

LC2P77F  
LC2P82F

# *Owner's Manual*

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## 1. GENERAL INFORMATION

### 1.1 READING AND UNDERSTANDING THE MANUAL

Some paragraphs in the manual containing information of particular importance for safety and operation are highlighted at various levels of emphasis, and signify the following:

#### NOTE

or

#### IMPORTANT

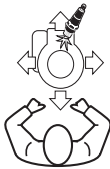
*These give details or further information on what has already been said, and aim to prevent damage either to the engine or other damages.*

**▲ WARNING!** *Non-observance will result in the risk of injury to oneself or others.*

**▲ DANGER!** *Non-observance will result in the risk of serious injury or death to oneself or others.*

#### NOTE

*All indications, "front", "rear", "right" and "left", are to be taken as referring to the engine positioned with the spark plug facing forwards with respect to the observer.*



The number before the paragraph title refers to the text references and their related figures (shown inside front and back covers).

### 1.2 SAFETY SYMBOLS

Your engine should be used with due care and attention. Symbols have therefore been placed on the engine to remind you of the main precautions to be taken. Their full meaning is explained later on.

You are also asked to carefully read the safety regulations in the applicable chapter of this handbook.



**Warning!** - Read and follow Operating Instructions before running engine.



**Warning!** - Gasoline is flammable. Allow engine to cool at least 2 minutes before refuelling.



**Warning!** - Engines emit carbon monoxide. DO NOT run in enclosed area.

## 2. GENERAL SAFETY STANDARDS

(to be strictly applied)

### A) TRAINING

- 1) Carefully read the instructions contained in this manual and the instructions of the machine on which this engine is installed. Learn how to stop the engine quickly.
- 2) Never allow people unfamiliar with these instructions to use the engine.
- 3) Never use the engine while people, especially children, or pets are nearby.
- 4) Remember that the operator or user is

*responsible for accidents or hazards occurring to other people or their property.*

### B) PREPARATION

- 1) Do not wear loose-fitting clothing, dangling drawstrings, jewels or items that could become caught; tie up long hair and keep at safe distance while starting the lawnmower.
- 2) Turn engine OFF and let it cool before removing gas cap.
- 3) **WARNING: DANGER!** Fuel is highly flammable:
  - store the fuel in special containers;
  - refuel only outdoors by using a funnel; never smoke while refueling and/or handling fuel;

- *add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot;*
  - *if you have spilt some fuel, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until the fuel has evaporated and fuel vapors have dissipated.*
  - *always put the tank and fuel container caps back on and tighten well.*
- 4) **Replace faulty mufflers and the guard, if damaged.**

### C) OPERATION

- 1) *Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.*
- 2) *Do not use starting fluids or similar products.*
- 3) *Do not change the engine governor settings or overspeed the engine.*
- 4) *Do not tilt the machine onto its side to prevent fuel leaks from the fuel tank cap.*
- 5) *Do not touch the cylinder fins and/or the muffler guard until the engine has cooled down.*
- 6) *Stop the engine and disconnect the spark plug wire before checking, cleaning or servicing the machine or the engine.*
- 7) *Transport the machine with an empty tank.*

### D) MAINTENANCE AND STORAGE

- 1) *Routine maintenance is essential for safety and for keeping a high performance level.*
- 2) *Do not store the machine with fuel in the tank in an area where the fuel vapors could reach an open flame, a spark or a strong heat source.*
- 3) *Allow the engine to cool before storing in any enclosure.*
- 4) *To reduce the fire hazard, keep the engine, the muffler and the fuel storage area free of grass, leaves, or excessive grease.*
- 5) *If the fuel tank has to be drained, this should be done outdoors once the engine has cooled down.*
- 6) *Never use the engine with either worn or damaged parts. Parts are to be replaced and not repaired. Use genuine spare parts. Parts that are not of the same quality can damage the engine and impair your safety.*

## 3. COMPONENTS AND CONTROLS

### 3.1 ENGINE COMPONENTS

1. Oil filler cap with dipstick
2. Oil drain plug
3. Air cleaner cover
4. Fuel stopcock
5. Spark plug cap
6. Engine code



Note your engine  
serial number here

### 3.2 ACCELERATOR CONTROL

The throttle (generally a lever), fitted to the machine, is connected to the engine by a cable.

Consult the machine's Instructions Manual to identify the throttle and its positions, usually marked by symbols, corresponding to:



**CHOKE** = to be used for starting from cold.



**FAST** = corresponds to maximum rpm; to be used when working.



**SLOW** = corresponds to minimum rpm.

## 4. WHAT YOU NEED TO KNOW

The engine performance, reliability and life are influenced by many factors, some external and some strictly associated with the quality of the products used and with the scheduled maintenance.

The following information allow a better understanding and use of your engine.

### 4.1 ENVIRONMENTAL CONDITIONS

The operation of a four stroke gas engine is affected by:

#### a) Temperature:

- Working in low temperatures could lead to difficult cold starting.
- Working in very high temperatures could lead to a difficult hot starting due to the evaporation of the fuel either in the carburetor float chamber or in the fuel pump.
- In any case, the right kind of oil must be used, according to the operating temperatures.

#### b) Altitude:

- The higher the altitude (above sea level), the lower the max power developed by an engine.
- When there is a considerable increase in altitude, the load on the machine should be reduced and particularly heavy work avoided.

### 4.2 FUEL

A good quality fuel is important for the reliability of engine operation.

- a) Use unleaded gasoline, with a minimum of 87 octane.
- b) Use clean, fresh fuel; purchase fuel in quantity that can be used within 30 days.
- c) Do not add oil or any kind of fuel additive.

### 4.3 OIL

Use high quality oils, choosing their viscosity grade according to the operating temperature.

- a) Use only detergent oil classified SJ,SL or higher are acceptable.
- b) Choose the SAE viscosity grade of oil from this chart:
  - from 41 to 95 °F (5 to 35°C) = SAE 30
  - from -13 to +41°F (-25 to +5°C) =  
5W-20 or 5W-30 (Conventional)
  - from 19 to + 95°F (-7 to + 35°C) =  
10W-30 (Synthetic) or 15W-40 (Conventional)
- c) The use of multi-viscosity oils in hot temperatures will result in higher than normal oil consumption; therefore, check oil level more frequently.
- d) Do not mix oils of different brands and features.
- e) SAE 30 oil, if used below 41°F, could result in possible engine damage due to inadequate lubrication.
- f) Oil should be at "FULL" mark do not overfill. Overfilling with oil may cause:
  - Smoking;
  - Spark plug or air filter fouling, which will cause hard starting.

### 4.4 AIR FILTER

The air filter must always be in perfect working order, to prevent debris and dust from getting ingested into the engine, reducing the efficiency and life of the machine.

- a) Always keep the filtering element free of debris and in perfect working order.
- b) If necessary, replace the filtering element with an original spare part. Incompatible filtering elements can impair the efficiency and life of the engine.
- c) Never start the engine without mounting the filtering element properly.

### 4.5 SPARK PLUG

Not all the spark plugs for engines are the same!

- a) Use only spark plugs of the recommended type, with the right heat range.
- b) Check the length of the thread, because – if too long – it will damage the engine beyond repair.
- c) Make sure that the electrodes are clean and their gap is correct. .030 in (.76mm)

## 5. STANDARDS OF USE

### 5.1 BEFORE EVERY USE

Before every use, perform the following checking procedures

#### 5.1.1 Check oil level

See the specific chapter (8.1) for the oil to be used.

- a) Place engine level.
- b) Clean around oil fill.
- c) Unscrew the cap, clean the end of the dipstick and insert it, without screwing it down.
- d) Remove the cap with the dipstick and check the oil level that must be between the "ADD" and "FULL" marks.
- e) If oil is required, add oil of the same kind up to the "FULL" mark, being careful not to spill any outside the oil fill.
- f) Fully tighten the filler cap and wipe off any spilled oil.

#### 5.1.2 Check air cleaner

The efficiency of the air filter is fundamental for the engine to work properly. Do not start the engine if the filtering element is missing or broken.

- a) Release the latches on the air cleaner and pull the air cleaner cover off the air-cleaner body.
- b) Clean the inside of the air cleaner cover with compressed air.
- c) Gently slide the filter out of the air-cleaner body.
- d) Inspect the filter for damage by looking into the filter while shining a bright light on the outside of the filter.
- e) Reinstall the filter, and air-cleaner body. Reapply the latches on the air cleaner cover.

#### 5.1.3 Adding fuel

**IMPORTANT** *To prevent damaging plastic parts of the motor, remove all traces of spilt fuel immediately. The warranty does not cover damage to plastic parts caused by fuel.*

See "Technical Data" chapter (8.1) for the fuel characteristics.

Refuelling must be made when the engine is cold, following the instructions contained in the machine's Instructions Manual.

#### 5.1.4 Spark plug wire

Firmly connect the wire to spark plug, making sure that there are no traces of dirt inside the cap on the spark plug terminal.

### 5.2 STARTING THE ENGINE (cold)

The engine must be started in the way described in the machine's Instruction Manual, always making sure that any device (if present) that could cause the machine to advance or the engine to stop is disengaged.

- a) Open the fuel shut off
- b) Pull the choke lever to the closed position
- c) Turn the starter key as described in the machine's instruction manual.

After a few seconds push the choke lever open.

#### NOTE

*If the engine starts but does not keep running, repeat the above steps with the throttle on "FAST".*

### 5.3 STARTING THE ENGINE (hot starting)

- Follow the cold-starting procedure with throttle control in "FAST" position.

### 5.4 USE OF THE ENGINE IN OPERATION

Maximum rpm must be used to optimise the engine's yield and performance, by setting the throttle lever to "FAST".

#### ⚠ WARNING!

*Keep your hands away from the muffler and surrounding areas that can become extremely hot. With the engine running, do not get loose-fitting clothing (ties, scarves, etc.) or hair close to the top part of the engine.*

**IMPORTANT** *Do not operate on over 20° inclines to prevent malfunctioning of the engine.*

### 5.5 STOPPING THE ENGINE DURING MOWING

- a) Move the throttle to "SLOW".
- b) Allow the engine to run at minimum speed for at least 15-20 seconds.
- c) Stop the engine following the instructions contained in the machine's Instructions Manual.

### 5.6 STOPPING THE ENGINE AFTER MOWING

- a) Move the throttle to "SLOW".
- b) Allow the engine to run at minimum speed for at least 15-20 seconds.
- c) Stop the engine following the instructions contained in the machine's Instructions Manual.
- d) Close the fuel shut off.
- e) Remove debris from the engine and especially the muffler to reduce the risk of fire.

### 5.7 CLEANING AND STORAGE

- a) Do not spray with water or power washer to clean the exterior of the engine.
- b) Use a compressed air gun (max. 87 psi) for preference, thus preventing debris and dust from penetrating inside.
- c) Store the lawnmower (and the engine) in a dry place, sheltered from severe weather conditions and sufficiently ventilated.

### 5.8 LONG STORAGE (over 30 days)

In case the engine has to be stored for a long time (for example at the end of the season), a few precautions are needed to help with future start-ups.

- a) To prevent the formation of deposits inside the tank, empty it of fuel by unscrewing the carburettor float chamber plug and collect-

ing all the fuel in a suitable container. At the end of the operation remember to screw the plug back on and fully tighten it.

- b) Remove the spark plug and pour about 1 oz of clean engine oil into the spark plug hole, then, having blocked the hole with a rag, run the starter motor briefly to distribute the oil over the inner surface of the cylinder. Finally replace the spark plug with out connecting the wire.

## 6. MAINTENANCE

### 6.1 SAFETY RECOMMENDATIONS

**⚠ WARNING!** *Remove the spark plug wire and read instructions before carrying out any cleaning, repair or maintenance operation. Wear proper clothing and working gloves whenever your hands are at risk. Do not perform maintenance or repair operations without the necessary tools and technical knowledge.*

**IMPORTANT** *Never get rid of used oil, fuel or other pollutants in unauthorized places.*

### 6.2 MAINTENANCE SCHEDULE

Follow the schedule below.

Operation	After First 5 hours	Every 5 hours or daily	Every 50 hours or every season	Every 100 hours	Every 200 hours	Every 500 hours
Check oil level		✓				
Check or clean air inlet screen <sup>2)</sup>		✓				
Change oil <sup>1)</sup>	✓			✓		
Clean muffler and engine		✓				
Air filter cleaning <sup>2)</sup> and check			✓			
Change oil filter				✓		
Check spark plug				✓		
Replace spark plug					✓	
Fuel filter check				✓		
Replace air cleaner primary element <sup>2)</sup>					✓	
Replace air cleaner secondary element <sup>2)</sup>						✓

<sup>1)</sup> Change oil every 25 hours if the engine is operating under heavy load or in hot weather.

<sup>2)</sup> Clean air cleaner more frequently if the machine is operating in dusty areas.

### 6.3 CHANGE OIL

See the specific chapter (8.1) for the oil to be used.

**⚠ WARNING!** *Drain oil while the engine is warm, being careful not to touch the hot engine nor the drained oil.*

- Place the machine on a flat surface.
- Clean the area around the filler cap and unscrew the cap with dipstick.
- Provide a suitable container for collecting the oil and unscrew the drain plug.
- Refit the drain plug and fully tighten it having made sure that the gasket is in the right position.
- Fill up with fresh oil.
- Check that the oil level has reached the "MAX" notch on the dipstick.
- Close the cap again and clean up any traces of oil that was possibly spilt.

#### NOTE

The oil capacity is 2.5 qt (2.4L)

#### ⚠ WARNING!

• *The length of time that gasoline can be left in your fuel tank and carburetor without causing functional problems will vary with such factors as gasoline blend, your storage temperatures, and whether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very warm storage temperatures accelerate fuel deterioration. Gasoline will oxidize and deteriorate in storage. Deteriorated gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. As a result, if the engine is not used for more than one month, the fuel should be drained thoroughly to prevent from deterioration of the fuel in the fuel system and carburetor.*

• *The failures of fuel system or engine performance arising from improper storage are not covered by the warranty.*

#### 6.4 CLEAN MUFFLER AND ENGINE

Muffler must be cleaned when the engine is cold.

- a) Use compressed air to remove any debris and dirt that could cause a fire from the muffler and its protective cover.
- b) Make sure that the cooling air intakes are not blocked.
- c) Clean the plastic components with a sponge soaked in water and detergent.

#### 6.5 AIR FILTER MAINTENANCE

- a) Release the latches on the air cleaner and pull the air cleaner cover off the air-cleaner body.
- b) Clean the inside of the air cleaner cover with compressed air.
- c) Gently slide the filter out of the air-cleaner body.
- d) Inspect the filter for damage by looking into the filter while shining a bright light on the outside of the filter.
- e) Reinstall the filter, and air-cleaner body. Reapply the latches on the air cleaner cover.

#### 6.6 SPARK PLUG SERVICE

- a) Remove the spark plug using a spark plug socket wrench.
- b) Clean the electrodes with a metal brush and remove any carbonaceous build-up.
- c) Using a thickness gauge, check for the right gap .030 (.76mm) between the electrodes.
- d) Install the spark plug and tighten to 25-30 N-m (18.5-22.1 ft-lb).

Replace the spark plug if the electrodes are burnt or if the porcelain is broken or damaged.

**▲ WARNING!** *Fire hazard! Do not check the ignition system with spark plug removed.*

#### NOTE

*Spark plug type: Champion RN9YC or equivalent*

#### 6.7 TUNING THE THROTTLE CABLE AND THE CARBURETTOR

Should the engine not reach maximum rpm with the throttle lever set to "FAST", it could be due to the throttle lever and speed control lever being out of phase or to a carburetion problem.

Contact your local dealer to restore normal operation.



## 7. TROUBLESHOOTING

PROBLEM	LIKELY CAUSE	SOLUTION
a) Hard starting	- No fuel	- Check and top off
	- Stale fuel / debris in tank	- Empty fuel tank and refill with fresh fuel
	- Incorrect starting procedure	- Perform correctly
	- Spark plug disconnected	- Check that the spark plug wire fits well over the plug terminals
	- The spark plug is wet or the spark plug electrodes are dirty or spark plug is not correctly installed	- Check
	- Air filter clogged	- Check and replace
	- Incorrect oil for the season	- Replace with proper oil
	- Fuel evaporation in the carburetor (vapor lock) due to high temperatures	- Wait for a few minutes then start again
	- Fault in carburation	- Contact your dealer
b) Inconsistent power	- Dirty electrodes or incorrect gap	- Check
	- The spark plug	- Check that the cap fits securely, free of dirt. Inspect lead for damage. Replace if insulator cracked or broken.
	- Air filter clogged	- Check and replace
	- Throttle lever in "CHOKE" position	- Move the lever to the "FAST" position
	- Fault in carburation	- Contact your dealer
	- Fault in ignition	- Contact your dealer
c) Loss of power	- Air filter clogged	- Check and replace
	- Fault in carburation	- Contact your dealer

## 8. TECHNICAL SPECIFICATIONS

### 8.1 REFILLING AND OPERATION MATERIALS

Fuel .....	Unleaded gasoline, minimum 87 octane
Engine oil: from 41 to 95 °F (5 to 35 °C).....	SAE 30
from -13 to 41 °F (-25 to +5 °C ).....	5W-20 or 5W-30
from -19 to +95 °F (-7 to +35 °C).....	Synthetic 10W-30 or 15W-40
Oil capacity .....	2.5 qt (2.4L)
Spark plug .....	RN9YC
Spark plug gap .....	0.030 in ( .76mm)

Wiring diagram

