

# ***PRESSURE WASHER***

## ***PROFESSIONAL POWER EQUIPMENT***

### **OPERATION INSTRUCTION AND PARTS LIST MANUAL**

#### **For General Direct Drive Diesel Pressure Washer**



**This manual contains:**

**IMPORTANT WARNINGS and INSTRUCTIONS. READ AND RETAIN FOR REFERENCE**

**⚠ WARNING:** To reduce the risk of injury, the user must read and understand the operators manual before using this product.

**SAVE THIS MANUAL FOR FUTURE REFERENCE**

## TABLE OF CONTENTS

<i>Introduction</i> .....	1
<i>Product Identification</i> .....	1
<i>Important Safety Instructions</i> .....	2-4
<i>Product Specifications</i> .....	5
<i>Know Your Pressure Washer</i> .....	6
<i>Assembly</i> .....	7-8
<i>Before Use</i> .....	9
<i>Pressure Washer Location</i> .....	10
<i>Start Your Power Washer</i> .....	11
<i>Use The Nozzle Tips</i> .....	12
<i>Rinsing Pressure</i> .....	12
<i>Apply Chemical</i> .....	13-14
<i>Maintenance</i> .....	15
<i>Storage</i> .....	16-17
<i>Trouble Shooting Guide</i> .....	18
<i>Unit Exploded View And Parts List</i> .....	19
<i>Pump Exploded View and Pump Parts List</i> .....	20
<i>Use Accessories for Pressure Washer</i> .....	21

## INTRODUCTION

### Thank You for Purchasing Our Professional Power Equipment Product

This instruction manual is intended for your benefit. Please read and follow the safety, installation, maintenance and troubleshooting steps described within to ensure your safety and satisfaction. The contents of this instruction manual are based upon the latest product information available at the time of publication. The manufacturer reserves the right to make product changes at any time without notice.

## PRODUCT IDENTIFICATION

### RECORD IDENTIFICATION NUMBERS

If you need to contact an Authorized Dealer for information on servicing, always provide the product model and identification numbers.

You will need to locate the model, revision and serial number for the machine and record the information in the places provided below. You will also need the model and serial number for the engine on your machine.

See the engine operators manual for the location of these numbers.

DATE OF PURCHASE: \_\_\_\_\_

DEALER NAME: \_\_\_\_\_

DEALER PHONE: \_\_\_\_\_

### Product Identification Numbers

UNIT MODEL NAME: \_\_\_\_\_

### ENGINE

MODEL: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

### PUMP

MODEL: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

## IMPORTANT SAFETY INSTRUCTIONS

This manual contains information that is important for you to know and understand. This information relates to protecting **YOUR SAFETY** and **PREVENTING EQUIPMENT PROBLEMS**. To help you recognize this information, we use the symbols below. Please read the manual and pay attention to these sections.

### DANGER

**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

### CAUTION

**CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### WARNING

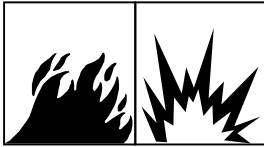
**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

### CAUTION

**CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.



### DANGER--RISK OF EXPLOSION OR FIRE



- Fuel and its vapors are extremely flammable and explosive.
- Fire or explosion can cause severe burns or death.

- **ALWAYS** shut off engine and allow it to cool a least 2minutes before adding fuel to the tank.
- **ALWAYS** use care in filling tank to avoid spilling fuel. Move pressure washer away from fueling area before starting engine.
- **ALWAYS** Keep maximum fuel level below top of tank to allow for expansion.
- **ALWAYS** operate and fuel equipment in well ventilated areas free from obstructions. Equip areas with fire extinguishers suitable for gasoline fires.
- **NEVER** operate pressure washer in an area containing dry brush or weeds.
- **ALWAYS** keep pressure washer a minimum of four feet away from surfaces (such as houses, automobiles, or live plants) that could be damaged from muffler exhaust heat.
- **ALWAYS** Store fuel in an OSHA approved container, in a secure location away from work area.
- **NEVER** spray flammable liquids



### DANGER-- RISK TO BREATHING



- Running engine gives off carbon monoxide, an odorless, colorless, poison gas.
- Breathing carbon monoxide can cause nausea, fainting or death.
- Some chemicals or detergents may be harmful if inhaled or ingested, causing severe nausea, fainting or poisoning.

- **ALWAYS** Operate pressure washer in a well ventilated area. Avoid enclosed areas such as garages, basements ,etc.
- **ALWAYS** Keep exhaust gas from entering a confined area through windows, doors, ventilation intakes, or other openings.
- **NEVER** operate unit in a location occupied by humans or animals.
- **ALWAYS** use the only fluids specifically recommended for high pressure washers.
- **ALWAYS** follow manufacturers recommendations, use a respirator or mask whenever there is a chance that vapors may be inhaled.
- **NEVER** use chlorine bleach or any other corrosive compound.



## WARNING--RISK OF FALL HAZARD



- Use of pressure washer can create puddles and slippery surfaces.
- Kickback from spray gun can cause you to fall.

- Keep operating area clear of all persons, pets, and obstacles.
- Do not operate the product when fatigued or under the influence of alcohol or drugs. Stay alert at all times.
- Never defeat the safety features of this product.
- Do not operate machine with missing, broken, or unauthorized parts.
- Never leave wand unattended while unit is running.
- If engine does not start after two pulls, squeeze trigger of gun to relieve pump pressure. Pull starter cord slowly until resistance is felt. Then pull cord rapidly to avoid kickback and prevent hand or arm injury.
- Keep children away from the pressure washer at all times.
- Do not overreach or stand on an unstable support.
- The cleaning area should have adequate slopes and drainage to reduce the possibility of a fall due to slippery surfaces.
- Be extremely careful if you must use the pressure washer from a ladder, scaffolding, or any other similar location.
- Firmly grasp spray gun with both hands when using high pressure spray to avoid injury when spray gun kicks back.



## WARNING--RISK OF ELECTRICAL SHOCK

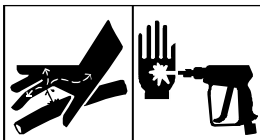


- Risk of electrocution.
- Contact with power source can cause electric shock or burn.

- Unplug any electrically operated product before attempting to clean it. Direct spray away from electric outlets and switches.
- NEVER spray near power source.



## WARNING--RISK TO FLUID INJECTION



- The high pressure stream of water that this equipment produces can cut through skin and its underlying tissues, leading to serious injury and possible amputation. Spray gun traps high water pressure, even when engine is stopped and water is disconnected, which can cause injury.

- ALWAYS point spray gun in safe direction and squeeze trigger, to release high pressure, every time you stop engine.
- NEVER aim spray gun at people, animals, or plants.
- NEVER place hands in front of nozzle.
- Make sure hose and fittings are tightened and in good condition. Never hold onto the hose or fittings during operation.
- Do not allow hose to contact muffler.
- Never attach or remove wand or hose fittings while system is pressurized.
- Use only hose and high pressure accessories rated for pressure higher than your pressure washer's p.s.i.
- To relieve system pressure, shut off engine, turn off water supply, and pull gun trigger until water stops flowing.
- DO NOT allow CHILDREN to operate pressure washer.
- NEVER repair leaking connections with sealant of any kind. Replace o-ring or seal.
- NEVER connect high pressure hose to nozzle extension.
- Keep high pressure hose connected to pump and spray gun while system is pressurized.
- DO NOT secure spray gun in open position.
- DO NOT leave spray gun unattended while machine is running.
- NEVER use a spray gun which does not have a trigger lock or trigger guard in place and in working order.
- ALWAYS be certain spray gun, nozzles and accessories are correctly attached.



## **DANGER-- RISK OF CHEMICAL BURN**



- Use of acids, toxic or corrosive chemicals, poisons, insecticides, or any kind of flammable solvent with this product could result in serious injury or death.

- Do not use acids, gasoline, kerosene, or any other flammable materials in this product. Use only household detergents, cleaners and degreasers recommended for use in pressure washers.
- Wear protective clothing to protect eyes and skin from contact with sprayed materials.
- Do not use chlorine bleach or any other corrosive compound



## **DANGER-- RISK OF HOT SURFACES**



- Contact with hot surfaces, such as engines exhaust components, could result in serious burn.

- During operation, touch only the control surfaces of the pressure washer. Keep children away from the pressure washer at all times. They may not be able to recognize the hazards of this product.



## **DANGER-- RISK OF MOVING PARTS**

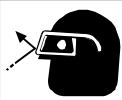


- Starter and other rotating parts can entangle hands, hair, clothing, or accessories.

- NEVER operate pressure washer without protective housing or covers.
- DO NOT wear loose clothing, jewelry or anything that may be caught in the starter or other rotating parts.
- Tie up long hair and remove jewelry.



## **DANGER-- RISK OF EYE INJURY**



- Spray can splash back or propel objects.

- Always wear safety goggles when using this equipment or in vicinity of where equipment is in use.
- Before starting the pressure washer, be sure you are wearing adequate safety goggles.
- NEVER substitute safety glasses for safety goggles.

## PRODUCT SPECIFICATIONS

### Performance:

Max working pressure(Head pressure) ..... 3600PSI/248BAR(+/-6%)  
Flow rate (Pump full capacity) ..... 4.5GPM/17LPM(+/-6%)

### Diesel Engine:

Engine Model ..... 186FE  
Engine Type ..... Single vertical cylinder, 4-stroke, air-cooled, direct injection  
Rated Output Power ..... 9HP  
Displacement ..... 406cc  
Revolution ..... Load 3250RPM, no load 3400RPM  
Starting System ..... Recoil manual start and electric start  
Fuel Tank Capacity ..... 5.5L  
Fuel Consumption ..... 2.15-2.55L/H  
Lubrication Oil Capacity ..... 1.65L  
Lubrication Oil Type ..... SAE10W30

### Battery:

Battery ..... 12V 20AH

### Triplex Pump:

Pump Model ..... 3WZ-1807A  
Pump Type ..... Heavy-duty grade, direct drive, brass forged manifold triplex pump  
Unloader System ..... Inner bypassing bolt on unloader with easy start system and loose proof knob  
Safety devices ..... Thermal relief protection  
Plunger Sealing System ..... Germany Parker U type sealing set solution  
Lubrication Oil Capacity ..... 570ML  
Lubrication Oil Type ..... SAE10W30

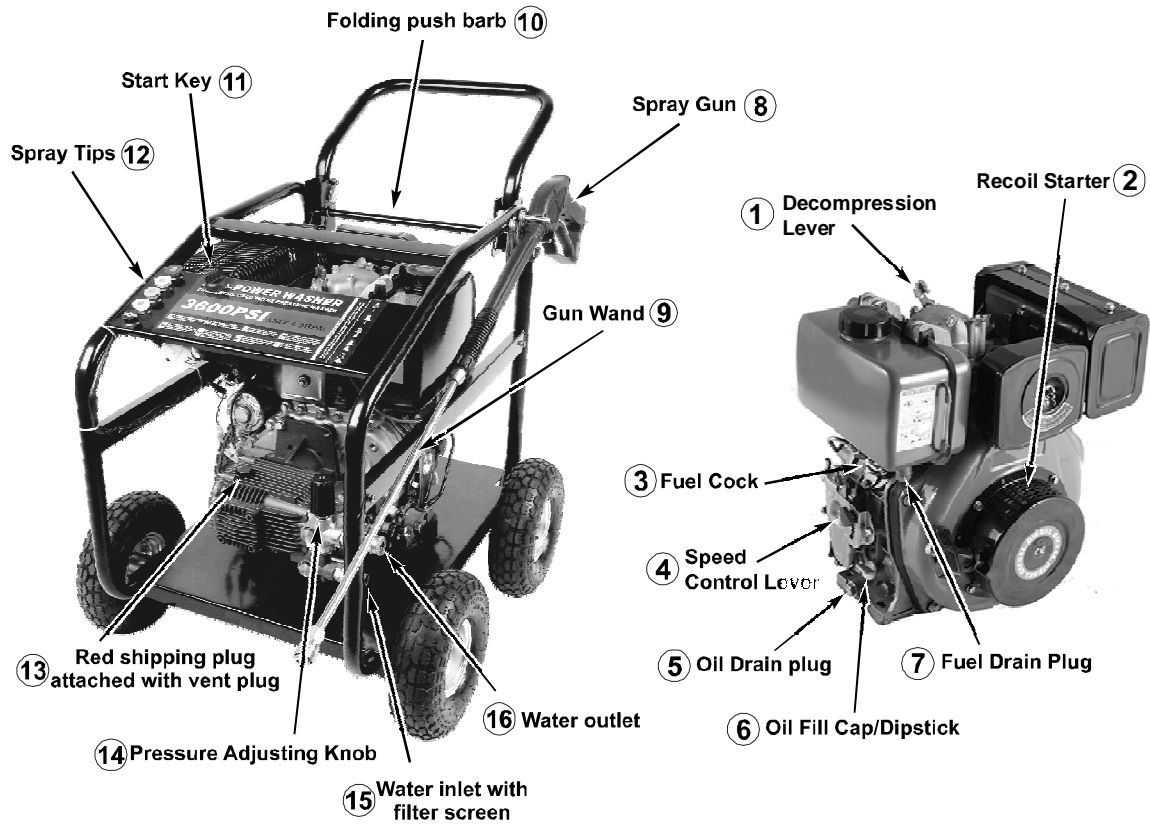
### Water supply:

Max. Feed Temperature..... 45 °C  
Min. Feed Volume ..... 5 gallons per minute @ 20 psi

### Dimension and weight:

Unit Net Weight ..... 90KG  
Shipping Weight..... 100KG  
Shipping Dimension ..... 80x53x64cm

# KNOW YOUR PRESSURE WASHER



1. **Decompression Lever** -- It helps you to start the engine by reducing the effort needed to pull the recoil starter handle.
2. **Recoil Starter** -- Use for starting the engine manually.
3. **Fuel Valve** -- Used to turn fuel on and off to engine.
4. **Speed Control Lever** -- It controls the engine speed.
5. **Oil Drain plug** -- Drain the engine oil here.
6. **Oil Fill Cap/Dipstick** -- Fill engine with oil here, and check the engine oil level use the dipstick.
7. **Fuel Drain Plug** -- Drain the engine fuel here.
8. **Spray Gun** -- Controls the application of water onto cleaning surface with trigger device. Includes safety latch.
9. **Gun wand with Quick Connect** -- To attach the spray tips on it.
10. **Folding push Bard** -- To push this barb to folding the frame.
11. **Electric starter** -- It has three position OFF, ON and START, switch the key to start the engine.
12. **Spray Tips** -- 0/15/25/40 degree and soap nozzle for various high pressure cleaning applications.
13. **Red shipping plug attached with vent plug** -- The pump is ship with red shipping plug to prevent oil leaking during transportation. Replace with the attached vent plug before using.

14. **Pressure Adjusting Knob** -- To raising or reduce the pressure by turn the knob.
  15. **Water inlet with filter screen** -- Connect garden hose here, and always have the filter screen present in it.
  16. **Water outlet build with detergent Injector** -- To connect high pressure hose.
- detergent Injector** -- Use to siphon detergent or other pressure washer chemicals into the low pressure stream.
17. **High Pressure Hose(Not Show)** -- Connect one end to the water pump and the other end to the spray gun.
  19. **Thermal Relief System(Not Show)** -- Cycles water through pump when water reaches 125--155 °F. Warm water will discharge from pump onto ground, prevents internal pump damage.
  20. **Battery(Not Show)** -- Supply the eletricity to key start system.
- PSI:** Pounds per square inch --common unit measure used for water pressure, air pressure, hydraulic pressure and pounds of force.
- GPM:** Gallons per minute (liters per minute [metric]) --common unit measure used for flow rate of water.
- Bypass Mode:** In bypass mode, high pressure pump recirculates water because spray gun trigger is not pulled.

# ASSEMBLY

Your pressure washer requires some assembly and is ready for use after it has been properly serviced with the recommended oil and fuel. Tool need open-end wrench 10mm, 14mm, 17mm.

## 1. Unpack Pressure Washer.

- 1.1 Set carton on a rigid, flat surface. Remove all loose parts and packing. Leave pressure washer in carton.

**⚠ WARNING** Unit is heavy. Do not attempt to lift and remove the pressure washer unit from the carton.



- 1.2 Using a box cutter, open carton completely by cutting the four corners allowing the sides to lay flat. Leave pressure washer on carton while installing wheel, leg rubber bumpers.

## 2. Assembly the Wheel

- 2.1 Remove the nut, spring washer and washer from the axle.
- 2.2 Fit the axles into the wheel axle ports, secure with the nut, spring washer and washer.
- 2.3 Lift the machine and fit the axles into the axle ports that at the bottom of the frame, and ensure the nipple of the spring clip is clocked into the small hole.

**NOTE:** Do not overtighten the nuts, the wheels must be able to rotate freely.

## 4. Assembly the Gun/Hose Hook

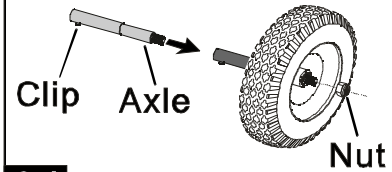
- 4.1 Fit the hook into the position shown and secure using the washers and nuts on the bracket

## 5.0 Preparing Pressure Pump

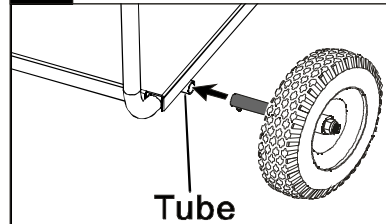
The pressure pump has a shipping plug inserted into the opening for the pump breather plug.

**⚠ WARNING** Failure to remove shipping plug and replace it with the dipstick/oil plug will damage pressure pump. Failure to add pump breather plug could void warranty

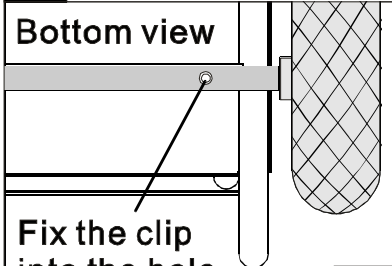
- 5.1 Using an 17mm open-end wrench or socket wrench, remove shipping plug from pressure pump. Discard shipping plug.
- 5.2 Remove pump breather plug from parts bag and insert it into pressure pump.
- 5.3 Tighten pump breather plug securely by hand. Do not use openend wrench or socket wrench to tighten. Using a wrench to tighten pump breather plug could strip threads.
- 5.4 Use sight glass on end of pressure pump to ensure pump oil is at 1/2 of the sight glass level
- 5.5 Add oil to pressure pump if level is below indicator on oil gauge. Use 30-weight non-detergent oil.
- 5.6 Outdoor temperatures determine the proper oil viscosity.
  - \*\*Below 40°F (4 °C) the use of SAE 30 will result in hard starting.
  - \*\*Above 80°F (27 °C) the use of 10W30 may cause increased oil consumption. Check oil level more frequently.



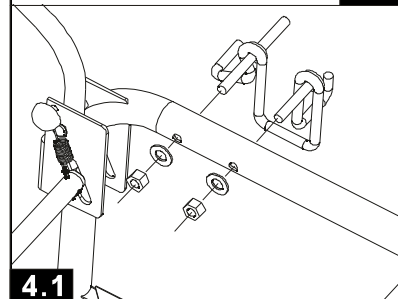
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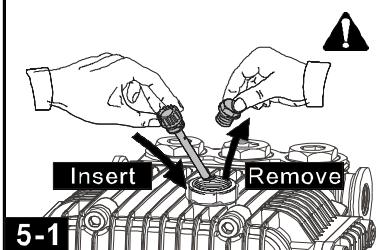
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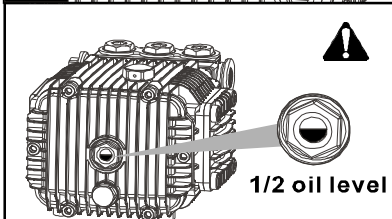
2.3



4.1



5-1



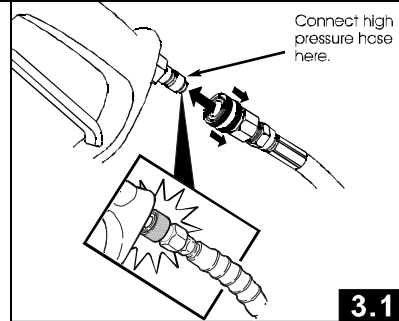
5-2



## BEFORE USE

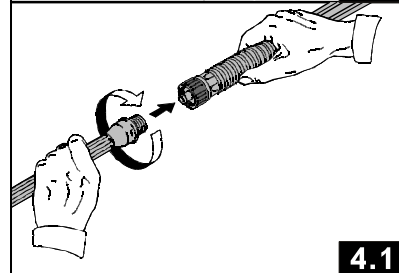
### 3. Attaching High Pressure Hose to Spray Gun

- 3.1 Pull slip ring on female quick-disconnect fitting of high pressure hose back.
- 3.2 Insert male quick-disconnect fitting on spray gun into female quick-disconnect on high pressure hose
- 3.3 Release slip ring on female quick-disconnect and twist. Listen for "click" to ensure both quick-disconnects are coupled.
- 3.4 Pull high pressure hose and spray gun in opposite direction to ensure they do not separate.



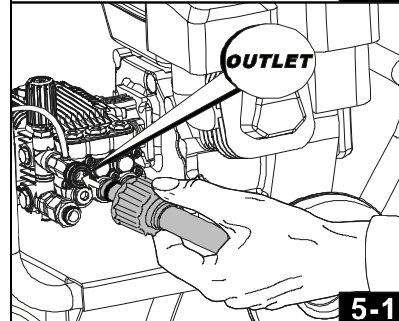
### 4. Connecting Spray Wand to Spray Gun

- 4.1 Thread spray wand onto spray gun.



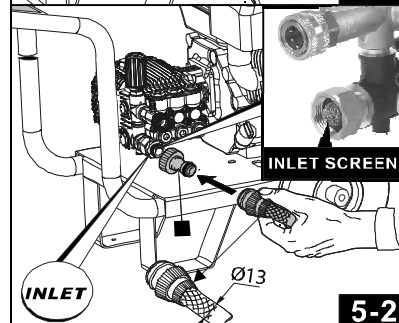
### 5. Connect Hose and Water Supply to Pump

- 5.1 Similarly, attach other end of high pressure hose to high pressure outlet on pump. Pull down on collar of quick connect, slide onto pump and let go of collar. Pull on hose to be sure of tight connection.
- 5.2 Before connecting garden hose to water inlet, inspect inlet screen. Clean screen if it contains debris or have it replaced if damaged. DO NOT run pressure washer if inlet screen is damaged.
- 5.3 Run water through your garden hose for 30 seconds to clean out any debris.



**IMPORTANT:** DO NOT siphon standing water for the water supply. Use ONLY cold water (less than 100°F).

- 5.4 Connect the garden hose (not to exceed 50 feet in length and with the ID no less than 13mm) to the water inlet. Tighten by hand.
- 5.5 Turn ON the water, squeeze the trigger to purge the pump system of air and impurities.



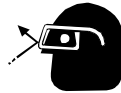
### NOTICE

DO NOT attempt to crank or start the engine before it has been properly serviced with the recommended oil. This may result in an engine failure.

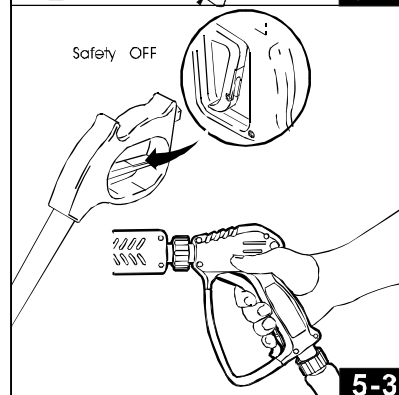
- There MUST be at least ten feet (3 m) of unrestricted garden hose between the pressure washer inlet and any device, such as a vacuum breaker or check valve.
- Damage to equipment resulting from failure to follow this instruction will void warranty.

### WARNING

Risk of eye injury.  
Spray can splash back  
or propel objects.



- Always wear safety goggles when using this equipment or in vicinity of where equipment is in use.
- Before starting the pressure washer, be sure you are wearing adequate safety goggles.
- NEVER substitute safety glasses for safety goggles.



# BEFORE USE

## NOTICE

Improper treatment of pressure washer can damage it and shorten its life.

DO NOT attempt to crank or start the engine before it has been properly serviced with the recommended oil. This may result in an engine failure.

### 1. Checking Engine Oil

- 1.1 Place pressure washer on a flat, level surface.
- 1.2 Remove oil cap/dipstick and wipe with clean cloth.
- 1.3 Fully reinsert oil cap/dipstick but do not screw in.
- 1.4 Remove oil cap/dipstick, the oil level should be between the **H** upper level and **L** level.
- 1.5 Fully reinsert oil cap/dipstick and hand tighten. Do not over tightening it.

### 2. Adding Engine Oil

- 1.1 Place pressure washer on a flat, level surface.
- 1.2 Remove oil cap and add indicated amount of oil at either one of the filler ports, wait one minuted and check oil level, add more oil if necessary.
- 1.3 Fully reinsert oil cap and hand tighten it.

### 3. Engine Oil Recommendations

Outdoor temperatures determine the proper oil viscosity for the engine. Use the chart to select the best viscosity for the outdoor temperature range expected. Below 40°F (4 °C) the use of SAE 30 will result in hard starting. Above 80°F (27 °C) the use of 10W30 may cause increased oil consumption. Check oil level more frequently.

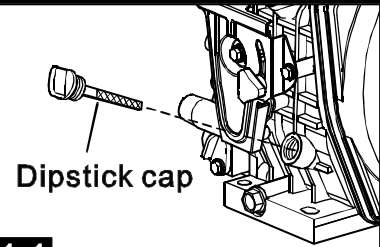
### 2. Adding Fuel

#### **WARNING**

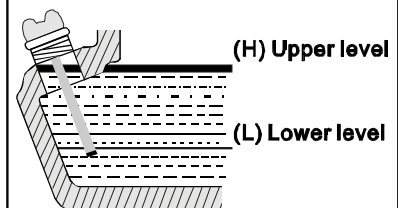
Fuel and fuel vapor are extremely flammable and explosive. Fire or explosion from misuse of fuel can cause severe burns and even death.

#### WHEN ADDING FUEL TO PRESSURE WASHER, OBSERVE THE FOLLOWING STEPS:

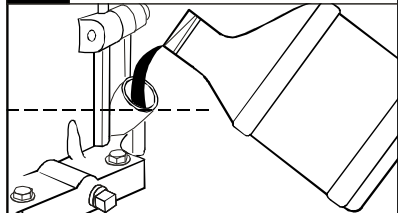
- 2.1 Turn pressure washer OFF and let it cool for at least two minutes before removing fuel cap. Loosen fuel cap slowly to release pressure.
- 2.2 Clean the area around the fuel cap.
- 2.3 Remover the fuel cap from the fuel tank.
- 2.4 Fill fuel tank outdoors.
- 2.5 Stop filling when the fuel is at the same level as the middle ring on the inlet fuel screen. Never overfill the fuel tank.
- 2.6 Replace the fuel cap and hand tighten. Do not over-tightening it.



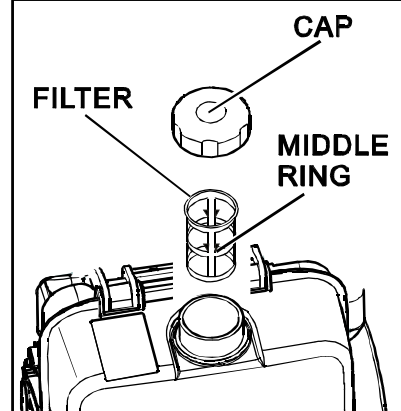
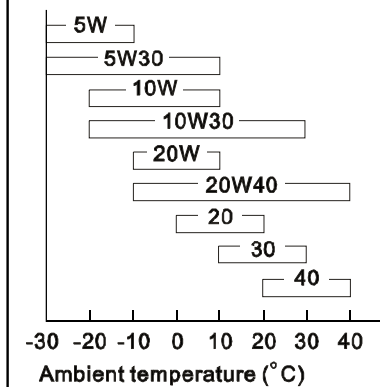
1-1



1-2



1-3



## PRESSURE WASHER LOCATION

### Pressure Washer Location

#### Clearances and Air Movement

### ⚠ WARNING



- Exhaust heat/gases can ignite combustibles, structures or damage fuel tank causing a fire.

- Keep at least 5 ft. (1.5 m) clearance on all sides of pressure washer including overhead.

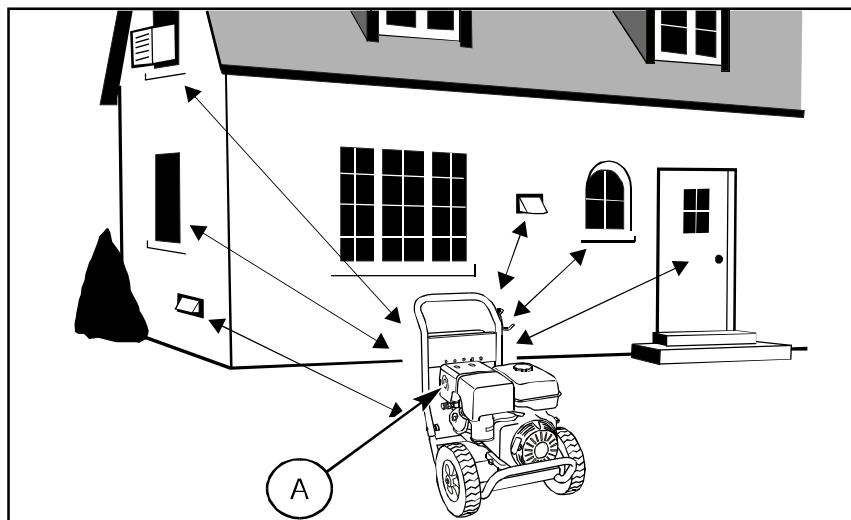
Place pressure washer in a well ventilated area, which will allow for removal of deadly exhaust gas. Do not place pressure washer where exhaust gas could accumulate and enter inside or be drawn into a potentially occupied building. Ensure exhaust gas (A) is kept away from any windows, doors, ventilation intakes, or other openings that can allow exhaust gas to collect in a confined area. Prevailing winds and air currents should be taken in

### ⚠ WARNING



- Running engine gives off carbon monoxide, an odorless, colorless, poison gas.
- Breathing carbon monoxide can cause headache, fatigue, dizziness, vomiting, confusion, seizures, nausea, fainting or death.

- Operate pressure washer ONLY outdoors.
- Keep exhaust gas from entering a confined area through windows, doors, ventilation intakes, or other openings.
- DO NOT start or run engine indoors or in an enclosed area, even if windows and doors are open.

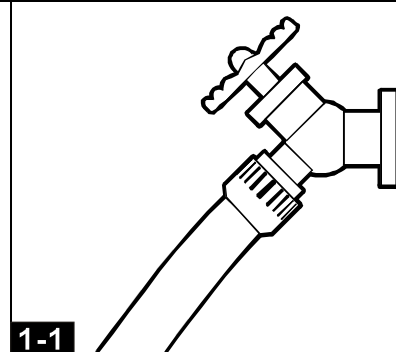


# START YOUR POWER WASHER

## 1. How to Start Your Pressure Washer

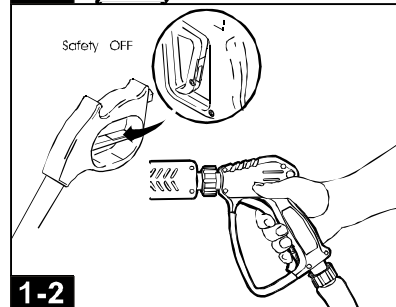
To start your pressure washer for the first time, follow these instructions step-by-step.

- 1.1 Place pressure washer near an outside water source capable of supplying water at a flow rate at least 5 gallons per minute and no less than 20 PSI at pressure washer end of garden hose.
- 1.2 Check that high pressure hose is tightly connected to spray gun and pump.
- 1.3 Make sure unit is in a level position.
- 1.4 Uncoil high pressure hose completely before using pressure washer.
- 1.5 Connect garden hose to water inlet on pressure washer pump.
- 1.6 Turn ON water, point gun in a safe direction and squeeze trigger to purge pump system of air and impurities.



<b>NOTICE</b>
DO NOT run the pump without the water supply connected and turned on.
Damage to equipment resulting from failure to follow this instruction will void warranty.

- 1.7 Attach wand to spray gun. Tighten by hand.
- 1.8 Choose the nozzle, pull back on collar of quick connector, insert nozzle and release collar. Tug on nozzle to make sure it is securely in place.
- 1.9 Rotate fuel valve to "On" position
- 1.10 Turn the engine speed control knob (A) to the left (B). Slide the engine speed control knob to the START position (C). Turn the engine speed control knob to the right (D) to tighten it.
- 1.11 Connect the positive and negative cable to the battery terminal.



## 2. Electric Start

Turn the Key clockwise to the START position. Release the key as soon as the engine starts. It will return to the ON position.

### NOTE: If the engine fails to start:

- 1) Wait until the engine complete stop. Engaging the starter while the engine in rotating will damage to the start motor and flywheel.
- 2) Wait at least 30 seconds before you attempt to start the engine again.

**IMPORTANT:** Allow the Engine to run at no load, low pressure for five minutes after each start-up so Engine can stabilize.

## 3. Recoil Start

See the engine manual for instructions on how to recoil start the engine.

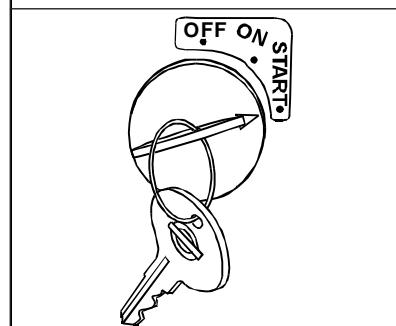
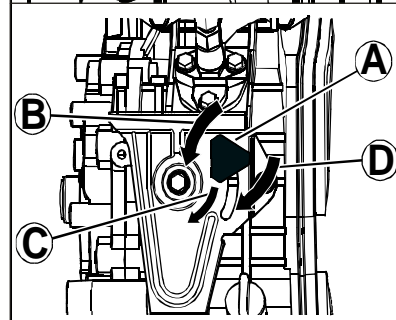
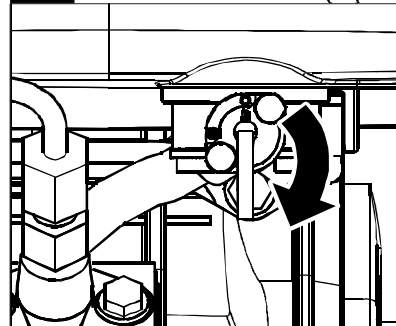
## 4. Cold Start in winter

If the engine is difficult to start in winter, see the engine manual for instructions on how to cold start.

## 5. How to Stop Your Pressure Washer

- 5.1 Release spray gun trigger and allow the engine to run unloaded for 3 minutes before shutting down.
- 5.2 Stop the engine by turn the engine sped control knob to the left (B), slide the knob to the STOP (A) position, turn the knob to the right (D) to tighten it.
- 5.3 Turn the engine switch to the "OFF" position and remove the key.
- 5.4 Rotate fuel valve to "OFF" position
- 5.5 Point spray gun in a safe direction, squeeze spray gun trigger to release retained high water pressure. Engage the gun trigger safety catch.

**IMPORTANT:** Spray gun traps high water pressure, even when engine is stopped and water is disconnected.



## USE THE NOZZLE TIPS

### 1. Attaching Pressure Nozzles to Spray Wand

- 1.1 Pull slip ring on female quick-disconnect fitting of spray wand back.
- 1.2 Insert male quick-disconnect fitting on pressure nozzle into female quick-disconnect on spray wand.
- 1.3 Release slip ring on female quick-disconnect and twist. Listen for "click" to ensure both quick-disconnects are coupled.
- 1.4 Pull high pressure nozzle and spray wand in opposite direction to ensure they do not separate.

**NOTE** To prevent damage to your surface and to select an appropriate nozzle size for your application, always start with lowest pressure nozzle size (White) and continue changing to the higher nozzle size until the best work result is achieved.

The pressure washer comes furnished with five spray nozzles. Each nozzle is color coded and delivers a specific spray pattern and pressure for a particular cleaning job. The size of the nozzle determines the size of the fan spray and the pressure out of the nozzle.

**WARNING** Pressure washer produces fluid pressures and velocities high enough to penetrate human and animal flesh which could result in serious injury or amputation. Do not point pressure washer in direction of people or animals. High velocity fluid spray can cause objects to break, propelling particles at high speeds.

**0° Nozzle - Red:** This nozzle delivers a pinpoint stream of pressurized water and is extremely powerful. It covers only a small area of cleaning. This nozzle should only be directed at surfaces that can withstand high pressure such as metal or concrete. Do not use this nozzle to clean wood.

**15° Nozzle - Yellow:** This nozzle delivers a powerful 15 degree spray pattern for intense cleaning of small areas. This nozzle should only be used on areas and materials that can withstand high pressure.

**25° Nozzle - Green:** This nozzle delivers a 25 degree spray pattern for intense cleaning of larger areas. This nozzle should only be used on areas that can withstand pressure from this nozzle.

**40° Nozzle - White:** This nozzle delivers a 40 degree spray pattern and a less powerful stream of water. This nozzle can cover a wide area and should be used for most general cleaning jobs.

**Chemical Nozzle - Black:** This nozzle is used to apply special chemicals and cleaning solutions. This nozzle produces the weakest pressure stream of the five nozzles.

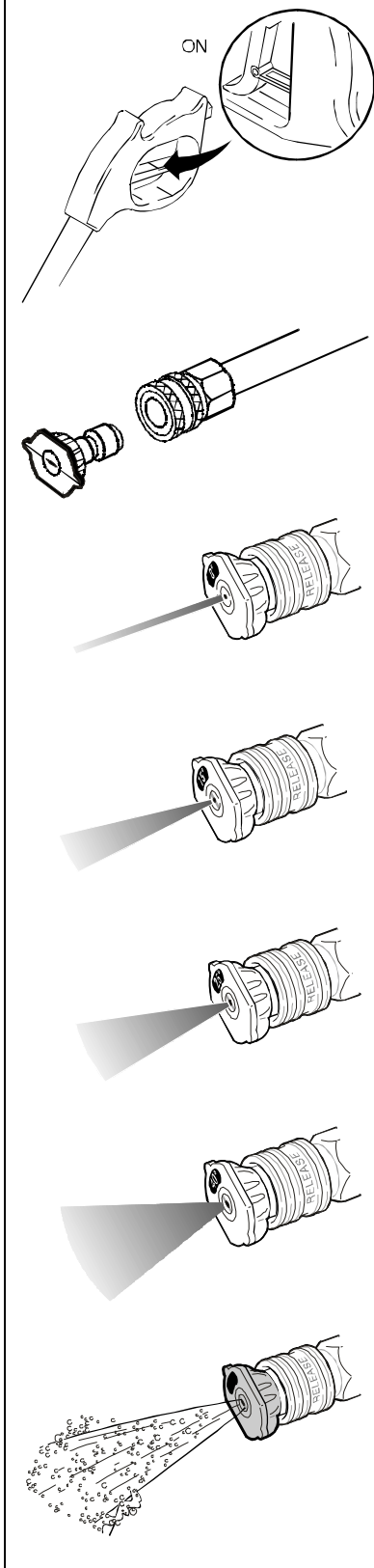
The pressure washer nozzles are stored in receptacles on a panel mounted to the handle of the washer. Colors on the panel identify nozzle location and spray panel.

### 2. Interchanging Pressure Nozzles

Turn off pressure washer before attempting to change pressure nozzles. Follow the steps below:

- 2.1 Pull slip ring of female quick-disconnect back and remove pressure nozzle in pressure wand
- 2.2 Insert male end of new pressure nozzle into quick-disconnect. Release slip ring of quick-disconnect and twist pressure nozzle ensuring proper connection.
- 3.2 Listen for "click" when coupling quick-disconnect and pull in opposite directions to ensure the quick-disconnect does not come apart.

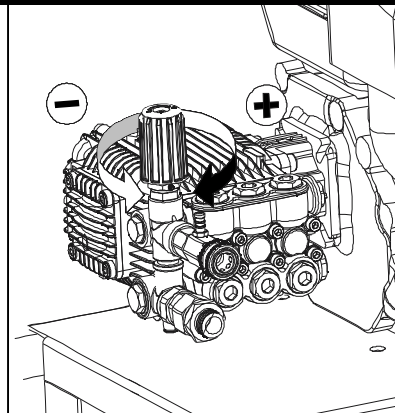
**WARNING** Never place hands in front of nozzle. Never grasp hose or fittings during pressure washer operation. Never attempt to attach or remove spray wand or hose fittings while pressure washer system is pressurized.



## RINSING PRESSURE

### 1. Pressure Washer Rinsing

- 1.1 Remove black spray tip from nozzle extension.
- 1.2 Select and install desired high pressure spray tip following instructions How to Use Spray Tips.
- 1.3 Keep spray gun a safe distance from area you plan to spray.
- 1.4 Increase (decrease) spray pressure by turning pressure control knob clockwise (counterclockwise). Use lower pressure to wash items such as a car or boat. Use higher pressure to strip paint and degrease driveways.
- 1.5 Apply a high pressure spray to a small area and then check surface for damage. If no damage is found, you can assume it is okay to continue rinsing.
- 1.6 Start at top of area to be rinsed, working down with same overlapping strokes as you used for cleaning.



## APPLY CHEMICAL

**Note:** Use only detergents designed for pressure washers; household detergents, acids, alkalines, bleaches, solvents, flammable material, or industrial grade solutions can damage the pump. Many detergents may require mixing prior to use. Prepare cleaning solution as instructed on the solution bottle.

### 1. To Apply Chemicals:

- 1.1 Press chemical hose onto barbed fitting located near back of high pressure hose connection.
- 1.2 Press other end of chemical hose, with filter, into container holding chemicals or cleaning solutions.
- 1.3 Install chemical (black) nozzle.

### 2. After Using Chemicals:

After using soaps and cleaning solutions, it is necessary to thoroughly clean the pressure washer.

- 2.1 Place the chemical hose in a container of clean water.
- 2.2 Turn on pressure washer and engage spray wand to draw clean water through the system to thoroughly clean it.

### 3. Cleaning and Applying Detergent

To apply detergent, follow these steps:

- 3.1 Review use of spray tips.
- 3.2 Prepare detergent solution as required by job.
- 3.3 Place small filter end of detergent siphoning tube into detergent container.

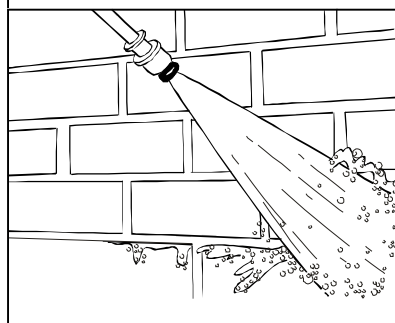
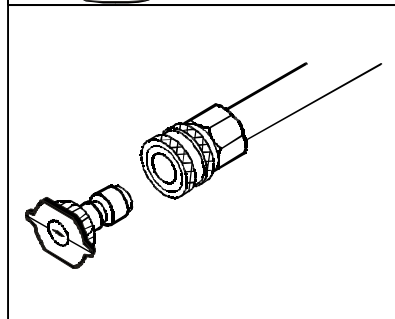
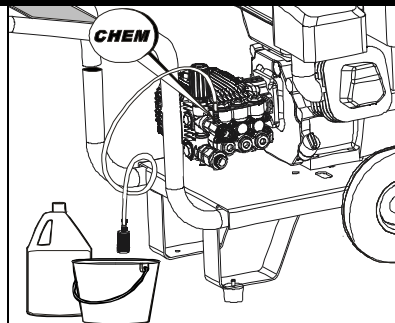
**NOTE:** Make sure the filter is fully submerged in detergent while applying detergent.

4. Make sure black spray tip is installed.

**NOTE:** Detergent cannot be applied with the high pressure spray tips (White, Green, Yellow or Red).

5. Make sure garden hose is connected to water inlet. Check that high pressure hose is connected to spray gun and pump. Turn on water.
6. Start engine following instructions How to Start Your Pressure Washer.
7. Apply detergent to a dry surface, starting at lower portion of area to be washed and work upward, using long, even overlapping strokes.
8. Allow detergent to "soak in" for 3-5 minutes before washing and rinsing. Reapply as needed to prevent surface from drying. **DO NOT** allow detergent to dry on (prevents streaking).

**IMPORTANT:** You must flush the detergent siphoning system after each use by placing the filter into a bucket of clean water, then run the pressure washer in low pressure for 1-2 minutes.



# MAINTENANCE

## General Recommendations

Regular maintenance will improve the performance and extend the life of the pressure washer.

The pressure washer's warranty does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, the operator must maintain the pressure washer as instructed in this manual and in the engine manual, including proper storage as detailed in Winter Storage and Long Term Storage

**NOTE:** Should you have questions about replacing components on your pressure washer, please contact dealer for assistance.

- Some adjustments will need to be made periodically to properly maintain your pressure washer. Check the spray gun and extension wand assembly for wear.
- All maintenance in this manual and the engine operator's manual should be made at least once each season.
- Once a year you should clean or replace the spark plug, clean or replace the air filter. A new spark plug and clean air filter assure proper fuel-air mixture and help your engine run better and last longer. Please refer to your engine operator's manual for more details.

## Pressure Washer Maintenance

### Clean Debris

Daily or before use, clean accumulated debris from cleaning system. Keep linkage, spring and controls clean. Keep area around and behind muffler free from any combustible debris. Inspect cooling air slots and openings on the pressure washer. These openings must be kept clean and unobstructed.

### NOTICE

Improper treatment of pressure washer can damage it and shorten its life.

- **DONOT** insert any objects through cooling slots.

Cleaning system parts should be kept clean to reduce the risk of overheating and ignition of accumulated debris.

Use a damp cloth to wipe exterior surfaces clean.

Use a soft bristle brush to loosen caked on dirt, oil, etc.

Use a vacuum cleaner to pick up loose dirt and debris.

### Check and Clean Inlet Screen

Examine the screen on the pump water inlet. Clean it if the screen is clogged or replace it if screen is damaged.

### Check High Pressure Hose

The high pressure hose can develop leaks from wear, kinking, or abuse. Inspect the hose each time before using it. Check for cuts, leaks, abrasions or bulging of cover, damage or movement of couplings. If any of these conditions exist, replace the hose immediately.

### ⚠ WARNING



The high pressure stream of water that this equipment produces can cut through skin and its underlying tissues, leading to serious injury and possible amputation.

- **NEVER** repair high pressure hose. Replace it.
- Replacement hose rating **MUST** exceed maximum pressure rating of unit

### Check Detergent Siphoning Tube

Examine the filter on the detergent tube and clean if clogged. The tube should fit tightly on the barbed fitting. Examine the tube for leaks or tears. Replace the filter or tube if either is damaged.

### Check Gun

Examine the hose connection to the spray gun and make sure it is secure, and make sure the "Safety Lock" is present attached on the trigger, it helps to prevent any accident jets when in operating. Replace spray gun immediately if it the "Safety Lock" is damage or not works.

### Check Spray Wand



Occasionally, the spray wand can become clogged with foreign materials such as dirt. When this happens, excessive pressure can develop. Whenever the pressure nozzle becomes partially clogged, the pump pressure will pulsate. It should be immediately cleaned.

# MAINTENANCE

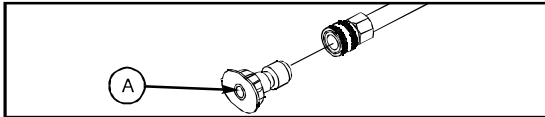
## Nozzle Maintenance

A pulsing sensation felt while squeezing the spray gun trigger may be caused by excessive pump pressure. The principal cause of excessive pump pressure is a spray tip clogged or restricted with foreign materials, such as dirt, etc. To correct the problem, immediately clean the spray tip following these instructions:

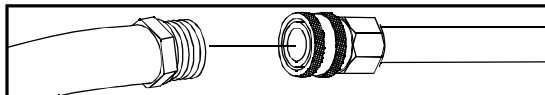
1. Shut off engine and turn off water supply.
2. ALWAYS point spray gun in a safe direction, squeeze spray gun trigger to release retained high water pressure.

 <b>WARNING</b>	
	The high pressure stream of water that this equipment produces can cut through skin and its underlying tissues, leading to serious injury and possible amputation. Spray gun traps high water pressure, even when engine is stopped and water is disconnected, which can cause injury.
<ul style="list-style-type: none"> <li>• Keep high pressure hose connected to pump and spray gun while system is pressurized.</li> <li>• ALWAYS point spray gun in safe direction squeeze spray gun trigger, to release high pressure, every time you stop engine.</li> </ul>	

3. Remove spray tip from end of nozzle extension.
4. Use a small paper clip to free any foreign material clogging or restricting spray tip (A).



5. Remove nozzle extension from spray gun.
6. Using a garden hose, remove additional debris by back flushing water through nozzle extension. Back flush between



7. Reinstall spray tip into nozzle extension.
8. Reconnect nozzle extension to spray gun.
9. Make sure garden hose is connected to water inlet. Check that high pressure hose is connected to spray gun and pump. Turn on water.
10. Start engine following instructions How to Start Your Pressure Washer
11. Test pressure washer by operating with each quick connect spray tip.

## Pump Oil Maintenance

### Changing Pump Oil

Change oil after first 50 hours of operation and then every 200 hours or 3 months, whichever occurs first.

**NOTE:** When changing pump oil, use only high quality nondetergent 30 weight oil. Use no special additives.


#### Change pump oil as follows:

1. Clean area around brass oil drain plug at bottom of pump.
2. Remove oil drain plug. Drain oil completely into an approved container.
3. When oil has completely drained, install oil drain plug and tighten firmly.
4. Clean area around pump oil dipstick. Remove dipstick and fill pump with recommended oil to full mark on dipstick.
5. Install pump oil dipstick.
6. Wipe up any spilled oil.

Pump Series	Oil Type	Oil Capacity
15	10W-30	430ML
18	10W-30	560ML

## Engine Maintenance

See the engine operator's manual for instructions on how to properly maintain the engine.

 <b>CAUTION</b>	
Avoid prolonged or repeated skin contact with used motor oil.	
<ul style="list-style-type: none"> <li>• Used motor oil has been shown to cause skin cancer in certain laboratory animals.</li> <li>• Thoroughly wash exposed areas with soap and water.</li> </ul>	



**KEEP OUT OF REACH OF CHILDREN. DON'T POLLUTE. CONSERVE RESOURCES. RETURN USED OIL TO COLLECTION CENTERS.**

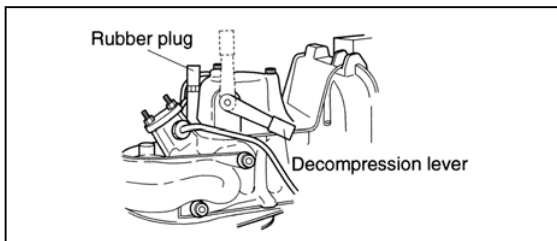


# STORAGE

## Long Term Storage Instructions

Follow the instructions below if you plan to storing the engine for a long periods of time.

- 1) Run the engine for 3 minutes to burn out the excess fuel in the chamber.
- 2) Stop the engine. Drain the engine lube oil while the engine is still warm and refill it with the new oil.
- 3) Remove the rubber plug on the rocker arm and put about 2cc of the lubricant into it, put it back in place.



## 4) Recoil starting

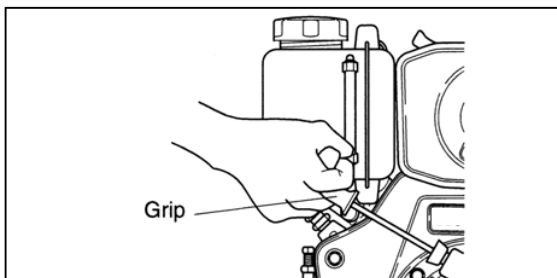
Push the decompression lever down and hold it while you pull the recoil starter 2 or 3 times. (Do not start the engine).

## 5) Electric starting

Hold down the decompression lever and turn the start key switch to the START position. Let the engine rotate for about 2-3 seconds

## 6) Pull the decompression lever up and pull the recoil starter slowly until you feel resistance. The resistance point occurs on the compression stroke where the intake and exhaust valves are closed. It is also the will prevent moisture from entering the chamber to cause rust.

## 7) Wipe the oil and dirt from the engine.



## Storage of Pressure Pump

1. Drain all water from high pressure line, coil it and store it in cradle of pressure washer handle.
2. Drain all water from spray gun and spray wand by holding spray gun in vertical position with nozzle pointed downward. Squeeze trigger to remove fluids from spray gun and spray wand. Store in spray gun/hose holder.
3. Store chemical hose, high pressure hose and spray wand so they are protected from damage, such as being run over.

It is **RECOMMENDED** that you follow these steps to protect the internal seals of pressure washer when storing unit for more than 30 days and/or when freezing temperatures are expected.

1. Obtain a funnel, six ounces of RV antifreeze and approximately 36 inches of garden hose with a male hose connector on one end.

### **CAUTION**

Use only RV antifreeze. Any other type of antifreeze is corrosive and can damage pressure pump.

2. Disconnect spark plug wire. Ensure it cannot touch any metal on pressure washer.
3. Connect 36 inch length of garden hose to water inlet of pressure pump.
4. Add RV antifreeze.
5. Pull engine starter rope slowly several times until antifreeze comes out of pressure hose connection of pressure pump.
6. Remove hose from water inlet of pressure pump.

## Other Storage Tips

1. Replace fuel container, if metal, and it begins to rust. Rust and dirt and debris can contaminate fuel supply and components resulting in poor performance and/or internal damage to engine. Fuel should be stored in newer approved plastic storage containers.
3. Cover pressure washer with a suitable cover that does not retain moisture such as a plastic or plastic coated tarp. **DO NOT** place the cover when the unit is still hot.
4. Store pressure washer in a clean, dry area.

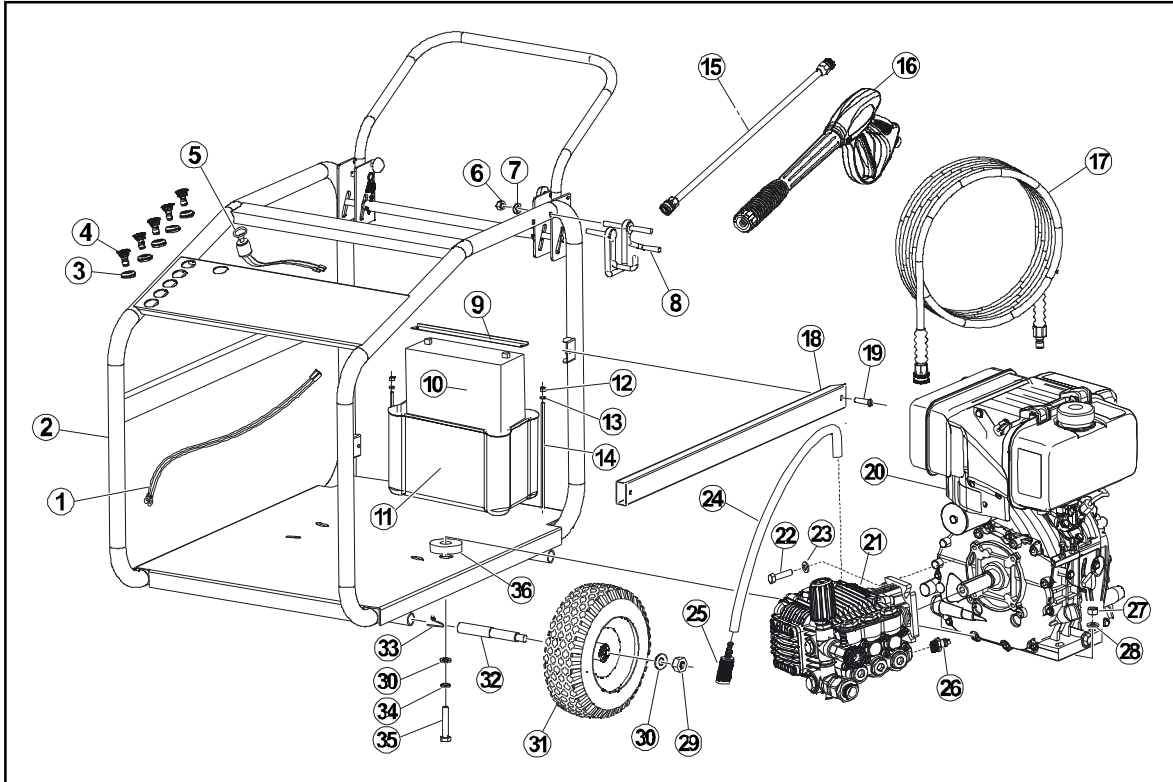
## TROUBLE SHOOTING GUIDE

Problem	Probable Cause	Solution
<b>Starter motor operates but engine does not start</b>	<ol style="list-style-type: none"> <li>1. No diesel fuel</li> <li>2. Improper diesel fuel</li> <li>3. Clogged fuel filter</li> <li>4. Poor fuel injection</li> <li>5. Compressed air leakage from intake/exhaust valves</li> </ol>	<ol style="list-style-type: none"> <li>1. Refuel fuel system</li> <li>2. Replace with recommended diesel fuel</li> <li>3. Replace fuel filter</li> <li>4. Contact authorized service facility.</li> <li>5. Contact authorized service facility.</li> </ol>
<b>Starter motor does not operated or rotates too slowly (engine can be turned manually)</b>	<ol style="list-style-type: none"> <li>1. Battery needs charging</li> <li>2. Faulty cable connection at battery terminals</li> <li>3. Faulty starter switch</li> <li>4. Faulty starter motor</li> </ol>	<ol style="list-style-type: none"> <li>1. Check electrolyte, recharge</li> <li>2. Clean terminals, retighten</li> <li>3. Contact authorized service facility.</li> <li>4. Contact authorized service facility.</li> </ol>
<b>Black exhaust smoke</b>	<ol style="list-style-type: none"> <li>1. Engine overloaded</li> <li>2. Clogged air cleaner element</li> <li>3. Improper diesel fuel</li> <li>4. Faulty spraying of fuel injection</li> <li>5. Excessive intake/exhaust valve clearance.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load</li> <li>2. Clean element or replace</li> <li>3. Replace with the recommended diesel fuel</li> <li>4. Contact authorized service facility.</li> <li>5. Contact authorized service facility.</li> </ol>
<b>White exhaust smoke</b>	<ol style="list-style-type: none"> <li>1. Improper diesel fuel</li> <li>2. Faulty spray pattern of fuel injection</li> <li>3. Fuel injection timing delay</li> <li>4. Engine burning oil</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with the recommended diesel fuel</li> <li>2. Contact authorized service facility.</li> <li>3. Contact authorized service facility.</li> <li>4. Contact authorized service facility.</li> </ol>
<b>No pressure or Low pressure</b>	<ol style="list-style-type: none"> <li>1.Spray wand not set to high pressure.</li> <li>2.Lower water supply.</li> <li>3.Hose fitting leaks during high pressure.</li> <li>4.Nozzle obstructed.</li> <li>5.Water filter screen obstructed.</li> <li>6.Defective thermal relief valve.</li> <li>7.Air in hose.</li> <li>8.Engine is running at lower speed.</li> <li>9.High pressure too long.</li> </ol>	<ol style="list-style-type: none"> <li>1.See "Using Spray Wand" section.</li> <li>2.Water supply must be 5 GPM @ 20 psi.</li> <li>3.Tighten hose fitting. Use thread sealant tape if necessary.</li> <li>5.Remove and clean filter.</li> <li>6.Call Customer Service:</li> <li>7.Stop engine and water source. Disconnect water source from pump inlet and turn water source to ON to remove all air from hose. When steady stream of water is present, turn water source to OFF. Re-connect water source to pump inlet and turn on water source. Squeeze trigger to remove remaining air.</li> <li>8.Increase the engine speed by turn the speed control knob.</li> <li>9.Move throttle control lever from fast position.</li> </ol>

## TROUBLE SHOOTING GUIDE

Problem	Probable Cause	Solution
<b>Pump will not draw Chemicals</b>	<ol style="list-style-type: none"> <li>1.Spray wand not set to low pressure..</li> <li>2.Chemical filter clogged.</li> <li>3.Chemical screen not in chemical.</li> <li>4.Chemical solution too thick.</li> <li>5.Pressure hose too long</li> <li>6.Chemical build-up in chemical injector.</li> </ol>	<ol style="list-style-type: none"> <li>1.See "Using Spray Wand" section.</li> <li>2.Clean Filter.</li> <li>3.Ensure end of chemical hose is fully submerged into chemicals.</li> <li>4.Dilute chemical. Chemical solutions should have same consistency as water.</li> <li>5.Lengthen water supply hose instead of pressure hose.</li> <li>6.Have parts cleaned or replaced by authorized dealer.</li> </ol>
<b>No or low pressure (after period of normal use).</b>	<ol style="list-style-type: none"> <li>1.Worn seal or packing.</li> <li>2.Worn or obstructed valves.</li> <li>3.Worn unloader piston.</li> <li>4.Worn E-Z start valve.</li> </ol>	Have parts cleaned or replaced by authorized dealer.
<b>Water leaking at spray gun/spray wand connection.</b>	<ol style="list-style-type: none"> <li>1.Worn or broken O-ring.</li> <li>2.Loose hose connection.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and replace O-ring.</li> <li>2. Tighten hose connection.</li> </ol>
<b>Water leaking at pump.</b>	<ol style="list-style-type: none"> <li>1.Loose connections.</li> <li>2.Piston packings worn.</li> <li>3.Worn or broken O-rings.</li> <li>4.Pump head or tubes damaged from freezing.</li> </ol>	<ol style="list-style-type: none"> <li>1.Check and replace O-ring</li> <li>2.Tighten hose connection.</li> <li>1.Tighten connections.</li> <li>2.Have parts cleaned or replaced by authorized dealer.</li> <li>3.Have parts cleaned or replaced by authorized dealer.</li> <li>4.Have parts cleaned or replaced by authorized dealer.</li> </ol>
<b>Oil leaking at pump</b>	<ol style="list-style-type: none"> <li>1.Oil seals worn.</li> <li>2.Loose drain plug.</li> <li>3.Worn drain plug O-ring.</li> <li>4.Worn fill plug O-ring.</li> <li>5.Pump overfilled.</li> <li>6.Incorrect oil used.</li> <li>7.Vent plug clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Have parts cleaned or replaced by authorized dealer.</li> <li>2.Tighten drain plug.</li> <li>3.Inspect and replace O-ring.</li> <li>4.Inspect and replace O-ring.</li> <li>5.Check for correct amount.</li> <li>6.Drain and refill with correct type and amount of oil.</li> <li>7.Clean vent plug. Use air hose to free it of blockage. If problem persists, replace vent plug.</li> </ol>
<b>Pump pulsates</b>	Nozzle obstructed.	See "Using Spray Wand" section.

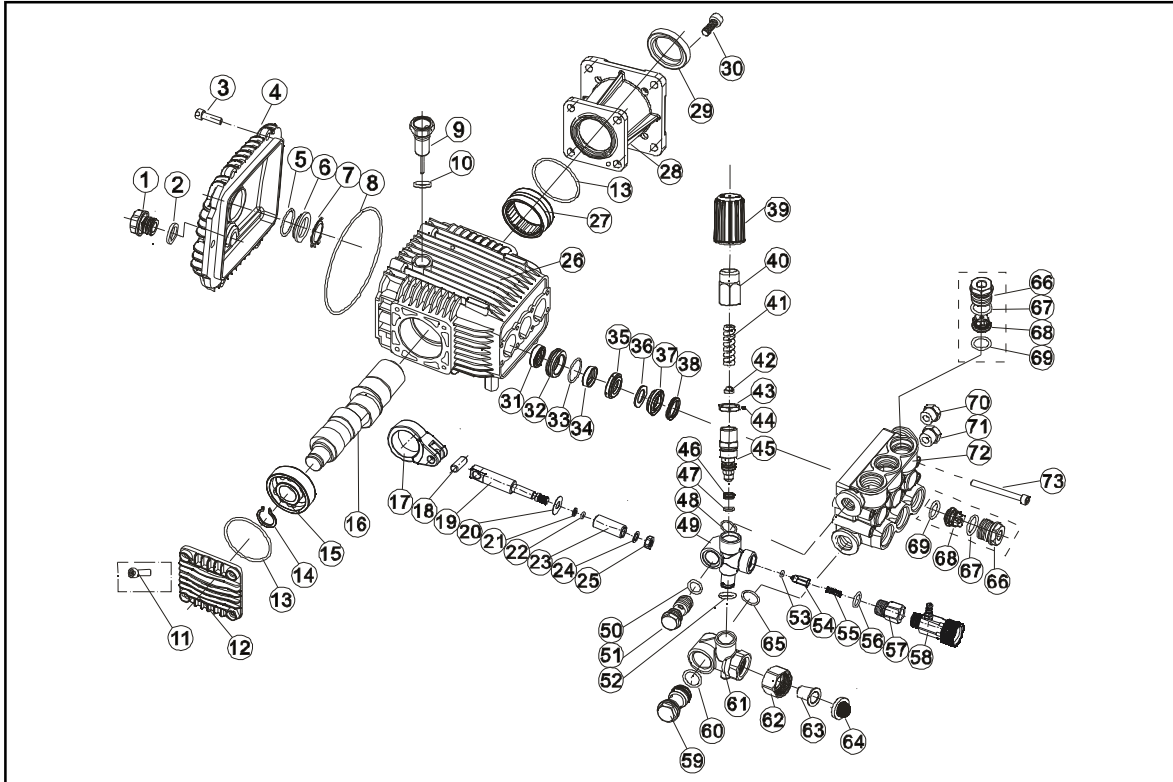
## UNIT EXPLODED VIEW AND PARTS LIST



### PARTS LIST

Ref No.	Description	Qty per pump	Ref No.	Description	Qty per pump
1	Wire	2	19	Screw	1
2	Frame	1	20	Diesel engine	1
3	Grommet	5	21	Pump	1
4	Nozzle	5	22	Bolt	4
5	Start key	1	23	Washer	4
6	Nut	2	24	Detergent inlet hose	1m
7	Plain washer	2	25	Filter	1
8	Hook	1	26	Thermal relief valve	1
9	Tighten plate	1	27	Nut	4
10	Battery	1	28	Washer	4
11	Case	1	29	Wheel fix lock nut	4
12	Fix nut	2	30	Washer	4
13	Plain washer	2	31	Wheel	4
14	Bolt	2	32	Axle	4
15	Wand	1	33	Spring clip	4
16	Gun	1	34	Spring washer	4
17	High pressure hose	10m	35	Bolt	4
18	Cross bar	1	36	Rubber feet	4

## PUMP EXPLODED VIEW AND PARTS LIST



### PARTS LIST

1	Drain plug	26	Crankcase	51	Outlet banjo bolt
2	Gasket	27	Needle bearing	52	O-ring
3	Screw	28	Flange	53	O-ring
4	Crankcase cover	29	Oil seal	54	Checking valve
5	O-ring	30	Bolt	55	Spring
6	Side glass	31	Oil seal	56	O-ring
7	Fix clip	32	Retainer ring	57	Outlet connector
8	O-ring	33	O-ring	58	QD with detergent injection
9	Vented oil plug	34	Low pressure seal	59	Inlet banjo bolt
10	O-ring	35	Seal compaction ring	60	O-ring
11	Bolt	36	Seal Compaction flake	61	By-pass housing
12	Crankshaft cover	37	High-pressure seal	62	Swivel nut
13	O-ring	38	Supporting ring	63	Inlet connector
14	Snap ring	39	Plastic cap	64	Inlet water filter
15	Ball bearing	40	Knob	65	O-ring
16	Crankshaft	41	Spring	66	Valve Plug
17	Connecting rod	42	Spring seat	67	O-ring
18	Fix pin	43	Jam nut	68	Checking valve assy
19	Plunger guide	44	Fix screw	69	O-ring
20	Checking ring	45	Unloader Valve	70	Outlet plug
21	Backup ring	46	Valve Seat	71	Inlet plug
22	O-ring	47	O-ring	72	Manifold head
23	Ceramic pipe	48	O-ring	73	Bolt
24	Plain washer	49	Valve housing		
25	Fix nut	50	O-ring		

## USE ACCESSORIES FOR PRESSURE WASHER

### Pressure Washer Accessories

Are add-on tools that further enhance the effectiveness and speed of your cleaning. Pressure washer accessories save you additional time and labour as well as reduce the wear and tear on your pressure washer. Thus with pressure washer accessories you can see the life of your pressure washer extended.



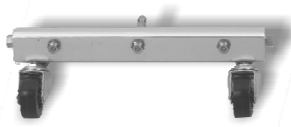
#### Foam Generator

It gives fantastic results, spraying foam all over the vehicle creating the 'snow bath effect' and excellent cleaning ability. Simply spray over vehicle and leave the foam to dwell soaking up the dirt in the process, rinse and dry leaving a excellent finish.



#### Turbo Nozzles

The nozzle rotates a powerful, zero degree spray pattern in a circular motion to break down tough dirt and grime. By spinning the discharge water, the spray adds additional scrubbing ability to the cleaning process. It provide a 200% cleaning efficiency over a 25-degree flat fan nozzle.



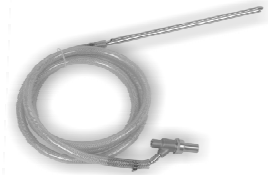
#### Water Broom-triplex nozzle

Three or Four fixed spray tips which are mounted on a rolling "broom" and make the job of cleaning any flat surface faster. Use it on sidewalks, driveways, decks, or anywhere you need to quickly clean a flat surface.



#### Wet sands blasting

It combined with your pressure washer and injects sands in to the water jetting to aid in blasting off coatings from steel and concrete surfaces, can be used on rust, paint, stains, and graffiti. It features a ceramic head and a sand probe that will draw sand directly out of the bag, get the sands wet and no atomised granules in the air for operator to breathe.



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