



# GASOLINE PRESSURE WASHER 13 HP - 4,000 PSI

**Model 97005**

## SET UP, OPERATING, AND SERVICING INSTRUCTIONS



### **⚠ DANGER**

Using an engine indoors **CAN KILL YOU IN MINUTES.**

Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell.



**NEVER** use inside a home or garage, **EVEN IF** doors and windows are open.

Only use **OUTSIDE** and far away from windows, doors, and vents.

Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.  
Failure to do so can result in serious injury.  
SAVE THIS MANUAL.**

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**For technical questions or replacement parts, please call 1-800-444-3353.**

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## SAVE THIS MANUAL

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Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

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## IMPORTANT SAFETY INFORMATION

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In this manual, on the labeling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **DANGER**

**DANGER** indicates a hazardous

situation which, if not avoided, will result in death or serious injury.

### **WARNING**

**WARNING** indicates a

hazardous situation which, if not avoided, could result in death or serious injury.

### **CAUTION**

**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### **NOTICE**

**NOTICE** is used to address practices not related to personal injury.

### **CAUTION**

**CAUTION**, without the safety alert symbol, is used to address practices not related to personal injury.



**WARNING!** Read all instructions. Failure to follow all instructions listed below may result in fire, serious injury and/or DEATH.

The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

### SAVE THESE INSTRUCTIONS

Safety warnings continue on next page.

## **SET UP PRECAUTIONS**

1. Gasoline fuel and fumes are flammable, and potentially explosive. Use proper fuel storage and handling procedures. Do not store fuel or other flammable materials nearby.
2. Have multiple ABC class fire extinguishers nearby.
3. This equipment may not have a spark arresting muffler included. A spark arresting muffler is required by law in California, on some US Forest Service land, and possibly in other areas or situations. Install an approved spark arrestor before use if legally required or if engine is to be used near grass, brush, forests, crops, or any other flammable materials.
4. Set up and use only on a flat, level, well-ventilated surface.
5. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during set up.
6. Use only oil and fuel recommended in the "Specifications" section of this manual.

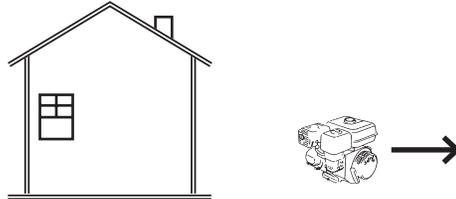
## **OPERATING PRECAUTIONS**

1.  **CARBON MONOXIDE HAZARD**  
**Using an engine indoors CAN KILL YOU IN MINUTES.**

Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell.



**NEVER** use inside a home or garage, **EVEN IF** doors and windows are open.



Only use **OUTSIDE** and far away from windows, doors, and vents.

2. Keep children away from the equipment, especially while it is operating.
3. Do not leave the equipment unattended when it is running. Turn off the equipment (and remove safety keys, if available) before leaving the work area.
4. Wear ANSI-approved safety goggles and hearing protection during use.
5. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to a heart pacemaker could cause pacemaker interference or pacemaker failure. Caution is

- necessary when near the engine's magneto or recoil starter.
6. Use only accessories that are recommended by Harbor Freight Tools for your model. Accessories that may be suitable for one piece of equipment may become hazardous when used on another piece of equipment.
  7. Do not operate in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Gasoline-powered engines may ignite the dust or fumes.
  8. Stay alert, watch what you are doing and use common sense when operating a piece of equipment. Do not use a piece of equipment while tired or under the influence of drugs, alcohol or medication.
  9. Do not overreach. Keep proper footing and balance at all times. This enables better control of the equipment in unexpected situations.
  10. Use this equipment with both hands only. Using equipment with only one hand can easily result in loss of control.
  11. Dress properly. Do not wear loose clothing or jewelry. Keep hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
  12. Parts, especially exhaust system components, get very hot during use. Stay clear of hot parts.
  13. Do not cover the engine or equipment during operation.
  14. Keep the equipment, its engine, and surrounding area clean at all times.
  15. Use the equipment, accessories, etc., in accordance with these instructions and in the manner intended for the particular type of equipment, taking into account the working conditions and the work to be performed. Use of the equipment for operations different from those intended could result in a hazardous situation.
  16. Do not operate the equipment with known leaks in the engine's fuel system.
  17. This product contains or, when used, produces a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. (California Health & Safety Code § 25249.5, *et seq.*)
  18. When spills of fuel or oil occur, they must be cleaned up immediately. Dispose of fluids and cleaning materials as per any local, state, or federal codes and regulations. Store oil rags in a bottom-ventilated, covered, metal container.
  19. Keep hands and feet away from moving parts.
  20. Before use, check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the equipment's operation. **If damaged, have the equipment serviced before using.** Many accidents are caused by poorly maintained equipment.
  21. Use the correct equipment for the application. Do not modify the equipment and do not use the

equipment for a purpose for which it is not intended.

22. Never operate the Pressure Washer using a pulsing action. Pulsing is the repeated and rapid ON and OFF operation of the Trigger. This action could result in the failure of components and connections that are under pressure.
23. This is a clean, cold water Pressure Washer. The working temperature range must be between 41° Fahrenheit and 104° Fahrenheit. The water supply pressure must not exceed 58 PSI and must be clean and free of any abrasive particles or corrosive contaminants.
24. Do not direct the water jet at live electrical equipment or the Pressure Washer itself.
25. **Do not direct the water jet at yourself, others or pets.**
26. Do not use the Pressure Washer to pump gasoline, kerosene, or any other flammable or corrosive liquids.
27. Do not leave the Pressure Washer unattended while the machine is running.
28. Never allow the Pressure Washer to run for more than two minutes with the Spray Gun in its closed position.
29. Do not allow the Pressure Washer to run dry, as this will cause serious damage to the Seals and Pump.
30. **WARNING:** The brass components of this product contain lead, a chemical known to the State of California to cause birth defects (or other reproductive harm). California

Health & Safety Code 25249.5, et seq.

31. Always ensure all water pressure is released and the Pressure Washer is turned off before attempting to disconnect any Hoses or Connectors.
32. This Pressure Washer is rated for domestic use only and should not be used for professional or commercial purposes.
33. Use caution when cleaning a vehicle to prevent damaging the finish with a high pressure water stream.

## **SERVICE PRECAUTIONS**

1. **Before service, maintenance, or cleaning:**
  - a. **Turn the engine switch to its "OFF" position.**
  - b. **Allow the engine to completely cool.**
  - c. **Then, remove the spark plug wire(s) from the spark plug(s).**
2. Keep all safety guards in place and in proper working order. Safety guards include muffler, air cleaner, mechanical guards, and heat shields, among other guards.
3. **Do not alter or adjust any part of the equipment or its engine that is sealed by the manufacturer or distributor. Only a qualified service technician may adjust parts that may increase or decrease governed engine speed.**
4. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during service.

5. Maintain labels and nameplates on the equipment. These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
6. Have the equipment serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the equipment is maintained. Do not attempt any service or maintenance procedures not explained in this manual or any procedures that you are uncertain about your ability to perform safely or correctly.
7. Store equipment out of the reach of children.
8. Follow scheduled engine and equipment maintenance.

**Refueling:**

1. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refuelling.
2. Do not refill the fuel tank while the engine is running or hot.
3. Do not fill fuel tank to the top. Leave a little room for the fuel to expand as needed.
4. Refuel in a well-ventilated area only.

 **SAVE THESE INSTRUCTIONS.**

**BASIC SPECIFICATIONS**

Fuel	Type	89+ octane unleaded gasoline
	Capacity	1.7 Gallons
Engine Oil	Type	SAE 25W (above 32° F) SAE 15W-40 (at 32° F or below)
	Capacity	37.2 Ounces (1.1L)
Pump Oil	Type	SAE 25W (above 32° F) SAE 15W-40 (at 32° F or below)
	Capacity	15.2 Ounces (0.45L)

**Note:** Additional specifications found in the TECHNICAL ENGINE SPECIFICATIONS chart in this manual.

The emission control system for this engine is warranted for standards set by the U.S. Environmental Protection Agency and by the California Air Resources Board (also known as CARB-Phase II). For warranty information, refer to the last pages of this manual.

At high altitudes, the engine's carburetor, governor, and any other parts that control the fuel-air ratio will need to be adjusted by a qualified mechanic to allow efficient high-altitude use and to prevent damage to the engine and any other devices used with this product.

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## UNPACKING

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When unpacking, check to make sure that the item is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at 1-800-444-3353 as soon as possible.

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## SET UP INSTRUCTIONS

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Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

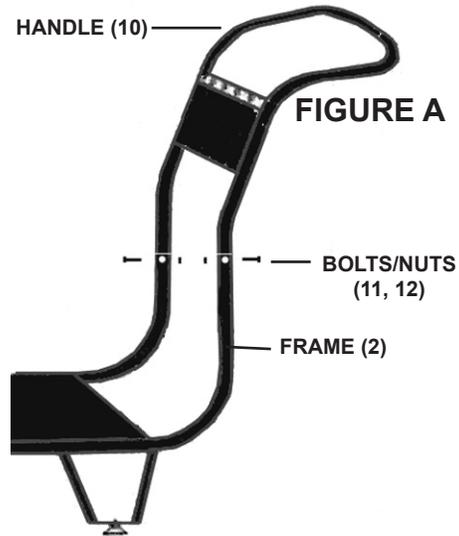
### **WARNING**

**Risk of accidental starting; resulting in serious personal injury.** Turn the Power Switch of the equipment to its "OFF" position, wait for the engine to cool, and unplug the spark plug wire(s) before assembling or making any adjustments to the equipment.

**Note:** For additional information regarding the parts listed in the following pages, refer to the Assembly Diagram near the end of this manual.

### Assembly

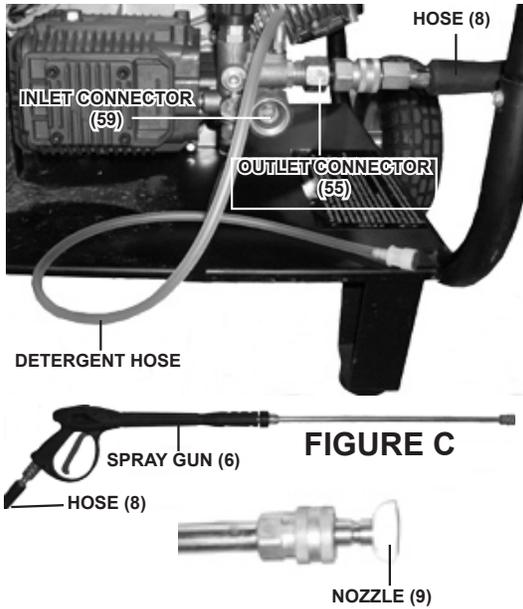
1. This equipment may not have a spark arresting muffler included. A spark arresting muffler is required by law in California, on some US Forest Service land, and possibly in other areas or situations. Install an approved spark arrester before use if legally required or if engine is to be used near grass, brush, forests, crops, or any other flammable materials.



2. To attach the Handle (10) to the Frame (2), insert the lower portion of the Handle into the Frame. Then secure the Handle to the Frame, using two Bolts and two Nuts. (See Figure A.)



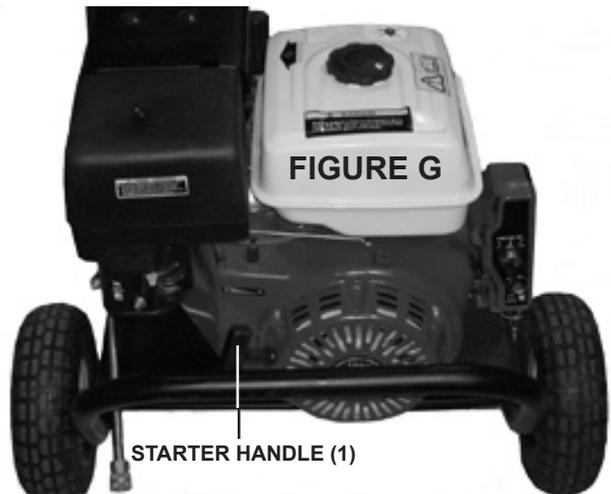
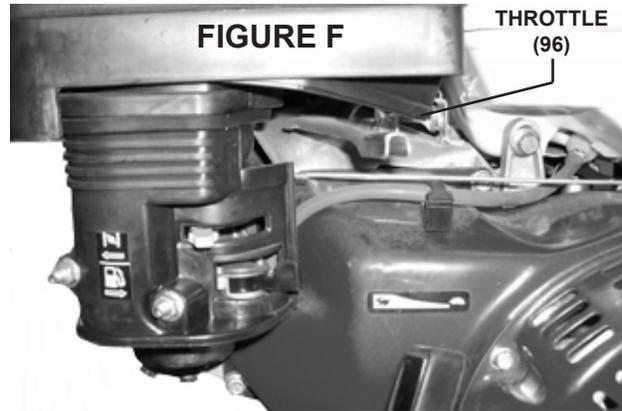
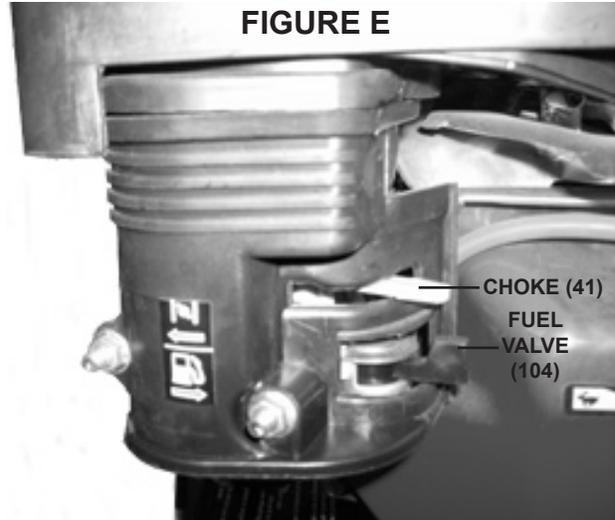
3. To attach the Wheels (1), slide a Wheel onto each end of the Axle located at the front of the Frame (2). Make sure air valve on wheel faces outward. Then secure the Wheels to the Axle, using one Lock Nut (13) for each Wheel. (See Figure B.)



- Attach the Hose (8) to the Spray Gun (6). Connect the other end of the Hose to the Outlet Connector (55). Connect a garden hose to the Inlet Connector (59). Insert the Detergent Hose into an approved container of detergent. Then attach the desired Nozzle (9) to the Spray Gun. (See Figure C.)

## OPERATING INSTRUCTIONS

### Engine Controls



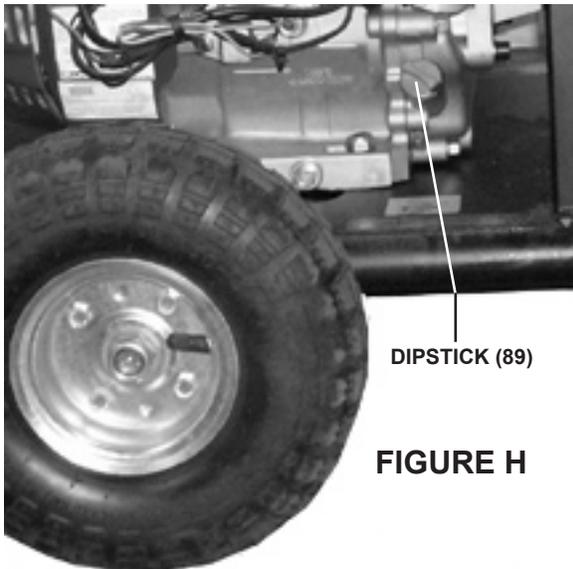
## Starting the Engine



**Inspect engine and equipment looking for damaged, loose, and missing parts before set up and starting. If any problems are found, do not use equipment until fixed properly.**

## Checking Engine Oil Level

**CAUTION!** Your Warranty is VOID if the engine's Crankcase (13) is not properly filled with oil before each use. Before each use, check the oil level. Do not run the engine with low or no engine oil. Running the engine with no or low engine oil WILL permanently damage the engine.



**FIGURE H**

1. Remove the dipstick and wipe it off with a clean rag. **(See Figure H.)**
2. Reinsert the dipstick completely and remove it to check the oil level. The oil level should be between the high and low marks on the dipstick. **(See Figure H.)**
3. If the oil level is below the low mark add the appropriate type of oil until the oil level is between the high and the low marks. **(See Figure H.)**

**Oil type:**

32° F or above = SAE 25W  
Below 32° F = SAE 15W-40

4. Replace the Oil Dipstick. **(See Figure H.)**

**CAUTION!** Do not run the engine with too little or too much oil. The engine will be permanently damaged.

## Checking Fuel Level



**WARNING!** To prevent fire, shut the engine off and wait for it to cool before adding fuel. Do not smoke. Avoid refueling if other equipment (which may create sparks) is operating in the immediate vicinity.

1. To fill the Fuel Tank (101), unscrew and remove the Fuel Tank Cap (109). **(See Figure I.)**

FUEL TANK CAP (109) FUEL TANK FILTER (108)



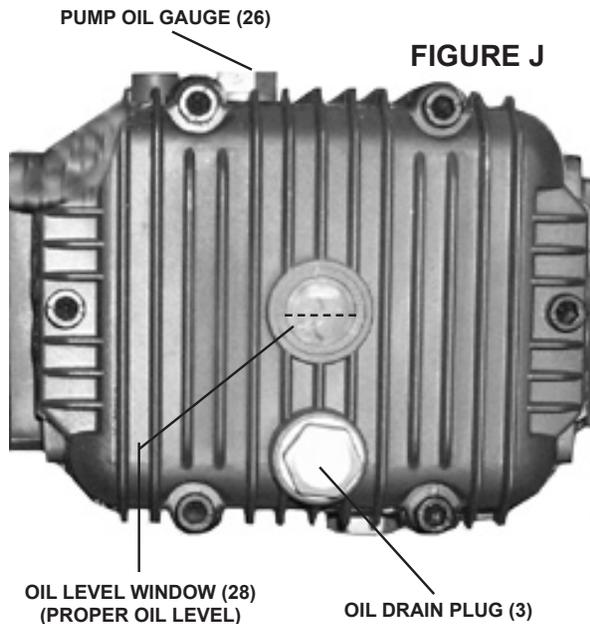
**FIGURE I**

2. Check to make sure the Fuel Tank Filter (108) is free of dirt and debris. If necessary, remove and clean the Filter. Then replace the Filter. **(See Figure I.)**

3. Mix fuel stabilizer (not included) with 89 octane (or better) unleaded gasoline according to fuel stabilizer directions.
4. Fill the Fuel Tank (101) to about 1 inch under the lip of the gasoline tank with the stabilized unleaded gasoline mixture. **(See Figure I.)**
5. Then replace the Fuel Tank Cap (109). **(See Figure I.)**

### **Checking Pump Oil Level**

**CAUTION!** Your Warranty is VOID if the Pump's Housing (13) is not properly filled with oil before each use. Before each use, check the oil level. Do not run the Pump with low or no oil. Running the Pump with no or low oil WILL permanently damage the Pump.



1. Remove the Oil Gauge (26) and wipe it off with a clean rag. **(See Figure J.)**
2. Reinsert the Oil Gauge (26) completely and remove it to check the oil level. The oil level should be

between the high and low marks on the Gauge. Also, the proper oil level can be visually observed through the oil Level Window (28). The proper oil level should appear midway in the Window. **(See Figure J.)**

If the oil level is below the low mark add the appropriate type of oil until the oil level is between the high and the low marks. Do not overfill. **(See Figure J.)**

#### **Oil type:**

32° F or above = SAE 25W  
Below 32° F = SAE 15W-40

3. Replace the Oil Gauge. **(See Figure J.)**

**CAUTION!** Do not run the Pump with too little or too much oil. The Pump will be permanently damaged.

### **Start Procedure**



#### **Before starting the engine:**

- a. **Follow the Set Up Instructions to prepare the equipment.**
- b. **Inspect the equipment and engine.**
- c. **Fill the engine with the proper amount and type of both fuel and oil.**

**Note:** This engine includes an automatic low oil shutdown sensor that disables the engine if the oil level is too low.

#### **d. Read the Equipment Operation section that follows.**

1. Turn the engine Fuel Valve (104) to its "OPEN" position. **(See Figure E.)**
2. Turn the Engine Switch (3) to its ON or RUN position. **(See Figure D.)**

3. Then, turn the engine Choke (41) to its “CHOKE” position. Set the Choke in the “RUN” position when starting a warm engine. **(See Figure E.)**
4. Grasp the Starter Handle (1), and pull slowly until resistance is felt. While holding the Handle, allow the Starter Rope to rewind slowly. Then, pull the Starter Handle with a rapid, full arm stroke. Once again, while holding the Handle, allow the Rope to rewind slowly. Repeat as necessary, until the engine starts. **(See Figure G.)**
5. After the engine starts, and once it starts to warm up, slowly move the Choke (41) to its “RUN” position. **(See Figure E.)**
4. When finished spraying, press in to fully engage the Safety on the Spray Gun (6). Turn off the Engine, and turn off the water supply. **WARNING! Do not disconnect the High Pressure Hose (8) or water inlet hose until all pressure is discharged safely.**
5. **IMPORTANT!** When turning off the unit after use, high pressure will remain inside the unit’s High Pressure Hose (8), and the water inlet hose. Point the Spray Gun (6) in a safe direction and hold the Trigger down for several seconds or until water stops flowing from the Spray Gun. The High Pressure Hose and water inlet hose can be disconnected after the pressure is released.

### **Pressure Washer Operation**

1. **IMPORTANT! NEVER allow the Pressure Washer to sit idle with the Engine running for longer than two minutes.** The unit will build up heat when it is on standby mode.
2. Turn on the water supply, press in on the Safety on the Spray Gun (6) and squeeze its Trigger until water flows out of the Gun without sputtering. This removes air from the system and allows the unit to properly perform. **Failure to follow this procedure can damage the Pump.**
3. Hold the Spray Gun (6) firmly with both hands. Point the Nozzle (9) in a safe direction. Then, disengage the Safety and squeeze the Trigger. Make sure to turn off the Engine whenever the Spray Gun is not in use. Clean the area, following the tips contained in the “*Operating Tips*” section.
6. Store the Pressure Washer and all accessories in accordance with the directions in the “*Storage*” section of this manual.

**IF ANY UNEXPECTED PROBLEMS ARISE, PLEASE REFER TO THE “TROUBLESHOOTING” SECTION AT THE END OF THIS MANUAL.**

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## **OPERATING TIPS**

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### **Adjusting The Spray Pattern**

1. You have a choice of four different color-coded Nozzles (9) giving you different spray patterns.
2. **0° Nozzle (colored red):** This Nozzle delivers a pinpoint stream and is extremely powerful. It covers a very small area of cleaning. This Nozzle should only be used on a surface that can withstand this high pressure such as metal or concrete. Do not use on wood. Do not use to clean vehicles.

3. **15° Nozzle (colored yellow):** This Nozzle delivers a powerful 15 degree spray pattern for intense cleaning of small areas. This Nozzle should only be used on areas that can withstand the high pressure from this Nozzle. Do not use to clean vehicles.
4. **40° Nozzle (colored white):** This Nozzle delivers a 40 degree spray pattern and a less powerful stream of water. It covers a wide area of cleaning. This Nozzle should be used for most general cleaning jobs and for cleaning vehicles.
5. **Low Pressure Nozzle (colored black):** This Nozzle is used to apply chemicals or cleaning solutions. It has the least power stream. Do not use to clean vehicles.
6. **NOTE:** Before using the Pressure Washer to clean patio paving slabs, it is advisable to test a small area first. Some paving slabs are manufactured from inferior materials and the use of a Pressure Washer could damage the surface.

### Using the Detergent Hose

1. Fill a suitable container with pressure washer detergent. Always follow instructions as outlined in the detergent manufacturer's manual.
2. Most automobile detergents are a combination of a detergent and a wax solution. These tend to be a thick viscous liquid. The viscosity (thickness) of the detergent will increase in cold weather. It is recommended that this type of detergent is diluted with warm water before filling the container. As a general guide, a recommended

dilution rate is 50/50. However, a trial and error process would determine the ideal dilution rate for a particular detergent.

3. A thick, viscous detergent will not flow freely from the detergent container and the residue will cause blockage in the detergent flow system.
4. After using a detergent the entire Pressure Washer system should be thoroughly flushed out with ample amounts of water.
5. If at any time the flow rate decreases, sputters, or is inconsistent, release the Trigger of the Spray Gun (6) and turn off the Engine. Squeeze the Trigger to release any pressure. Then check the Nozzle (9) of the Spray Gun for any blockage. If blockage is suspected, clean the Nozzle thoroughly. If the problem still exists, check and clean the Filter on the Detergent Hose.

### Cleaning Recommendations

1. Clean an inconspicuous test area to help avoid damaging the surface. Always begin with the fan spray at a distance of about 3-5 feet from the surface being cleaned to avoid damaging the surface of the object. Make sure the test area is clear of people and water-prone delicate objects. If a pressure washer detergent is to be used, apply the detergent to this area as well. After cleaning this area, turn off the Engine and inspect the area carefully for any damage or discoloration. If any damage is noted from the Nozzle used, use a less powerful Nozzle when cleaning the rest of the area.

If damage or discoloration is noted from the detergent, do not use the detergent when cleaning.

2. First, pass over the area with a light cleaning. Then clean the area more thoroughly.
3. **For a vertical or sloped surface:**
  - Wash from the top down.
  - If possible, direct the stream of water in the same direction as the slope towards a drainage area. This will enable better drainage and, therefore, better cleaning.
4. **For a flat surface:**
  - If a thin layer of water accumulates on the surface, periodically use a stream of water to direct the water toward the drainage.
  - After the major cleaning is done, sweep the surface with the stream of water to help direct loose debris toward the drainage.
5. If detergent is to be applied, use only pressure washing detergent. Other detergents may clog or damage the Pressure Washer. Apply the detergent at low pressure. Allow the detergent several minutes to sit and soak into the work surface. This will improve cleaning efficiency. Make sure to rinse off all detergent completely.
6. Hold the Spray Gun (6) at about a 45° angle and steadily sweep the water stream back and forth. If a severe, head-on angle is used, dirt may imbed in the surface being cleaned. Follow a steady, consistent pace during cleaning. This will help prevent stripes or discoloration afterwards. If streaking or uneven cleaning is noted at the end of a project, go over the edges of the streaks with a wide fan pattern to help blend these lighter areas in.
7. If several different surfaces are to be cleaned, make sure not to damage any of the less solid surfaces while attempting to clean the harder ones. This is especially a concern when cleaning tile and grout, bricks and mortar, or stones and mortar.
8. If wood is being cleaned, make sure not to damage it. Pressure washed wood will usually require resurfacing (sanding) and re-coating with a surface protectant (wood, stain, varnish) after it has dried. Try to avoid leaving water on a wooden surface, as doing so can harm the surface.

## TECHNICAL SPECIFICATIONS

Engine Type	13 HP / OHV Recoil Start Air Cooled 3600 RPM	
Displacement	390cc	
Rotation viewed from PTO (power takeoff - the output shaft)	Counterclockwise (Facing the Shaft)	
Fuel	Type	89+ octane unleaded gasoline
	Capacity	1.7 Gallons
Engine Oil	Type	SAE 25W (above 32° F) SAE 15W-40 (at 32° F or below)
	Capacity	37.2 Ounces (1.1L)
Spark Plug	Types	LG F7RTC
	Gap	0.027" to 0.031"
Engine Approvals	California Emissions U.S. EPA Phase II	
Pump RPM	3400 RPM	
Water Flow	4.0 Gal. Per Minute	
Pressure Rating	4,000 PSI	
Pump Inlet Pressure	30 PSI/4 Gal. Per Minute (Minimum) 80 PSI (Maximum)	
Hose Required	5/16" I.D.	
Pump Oil	Type	SAE 25W (above 32° F) SAE 15W-40 (at 32° F or below)
	Capacity	15.2 Ounces (0.45L)
Water Temperature	Up to 104° F / 40° C	
Nozzles Included	0° (Red) 15° (Yellow) 40° (white) Chemical (Black)	
Spray Gun Type	Safety Lock-Off Triggered Handle	
Hose Length	32 Ft.	
Hose Fittings	Quick Connect	
Hose Pressure	6000 PSI Maximum	
Wheel Size & Inflation	4.10/3.50 Pneumatic 30 PSI (Cold)	

## SERVICING

### **WARNING**

Risk of serious personal injury

from accidental starting. Turn the Power Switch of the equipment to its "OFF" position, wait for the engine to cool, and unplug the spark plug wire(s) before performing any inspection, maintenance, or cleaning procedures.

Damaged equipment can fail, causing serious personal injury. Do not use damaged equipment. If abnormal noise, vibration, or excess smoking occurs, have the problem corrected before further use.

### Maintenance Procedures

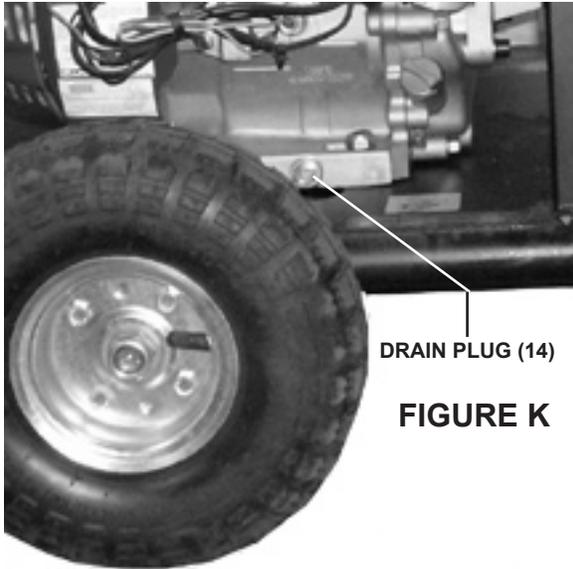


Many maintenance procedures, including any not detailed in this manual, will need to be performed by a qualified technician for safety. If you have any doubts about your ability to safely service the equipment or engine, have a qualified technician service the equipment instead.

### Engine Oil Change

 **CAUTION!** Oil is very hot during operation and can cause burns. Wait for engine to cool before changing oil.

1. Place a drain pan (not included) underneath the Crankcase's Drain Plug (14). (See Figure K, next page.)



**FIGURE K**

2. Remove the Drain Plug (14) and, if possible, tilt the Crankcase slightly to help drain the oil out. Recycle used oil.
3. Replace the Drain Plug (14) and tighten it.
4. Refill the oil to the proper level following the instructions under the “**Starting the Engine**” section.

### Air Filter Element Maintenance



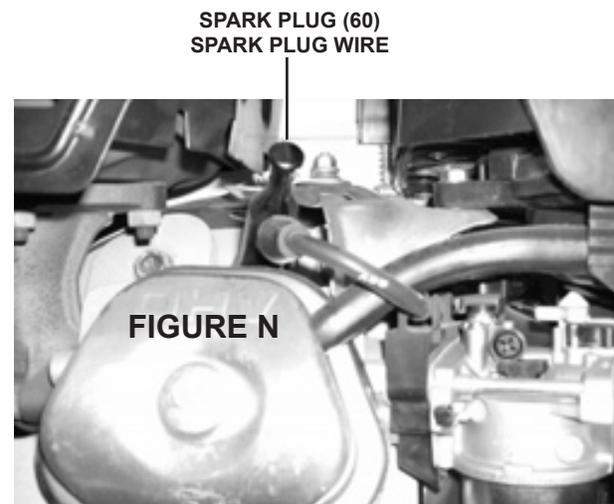
**FIGURE L**

1. The Air Cleaner Cover (51) is held in place by a Wing Nut (47). Remove it. (See Figure L.)

2. Remove a second Wing Nut (47) and its Washer (48). Then remove the Air Filter Element (49).
3. For filter elements:  
To prevent injury from dust and debris, wear ANSI-approved safety goggles, NIOSH-approved dust mask/respirator, and heavy-duty work gloves. In a well-ventilated area away from bystanders, stand down wind, and use pressurized air to blow dust out of the Air Filter Element (49). If this does not get the Filter reasonably clean, replace it.
4. Install the new filter or the cleaned filter. Secure the Air Cleaner Cover before use.

### Spark Plug Maintenance

1. Disconnect spark plug wire from end of plug. Clean out debris from around spark plug.



**FIGURE N**

2. Using a spark plug wrench, remove the spark plug. (See Figure N.)
3. Inspect the spark plug:  
If the electrode is oily, clean it using a clean, dry rag. If the electrode has deposits on it, polish it using

emery paper. If the white insulator is cracked or chipped, the spark plug needs to be replaced.

4. When installing a new spark plug, adjust the plug's gap to the specification on the Technical specification chart. Do not pry against the electrode, the spark plug can be damaged.
5. Install the new spark plug or the cleaned spark plug into the engine. Then re-attach the Spark Plug Wire.

## TROUBLESHOOTING

Problem	Possible Causes	Probable Solutions
Engine will not start	<b>FUEL RELATED:</b> <ol style="list-style-type: none"> <li>1. No fuel in tank or fuel valve closed.</li> <li>2. Choke not in start position, especially with cold engine.</li> <li>3. Low quality or deteriorated, old gasoline.</li> <li>4. Carburetor not primed.</li> <li>5. Dirty fuel passageways blocking fuel flow.</li> <li>6. Carburetor needle stuck. Fuel can be smelled in the air.</li> <li>7. Too much fuel in chamber. This can be caused by the carburetor needle sticking.</li> </ol>	<b>FUEL RELATED:</b> <ol style="list-style-type: none"> <li>1. Fill fuel tank and open fuel valve.</li> <li>2. Move choke to start position if engine is cold.</li> <li>3. Use only fresh 89+ octane unleaded gasoline.</li> <li>4. Prime carburetor by pressing priming bulb approximately three times.</li> <li>5. Clean out passageways using fuel additive. Heavy deposits may require further cleaning.</li> <li>6. <b>Gently</b> tap side of carburetor float chamber with screwdriver handle.</li> <li>7. Turn choke to run position. Remove spark plug and pull the start handle several times to air out the chamber. Reinstall spark plug and set choke to start position.</li> </ol>
	<b>IGNITION (SPARK) RELATED:</b> <ol style="list-style-type: none"> <li>1. Spark plug wire not connected securely.</li> <li>2. Spark plug electrode wet or dirty.</li> <li>3. Incorrect spark plug gap.</li> <li>4. Spark plug wire broken.</li> <li>5. Incorrect spark timing or faulty ignition system.</li> </ol>	<b>IGNITION (SPARK) RELATED:</b> <ol style="list-style-type: none"> <li>1. Connect spark plug wire properly.</li> <li>2. Clean spark plug.</li> <li>3. Correct spark plug gap.</li> <li>4. Replace spark plug wire.</li> <li>5. Have qualified technician diagnose/repair ignition system.</li> </ol>
	<b>COMPRESSION RELATED:</b> <ol style="list-style-type: none"> <li>1. Cylinder not lubricated. Problem after long storage periods.</li> <li>2. Loose or broken spark plug. (Hissing noise will occur when trying to start.)</li> <li>3. Loose cylinder head or damaged head gasket. (Hissing noise will occur when trying to start.)</li> <li>4. Engine valves or tappets misadjusted or stuck.</li> </ol>	<b>COMPRESSION RELATED:</b> <ol style="list-style-type: none"> <li>1. Pour tablespoon of oil into spark plug hole. Crank engine a few times and try to start again.</li> <li>2. Tighten spark plug. If that does not work, replace spark plug. If problem persists, may have head gasket problem, see #3.</li> <li>3. Tighten head. If that does not remedy problem, replace head gasket.</li> <li>4. Adjust valve clearance. If that does not work, clean or replace valves/tappets.</li> </ol>



**Follow all safety precautions whenever diagnosing or servicing the equipment or engine.**

## TROUBLESHOOTING

Problem	Possible Causes	Probable Solutions
Engine misfires	<ol style="list-style-type: none"> <li>1. Spark plug wire loose.</li> <li>2. Incorrect spark plug gap or damaged spark plug.</li> <li>3. Defective spark plug wire.</li> <li>4. Old or low quality gasoline.</li> <li>5. Incorrect compression.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check wire connections.</li> <li>2. Re-gap or replace spark plug.</li> <li>3. Replace spark plug wire.</li> <li>4. Use only fresh 89+ octane unleaded gasoline.</li> <li>5. Diagnose and repair compression. (Use <b>Engine will not start: COMPRESSION RELATED</b> section.)</li> </ol>
Engine stops suddenly	<ol style="list-style-type: none"> <li>1. Low oil shutdown.</li> <li>2. Fuel tank empty or full of impure or low quality gasoline.</li> <li>3. Defective fuel tank cap creating vacuum, preventing proper fuel flow.</li> <li>4. Faulty magneto.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill engine oil to proper level. Check engine oil before EVERY use.</li> <li>2. Fill fuel tank with fresh 89+ octane unleaded gasoline.</li> <li>3. Test/replace fuel tank cap.</li> <li>4. Have qualified technician service magneto.</li> </ol>
Engine knocks	<ol style="list-style-type: none"> <li>1. Old or low quality gasoline.</li> <li>2. Engine overloaded.</li> <li>3. Incorrect spark timing, deposit buildup, worn engine, or other mechanical problems.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill fuel tank with fresh 89+ octane unleaded gasoline.</li> <li>2. Do not exceed equipment's load rating.</li> <li>3. Have qualified technician diagnose and service engine.</li> </ol>
Engine backfires	<ol style="list-style-type: none"> <li>1. Impure or low quality gasoline.</li> <li>2. Engine too cold.</li> <li>3. Intake valve stuck or overheated engine.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill fuel tank with fresh 89+ octane unleaded gasoline.</li> <li>2. Use cold weather fuel and oil additives to prevent backfiring.</li> <li>3. Have qualified technician diagnose and service engine.</li> </ol>

**Follow all safety precautions whenever diagnosing or servicing the equipment or engine.**

**PLEASE READ THE FOLLOWING  
CAREFULLY**

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

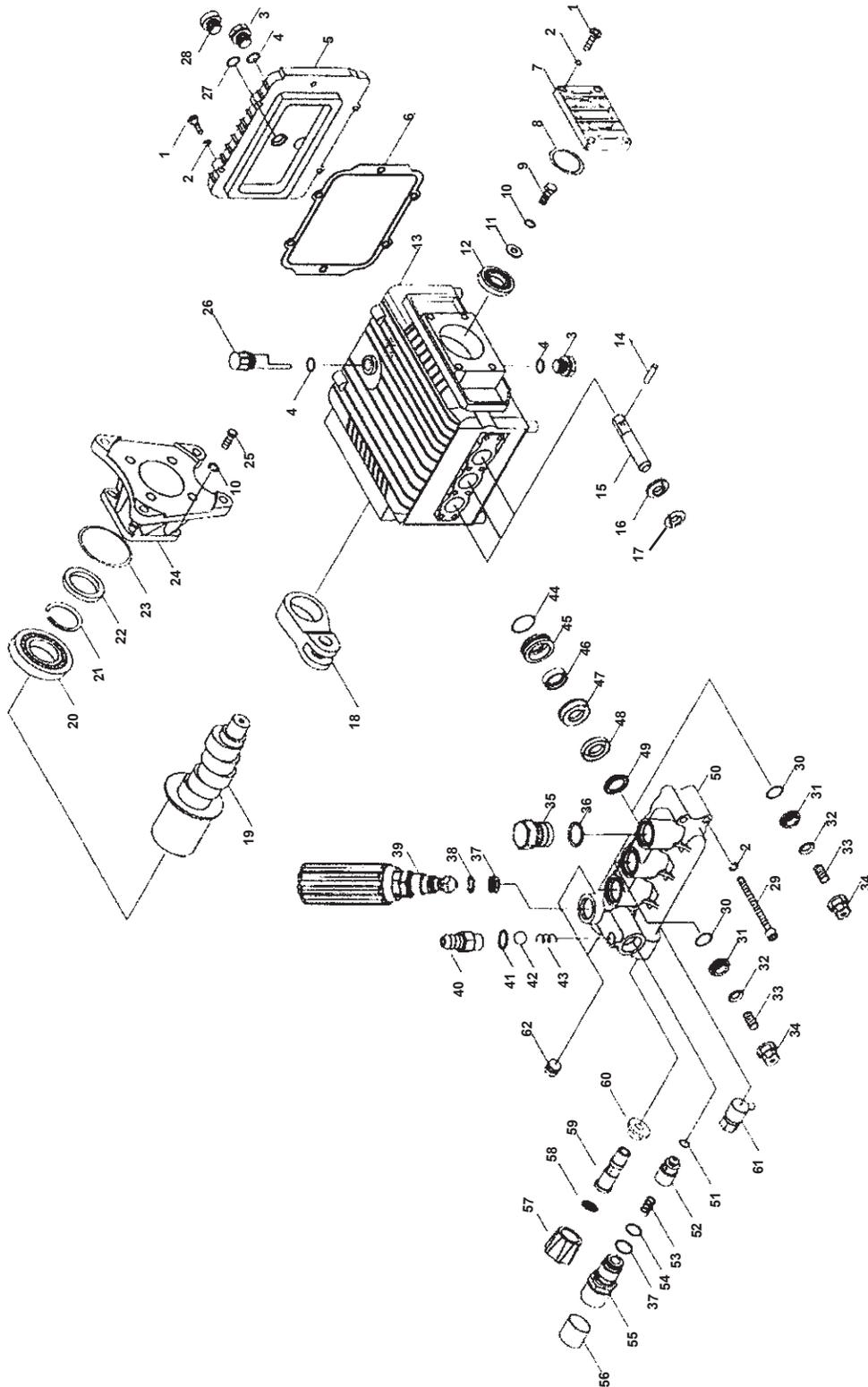
**PUMP PARTS LIST**

Part	Description	Q'ty
1	Screw (M6 x 16)	10
2	Spring Washer (#6)	24
3	Oil Drain Plug	2
4	O-Ring (13.2 x 2.65)	3
5	Back Cover	1
6	Seal	1
7	Cover	1
8	O-Ring (47.5 x 1.8)	1
9	Bolt (M8 x 16)	1
10	Spring Washer (#8)	5
11	Gasket (#8)	1
12	Bearing (304)	1
13	Housing	1
14	Pin	3
15	Plunger	3
16	Oil Seal	3
17	Water Block Ring	3
18	Connecting Rod	3
19	Crank Shaft	1
20	Bearing (NK140/20)	1
21	Retaining Ring (#40)	1
22	Seal Ring (38 x 58 x 8)	1

Part	Description	Q'ty
23	O-Ring (50 x 2.65)	1
24	Connecting Flange	1
25	Screw (M8 x 25)	4
26	Oil Gauge	1
27	Plastic Washer (20 x 15.8 x 1)	1
28	Oil Level Window	1
29	Screw (M6 x 55)	8
30	O-Ring (11.8 x 1.8)	6
31	Valve Seat	6
32	Valve Plate	6
33	Valve Spring	6
34	Valve Jacket	6
35	Bulkhead	4
36	O-Ring (15 x 1.8)	3
37	Valve Seat	1
38	O-Ring (11.2 x 1.8)	1
39	Unload Valve	1
40	Detergent Injection Connector	1
41	O-Ring (4.5 x 1.8)	1
42	Steel Ball (5.5)	1
43	Spring	1
44	O-Ring (24 x 1.8)	3
45	Subsidiary Seal Ring Seat	3
46	Subsidiary Seal Ring	3
47	Main Seal Ring Seat	3
48	V-Seal Ring	3
49	V-Compaction Ring	3
50	Pump Body	1
51	O-Ring (4 x 2.65)	1
52	Check Valve Core	1
53	Check Valve Spring	1
54	O-Ring (12.5 x 1.8)	1
55	Outlet Connector	1
56	Screw Jacket	1
57	Nut	1
58	Filter	1
59	Inlet Connector	1
60	Plastic Gasket	1
61	Thermal Protection	1
62	Plunger	2

**IMPORTANT:**  
When ordering Pump parts,  
make sure to specify  
"PUMP"  
and the part number.  
(i.e., "PUMP" Part #1, Screw)

# PUMP ASSEMBLY DIAGRAM



## ENGINE PARTS LIST

Part	Description	Qty.
1	Starter Handle	1
2	Flange Bolt (M6 x 8)	3
3	Engine Switch	1
4	Fan Cover	1
5	Flange Bolt (M6 x 12)	12
6	Shroud	1
7	Starter Pulley	1
8	Cooling Fan	1
9	Flange Nut (M16)	1
10	Wire Harness Clip	1
11	Flywheel	1
12	Oil Seal (35 x 52 x 8)	2
13	Crank Case Assy.	1
14	Drain Plug	2
15	Amplifier	1
16	Drain Lug Washer	2
17	Wire Clip	1
18	Flange Bolt (M6 x 25)	2
19	Ignition Coil Assy.	1
20	Grommet Cord	1
21	Cord Stop Switch	1
22	Oil Seal (8 x 14 x 5)	1
23	Radial Ball Bearing (6202)	2
24	Governor Arm Shaft	1
25	Lock Pin (10mm)	1
26	Washer (8.2 x 17 x 0.8)	1
27	Flange Nut (M10)	1
28	O-Ring (14mm)	1
29	Oil Level Switch Assy.	1
30	Balancer Weight	1
31	Crank Shaft	1
32	Key	1
33	Radial Ball Bearing (6207)	2
34	Cylinder Head Gasket	1
35	Dowel Pin (12 x 20)	2
36	Head Bolt (8 x 111)	2
37	Insulator Packing	1
38	Carburetor Insulator	1

**IMPORTANT:**  
**When ordering Engine parts,**  
**make sure to specify**  
**“ENGINE”**  
**and the part number.**  
**(i.e., “ENGINE” Part #1, Starter Recoil)**

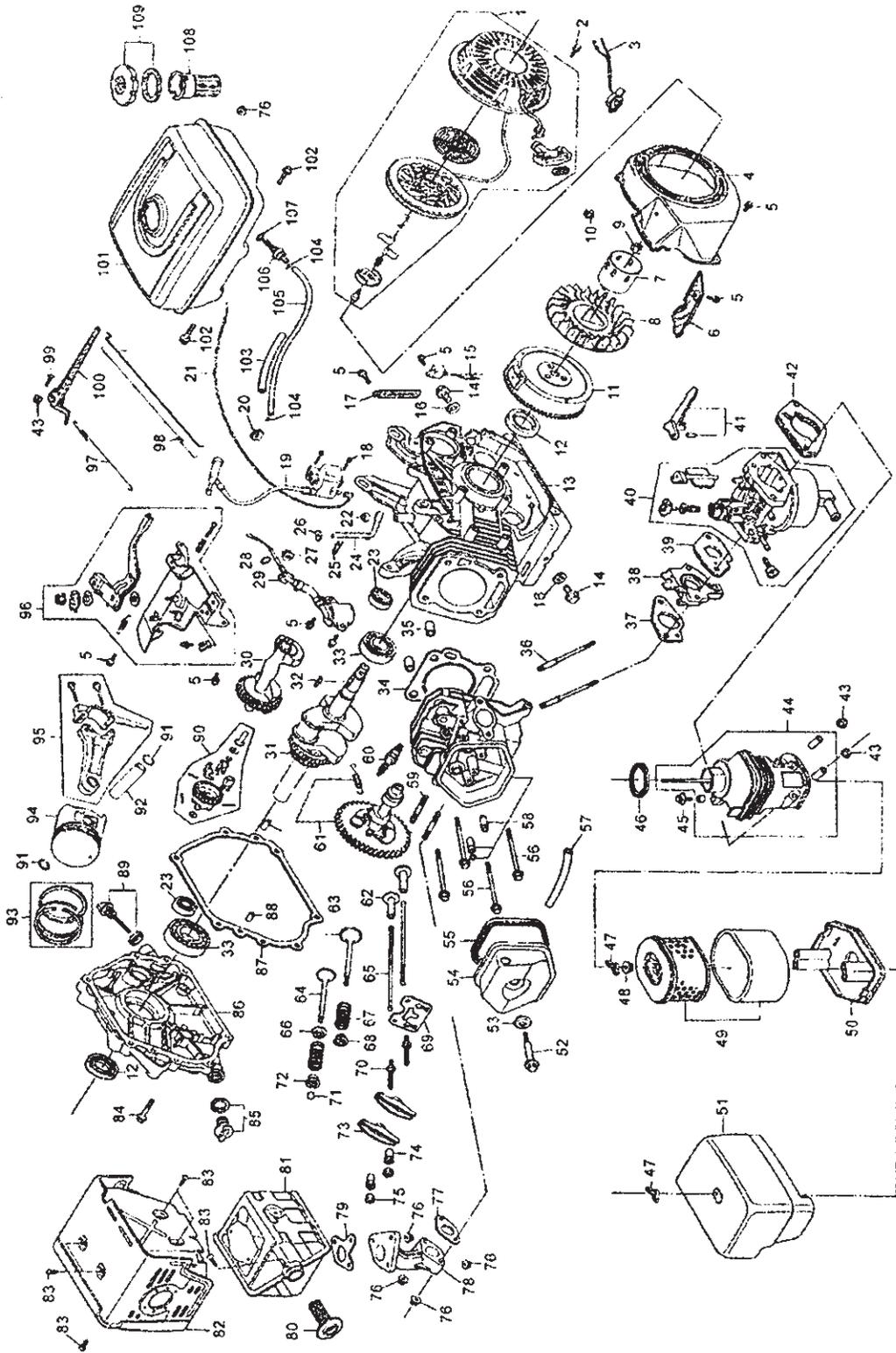
Part	Description	Qty.
39	Carburetor Packing	1
40	Carburetor Assy.	1
41	Choke	1
42	Air Cleaner Packing	2
43	Flange Nut (M6)	5
44	Air Cleaner Case	1
45	Flange Bolt (M6 x 20)	1
46	Air Cleaner Seal	1
47	Wing Nut (M6)	2
48	Drain Lug Washer	2
49	Air Cleaner Element	1
50	Air Cleaner Separator	1
51	Air Cleaner Cover	1
52	Head Cover Bolt	1
53	Head Cover Washer	1
54	Head Cover	1
55	Exhaust Pipe	1
56	Flange Bolt (M10 x 80)	4
57	Breather Tube	1
58	Cylinder Head	1
59	Head Bolt (M8 x 34)	2
60	Spark Plug	1
61	Cam Shaft Assy.	1
62	Valve Lifter	2
63	Intake Valve	1
64	Exhaust Valve	1
65	Push Rod	2
66	Valve Spring Seat	1
67	Valve Spring	2
68	Intake Valve Spring Retainer	1
69	Push Rod Guide Plate	1
70	Pivot Bolt	2
71	Valve Rotator	1
72	Exhaust Valve Spring Retainer	1
73	Valve Rocker Arm	2
74	Valve Rocker Arm Nut	2
75	Pivot Adjusting Nut	2
76	Flange Nut (M8)	6

**IMPORTANT:**  
**When ordering Engine parts,**  
**make sure to specify**  
**“ENGINE”**  
**and the part number.**  
**(i.e., “ENGINE” Part #1, Starter Recoil)**

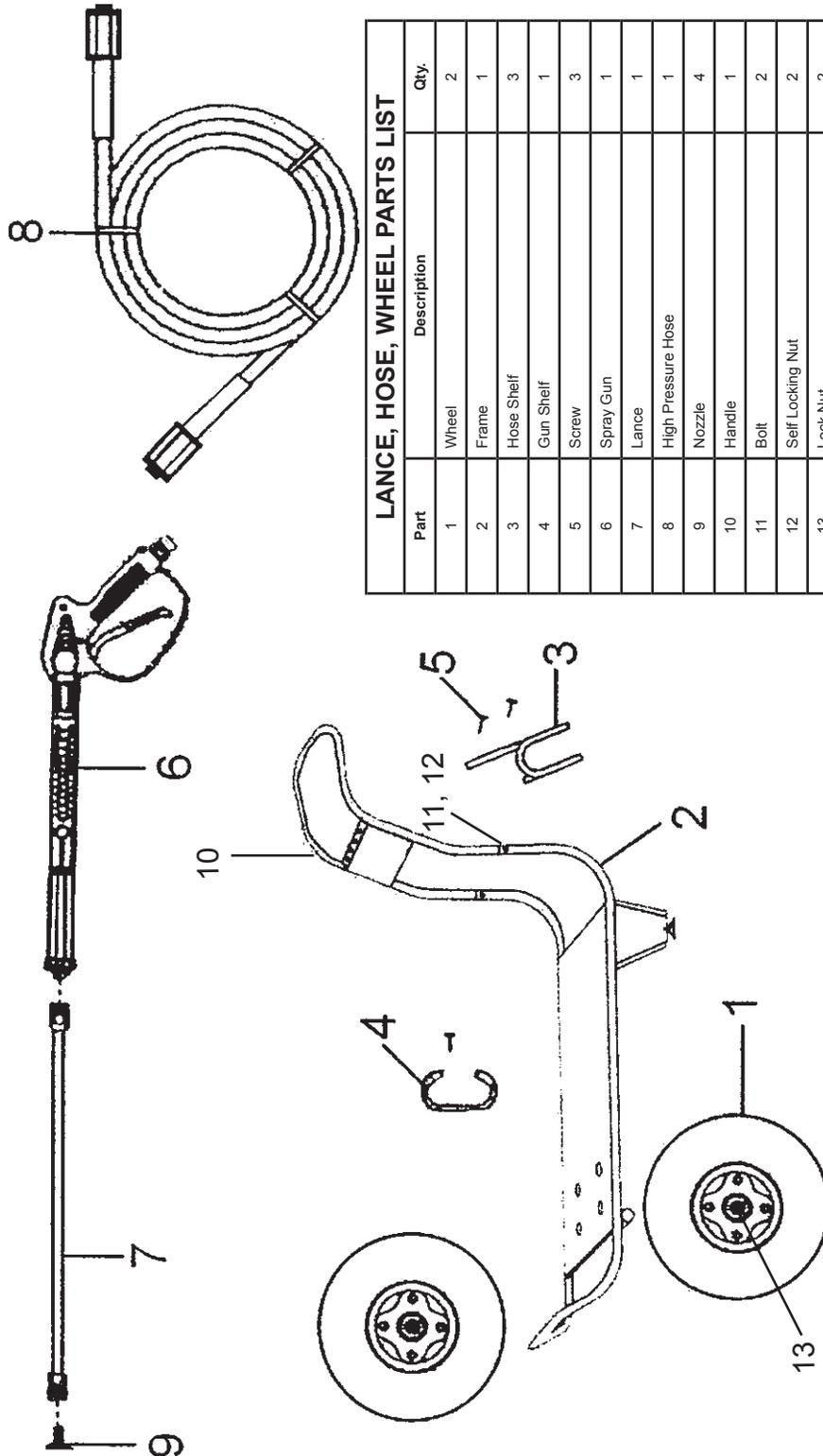
<b>Part</b>	<b>Description</b>	<b>Qty.</b>
77	Exhaust Pipe Gasket	1
78	Exhaust Pipe	1
79	Muffler Stay	1
80	Spark Arrester	1
81	Muffler	1
82	Muffler Guard	1
83	Tapping Screw (M5 x 8)	5
84	Flange Bolt (M8 x 40)	7
85	Oil Cap	1
86	Crank Case Cover	1
87	Case Cover Packing	1
88	Dowel Pin (8 x 12)	2
89	Dipstick	1
90	Governor Kit	1
91	Piston Pin Clip	2
92	Piston Pin	1
93	Piston Ring Set Assy.	1
<b>IMPORTANT:</b> <b>When ordering Engine parts,</b> <b>make sure to specify</b> <b>“ENGINE”</b> <b>and the part number.</b> <b>(i.e., “ENGINE” Part #1, Starter Recoil)</b>		

<b>Part</b>	<b>Description</b>	<b>Qty.</b>
94	Piston	1
95	Connecting Rod Assy.	1
96	Throttle Assy.	1
97	Governor Spring	1
98	Throttle Return Spring	1
99	Governor Arm Bolt	1
100	Governor Arm	1
101	Fuel Tank	1
102	Flange Bolt (M8 x 25)	2
103	Rubber Supporter	1
104	Fuel Valve	1
105	Outlet Pipe (4.5 x 235)	1
106	Fuel Tank Joint	1
107	Fuel Tank Rubber Joint	1
108	Fuel Tank Filter	1
109	Fuel Tank Cap	1
<b>IMPORTANT:</b> <b>When ordering Engine parts,</b> <b>make sure to specify</b> <b>“ENGINE”</b> <b>and the part number.</b> <b>(i.e., “ENGINE” Part #1, Starter Recoil)</b>		

# ENGINE ASSEMBLY DIAGRAM



# FRAME, LANCE, HOSE, WHEEL PARTS LIST & ASSEMBLY DIAGRAM



Part	Description	Qty.
1	Wheel	2
2	Frame	1
3	Hose Shelf	3
4	Gun Shelf	1
5	Screw	3
6	Spray Gun	1
7	Lance	1
8	High Pressure Hose	1
9	Nozzle	4
10	Handle	1
11	Bolt	2
12	Self Locking Nut	2
13	Lock Nut	2

**IMPORTANT:**

When ordering parts, make sure to specify "FRAME", "GUN", "LANCE", "WHEEL", "GUN SHELF", "GUN SHELF", or "HOSE SHELF" and the part number. (i.e., "WHEEL" Part #1, Wheel)

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## **90 DAY WARRANTY**

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Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. This warranty is expressly in lieu of all other warranties, express or implied, including the warranties of merchantability and fitness.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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**3491 Mission Oaks Blvd. • PO Box 6009 • Camarillo, CA  
93011 • (800) 444-3353**

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## **EMISSION CONTROL SYSTEM WARRANTY**

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### **California and United States Emission Control Defects Warranty Statement**

The California Air Resources Board (herein CARB), the United States Environmental Protection Agency (herein EPA), and Harbor Freight Tools (herein HFT) are pleased to explain the emission control system warranty on your 1995 and later Small Off-Road Engine (herein engine). In California, the engine must be designed, built and equipped to meet the State's stringent anti-smog standards. Elsewhere within the United States, new off-road, spark-ignition engines certified for model year 1997 and later, must meet similar standards set forth by the EPA. HFT must warrant the emission control system on your engine for the periods of time described below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor or fuel-injection system, and the ignition system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, HFT will repair your engine at no cost to you including diagnosis, parts and labor.

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### **Manufacturer's Warranty Coverage**

The 1995 and later engines are warranted for two (2) years. If any emission-related part on your engine is defective, the part will be repaired or replaced by HFT.

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### **Harbor Freight Tools Emission Control Defects Warranty Coverage**

Engines are warranted for a period of two (2) years relative to emission control parts defects, subject to the provisions set forth below. If any emission related part on your engine is defective, the part will be repaired or replaced by HFT.

#### **Owner's Warranty Responsibilities**

- As the engine owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. HFT recommends that you retain all receipts covering maintenance on your engine, but HFT cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the engine owner, you should, however, be aware that HFT may deny you warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.
- You are responsible for shipping your engine to a HFT warranty station as soon as a problem exists. Contact the HFT Customer Service department at the number below to make shipping arrangements. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Harbor Freight Tools Customer Service Department at 1-800-444-3353.

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### **Harbor Freight Tools Emission Control Defects Warranty Provisions**

#### **1. Length of Coverage**

HFT warrants to a first retail purchaser and each subsequent purchaser that the engine is free from defects in materials and workmanship that cause the failure of warranted parts for a period of two (2) years after the date of delivery to the first retail purchaser.

#### **2. No Charge Repair or Replacement**

Repair or replacement of any warranted part will be performed at no charge to the owner if the work is performed through a warranty station authorized by HFT. For emissions warranty service, contact the HFT Customer Service Department at 1-800-444-3353.

#### **3. Consequential Damages Coverage**

Coverage under this warranty shall also extend to the failure of any engine components caused by the failure of any warranted part while it is still covered under this warranty.

#### 4. Coverage Exclusions

Warranty claims shall be filed in accordance with the provisions of the HFT warranty policy explained in the box at the top of the previous page. HFT shall not be liable for any loss of use of the engine, for any alternative usage, for any damage to goods, loss of time, or inconvenience. Warranty coverage shall also be excluded for any part which fails, malfunctions, or is damaged due to failure to follow the maintenance and operating instructions set forth in the Owner's Manual including, but not limited to:

- a) Use of parts which are not authorized by HFT
- b) Improper installation, adjustment or repair of the engine or of any warranted part unless performed by an authorized warranty center
- c) Failure to follow recommendations on fuel use contained in the Owner's Manual
- d) Improper or inadequate maintenance of any warranted parts
- e) Repairs performed outside of the authorized warranty service dealers
- f) Alterations by changing, adding to or removing parts from the engine.

#### 5. Service and Maintenance

Component parts which are not scheduled for replacement as required maintenance or are scheduled only for regular inspection to the effect of "repair or replace as necessary" are warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance is warranted for the period of time up to the first scheduled replacement point for that part. Any replacement part, provided it is equivalent in durability and performance, may be used in performance of maintenance or repairs. The owner is responsible for commissioning a qualified technician/mechanic to perform all required maintenance, as outlined in the Inspection, Cleaning, and Maintenance section in this manual.

#### 6. Warranted Parts

##### 1) Fuel Metering System

- i) Carburetor and its internal parts.
- ii) Fuel pump (if so equipped).
- iii) Cold start enrichment system.

##### 2) Air Induction System

- i) Intake pipe/manifold.
- ii) Air cleaner.

##### 3) Ignition System

- i) Spark plug.
- ii) Magneto ignition system.

##### 4) Catalyst System (if so equipped)

- i) Exhaust pipe stud.
- ii) Muffler.
- iii) Catalytic converter (if so equipped).

##### 5) Miscellaneous Items Used in Above Systems

- i) Vacuum, temperature and time sensitive valves and switches.
- ii) Hoses, belts, connectors, and assemblies.

#### Record Product's Serial Number Here:

\_\_\_\_\_

**Note:** If product has no serial number, record month and year of purchase instead.

**Note:** Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.