

ONYX

TECHNOLOGY POWERING A CLEANER FUTURE

LX700

19HP 708cc PROPANE ENGINE



OPERATOR MANUAL

ONYX PROPANE ENGINE LX700

This Guide provides necessary instructions on machine operation and maintenance. Before operation or use of this machine, please carefully read and understand this Guide.



TECHNOLOGY POWERING A CLEANER FUTURE

12605 Commerce Station Drive • Suite 700
Huntersville, NC 28078
704.827.9368

Website: <https://www.onyx solutions.store/>

No further notice will be given for possible change of specification and parts.

Machine Information:

Please fill in when installing for future reference.

Model number: _____

Machine serial number: _____

Sales representative: _____

PO number: _____

Date PO placed: _____

Installation Date: _____



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PARTS ORDERING

When ordering the replacement parts, please refer to the ONYX website at www.onyx solutions.com. Use of the published Illustrated Parts Lists (IPL's) to identify the correct part number required is required to support accuracy of parts ordering.

Machine IPL's can be found at the top of the SHOP page of the ONYX website. Before matching parts or accessories, please firstly determine your machine model and serial number. You can order parts and accessories from any authorized service center or dealer by telephone at 704-827-9368, or email us at sales@onyx solutions.com.

WARRANTY CLAIMS

ONYX Warranty Statement (policy) and Warranty Claim form can be found on the SUPPORT page of the ONYX website, <https://www.onyx solutions.store/support>.

TECHNICAL SUPPORT

Technical support is available by submitting a HELP TICKET on the CONTACT US page of the ONYX website, <https://onyx solutions.odoo.com/contact>.

PROTECT THE ENVIRONMENT



Please abandon the old machine components such as packaging material, battery, etc. and toxic liquid such as anti-freezing agent and oil according to your local regulations on waste disposal and on the premise of maintaining environmental safety. Please ensure to carry out the recycling well.



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GENERAL INFORMATION

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 injury 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.

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: Propane is flammable. Allow engine to cool at least 2 minutes before refuelling.



WARNING: Engines emit carbon monoxide. DO NOT run in enclosed area.

GENERAL SAFETY STANDARDS

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.

GENERAL SAFETY STANDARDS

PREPERATION:

- 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 split 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 vapours have dissipated.
 - always put the tank and fuel container caps back on and tighten well.
- 4) Replace faulty silencers and the guard, if damaged.

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 silencer guard until the engine has cooled down.
- 6) Stop the engine and disconnect the spark plug cable before checking, cleaning or servicing the machine or the engine.
- 7) Do not crank the engine with spark plug removed.
- 8) Transport the machine with empty tank.

MAINTENANCE AND STORAGE:

- 1) A 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 vapours 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 silencer 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) On safety ground, 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.

COMPONENTS AND CONTROLS

ENGINE COMPONENTS:

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

ENGINE COMPONENTS:

The throttle trigger (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 trigger and its positions, usually marked by symbols, corresponding to:



CHOKE: To be used for starting from cold.



FAST: Corresponds to maximum revs; to be used when working.



SLOW: Corresponds to minimum revs.

LX700 19HP PROPANE ENGINE

ONYX LX700 engines operate on clean burning propane fuel significantly reducing emissions while increasing safety and reliability.

CLEANEST EMISSIONS IN CLASS

LEHR Propane Fuel Systems on the LX700 are certified 53% cleaner emissions than the closest engine in its class according to the Environmental Protection Agency. Standard low tone catalytic mufflers reduce carbon monoxide emissions well below OSHA permissible exposure limits. SAM Safe Air Monitor further increases safety by alerting operators should carbon monoxide levels climb to unsafe levels and will automatically shut engines down to prevent injury.

RELIABILITY

LEHR Propane Fuel Systems use a patented variable venturi and fuel jet design which never comes out of calibration and requires no field adjustments. LEHR systems utilize a threestage pressure regulator that vaporizes any liquid propane caused by overfilled cylinders or use of liquid cylinders making the LX700 the safest and most reliable engine in its class.

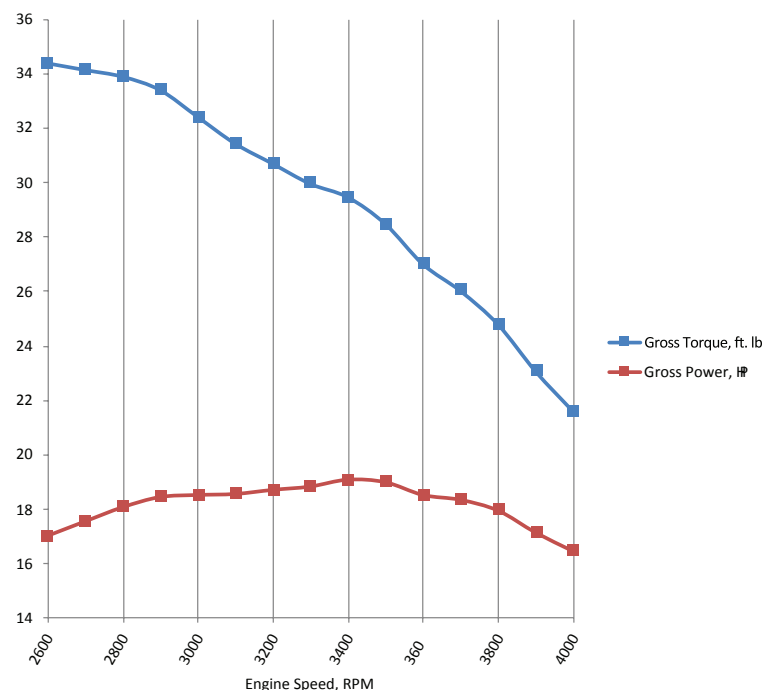
DESIGNED FOR PROPANE DURABILITY

Heavy-duty piston rings, a cast iron cylinder liner, and hardened heads designed for propane fuel resist wear and ensure precise timing for long engine life in commercial and industrial applications. Our heavy duty, low tone catalytic muffler is supported back to the engine block with two brackets and lasts the life of the engine.

SPECIFICATIONS

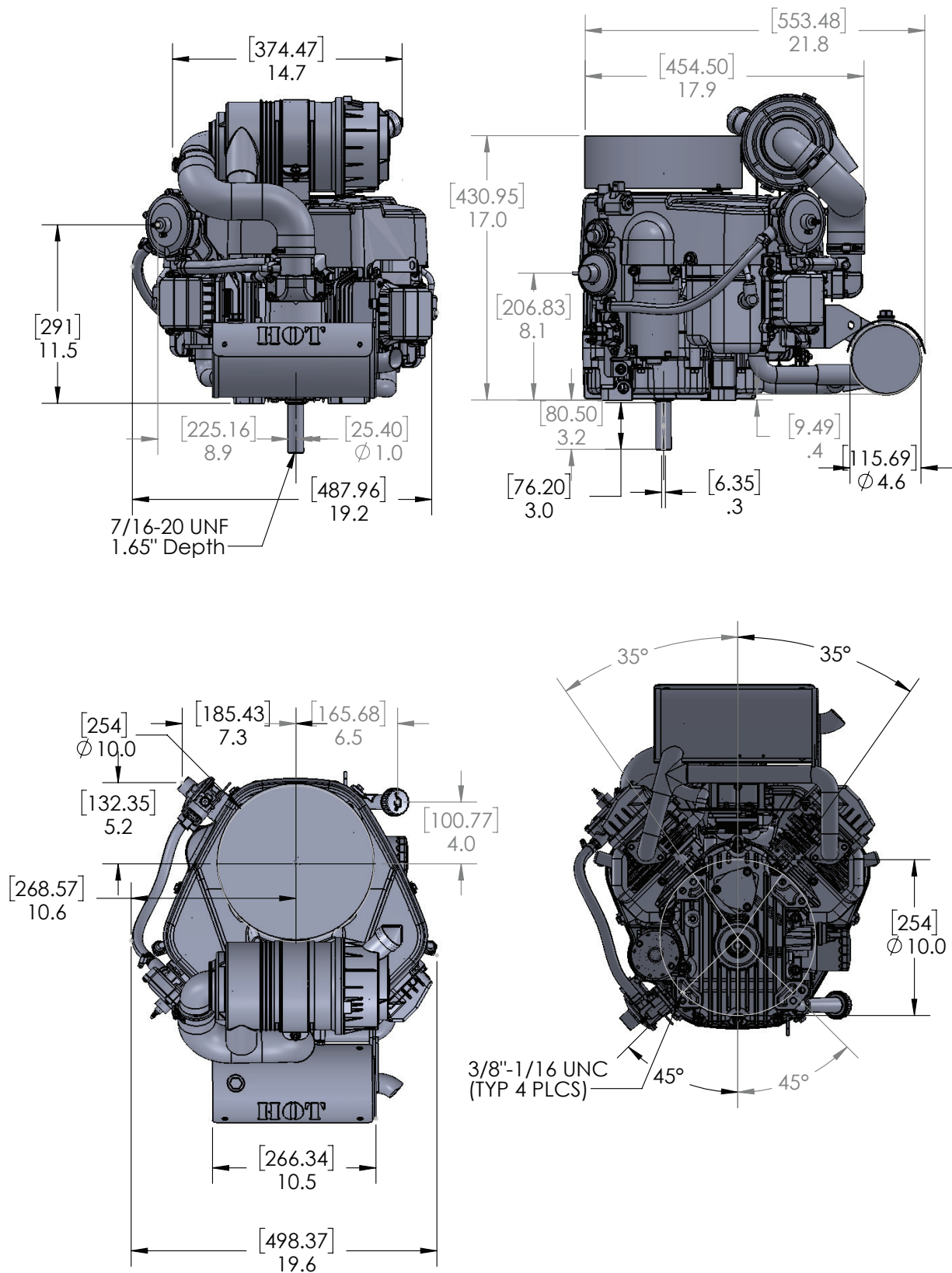
Type:	Air-cooled, V-Twin OHV
Power:	19hp (14.0 kW)
Size:	708cc Vertical Shaft
Bore x Stroke:	77mm x 76mm
Fuel System:	Fixed Venturi & Jet with
Fuel Type:	Butterfly Throttle
Starter:	Vapor Propane
Oil Capacity:	Electric 12v
Dry Weight:	2.4 Liters
Air Cleaner:	93lbs.
Muffler:	Canister, Top Mount
Cylinder:	Low Tone Catalytic
Crankshaft:	V-Twin, Hardened 1" Keyed PTO

POWER CURVE



LX700 19HP PROPANE ENGINE

DIMENSIONS (mm)



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.

ENVIRONMENTAL CONDITIONS:

The operation of a four-stroke endothermic engine is affected by:

a) Temperature:

- Working in low temperatures could lead to a 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 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 endothermic engine.
- When there is a considerable increase in altitude, the load on the machine should be reduced and particularly heavy work avoided.

OIL:

Use always 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 5 to 35 °C = SAE 30
- from -25 to + 5 °C = 5W-20 or 5W-30 (Multi-viscosity)
- from -7 to + 35 °C = Synthetic oils 10W-30 or 15W-40 (Multi-viscosity)

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 5°C, could result in possible engine damage due to inadequate lubrication.

f) Oil should be at “MAX” mark do not overfill. Overfilling with oil may cause:

- Smoking;
- Spark plug or air filter fouling, which will cause hard starting.

AIR FILTER:

A good quality fuel is the major issue for the engine reliability of operation. The air filter must always be in perfect working order, to prevent debris and dust from getting sucked 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.

WHAT YOU NEED TO KNOW

SPARK PLUG:

Not all the spark plugs for endothermic 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.

STANDARDS OF USE

BEFORE EVERY USE:

Before every use, perform the following checking procedures in order to assure regular operation.

CHECK THE OIL LEVEL:

See the specific chapter for the oil to be used.

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

CHECK THE 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) Clean around the filter cover.
- b) Open the clips of the two sides of the air filter cover.
- c) Check the condition of the filtering element. It must be intact, clean and in perfect working order; if not, either carry out maintenance or replace it.
- d) Put the cover back.

SPARK PLUG CAP:

Firmly connect the cable cap to the spark plug, making sure that there are not traces of dirt inside the cap and on the spark plug terminal.

STARTING THE ENGINE (COLD):

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

- a) Open the fuel stopcock.
- b) Move the throttle to "CHOKE".
- c) Turn the starter key as described in the machine's instruction manual.

After a few seconds, slowly move the throttle from "CHOKE" to either "FAST" or "SLOW".

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

STARTING THE ENGINE (HOT STARTING):

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

USE OF ENGINE IN OPERATION:

Maximum revs must be used to optimize the engine's yield and performace, by setting the throttle trigger to "FAST".



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

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

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.

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) When the engine is cold, disconnect the spark plug and remove the starter key (if present).
- e) Close the fuel stopcock.
- f) Remove any debris from the engine and especially around the exhaust silencer to reduce the risk of fire.

CLEANING AND STORAGE:

- a) Do not spray with water or use hydraulic lances to clean the exterior of the engine.
- b) Use a compressed air gun (max. 6 bars) 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.

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 the future start-up.

- a) To prevent the formation of deposits inside the tank, empty it of fuel by unscrewing the carburettor float chamber plug and collecting 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 3 cl of clean engine oil into the spark plug hole, then, having blocked the hole with a rag, run the starter motor briefly to turn the engine for a few revs and distribute the oil over the inner surface of the cylinder. Finally replace the spark plug without connecting the cable cap.

MAINTENANCE



WARNING: Remove the spark plug cap 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 operation without the necessary tools and technical knowledge.

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

MAINTENANCE SCHEDULE:

Follow the hourly or calendar - whichever occurs first - maintenance schedule shown in the following table.

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 ²		✓				
Change oil ¹	✓			✓		
Clean silencer and engine		✓				
Air filter clearing ² and check		✓				
Change oil filter				✓		
Check spark plug				✓		
Replace spark plug					✓	
Fuel filter check ³				✓		
Replace air cleaner primary element ²					✓	
Replace air cleaner secondary element ²						✓

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

²) Clean air filter more frequently if the machine is operating in dusty areas.

³) To be carried out by a specialized center.

MAINTENANCE

CHANGE OIL:

See sepcific chapter 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.

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

NOTE: The oil capacity is about 2.0 Liter



WARNING: The length of time that Propane can be left in your fuel tank and carburetor without causing functional problems will vary with such factors as Propane blend, your storage temeratures, 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. Propane will oxidize and deteriorate in storage. Deteriorated Propane 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 oil shall be drained thoroughly to prevent from deterioration of the fuel in the fuel system and carburetor. The failure of the fuel system or engine performance arising from improper storage are beyond the scope of the warranty.

CLEAN SILENCER AND ENGINE:

Silencer must be cleaned when the engine is cold.

- a) Use a jet of compressed air to remove any debris and dirt that could cause a fire from the silencer 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.

AIR FILTER MAINTENANCE:

- a) Clean debris in the air filter cap and rain cover.
- b) Open the clips on the two sides of air filter cover.
- c) Gently shake element up and down, take out air cleaner primary element and secondary element.
- d) Tap the cartridge on a solid surface and blow it from the inside with compressed air to remove dust and debris.

IMPORTANT: Do not use water, petrol, detergents or any other products to clean the cartridge.

- e) Clean the inside of the filter housing, making sure to block the inlet duct with a rag to prevent dust and debris from entering the engine.
- f) Remove the rag blocking the air inlet duct. Reinstall the primary and secondary air filter elements.
- g) Reinstall the air filter cover and secure it to the filter housing with the holding clips.

MAINTENANCE

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 (0.6-0.8mm) between the electrodes.
- d) Install the spark plug and tighten with a socket wrench.

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.

IMPORTANT: Use only spark plugs of the recommended type.

TUNING THE THROTTLE CABLE AND THE CARBURETOR:

Should the engine not reach maximum revs with the throttle trigger set to “FAST”, it could be due to the throttle trigger and speed control lever being out of phase or to a carburetion problem. Go to a specialised center or contact your dealer to restore normal operation.

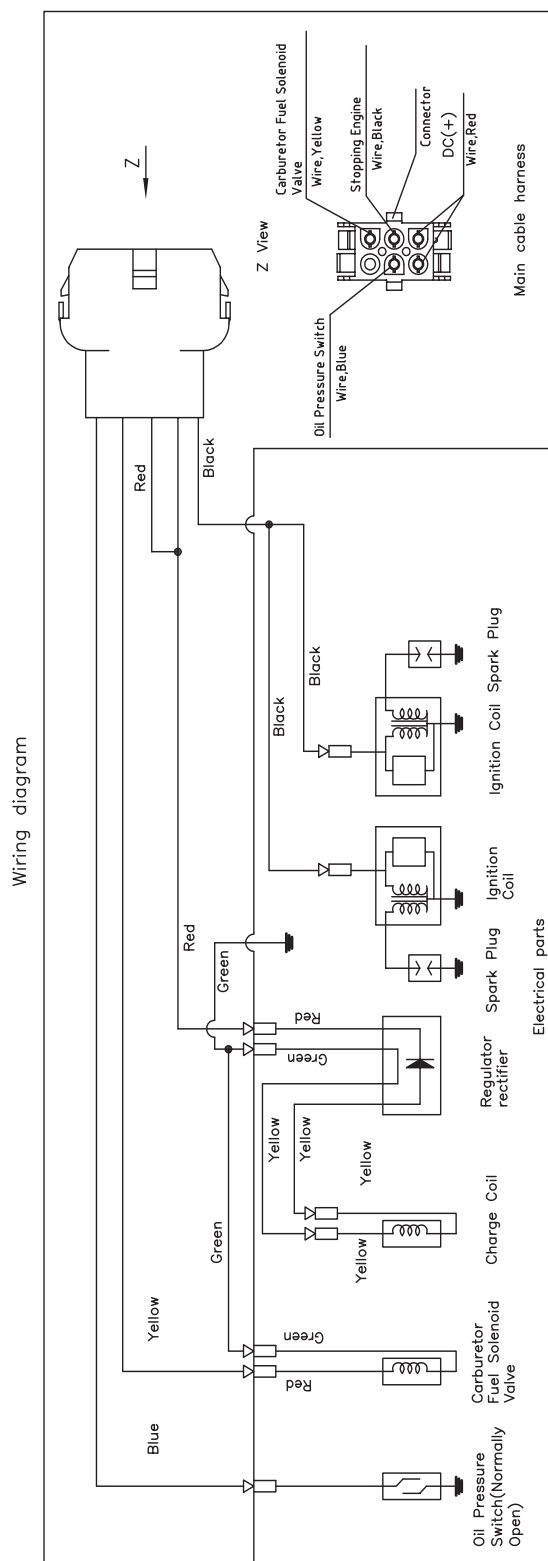
TROUBLESHOOTING

Problem	Reason	Solution
Hard starting	No fuel	Check and refuel
	Stale fuel or build-ups in tank	Empty fuel tank and refill with fresh fuel
	Incorrect starting procedure	Perform the starting procedure correctly
	Spark plug disconnected	Check that the spark plug cap fits well over the plug terminals
	The spark plug is wet or the spark plug electrodes are dirty or placed inadequately	Check
	Air filter clogged	Check and clean
	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 a Licensed Service Center
Inconsistent working	Hard starting	Contact a Licensed Service Center
	Dirty electrodes or incorrect gap	Check
	The spark plug cap is inserted incorrectly	Check that the cap is fitted correctly
	Air filter clogged	Check and Clean
	Throttle trigger in "CHOKE" position	Move the lever to the "FAST" position
	Fault in carburation	Contact a Licensed Service Center
Loss of power whilst operating	Fault in ignition	Contact a Licensed Service Center
	Air filter clogged	Check and clean
	Fault in carburation	Contact a Licensed Service Center
	Governor out of phase with respect to the accelerator	Adjust the cable

REFILLING AND OPERATION MATERIALS:

Fuel	Propane
Engine Oil: From 5° to 35° C	SAE 30
From -25° to 5° C	5W-20 or 5W30
From -7° to 35° C	Synthetic 10W-30 or 15W-40
Oil Capacity	2.0 Liter
Spark Plug	F7TRC (NHSP) or equivalent
Spark Plug gap	0.6-0.8mm

WIRING DIAGRAM/SCHEMATIC



Link to Wiring Schematic PDF file on ONYX Website Support Page:
<https://www.onyx solutions.store/support>

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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