

STANDARD OPERATING PROCEDURES FOR THE 3500 PSI PORTABLE PRESSURE WASHER (UNIT # 897)

1. Purpose:

To provide a procedure which outlines the responsibilities of all employees in the Operations & Facilities Division of the Town of Fort Frances in the safe usage of the 3500 psi Portable Pressure Washer.

2. Responsibility:

All employees in the Operations & Facilities Division are responsible for understanding and carrying out the responsibilities and duties outlined in the policy. All employees using the 3500 psi Portable Pressure Washer must be trained in the safe operation of the equipment and familiar with all controls. Untrained personnel are not permitted to operate this equipment.

3. Procedure for operating 3500 psi Portable Pressure Washer:

- **Flushing The System:**

The 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.

- **Start-up/cold water operation:**

- 1) Refer to the Important Safety Instructions before starting the machine.
- 2) Locate the Safety Decals on the unit and heed their warnings.
- 3) Ensure the Burner Switch is in the **OFF** position.
- 4) Pointing the trigger gun in a safe direction, unlock the trigger gun and squeeze the trigger. Hold the trigger gun open while starting the engine. Brace yourself for possible gun kickback when the engine starts.
- 5) Once the engine 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 MACHINE OFF IMMEDIATELY!** Be sure that all damaged parts are replaced and that all mechanical problems have been corrected prior to the operation of the unit.

- b) Inspect high pressure hoses for kinks, cuts, and leaks. If a cut or leak is found, **TURN MACHINE OFF IMMEDIATELY!** Replace hose before starting the machine.
- 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 hands 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 package.

- **Hot Water Operation:**

- 1) Follow preceding steps 1-7 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 THE MACHINE OFF IMMEDIATELY!** Be sure that all damaged parts are replaced and that all mechanical problems have been corrected prior to operation of the unit.

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

4. OPTIONS

- **STEAM – 250 degree F**

The GREEN steam nozzle is used for 250 degree F Wet Steam operation. This nozzle is sized for operation with the unloader and steam valve (where applicable) to provide high pressure wet steam. Replacement of this nozzle with an improperly sized nozzle may cause operational problems with the machine.

- 1) Install GREEN steam nozzle into dual lance assembly.
- 2) Follow “Hot Water Operation” start-up procedures.
- 3) Turn steam valve completely counter clockwise to achieve maximum outlet temperature (250 degree F)

NOTE: 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.

- **ADJUSTABLE THERMOSTAT:**

Regulates the maximum discharge temperature. Turn the dial to the desired maximum discharge temperature. This may cause the burner to fire intermittently.

- **BALL VALVE: (Auxiliary Tank)**

- 1) Connect hose from the auxiliary tank to open port on the 3-way ball valve.
- 2) Use the selector lever on the ball valve to allow water to flow from the auxiliary tank to the pump.
- 3) The water level in the auxiliary tank must always be higher than the pump inlet. This will ensure gravity feed of water to the pump. Failure to keep the water level above the pump inlet will result in the pump running dry and damage to the wet end of the pump.

- **HIGH PRESSURE DETERGENT: (Cleaning with Detergents)**

NOTE: This feature is designed to use with mild detergents only. Since the cleaning solution travels through various parts of the pressure washer, do not use corrosives as they will cause extensive damage as well as pose a considerable safety hazard.

- 1) Be certain to wear proper Personal Protective Equipment.
- 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 strainer end of the clear vinyl detergent hose 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 surfaces. Be certain to apply cleaning solution to a small section at a time.
- 5) To Rinse: lock the trigger gun in the "OFF" position. Turn the detergent metering valve to the "OFF" position. Unlock the trigger gun and spray. It will take about 30 seconds to purge all detergent from the line. For best rinsing results, start from the top and work down.
- 6) Siphon a gallon of water through the detergent injection system after each use. This prevents the possibility of corrosion or detergent residue causing mechanical problems during the next use.

5. Important Safety Instructions

- Always operate pressure washer in a well ventilated area free of flammable vapours, 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 fuel tanks.
- Never fill the fuel tanks while the engine is running or hot. Allow the engine to cool two minutes before refuelling.
- Do not refuel indoors or in a poorly ventilated area.
- Always refuel slowly to avoid the possibility of spilled fuel which may cause a risk of fire.
- When refuelling the Burner Fuel Tank, use No. 1 or No. 2 oil/diesel or kerosene. Do not use gasoline, crankcase drainings, or oil containing gasoline or solvents.
- 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 cables from the battery, start with the negative terminal and when connecting them start with the positive terminal.
- DO NOT jump start the battery unless both batteries are of equal voltage and amperage.
- The pressure washer has a Safety Relief Valve which should never be altered, modified or made inoperative. If the device fails, replace immediately with genuine manufacturer replacement part.
- Never operate the pressure washer in an enclosed area. Always make certain there is adequate ventilation (fresh outside air) for breathing and combustion.
- 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 the pressure washer to dispense hazardous detergents.
- Keep clear of nozzle and spray! Never put your hand, fingers or body directly over the spray nozzle.
- Never point the high pressure discharge spray at yourself or anyone else. Always keep operating area clear of all persons.
- 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 before each use 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.
- 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.)
- 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.

- Do not allow metal components of the pressure washer to come in contact with live electrical components.
- Never allow any part of your body to contact the engine, muffler or heat exchanger.
- Never make adjustments to factory set pressures.
- Never exceed manufactures maximum allowable pressure rating of attachments.
- Do not allow any hoses to make contact with the engine, muffler, or heat exchanger to prevent the possibility of bursting. Avoid dragging the hoses over abrasive surfaces such as cement.
- 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 non heated vehicle without first allowing the entire unit to thaw.
- Do not operate the unit without all protective covers in place.
- Seek emergency medical care if you are using cleaning agents and the spray appears to have penetrated the skin. Do not treat as a simple cut. Be prepared to tell a physician exactly what kind of detergents you were using by reading the Material Safety Data Sheets (MSDS) provided with your detergent.
- Never use any solvents or highly corrosive detergents or acid type cleaners with this pressure washer.
- Do not direct spray toward fragile materials such as glass for shattering could occur.
- Stay alert! Watch what you are doing. Do not operate the unit when fatigued or under the influence of alcohol or drugs.
- Never squeeze the trigger unless securely braced.
- Do not overreach or stand on unstable support.
- Wet surfaces can be slippery, wear protective foot gear and keep good footing and balance at all times.
- Never trigger the gun while on a ladder or roof.
- Always hold on firmly to the gun/lance assembly when starting or operating the unit. Failure to do so can cause the lance to fall and whip dangerously.
- 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.
- Never run the unit with the governor disconnected or operate at excessive speeds.
- Do not move the unit by pulling on the hose.

Personal Protective Equipment

- CSA approved safety boots, safety glasses and hearing protection must be worn.
- Gloves should be worn.
- When using cleaning agents coveralls and respirators are advisable.

6. Maintenance Tips: All maintenance will be performed by qualified personnel only. The Operations and Facilities mechanics will perform periodic checks and repairs and maintenance, as specified in the manual.