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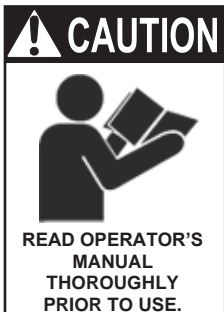
# Water Blaster Operation and Safety Manual





## **HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY**

Never point or aim the gun/wand at yourself or anyone else.  
Never put your hand, fingers or body directly in front of the spray nozzle.



## **A. KNOW YOUR PRESSURE WASHING EQUIPMENT**

Do not operate your power washer until you completely understand and can follow all operating instructions, precautions and safety rules.

Restrict the use of your power washer to users who have read, understand and can follow all operating instructions, precautions and safety rules.

If there are questions or issues not covered in the operator's manual please call Pressure Solutions on 09 443 2913 or 0800 774 765.



## **B. PLAN AHEAD**

1. Always wear ear protection to cut noise and eye protection and / or face shield to prevent debris from flying or ricocheting into eyes and face which could result in serious injury.
2. Dress safely in long pants and wear boots or shoes. Other protective equipment is advisable when using chemicals, cleaning detergents or other corrosive or abrasive substances.
3. Do not operate pressure washing equipment if you have consumed alcohol or taken medication.
4. Keep pets, children and bystanders a safe distance away from your work area. A minimum of 15 metres is recommended.
5. Do not spray directly at glass or fragile objects.
6. CAUTION after turning off your pressure washer and water supply, there is still high pressure water trapped in the system. You must release the pressure by triggering the gun after the engine/motor has completely stopped.
7. Know what chemicals you are using and read safety data sheets supplied.



## HAZARDS FOR GASOLINE ENGINES/ELECTRIC MOTORS



Follow all safety precautions, operating procedures and maintenance listed in your engine operator's manual which comes with the pressure cleaner. This manual may be attained from your local small engine repair center.

- **DO NOT** fill the engine with gasoline when the engine is running, hot or near an open flame. **DO NOT SMOKE.**

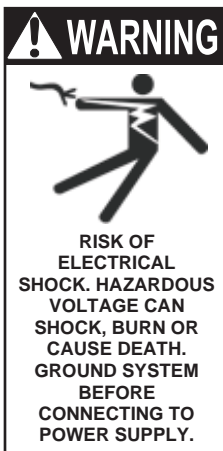


- **DO NOT** run power washers in an enclosed area. Exhaust fumes contain poisonous carbon monoxide gas. Breathing exhaust gases can cause serious illness or death.
- **DO NOT** touch or come in contact with hot mufflers, cylinders, cooling fins or hot exhaust gases as this may result in severe burns.

Never tamper with governor spring, governor links or other components which may increase the speed (RPM) of the engine.



- **DO NOT** operate pressure cleaners in the presence of flammable vapors or gases. When servicing pressure cleaning equipment, be sure to properly dispose of any flammable materials.
- **DO NOT** make adjustments to your equipment without first removing the spark plug.
- When transporting pressure cleaners, the fuel shut-off valve must be in the closed position, to prevent fuel from spilling out.



- A circuit dedicated only to the electric pressure washer is recommended. This circuit should be installed by a licensed electrician and checked to supply adequate voltage under load. If the distance from the panel is too long, the wire size is too small or the voltage is initially too low, this will cause the thermal overload to trip. If the thermal overload on the motor trips consult factory. Plug your cord into the receptacle. **DO NOT USE EXTENSION CORDS! USE ONLY THE FACTORY SUPPLIED POWERCORD.**

# **INITIAL SETUP AND OPERATION OF YOUR NEW WATER BLASTER**

## **Tested**

All units that are sold by Pressure Solutions Ltd are tested (excluding boxed domestic units). This will explain the reason for water potentially being in the pump or hose still.

## **Inspection for freight damage**

When you receive your commercial pressure washer be sure you check for concealed freight damage. Any damage should be noted with the delivering carrier. If you have any questions related to freight call your selling dealer.

## **Inspection of oil levels**

Check all oil levels in the pump or engine if applicable. Failure to check all levels could result in pressure washer damage. Most pumps are shipped with oil from factory and the crankcases are sealed. You may have to remove a shipping plug and install a dipstick in the pump. Oil type is stated on the pump breakdown and in the engine manual.

## **Water Supply**

Your water supply must provide water to the equipment that exceeds the litres Per Minute (LPM) rate of your unit. You can check your LPM by using a 20 litre bucket and a timer. If your unit is 20 LPM or less and the bucket fills in less than a minute you have adequate supply. Some water supply systems are affected by things like washing machines, livestock watering systems and flushing of toilets. Be sure the supply is still adequate when these operations are taking place. The water temperature cannot exceed 55 degrees Celsius on the standard models and 65 degrees celcius on the high temperature models and the pressure should not exceed 60 PSI. **Failure to secure adequate water supply to your water blaster will result in pump damage. DO NOT RUN PUMPDY.**

## **Water Quality**

Your water should not contain particles larger than 80 microns. Although there are small filters installed on power washers that filter the water, they could only filter poor quality water for a short period of time before they clog. This would result in damage to the machine. Therefore you should insure no sand or scale particles are present in the water supply. Water filters, hoses and fittings should be checked prior to every operation for cleanliness, leaks and repair needs. Repair or replace as needed.

## **Supply Hose**

Hook a garden hose from the faucet to the machine, when doing this be sure to check the inlet water filter or screen. This hose should be a least 5/8" diameter and a length at least 5 metres. This 5m length helps isolate the water supply from pulsations from the pump.

## **Supply Tank**

Ensuring this water is still being filtered appropriate is important, making sure there is no debris in the tank. Always check to make sure the tank is full and there is nothing restricting the water before use.

## **Purge Air**

Turn on the water supply and open the trigger gun, this will purge all the air from the system. Look for water leaks and stop any leak found. Leaks can cause erratic pump behavior.

## **Pump**

Prior to turning on the power switch or starting engine, check the oil level in the pump. The pump oil should be changed after roughly 30 hours of operation initially, then every 3 months or 100 hours of operation thereafter for a general service. More frequently for extensive use or hostile environments is also recommended (dusty or high moisture).

## **Turn on Power**

Turn on the power switch. Pull trigger gun and check for adequate pressure.

### **The Unloader Valve**

Pressure cleaners are built with one of two types of unloaders: The Trapped Pressure Unloader or the Flow Actuated Unloader. After the pump is filled with water, the direction of water flow must be controlled with the unloader or regulating valve. A positive displacement pump is always delivering a specific volume of water whether the spray gun is open or closed; therefore a device is needed to control the direction of flow, either to the open spray gun or redirecting the flow back to the inlet side of the pump when the spray gun is closed. Without an unloader valve, dangerously high pressure will be produced when the spray gun is closed because the water being forced out of the pump has no place to go. The unloader is used as a safety device to guard against failure of component parts, and the development of dangerously high pressures.

### **Hoses and Couplers**

Hoses supplied by Pressure Solutions are sized in length and diameter for best operational performance and size within the pressure capabilities of your unit. Additional hose added to the machine may change the performance of the machine. Please call us if you have any questions, there is a large variety of hose which are all suitable for various applications. *When replacing or disconnecting the quick couplers be sure the machine is shut off and relieve the pressure from all hoses.*

### **During Operation**

The pressure of all units (except boxed domestic units which were tested at the appropriate factory) are set at Pressure Solutions for the Optimal output from your water blaster during the testing procedure. No adjustments to the machine should be required for operation. During operation do not leave the machine running for more than 2 minutes without the trigger gun being pulled. Although your machine may have a bypass set-up on it or a thermal relief system, this can still cause extensive pump damage. If machine will not be discharging water for more than 2 minutes, shut the machine off.

# NOZZLE STYLES

## **Chemical injector use with interchangeable tips**

Your water blaster may be supplied with a downstream chemical injector. The 1/4" clear vinyl tube is inserted into the desired chemical that you wish to apply. Be sure to use the black or blue, low pressure nozzle to apply chemical. The chemical injector will only open up and allow chemical into the line when this tip is used. This tip enables the pressure to drop to approximately 250 PSI to draw chemical. Some injectors can be shut on and off or the rate of injection can also be set by turning the knob that the clear vinyl tube attaches too. *Be sure to flush injection system with clear water after use.*

## **Multi-Reg (Adjustable) Tip**

If your unit is supplied with an adjustable tip, the spray pattern can be changed by rotating the outer shell of the nozzle. The nozzle also will move forward and backward.

The nozzle must be pulled back toward the gun for high pressure rinse. When the nozzle is moved forward you will have low pressure and the soap injector will start to draw chemical.

## **Chemical injector use with multi-reg tip**

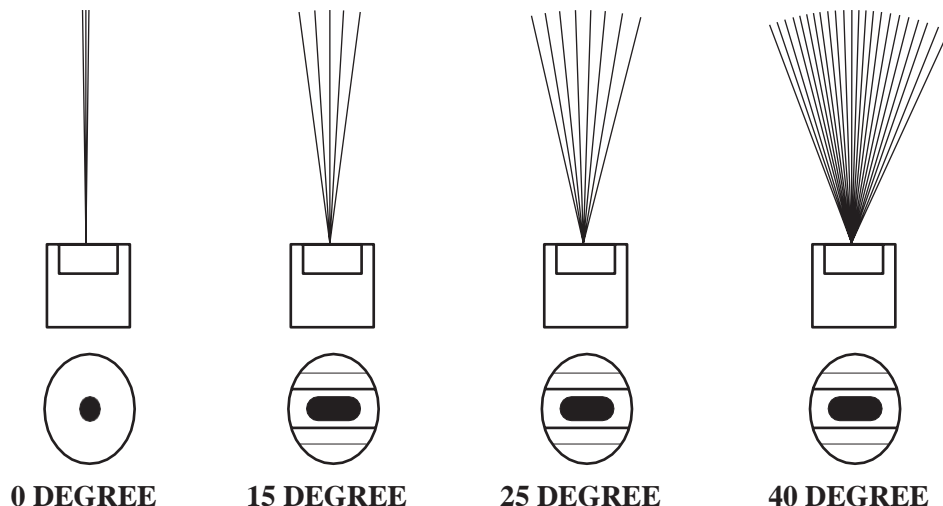
Move the outer shell of your tip forward (away from the gun). This will lower your pressure and allow the injector to start to draw chemical. Chemical will only be drawn in the low pressure setting. Pull nozzle back for high pressure rinse.

## **Rotary/turbo nozzle**

If your unit is supplied with one of these nozzles, they are a more aggressive nozzle than the fan alternative you will find commonly supplied with water blasters. The nozzle spray pattern comes out in a cone shape, using a 0 degree fan (see below) which rotates quickly creating the more aggressive nature. Commonly used when fan nozzles aren't suitable for the application.

## **NOZZLE SELECTION GUIDE**

Spray nozzle can be identified by the nozzle "number", a five or six digit number that is stamped on the nozzle, which indicates the spray angle and orifice size. In most cases the second and third digits of the nozzle number indicate the spray angle in degrees. EXAMPLE: 00 is 0 degrees, 15 is 15 degrees and 40 is 40 degrees. The last three numbers of the nozzle number indicated the orifice size, a standard industry designation. EXAMPLE: 60 is a 6.0 orifice, 55 is a 5.5 orifice. These numbers correspond to the actual dimensions, giving the size of the orifice. They do not however directly indicate gallons per minute, flow rates or inches in diameter of the orifice. Some power washers come with an adjustable nozzle which is fixed to the end of the wand. The fan spray may be adjusted by turning the nozzle and chemicals may also be applied by pulling outward on the nozzle.



## STANDARD SPRAY NOZZLE APPLICATIONS

**Caution: The spray force from these nozzles can cause injuries if pointed directly at yourself or others. Before observing directly always disconnect from spray wand.**

### A. 0 DEGREE – (RED NOZZLE) BLASTING

- . Removing caked on mud from heavy construction, farm or lawn equipment.
- . Cleaning tar, glue or stubborn stains from concrete.
- . Cleaning overhead areas.
- . Removing rust from steel and oxidation from aluminum.

### B. 15 DEGREE – (YELLOW NOZZLE) STRIPPING

- . Removing paint from wood, masonry or metal.
- . Removing grease or dirt from equipment.
- . Removing heavy mildew stains.
- . Removing marine growth from boats and marine equipment.
- . Removing rust from steel and oxidation from aluminum.

### C. 25 DEGREE – (GREEN NOZZLE) CLEANING

- . General cleaning of dirt, mud and grime.
- . Cleaning roofs, gutters and downspouts.
- . Removing light mildew stains.
- . Removing algae and bacteria build-up from pools.
- . Rinsing surfaces in preparation for painting.

### D. 40 DEGREE – (WHITE NOZZLE) WASHING

- . Light cleaning and washing.
- . Washing and rinsing of automobiles and boats.
- . Leaning roofs, windows, patios and driveways.

### E. (BLUE & BLACK NOZZLES)

- . Used to apply soap/chemicals

## WATER BLASTER ACCESSORIES

- . Accessories include surface cleaners, telescopic lances, the various nozzles. All available from Pressure Solutions, please state the pressure and flow of your water blaster so we can assist in finding the correct size.
- . Ensure that the accessory you are using is set-up with the correct nozzle size for your unit. If not this will potentially cause damage to pump components.
- . Each accessory has different application which they assist with making it access easier and more efficient.

## **SHUT DOWN PROCEDURE**

### **STORAGE**

1. Turn off the power switch on the water blaster.
2. Relieve pressure on line by pulling trigger gun.
3. Shut off water supply and disconnect garden hose.
4. Be sure to check for water leaks or oil leaks that should be repaired before the next operation.
5. If you are going to store the machine for extended period of times in cold climates be sure to antifreeze the equipment. A 50% anti-freeze solution may be drawn in through the inlet of the pump using a short remnant of garden hose. This fluid should be run through the pump when the fluid is discharged from the pump discharge your machine is winterized. Do not allow machine to freeze.
6. Fuel stabilizer for gas if unit is to be stored for 30-90 days. If storing unit over 90 days drain fuel tank, shut off fuel valve and run unit until it stops.

### **PREVENT DAMAGES AND EXCESSIVE WEAR**

1. Avoid extending hoses across high traffic areas while using water blasters, and never leave the hose where it may be run over by vehicles of any type.
2. Never pull on the hose to move the water blaster.
3. Never pull your high pressure hose around a tight corner or force it into a small loop.
4. Wrap up the water blaster hose when finished cleaning and store it on a hose hook, hanger, reel or other safe location.
5. Check oil levels (pump & engine) at every fueling to prevent low oil damage.
6. Inspect inlet water filter for cleanliness and damage. If soiled or dirty, rinse with fresh water. If damaged, replace with new filter.
7. When lifting or transporting water blaster, secure and lift only with appropriate lifting handles. *Make sure the unit is transported upright as you don't want the oil leaking out and going into the carburetor.*

### **WATER BLASTER CARE**

1. Change oil in pump after the first 30 working hours (break in period) and then every 3 months or 100 hours of operation. The oil drain bolt is located on the bottom side of the pump. When refilling or adding oil to your pump, the water blaster should be on level ground. Most water blasters have a site glass located on the side of pump, the oil level must be in the center of the site glass. See pump manufacturer specification sheet for proper lubrication if unsure.
2. Prevent pump from freezing during freezing conditions. Flush pump with 1 to 1 mixture of automobile anti-freeze and water. This will also act as a lubricant.
3. Check air filter, spark plugs and oil filters every 100 hours on top of the oil above as part of a general service. These only need to be changed once they have been determined to be dirty or the engine isn't running properly. Please call Pressure Solutions if you require a service or assistance.



# TROUBLESHOOTING - COMMON PROBLEMS AND SOLUTIONS

## What type of oil does my water blaster require?

- Pump and Engine      **10W 30**
- Gearbox                      **80W 90**

## Low Nozzle Pressure

Low nozzle pressure is a common complaint. In a majority of instances, low nozzle pressure is generally caused by one of the following:

1. Obstructed or clogged nozzle tip.
2. Obstructed or clogged inlet filter.
3. Unloader valve stuck open due to debris lodged under the check valve ball.
4. Customer use of shutoff-type quick connectors.
5. Plugged or obstructed hose.
6. Insufficient flow in litres per minute (not pressure) to the pump.

## Why should I keep my nozzles clean?

Clogged nozzles can increase pump back pressure and possibly damage the pump. Immediate attention is required.

## How do I clean clogged nozzles?

1. Always disconnect your spray wand from the gun before cleaning your nozzles!
2. Clear the nozzle with a small rigid piece of wire such as a paper clip.
3. Flush the nozzle backwards with water.
4. Reconnect the wand to the gun.
5. Restart the pressure washer and depress the trigger on the spray gun.

If the nozzle is still plugged or partially plugged, repeat number 1-4. If the previous procedure does not clear the nozzle, replace with a new nozzle.

## Surging Operation

Another condition is that pressure surges. That is, when the trigger is pulled, pressure is satisfactory for a moment then falls off. When the trigger is released, pressure builds up to normal levels. This is generally a sign that the water supply cannot provide the flow rate (litres per minute) required by the pump. Following are some possible solutions:

1. Make sure the supply is not restricted; that there are no under-sized fittings and the inlet screen is unobstructed.
2. Make sure the flow rate of the water supply is sufficient for the pump. First, find the capacity of your pump in litres per minute (LPM). Then determine the flow rate of your supply by measuring the litres that can be delivered in one minute. If your supply does not deliver the LPM your pump requires, do not use the pump. It will suck air, causing cavitations which can quickly damage pump components.
3. Check for leaks in the supply fittings. Any leak will cause the pump to draw air and perform poorly.

## Soap Injector Not Working Properly

When a soap injector is not working properly, the problem is generally fairly easy to isolate. Check the following:

1. If you have interchangeable tips, make sure the Black or blue, soap tip is installed. Soap injectors will not work when high pressure nozzles are installed.
2. Be sure that the soap injector valve is turned on and turn selector valve to desired setting.

3. A piece of debris may be caught in the injector valve, injector ball valve, or orifice. Disassemble and clean the injector.
4. If you have an adjustable nozzle, be sure it is in the low pressure position (away from the gun) to draw soap.

We offer a 30 hour free oil change and check over with every water blaster or custom build purchased from us. This is in line with the Honda engine manual along with other engine suppliers we use. This does not include a general service, anything else needing to be done will need to be paid for or if determined to be under warranty by the service technician then carried out this way. The customer will need proof of purchase to be brought in when getting this done, if the engine has done beyond the 50 hours from the free oil change/check-up then a charge will occur as this is past its run in period. In the case of not knowing how many hours your machine has done, it will need to be within a year from purchase for domestic customers. If the unit is used commercially and the hours are unknown, it will need to be brought in within a 3 month period to be eligible for the free oil change and check over.

### **WARRANTY INFORMATION:**

This warranty is given by Pressure Solutions Ltd, 48 Diana Drive, Wairau Valley, Auckland (the Company). Subject to the exceptions set out below, this machine is warranted by the Company to be free from defects in materials and workmanship for a period of 1 year from the date of purchase with the exception of Honda motors which have a 3 year warranty from date of purchase by Honda New Zealand Ltd. If a product is used from another manufacturer, the unit/item/engine/pump will carry a manufacturers warranty from that supplier which can be stated on a case by case basis.

*Note: All accessories that come with the machines have a 3 months warranty only.*

The benefits offered by this warranty are in addition to your rights and remedies under New Zealand law. Our machines come with guarantees that cannot be excluded under the Consumer Guarantees Act 1993. You are entitled to a replacement or refund for a substantial failure and for compensation for any reasonably foreseeable loss or damage arising as a result of the machine failure. You are also entitled to have the machine repaired or replaced if the machine fails to be of acceptable quality and the failure does not amount to a substantial failure. In the event of a minor failure, the Company reserves the right to choose to repair or replace the appliance.

To make a warranty claim, you must advise as soon as the incident/issue occurs and be able to supply proof of purchase. In the first instance, you should call Pressure Solutions Ltd on 0800 774 765.

The Company will bear any expenses incurred for warranty claims, excluding the cost of transport of the machine for service or the service agents travelling costs to and from your home if you live outside the service area of the Company or one of its agents.

#### **This warranty will not apply in the following cases:**

- i) Any defect or damage which is a result of repair, alteration or modification carried out without the written permission of the Company.
- ii) The use of parts not manufactured, sold or approved by the Company are used in any replacement or repair.
- iii) The machine is operated on an electrical, gas or water supply which differs from the ratings specified on the rating plate and instructions for installation and use of appliance.
- iv) The machine is damaged as a direct result of incorrect installation or being used for a purpose for which it was not designed, sold or otherwise not in accordance with any instructions for installation and use.

If you are unsure on any of the above information or have any further questions, please call Pressure Solutions on 09 443 2913 or 0800 774 765.