

*SAVE THIS MANUAL FOR FUTURE USE.  
CONSERVE ESTE MANUAL PARA SU REFERENCIA FUTURA.  
CONSERVEZ LE GUIDE POUR CONSULTATION ULTÉRIEURE.*

# **LCT ENGINES DE MOTORES LCT LCT MOTEURS**

**Operation Manual / Manual De Empleo / Manuel D'opération**

*This spark ignition system complies with the Canadian standard ICES-002.*

*Este sistema de la ignición de la chispa se conforma con los HIELOS estándar canadienses-002.*

*Ce système d'allumage par étincelle de véhicule est conforme à la norme NMB-002 du Canada.*

California Proposition 65

**WARNING:**

The engine exhaust from this product and this product contains chemicals known to the state of California to cause cancer and birth defects, or other reproductive harm.

**! DANGER**

**CARBON MONOXIDE HAZARD**

NEVER use engine inside homes, garages, crawl spaces, or other partially enclosed areas. Poisonous gases that can be harmful or fatal can build up in these areas. Using a fan and opening doors or windows does NOT provide enough fresh air.

Engine exhaust contains carbon monoxide - a poisonous gas that can be harmful or fatal. You CANNOT see or smell this gas.

Use a battery-powered carbon monoxide detector when running an engine.

If you start to feel sick, dizzy, or weak while using an engine, shut it off and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.

**! DANGER**

Using an engine or engine application indoors CAN KILL YOU IN MINUTES.  
Exhaust contains carbon monoxide, a poison gas you cannot see or smell.

 NEVER use in the home or in partly enclosed areas such as garages.		 ONLY use outdoors and far from open windows doors, and vents.
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Avoid other engine dangers.  
READ MANUAL BEFORE USE.

# Introduction

**When using this engine, your safety and the safety of others should be your top priority.**

To assist you in making informed decisions regarding safety, we have provided operating procedures and other information on labels and in this manual. This information warns you of potential hazards that could hurt you or others.

Please stay safety conscious when using this engine.

We have provided important safety information in a variety of forms, including:

- Safety Labels: placed on the engine.
- Safety messages: preceded by a safety alert symbol and one of three signal words, DANGER, WARNING, or CAUTION. These safety alert symbols mean:



**DANGER**

If you do not follow instructions, it **WILL** cause you **SERIOUS INJURY** or **DEATH**.



**WARNING**

If you do not follow instructions, it **MAY** cause you **SERIOUS INJURY** or **DEATH**.



**CAUTION**

If you do not follow instructions, it may cause you **SERIOUS INJURY** or **EQUIPMENT DAMAGE**.

- Safety Headings: such as **IMPORTANT SAFETY INSTRUCTIONS**.
- Safety Section: such as **ENGINE SAFETY**.
- Instructions: How to use this engine correctly and safely.

Thoroughly read and review this manual to know how to stay safe and get maximum benefit and enjoyment from using this engine.

# Engine Safety

## IMPORTANT SAFETY INSTRUCTIONS

Accidents occur less frequently when instructions are followed, the operator is safety conscious and the engine is properly maintained. Some of the most common hazards are discussed below, along with the best way to protect yourself and others.

### Owner and Operator Responsibilities

Owners and operators should perform the following suggestions:

- Carefully read the owners manual.
- Follow the instructions in this manual carefully.
- Familiarize yourself with all controls and know how to stop the engine quickly in case of an emergency.
- Keep children away from the engine and do not let them operate it. Keep children and pets away from the area of operation.
- Operate this engine in well-ventilated areas. NEVER run engine indoors.

### Refueling the Engine

Gasoline is extremely flammable, and gasoline vapor can explode. When refueling the engine, take the following precautions.

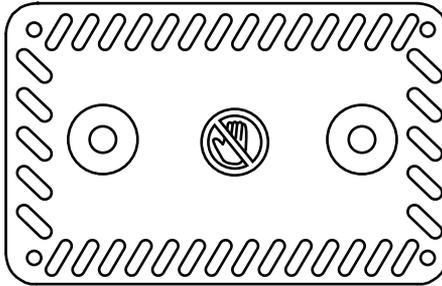
- Perform when the engine is cool.
- Refuel outdoors in well-ventilated areas.
- The engine should not be running.
- Make sure the engine is grounded to prevent static electrical spark.
- Do not smoke or use cell phones when refueling.
- Keep away from flames or sparks.
- If spillage occurs, be sure all areas are dry and vapor has dissipated prior to starting the engine.

## Engine Safety CONTINUED

### Exhaust / Muffler

Engine exhaust is dangerous because of intense heat and emission of carbon monoxide (poisonous gas).

- The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Do not touch the muffler while it is hot. Do not store the engine until it is cool.



- To prevent fire hazards and for adequate ventilation, keep the engine at least 3 feet (1 meter) away from building walls and other equipment during operation. Do not place flammable objects close to the engine.

- Carbon Monoxide Hazard:  
Exhaust gas contains carbon monoxide, a poisonous gas. Avoid inhalation of exhaust gas. Always run the engine in a well-ventilated area. Never run the engine indoors.

 **DANGER**

### Other Equipment

Review the instructions provided with the equipment powered by this engine for any additional safety precautions that should be observed in conjunction with engine startup, shutdown, operation, or protective safety gear that may be needed to operate the equipment.

 **WARNING**



**Do not touch hot sections of engine (see muffler figure above). The hot sections of the engine can cause severe burns.**

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# Controls & Features

## CONTROLS

### 1. Fuel Valve

The fuel valve opens and closes the passage between the fuel tank and the carburetor. The fuel valve must be in the ON position for the engine to run. When the engine is not in use, be sure the fuel valve is in the OFF position to prevent carburetor flooding and to reduce the possibility of fuel leakage.

### 2. Engine ON/OFF Switch (per engine specification)

The engine switch enables and disables the ignition system. Turn the engine switch to the ON position to start the engine. Turn the engine switch to the OFF position to stop the engine.

### 3. Choke Lever

The choke lever opens and closes the choke valve in the carburetor. The "ON" position enriches the fuel mixture which makes it easier when starting a cold engine. The opposite position provides the correct fuel mixture for operation after engine warms up.

### 4. Throttle Lever (per engine specification)

The throttle lever controls engine speed (RPMs). Moving the throttle lever in the directions shown makes the engine run faster or slower. (Non-generator applications.)

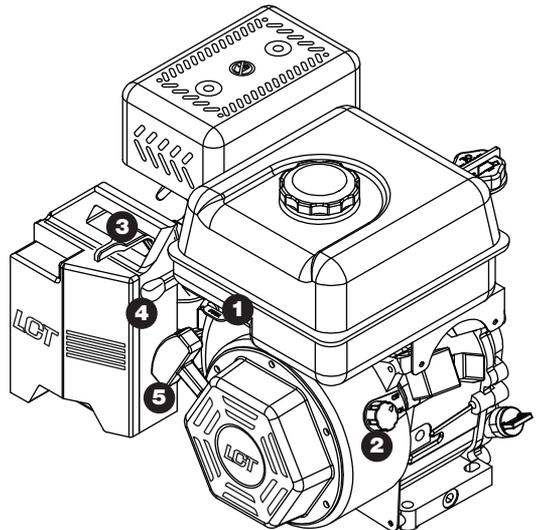
### 5. Recoil Starter Grip

Pulling the starter grip operates the recoil starter to crank the engine. Always grip snugly and have your body positioned properly when pulling. Keep thumb on the end of the handle in case of kick-back.

## WARNING



Do not touch hot sections of engine. The hot sections of the engine can cause severe burns.



## Before Operation

### PRE-OPERATION CHECKS

For your safety, and to maximize the service life of your equipment, it is very important to take a few moments before you operate the engine to check its condition. Be sure to take care of any problem you find, or have your servicing dealer correct it, before you operate the engine.

#### **WARNING**

**Improperly maintaining this engine or failing to correct a problem before operation, could cause a malfunction in which you could be seriously injured.**

**Always perform a pre-operation inspection before each operation and correct any problem.**

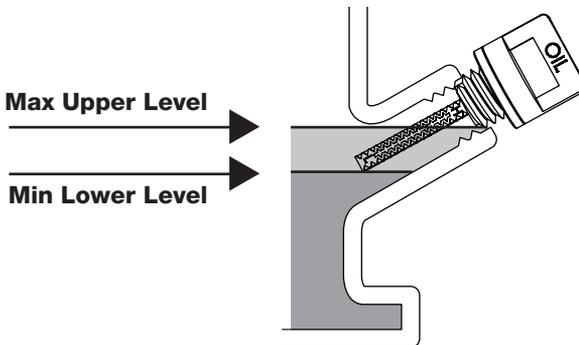
Before beginning your pre-operation checks, be sure the engine is level and the engine switch is in the OFF position (per engine specification).

#### **Check the General Condition of the Engine**

- Remove any excess dirt or debris, especially around the muffler, recoil starter, and cylinder head fins.
- Inspect for signs of damage and oil leakage.
- Be sure all shields and covers are in place. All nuts, bolts, and screws must be tight.

#### **Check the Engine**

- Check the engine oil level. Running the engine with a low oil level or improper oil can cause engine damage. To avoid the inconvenience of an unexpected shutdown, always check the engine oil on a level surface before startup.



## **Before Operation** CONTINUED

- Check the air filter. A dirty air filter will restrict air flow to the carburetor, reducing engine performance and can cause excessive wear on the engine.
- Check the fuel level before start-up. Since the engine must be cool before refueling, starting with a full tank will help to eliminate or reduce operating interruptions for refueling.

### **Check all Equipment Powered by this Engine**

Review the instructions provided with the equipment powered by this engine for all precautions and procedures that should be followed before starting the engine.

# Operation

## SAFE OPERATING PRECAUTIONS

Please review this section BEFORE OPERATION.

### WARNING

Carbon monoxide gas is toxic.  
Breathing it can cause unconsciousness and/or death.  
Avoid any areas or actions that expose you to carbon monoxide.

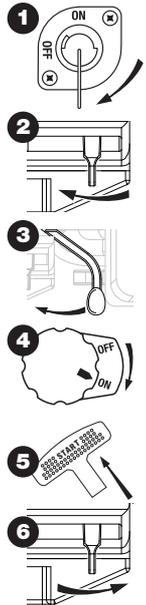
### WARNING

**DO NOT** place the hands on or near the exhaust system while starting.

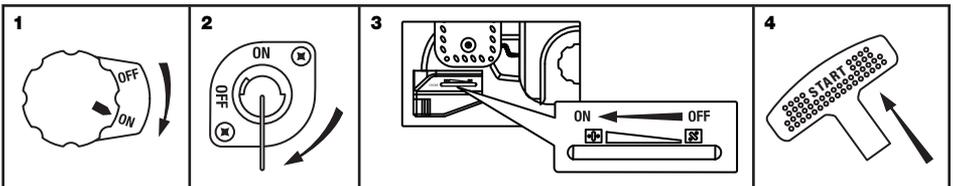
Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed in conjunction with starting, shutting down, or operating the engine.

## STARTING THE ENGINE

1. Place the fuel valve to the ON position (if applicable).
2. To start a cold engine, move the choke lever to the ON position.
3. Move the throttle lever away from the SLOW position, about 1/3 of the way toward the FAST position (per engine specification).
4. Turn the engine switch to the ON position (per engine specification).
5. Pull the recoil handle.
6. If the choke lever has been moved to the ON position to start the engine, gradually move it to the opposite position as the engine warms up.



## 4 STEP STARTING PROCEDURE\*

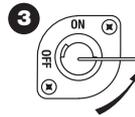


\*Per engine specification

## STOPPING THE ENGINE

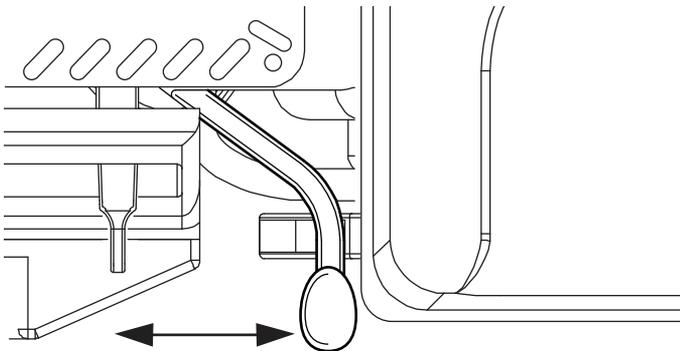
To stop the engine in an emergency, turn the engine switch to the OFF position. Under normal conditions, use the following procedure (per engine specification).

1. Move the throttle lever to the SLOW position and allow the engine to run slowly for cool down. This reduces the chance of backfire. (Non-generator applications.)
2. Turn the engine switch to the OFF position (per engine specification).
3. Turn the fuel valve lever to the OFF position.



## SETTING ENGINE SPEED

Position the throttle lever for the desired engine speed. For engine speed recommendations, refer to the instruction manual provided with the equipment powered by this engine. (Non-generator applications.)



**Increases RPM**

**Decreases RPM**

### **HIGH ALTITUDE OPERATION**

#### **Carburetor Modifications**

The standard carburetor air-fuel mixture may be too rich when operated at high altitude resulting in possible decreased performance and increased fuel consumption. Please have an authorized LCT Service Center modify this engine's carburetor if it is operated continuously above 5000 feet. Failure to modify may result in poor engine performance, spark plug fouling, hard starting, and increased emissions.

Carburetor modification by an authorized LCT Service Center will improve performance and allow this engine to continually meet US EPA and California ARB emission standards throughout its useful life.

#### **Important Note**

When the carburetor has been modified for high altitude operation, the air-fuel mixture may be too lean for operation at 5000 feet or below. This could result in the engine overheating and could cause serious engine damage. Please have an authorized LCT Service Center restore high altitude converted carburetors back to the original factory specification before operating below 5000 feet.

**To locate the nearest LCT dealer, please visit our website or call our toll free hotline:**

<http://www.lctusa.com>

Toll Free: (800) 558-5402

# Servicing Your Engine

## THE IMPORTANCE OF MAINTENANCE

Protect yourself and your equipment by properly maintaining your engine. Proper engine maintenance is necessary for safe, economical, and trouble-free operation.

### **WARNING**

**Improperly maintaining this engine, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously hurt or killed.**

**Always follow the inspection and maintenance recommendations and schedules in this owner's manual.**

To assist you in properly caring for your engine, the following pages include routine inspection procedures and simple maintenance procedures using basic hand tools. Service tasks that are more difficult or which require special tools should be handled by professionals and are normally performed by a service technician or qualified mechanic.

If you operate your engine under stressful conditions such as sustained high-load or high-temperature operation, or use your engine in unusually wet or dusty conditions, servicing should be more frequent. Consult your service technician for recommendations applicable to your individual needs and use.

### **NOTE**

**See Maintenance Schedule for normal and extreme operation condition differences.**

### MAINTENANCE SAFETY INSTRUCTIONS

This manual contains very important safety precautions. However, we cannot warn you of every conceivable hazard that can arise while performing maintenance. You must decide whether or not you should perform a given task and always be safety conscious.

#### **WARNING**

**Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed.**

**Always follow the procedures and precautions in the owner's manual.**

### Safety Precautions

- Make sure the engine is not running, is turned OFF, spark plug cap is removed from spark plug, and engine is cooled off before you begin any maintenance or repairs. This can prevent several potential hazards, such as the following:

#### **Carbon monoxide poisoning from engine exhaust.**

Run engine in a well-ventilated area.

#### **Burns from hot parts.**

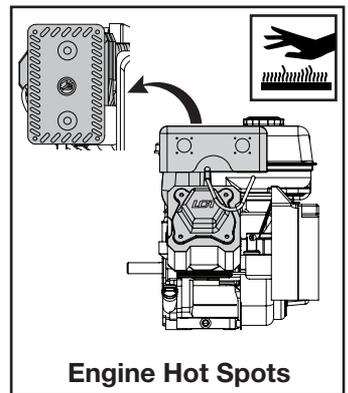
Let the engine and exhaust system cool-off before touching. (see drawing right)

#### **Injury from moving parts.**

Do not run the engine unless instructed to do so.

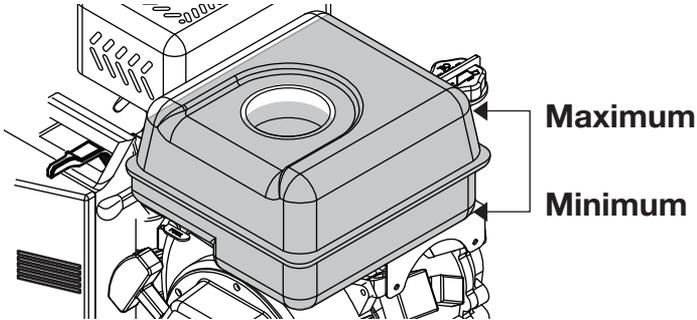
- Before you begin maintenance, read all instructions and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be alert when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks and flames away from all fuel-related parts.
- It is suggested to keep a fire extinguisher close by when performing maintenance.

Your servicing dealer knows your engine best and is equipped to maintain and repair it.



### REFUELING

With the engine stopped and cool, remove the fuel tank cap and check the fuel level. Refill the tank if the fuel level is low. Leave enough area in the tank to allow for fuel expansion caused by heat. This will help prevent fuel from being forced from the tank onto a hot surface. **NEVER FILL TANK ABOVE MARKED RECOMMENDATIONS ON FILLER NECK.**



#### **⚠ WARNING**

**Gasoline is highly flammable and explosive.**

**You can be burned or seriously injured when handling fuel.**

- **Stop the engine and keep heat sparks and flame away.**
- **Only handle fuel outdoors.**
- **Wipe up spills immediately.**

Refuel in a well-ventilated area with the engine OFF and cool. Avoid spilling fuel. Do NOT fill above the fuel strainer marking. After refueling, tighten the fuel tank cap securely. Refuel the engine in a properly ventilated location and away from where fuel fumes may reach flames or sparks. Keep fuel away from appliance pilot lights, barbecues, electric appliances, power tools, and other electric appliances.

Spilled fuel is a fire hazard and it causes environmental damage. Wipe up spills immediately. Do not use cell phones or other electronic devices while refueling. Prevent static electricity when refueling. Fuel can damage paint and plastic. Do not spill fuel when filling your fuel tank. Damage caused by spilled fuel is not covered under warranty.

### FUEL RECOMMENDATIONS

Use unleaded gasoline with a pump octane rating of 86 or higher. These engines operate best on unleaded gasoline.

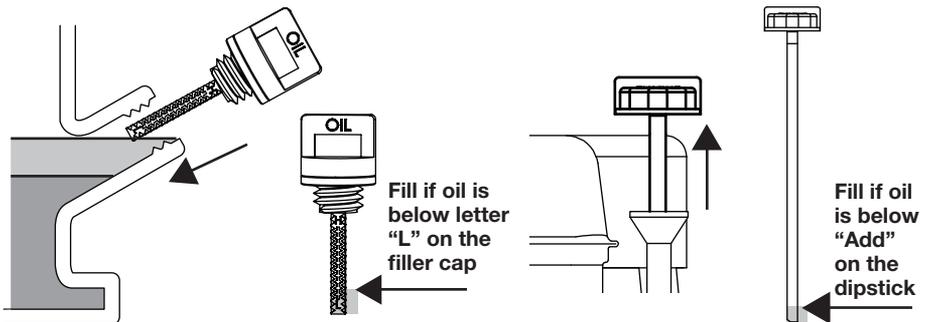
Do NOT use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank. Use only proper fuel containers that are properly marked.

Maximum recommended ethanol content: 10%

### ENGINE OIL LEVEL CHECK

Check the engine oil level with the engine stopped and with the engine in a level position.

1. Remove either side mounted filler cap dipstick or high oil fill dipstick and wipe it clean.
2. Insert the dipstick into the filler neck and turn clockwise until fully seated. Then remove the dipstick by turning it counter-clockwise. Check the oil level shown on the dipstick.
3. If the oil level is low, fill to the edge of the oil filler hole with the recommended oil.
4. Securely screw in the filler cap/dipstick. Running the engine with a low oil level can cause engine damage. Always check the engine oil before start up.



### ENGINE OIL CHANGE

Drain the used oil while the engine is warm. Warm oil drains quickly and completely. Avoid contact with hot oil.

1. Place a suitable container below the engine to catch the used oil then remove the filler cap/dipstick and the drain plug.

**continued on next page**

## Servicing Your Engine CONTINUED

2. Allow the used oil to drain completely, then reinstall the drain plug, and tighten it securely. Do not over tighten. Dispose of used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw used oil in the trash, pour it on the ground, or pour down a drain.
3. With the engine in a level position, fill to the outer edge of the oil filler hole with the recommended oil.

### Engine Oil Capacities

136cc - 16 oz (.473 liter)

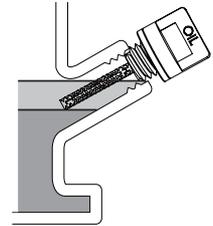
208cc - 16 oz (.473 liter)

291cc - 32 oz (.946 liter)

414cc - 38 oz (1.123 liter)

**Max Upper Level** →

**Min Lower Level** →



### ⚠ **NOTICE**

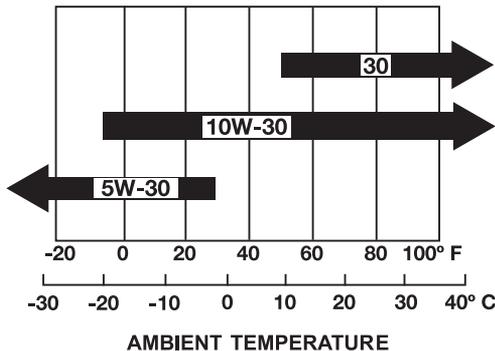
Running the engine with a low oil level can cause engine damage.

4. Securely screw in the filler cap/dipstick.

## ENGINE OIL RECOMMENDATIONS

Engine oil affects performance and service life. Use 4-stroke automotive detergent oil.

SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area warrants.



The SAE oil viscosity and service classification are in the API label on the oil container. Use API SERVICE category SJ engine oil, or better.

### **AIR FILTER INSPECTION**

Remove the air cleaner cover and inspect the filter. Use caution to avoid dropping debris into the air passage. Always replace damaged filter elements.

### **AIR FILTER SERVICE**

A dirty air filter will restrict air flow to the carburetor, which will reduce engine performance. When an air filter becomes dirty, replace it immediately.

Operating the engine without an air filter or with a damaged air filter will allow dirt to enter the engine, causing the engine to wear rapidly. This type of damage is not covered by the Limited Warranty.

### **SPARK PLUG SERVICE**

F6RTC (Torch) Plug Recommended

Cross References:

- Champing plug cross reference is: RN9YC (some tables show RN9YCC)
- NGK plug cross reference: BPR6ES
- BOSCH plug cross reference is: WR6DC

#### **⚠ NOTICE**

Using an incorrect spark plug may cause engine damage.

1. When engine is cool, disconnect the spark plug cap and remove any debris from the spark plug area with high pressure air.
2. Remove the spark plug with a 13/16-inch spark plug wrench.
3. Inspect the spark plug. Replace it if the electrodes are worn or if the insulator is cracked or chipped. Spark plug gap should be set to 0.027 - 0.030 inches.
4. Install the spark plug carefully to avoid cross threading. Screw in spark plug by hand until it stops turning.
5. Tighten the spark plug with a 13/16-inch spark plug wrench. Tighten 1/4 turn after the spark plug seats.

#### **⚠ NOTICE**

A loose spark plug can overheat and damage the engine. Over-tightening the spark plug can damage the threads in the cylinder head.

6. Attach the spark plug cap. Ensure spark plug cap snaps into place securely.

## Helpful Tips & Suggestions

### STORING YOUR ENGINE

#### Storage Preparation

Proper storage preparation keeps your engine trouble-free and clean. The following steps will assist in keeping rust and corrosion from impairing your engine's function and appearance, and will make the engine easier to start when using again.

#### Cleaning

If the engine has been running, allow it to cool for at least half an hour before cleaning. Clean all exterior surfaces and apply a light film of oil or WD-40 to prevent rust.

- Do not spray water into muffler or air cleaner. Water in the air cleaner will soak the air filter, and water that passes through the air filter or muffler can enter the cylinder and cause severe damage.
- Water contacting a hot engine can cause damage. If the engine has been running, allow it to cool for at least half an hour before washing.

#### Adding a Fuel Stabilizer to Extend Fuel Storage Life

1. Turn the fuel valve off while engine is running and allow the engine to run until it stops. Turn engine OFF when it begins surging to avoid engine damage.
2. Add fuel stabilizer, following the manufacturer's instructions.
3. Turn fuel valve on after adding fuel stabilizer
4. Re-start engine.
5. Run the engine outdoors for 1 minute to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.
6. Slow the engine to an idle speed. (Non-generator application.)
7. Repeat step 1 above.

## Helpful Tips & Suggestions CONTINUED

### MAINTENANCE SCHEDULE

#### Normal Operating Conditions (less than 40 hrs. per year)

	EACH USE	FIRST MONTH	EVERY 6 MONTHS	ONCE A YEAR
Engine Oil Level	Check			
Engine Oil		Replace	Replace	
Air Filter	Check			Clean / Replace
Spark Plug*			Clean	Replace
Cylinder/Head Fins				Clean
Oil Leaks	Check			
Bolts	Check			
Fuel Hose Clamps	Check			

\* Spark plug gap to be set to 0.027 - 0.030 inches.

#### Extreme Operating Conditions (greater than 40 hrs. per year)

	EACH USE	EVERY 40 HOURS
Engine Oil Level	Check	
Engine Oil		Drain and Replace
Air Filter	Check	Replace
Spark Plug*		Replace
Cylinder/Head Fins	Check	Clean
Oil Leaks	Check	
Bolts	Check	
Fuel Hose Clamps	Check	

\* Spark plug gap to be set to 0.027 - 0.030 inches.

#### **NOTE**

**Following proper maintenance is critical under extreme operating conditions.**

### **STORAGE PRECAUTIONS**

If your engine will be stored with gasoline in the fuel tank and in the carburetor, there is the possible hazard of gasoline vapor ignition. Choose a well-ventilated storage area away from heat, sparks, flames, and any appliance that operates with a flame such as a furnace, water heater, or clothes dryer. Avoid any area with a spark-producing electric motor, garage door openers, or where power tools are operated.

Avoid storage areas with high humidity which causes rust and corrosion. Leave the fuel valve lever in the OFF position to reduce the possibility of fuel leakage.

Position the equipment so the engine is level to avoid fuel or oil leakage. When the engine and exhaust system are cool, cover the engine to keep out dust. A hot engine and exhaust system can ignite or melt certain materials. Do not use sheet plastic as a dust cover. A nonporous cover can trap moisture around the engine causing rust and corrosion.

### **Removal From Storage**

Check your engine as described in the BEFORE OPERATION chapter of this manual. If refueling is required, only use fresh gasoline.

### **TRANSPORTING**

Transport only when engine is cool. A hot engine and exhaust system can burn you and can ignite some materials. Keep the engine level when transporting to reduce the possibility of fuel leakage. Position the fuel valve lever to the OFF position. Secure the engine to prevent movement during transporting to prevent potential injury and damage to the engine.

### EMISSION CONTROL SYSTEM INFORMATION

#### The U.S. and California Clean Air Acts

EPA and California regulations require all manufacturers to furnish written instructions describing the operation and maintenance of emission control systems.

The following instruction and procedures must be followed in order to keep the emissions from your engine within the emission standards.

#### Tampering and Altering

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of the intake, fuel or exhaust systems.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

### CONSUMER INFORMATION

#### Manufacturer Publications

These publications will give you additional information for maintaining and repairing your engine. You may order them online at most book retailing web sites.

#### Small Engine Repair – Chilton Manual

This manual covers complete maintenance and overhaul procedures. It is intended to be used by a skilled technician.

# Emissions Control Systems Warranty

United States Environmental Protection Agency (US EPA), and Liquid Combustion Technology, LLC (LCT) are pleased to explain the emission control system warranty on your small off-road engine. LCT must warrant the emission control system on your small off-road engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

## MANUFACTURER'S WARRANTY COVERAGE

1995 and later small off-road engines are warranted for two years. If any emission-related part on your engine is defective, the part will be repaired or replaced by Liquid Combustion Technology, LLC.

## OWNER'S WARRANTY RESPONSIBILITIES

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Liquid Combustion Technology, LLC recommends that you retain all receipts covering maintenance on your small off-road engine. Liquid Combustion Technology, LLC cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should however be aware that Liquid Combustion Technology, LLC may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road engine to an authorized Liquid Combustion Technology, LLC service center as soon as a problem exists. 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 Liquid Combustion Technology, LLC at 1-877-274-2214.

## GENERAL EMISSIONS WARRANTY COVERAGE

The warranty period begins on the date the engine or equipment is delivered to an ultimate Purchaser. Liquid Combustion Technology, LLC warrants to the ultimate

purchaser and each subsequent purchaser that the engine is: (1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code; and, (2) Free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in the Liquid Combustion Technology, LLC's emission control system warranty manual for a period of two years. (3) Repair or replacement of any warranted part under the warranty provisions will be performed at no charge to the owner at a Liquid Combustion Technology, LLC service center.

The warranty on emissions-related parts will be interpreted as follows: Any warranted part that is not scheduled for replacement as required maintenance in the written instructions supplied must be warranted for the warranty period specified in (2) above. If any such part fails during the period of warranty coverage, it must be repaired or replaced by Liquid Combustion Technology, LLC according to (3) above. Any such part repaired or replaced under the warranty must be warranted for the remaining warranty period. Any warranted part that is scheduled only for regular inspection in the written instructions supplied must be warranted for the warranty period specified in (2) above. A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for the remaining warranty period.

Any warranted part that is scheduled for replacement as required maintenance in the written instructions supplied must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part will be repaired or replaced by Liquid Combustion Technology, LLC according to (3) above. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part. Notwithstanding the provisions of (3) above, warranty services or repairs will be provided at all Liquid Combustion Technology, LLC's service centers that are franchised to service the subject

## Emissions Control System Warranty CONTINUED

engines. The owner will not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at an authorized Liquid Combustion Technology, LLC service center.

Liquid Combustion Technology, LLC is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part. Throughout the engine's warranty period defined in (2) above, Liquid Combustion Technology, LLC will maintain a supply of warranted parts sufficient to meet the expected demand for such parts. Any replacement part may be used in the performance of any warranty maintenance or repairs and will be provided without charge to the owner. Such use will not reduce the warranty obligations of Liquid Combustion Technology, LLC. Add-on or modified parts may not be used. Such use will be grounds for disallowing a warranty claim. Liquid Combustion Technology, LLC will not be liable to warrant failures of warranted parts caused by the use of such an add-on or modified part.

# Manufacturers Warranty Information

## ENGINE OWNER WARRANTY POLICY

Effective date: June 1, 2003

## MANUFACTURER'S LIMITED WARRANTY STATEMENT

Liquid Combustion Technology, LLC manufactures its engines and equipment to the highest level of quality to bring our customers unparalleled owner satisfaction. Liquid Combustion Technology, LLC products are warranted to the original owner as follows:

## WARRANTY COVERAGE

### What is covered:

Liquid Combustion Technology, LLC will repair or replace any part or parts of the engine that are found to be defective in material or workmanship under normal use during the warranty period shown below. Warranty repairs or replacement will be made without charge for parts or labor.

### How to obtain warranty service:

You must deliver your LCT engine, or the equipment, together with proof of original retail purchase date, at your expense, to an LCT engine dealer or distributor authorized to perform warranty repairs. To find the nearest authorized service center to you go to: [www.lctusa.com](http://www.lctusa.com) and click on the SERVICE page to find the link or call 1-800-558-5402.

## WARRANTY PERIOD

### PRODUCTS

Engines	2 years
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THERE IS NO OTHER EXPRESS WARRANTY MADE OR IMPLIED AND LIQUID COMBUSTION TECHNOLOGY, LLC DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF PERFORMANCE, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT AND UNDER NO THEORY WHATSOEVER, SHALL LIQUID COMBUSTION TECHNOLOGY, LLC BE LIABLE FOR ANY HARM OR DAMAGE, WHETHER DIRECT, INDIRECT, CONSEQUENTIAL OR SPECIAL, SUFFERED BY OWNER. OWNER'S SOLE REMEDY SHALL BE THE REPAIR OR REPLACEMENT OF

THE DEFECTIVE LIQUID COMBUSTION TECHNOLOGY, LLC COMPONENT, PART OR EQUIPMENT THEREOF, AT LIQUID COMBUSTION TECHNOLOGY, LLC'S DISCRETION, ALL IN ACCORDANCE WITH THIS WRITTEN LIMITED WARRANTY. LIQUID COMBUSTION TECHNOLOGY, LLC HAS NOT AUTHORIZED ANY PERSON TO MODIFY, ALTER OR EXPAND THE WARRANTIES CONTAINED IN THIS DOCUMENT.

## LIMITATION OF LIABILITY

It is understood and agreed that Liquid Combustion Technology, LLC's liability and owner's sole remedy, whether in contract, under any warranty, in tort (including negligence) and strict liability or otherwise, shall not exceed the return of the amount of the purchase price paid by the owner and under no circumstances shall Liquid Combustion Technology, LLC be liable for any special, incidental or consequential damages, including, but not limited to, personal injury, property damage, damage to or loss of equipment, lost profits or revenue, costs of renting replacements and other additional expenses, even if Liquid Combustion Technology, LLC has been advised of the possibility of such damages. The price stated for the Liquid Combustion Technology, LLC product is a consideration in limiting Liquid Combustion Technology, LLC's Liability and owner's remedy. Some states do not allow the exclusion or limitation of incidental and consequential damages, and as such, the above language may not be applicable in such states that do not allow the exclusion or limitation of incidental and consequential damages. This Warranty gives you specific legal rights and you may also have other rights, which vary, from state to state.

# California Emission Control Warranty Statement

## **YOUR WARRANTY RIGHTS AND OBLIGATIONS**

The California Air Resources Board, United States Environmental Protection Agency (US EPA), and Liquid Combustion Technology, LLC (LCT) are pleased to explain the emissions control system warranty on your 2013 small off-road engine (SORE). In California, new small off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. Liquid Combustion Technology, LLC must warrant the emission control system (EEC) on your small off-road engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

Your emission control system may include parts such as the carburetor or fuel tanks, fuel lines, fuel caps, valves, canisters, filters, vapor hoses, clamps, connectors, and other associated components.

## **MANUFACTURER'S WARRANTY COVERAGE**

This emissions control system is warranted for two years. If any emissions-related part on your equipment is defective, the part will be repaired or replaced by Liquid Combustion Technology, LLC.

## **OWNER'S WARRANTY RESPONSIBILITIES**

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Liquid Combustion Technology, LLC recommends that you retain all receipts covering maintenance on your small off-road engine, but Liquid Combustion Technology, LLC cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should however be aware that Liquid Combustion Technology, LLC may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road engine to a Liquid Combustion Technology, LLC distribution center as soon as a problem exists. 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 LCT at:  
1-877-274-2214

# General Emissions Warranty Coverage

## YOUR WARRANTY RIGHTS AND OBLIGATIONS

Liquid Combustion Technology, LLC's application for certification warrants to the ultimate purchaser and each subsequent purchaser that the engine is:

- (1) Designed, built, and equipped so as to conform with all applicable regulations and,
- (2) Free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in the Liquid Combustion Technology, LLC's application for certification.

## WARRANTY PERIOD

The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser or first placed in service. The warranty period is two years.

## WARRANTY COVERAGE FOR EMISSIONS-RELATED PARTS

Subject to certain conditions and exclusions as stated below, the warranty on emission-related parts is as follows:

- (1) Any warranted part that is not scheduled for replacement as required maintenance in the written instructions supplied is warranted for the warranty period stated above. If the part fails during the period of warranty coverage, the part will be repaired or replaced by Liquid Combustion Technology, LLC according to subsection (4) below. Any such part repaired or replaced under the warranty will be warranted for the remaining warranty period.
- (2) Any warranted part that is scheduled only for regular inspection in the written instructions supplied is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
- (3) Any warranted part that is scheduled for replacement as required maintenance in the written instructions supplied is warranted for the period of time before the first scheduled replacement date for that part. If the part fails prior to the first scheduled replacement, the part will be repaired or

replaced by Liquid Combustion Technology, LLC's according to (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

- (4) Repair or replacement of any warranted part under the warranty provisions herein will be performed at a warranty station at no charge to the owner.
- (5) Notwithstanding the provisions of herein, warranty services or repairs will be provided at all Liquid Combustion Technology, LLC's distribution centers that are franchised to service the subject engines.
- (6) The owner will not be charged for diagnostic labor that is directly associated with diagnosis of a defective, emission-related warranty part, provided that such diagnostic work is performed at a warranty station.
- (7) Liquid Combustion Technology, LLC is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.
- (8) Throughout the engine's warranty period defined above, Liquid Combustion Technology, LLC will maintain a supply of warranted parts sufficient to meet the expected demand for such parts.
- (9) Any replacement part may be used in the performance of any warranty maintenance or repairs and will be provided without charge to the owner. Such use will not reduce the warranty obligations of Liquid Combustion Technology, LLC.
- (10) Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claim. Liquid Combustion Technology, LLC will not be liable to warrant failures of warranted parts caused by the use of such an add-on or modified part.

## Warranted Parts

The repair or replacement of any warranted part otherwise eligible for warranty coverage may be excluded from such warranty coverage if Liquid Combustion Technology, LLC demonstrates that the engine or equipment has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part. That notwithstanding, any adjustment of a component that has a factory installed, and properly operating, adjustment limiting device is still eligible for warranty coverage. The following emission warranty parts lists are covered if factory installed:

- (1) Fuel Metering System
  - (i) Carburetor and internal parts (and/or pressure regulator or fuel injection system)
  - (ii) Air/fuel ratio feedback and control system
  - (iii) Cold start enrichment system
- (2) Air Induction System
  - (i) Controlled hot air intake system
  - (ii) Intake manifold
  - (iii) Air filter
- (3) Ignition System
  - (i) Spark plugs
  - (ii) Magneto or electronic ignition system
  - (iii) Spark advance/retard system
- (4) Exhaust Gas Recirculation (EGR) System
  - (i) EGR valve body, and carburetor spacer if applicable
  - (ii) EGR rate feedback and control system
- (5) Air Injection System
  - (i) Air pump or pulse valve
  - (ii) Valves affecting distribution of flow
  - (iii) Distribution manifold
- (6) Catalyst or Thermal Reactor System
  - (i) Catalytic converter
  - (ii) Thermal reactor
  - (iii) Exhaust manifold
- (7) Particulate Control Traps
  - (i) Filters, precipitators, and any other device used to capture particulate emissions
- (8) Miscellaneous Items Used in Above Systems
  - (i) Vacuum, temperature, and time sensitive valves and switches
  - (ii) Electronic controls
  - (iii) Hoses, belts, connectors, and assemblies
- (9) Evaporative Emissions Components
  - (i) Fuel Line
  - (ii) Fuel Line Clamps
  - (iii) Fuel Tank and Fuel Cap
  - (iv) Carbon Canister and connecting parts
  - (v) ROV

If you have any questions regarding your warranty rights and responsibilities, you should contact:

Liquid Combustion Technology, LLC  
100 Roe Road  
Travelers Rest, SC 29690  
Phone : 1-877-274-2214  
Manufactured by Liquid Combustion Technology, LLC

## Specifications

Item	136	208	291	414
Maximum speed	3850±150rpm	3850±150rpm	3850±150rpm	3850±150rpm
Idle speed	2150±50rpm	2150±50rpm	2150±50rpm	2150±50rpm
Compression	8.5:1	8.5:1	8.2:1	8:1
Displacement	136cc	208cc	291cc	414cc
Cast iron sleeve	yes	yes	yes	yes
Bore and stroke	62mm x 45mm	70mm x 54mm	80mm x 58mm	90mm x 65mm
Fuel	gasoline	gasoline	gasoline	gasoline
Compression release	yes	yes	yes	yes
Dry weight	31lbs / 14.1kg	36lbs / 15kg	46lbs / 21kg	58lbs / 26kg
Low oil shut off	if equipped	if equipped	if equipped	if equipped
Fuel shut off valve	yes	yes	yes	yes

# ***LCT***

***LIQUID COMBUSTION TECHNOLOGY***

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Liquid Combustion Technology, LLC | 100 Roe Road | Travelers Rest, SC 29690

| Phone: 877-274-2214 |