

The following pressure washer manual will help you guide you through the pressurewashing setup and provide you with a valuable tips on these commercial matchless machines.

Initial Setup and Operation of your New Pressure Washer

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 the 800 number listed in the front of the manual.

Inspection of oil levels

Check all oil levels in the pump or engine if applicable. Failure to check all levels will result in pressure washer z`damage. Most pump are shipped with oil from factory and the crankcase 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 book.

Water Supply

Your water supply must provide water to the equipment that exceeds the Gallon Per Minute {GPM} rate of your machine. You can check your GPM by using a 5 Gallon bucket and a timer. If your machine is 5 GPM or less and the bucket fills in less than a minute you have adequate supply. Some systems are effected 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 145 Degrees Fahrenheit on the standard models and 180 degrees Fahrenheit on the high temperature models and the pressure should not exceed 60 PSI. **Failure to secure adequate water supply to your commercial pressure washer will result in pump damage. DO NOT RUN PUMP DRY.**

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.

Supply Hose

Hook a garden hose from the hydrant to the machine, when doing this be sure to check the inlet water filter or screen. This hose should be at least 5/8" diameter and a length at least 15 feet. This 15' length helps isolate the water supply from pulsations from the pump. ***Many states require a Vacuum Break or back flow preventor be installed at the hydrant, before the garden hose, to insure the water source cannot be contaminated. Be sure to check local and state regulations upon installation.***

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.

Electrical Supply

A circuit dedicated only to the pressure washer is recommended. This circuit should be installed

by a licensed electrician and checked to supply adequate voltage ***Under Load***. Sometimes 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 GFCI or Thermal to trip. If the GFCI trips or the thermal overload on the motor trips consult factory. Plug your cord into the receptacle. **DO NOT USE EXTENSION CORD!**

Pump

Prior to turning on the power switches or your engine check the oil level in the pump.

Turn on Power

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

During Operation

The pressure was set at the factory 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 has a by-pass valve on it and may have a thermal relief system, this can cause extensive pump damage. If machine will not be discharging water for more than 2 minutes, shut the machine off.

Tip Styles

Interchangeable Tips

Your machine is supplied with either interchangeable tips or a multi-reg. Your machine is supplied with interchangeable spray tips. The black tip lowers your pressure and draws chemical. The other tips are for high pressure rinse at different spray angles. Red is 0 degree, yellow is 15 degree, green is 25 degree and white is 40 degree. The yellow tip is used for most standard applications. Be sure the quick coupler is fully engaged before pulling the trigger gun. Failure to do so may result in the tip becoming a projectile and may be lost or damage to property or persons may occur.

Chemical injector use with interchangeable tips

Your pressure washer is supplied with a downstream chemical injector. The 1/4" clear vinyl tube is to be inserted into the desired chemical to apply. Be sure to use the black, low pressure nozzle to inject 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. The injector 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 to. See calibration below. **Be sure to flush injection system with clear water after use.**

Multi-Reg (Adjustable) Tip

If your machine 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.

Calibration

If an accurate injection rate is desired, use this formula: $(\text{GPM} \times 128) \div (\text{ounces drawn in 1 minute}) = x:1$

IE: If a 2.0 GPM machine draws 8 ounces of chemical in 1 minute: $(2 \times 128) / 8 = 32:1$

Hoses and couplers

Factory supplied hoses are sized in length and diameter for best operational performance and sized within the pressure capabilities. Additional hose added to the machine may change the performance of the machine. Consult factory if you have any questions. When replacing or disconnecting the quick couplers be sure the machine is shut off and relieve the pressure from all hoses.

Shut Down Procedure

Storage

1. Turn off the power switch on the commercial pressure washer
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.

Pump

The pump oil should be changed after the first 50 hours of operation, then every year for average service or more frequently for extensive use or hostile environments {dusty or high moisture}

Filters

Water filters, hoses and fittings should be checked prior to every operation for cleanliness, leaks and repair needs. Repair or replace as needed.

Troubleshooting - Common Problems and Solutions

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. Plugged nozzle tip.
2. Inlet screen plugged.
3. Insufficient flow in gallons per minute (not pressure) to the pump.
4. Unloader valve stuck open due to debris lodged under the check valve ball.
5. Customer use of shutoff-type quick connectors.
6. Plugged hose.

Why should I keep my nozzles clean?

Clogged nozzles can increase pump 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 complaint 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 (gallons 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 gallons per minute (gpm) as shown in the Water Supply. Then determine the flow rate of your supply by measuring the gallons that can be delivered in one minute. If your supply does not deliver the gpm your pump requires, do not use the pump. It will suck air, causing cavitation 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, 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.

Notice

User maintenance procedures include replacing valves and seal. Unloader components are not user serviceable. Repairs involving unloaders and crankcase components should be referred to the factory or a factory authorized repair center.

Two Piece Gun/Wand used on smaller electric units (uses orifices)

Orifice Size	Machine Specifications
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#3.5	1450 PSI @ 2.0-2.2 GPM
	2500 PSI @ 3.0-3.5 GPM
#4	1000 PSI @ 2.0-2.2 GPM
	3000 PSI @ 4.0-4.5 GPM
#5	1500 PSI @ 3.0-3.5 GPM
#6	2000 PSI @ 4.0-4.5 GPM

Gun/Wand used on large electric units(uses either Multi-Reg or Q Meg Tip)



Multi-Reg Tip

Q Meg Tips

Q Meg Size	Machine Specifications	Q Meg Description Black - Soap Tip Red - 0 Degree Yellow - 15 Degree Green - 25 Degree White - 40 Degree
#3.5	1450 PSI @ 2.0-2.2 GPM	
	2500 PSI @ 3.0-3.5 GPM	
#4	1000 PSI @ 2.0-2.2 GPM	
	3000 PSI @ 4.0-4.5 GPM	
#5	1500 PSI @ 3.0-3.5 GPM	
#6	2000 PSI @ 4.0-4.5 GPM	

How to determine your orifice or tip size:

1. Determine pressure and flow of your pressure washer
2. Determine style of gun/wand your unit has
3. Match the pressure and flow of your machine with the style of gun/wand you have
4. Match the orifice size or Q Meg you need using the two boxes above

Example: If your unit operates at 4.0 GPM at 3000 PSI, you will need a #4 in either an orifice or a Q-Meg in the color of your choice, depending on your gun style

Part Number	Description
542081	Gun Wand Half

542082	Wand Tip Half (see orifice chart for correct orifice)
510065	1/4" Quick Coupler for All units
510100	O-Ring for 1/4" Quick Coupler and Twist Fast for All units
509372	Gun for large electric units
509370	Lance for large electric units