking at safety relief valve.	Unloader malfunction.	Detect and correct unloader problem.
	Pressure switch malfunction.	Detect and correct pressure switch problem.
	Safety Relief Valve is defective.	Replace safety relief valve. NEVER run unit without safety relief valve. Doing so can cause an explosion!
Oil appears milky or foamy.	Water in oil.	Change pump oil. Fill to proper level.
Oil leaking from unit.	Worn seals or o-rings.	Contact Customer Service.

SYMPTOM	PROBABLE CAUSE	REMEDY
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".
	Nozzle assembly is plugged.	Clean or replace.
Water flows back into detergent container.	Ball & Spring in Venturi reversed, 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.
Blower motor will not run. (Burner will not ignite without blower running)	Burner/Blower motor malfunction.	Repair or replace.
	Belt broken or slipping on generator.	Adjust or replace as necessary.
Blower runs, but burner will not ignite	Switch is not in "Burner" position.	Check switch position.
	Thermostat knob is OFF.	Check thermostat knob position.
	Out of fuel.	Refuel.
	Trigger gun is closed.	Open trigger gun for pressure.
	Detergent valve is open, but detergent hose is not completely submerged in solution. (This causes safety devices to shut down burner.)	Close valve, or completely submerge clear vinyl hose into detergent solution.
	Pressure switch override.	Pressure should be over 375 PSI
	No voltage.	Consult Service Department.
	Fuel pump sucking air.	Tighten all fuel intake connections. Eliminate leaks in intake line.
	Poor or improper fuel supply.	Check fuel to ensure it is correct. Drain tank and filter if necessary and refill with proper fuel.



## TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
Blower runs, but burner will not ignite.	Dirty or clogged fuel filter or fuel water separator.	Drain or replace as necessary.
	Low fuel pump pressure.	Check fuel pump pressure, adjust or replace as necessary.
	Fuel pump inoperative.	Check pressure, replace if necessary.
	Flexible coupler broken.	Replace.
	Fuel solenoid valve failure.	Replace.
	Dirty or clogged fuel nozzle.	Replace fuel nozzle.
	Improper burner air adjustment.	Adjust.
	Faulty ignition module.	Repair or replace. Consult your Customer Service.
	Ignition electrodes damaged or worn.	Adjust or replace electrodes. Consult your Customer Service.
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.
	Improper air adjustment setting.	Adjust.
	Fuel pump malfunctioning.	Replace.
Blower runs, burner ignites but will not heat.	Thermostat knob is OFF.	Check thermostat knob position.
	Detergent valve is open, but detergent hose is not completely submerged in solution. (This causes safety devices to shut down burner.)	Close valve, or completely clear vinyl hose into detergent solution.
	Poor or improper fuel supply.	Check fuel to ensure it is correct. Drain tank and replace filter if necessary and refill with proper fuel.
	Dirty or clogged fuel filter or fuel water separator.	Drain or replace as necessary.
	Low fuel pump pressure.	Check fuel pump pressure, adjust or replace if needed.
	Dirty or clogged fuel nozzle.	Replace fuel nozzle.



## TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
Blower runs, burner ignites but will not heat.	Improper burner air adjustment setting.	Adjust
	Scale build up in heat exchanger coil.	Consult your Customer Service.
Burner discharges white smoke.	Low on fuel.	Refuel. If white smoke persists, consult Customer Service.
	Excessive air supply.	Adjust
Burner discharges black smoke.	Insufficient air supply.	Adjust





**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**