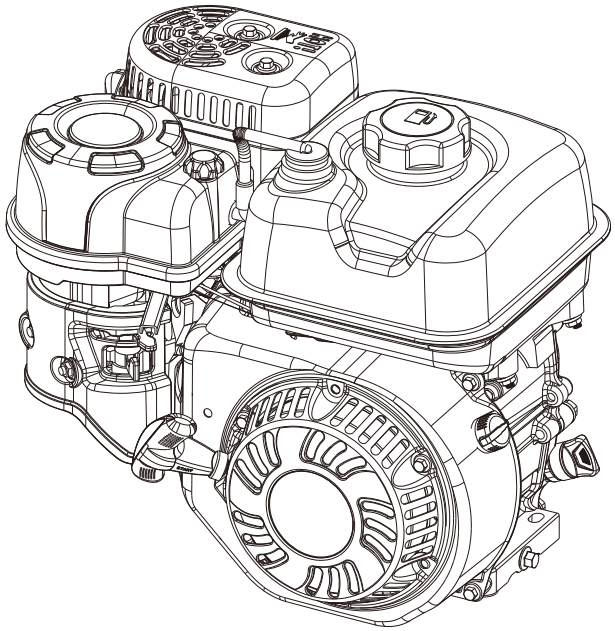
GENMAX®

GASOLINE ENGINE

User's Manual



WARNING: SAVE THIS MANUAL FOR FUTURE REFERENCE

This manual contains important information regarding safety. Operation, maintenance and storage of this product. Before use, read carefully and understand all cautions, warnings, instructions and product labels. Failure to do so could result in serious personal injury and/or property damage.

Thank you very much for choosing engine product manufactured by our Company!

This Manual will instruct you how to operate and use the engine set safely and properly. Please be sure to read it carefully before using.

All technical data and diagrammatic presentations in this User's Manual are consistent with the latest product at the time of publication.

Due to the revision and other changes, contents of this Manual may be slightly different from actual situation. The Company is entitled to revise it at any time, and the revised version will be developed without prior notice, please understand that. The copyright of this User's Manual belongs to the Company, and this Manual is not allowed to be reproduced without written consent of the Company, violators must be prosecuted.

This Manual is a permanent part of the engine set. If the engine set is resold, the Manual will be resold together with the engine set.

TABLE OF CONTENTS

SAFETY

Personal and property safeties of you and others are very vital. Please read the Safety Warning in the User's Manual and the decals of the engine set carefully.

The Safety Warning can alert you to those potential hazards that could harm you and others. In front of each Safety Warning, there is one of four words "**DANGER**", "**WARNING**", "**ATTENTION**", and "**CAREFUL**". Details are as follows:

⚠ DANGER

Failure to follow the instruction will result in being in peril of your life or extremely serious injury.

⚠ WARNING

Failure to follow the instruction will result in being in peril of your life or very serious injury.

⚠ CAREFUL

Failure to follow the instruction will result in minor injury.

NOTICE

Failure to follow the instruction will result in the damage to your engine set and other properties.

SAFETY PRECAUTIONS

⚠ DANGER

Using a 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.

⚠ WARNING

Engine exhaust contains carbon monoxide, a poisonous gas that could kill you in minutes. You CANNOT smell it, see it, or taste it. Even if you do not smell exhaust fumes, you could still be exposed to carbon monoxide gas.

- Operate this product ONLY outside far away from windows, doors and vents to reduce the risk of carbon monoxide gas from accumulating and potentially being drawn towards occupied spaces.
- Install battery-operated carbon monoxide alarms or plug-in carbon monoxide alarms with battery back-up according to the manufacturer's instructions. Smoke alarms cannot detect carbon monoxide gas.
- DO NOT run this product inside homes, garages, basements, crawlspaces, sheds, or other partially-enclosed spaces even if using fans or opening doors and windows for ventilation. Carbon monoxide can quickly build up in these spaces and can linger for hours, even after this product has shut off.
- ALWAYS place this product downwind and point the engine exhaust away from occupied spaces. If you start to feel sick, dizzy, or weak while using this product, shut it off and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.
- If you start to feel sick, dizzy or weak while using the portable engine, you may have carbon monoxide poisoning. Get out side to fresh air immediately and emergency medical assistance.. Very high levels of CO can rapidly cause victims to lose consciousness before they can rescue themselves. DO NOT attempt to shut off the engine before moving to fresh air. Entering an enclosed space where a engine is or has been running may put you at greater risk of CO poisoning.

SAFETY

⚠ DANGER

- Never use the engine in a location that is wet or damp. Never expose the engine to rain, snow, water spray or standing water while in use. Protect the engine from all hazardous weather conditions. Moisture or ice can cause a short circuit or other malfunction in the electrical circuit.
- Gasoline and its vapors are extremely flammable and explosive under certain conditions, could cause burns, fire, or explosion resulting in death or serious injury and/or property damage.
- Fill or drain fuel tank outdoors, in a well-ventilated area.
- DO NOT remove the fuel cap with the engine running.
- DO NOT overfill the fuel tank. Allow space for fuel expansion.
- DO NOT refuel the engine while the engine is running.
- DO NOT light a cigarette or smoke when add fuel.
- DO NOT tip engine or equipment at angle which causes fuel to spill.
- If fuel spills, wait until it evaporates before starting engine.
- Keep fuel away from sparks, open flames or other form of ignition (such as match, cigarette, pilot lights, static electric source)
- Store any containers containing gasoline in a well-ventilated area, away from any combustibles or source of ignition.
- Check for fuel leaks after refueling. Never operate the engine if a fuel leak is discovered.

⚠ WARNING

- Running engines produce heat. Severe burns can occur on contact.
- Combustible material can catch fire on contact.
- DO NOT touch hot muffler area.
- Allow equipment to cool before touching.

⚠ CAREFUL

- DO NOT allow children or unqualified persons to operate or service the engine.
- DO NOT cover the engine or equipment during operation.
- DO NOT operate the equipment with known leaks in the engine's fuel system.

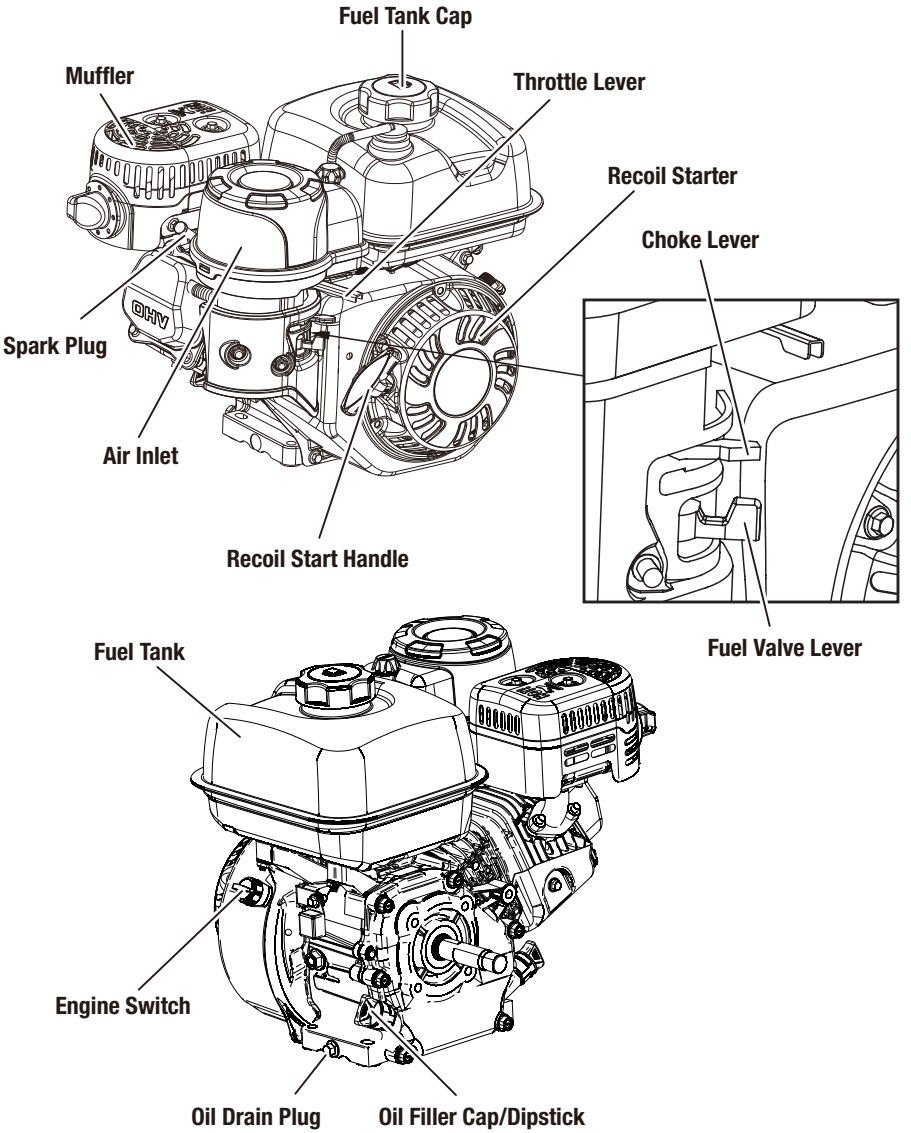
⚠ WARNING

Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go. To avoid kickback, slowly pull the cord until you feel resistance, then pull rapidly. Broken bones, fractures, bruises or sprains could result. Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories. Traumatic amputation or severe laceration can result.

NOTICE

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 apparel that may be needed to operate the equipment.

NAMES OF COMPONENTS



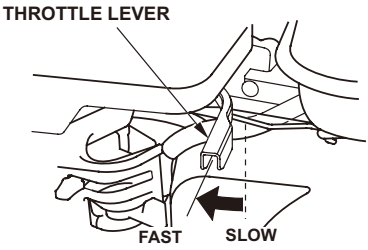
STATEMENT: The illustrations used in this manual are intended as representative reference views only.

CONTROLS

Note: The product you purchased may not have these configurations, please refer to the actual product.

THROTTLE LEVER

The throttle lever controls engine THROTTLE LEVER speed. Moving the throttle lever in the directions shown makes the engine run faster or slower.



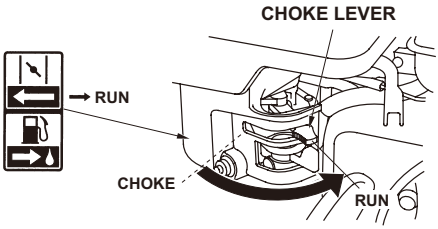
CHOKE LEVER

The choke lever opens and closes the choke valve in the carburetor.

The “CHOKE” position enriches the fuel mixture for starting a cold engine.

The “RUN” position provides the correct fuel mixture for operation after starting, and for restarting a warm engine.

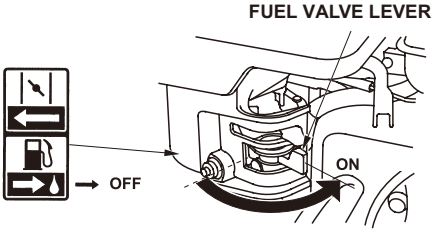
Some engine applications use a remotely-mounted choke control rather than the engine-mounted choke lever shown here.



FUEL VALVE LEVER

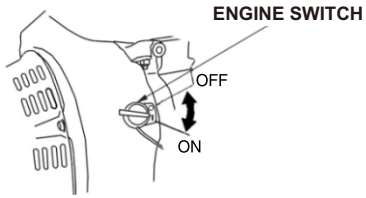
The fuel valve opens and closes the passage between the fuel tank and the carburetor. The fuel valve lever must be in the ON position for the engine to run.

When the engine is not in use, leave the fuel valve lever in the OFF position to prevent carburetor flooding and to reduce the possibility of fuel leakage.

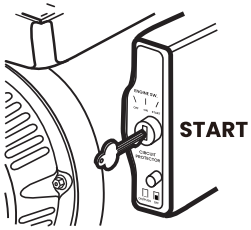


ENGINE SWITCH

1. For recoil start model: The engine switch enables and disables the ignition system. The engine switch must be in the RUN position for the engine to run. Turning the engine switch to the STOP position stops the engine.

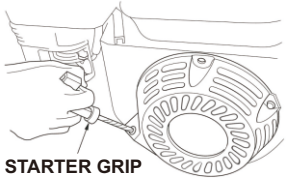


2. For electric start model:
   Turn the engine switch to the OFF position to stop the engine.
   Turn the engine switch to the ON position to recoil start the engine.
   Turn the engine switch to the START position to electric start the engine.



RECOIL STARTER

Pulling the recoil starter can crank the engine.



CHECK THE GENERAL CONDITION OF THE ENGINE

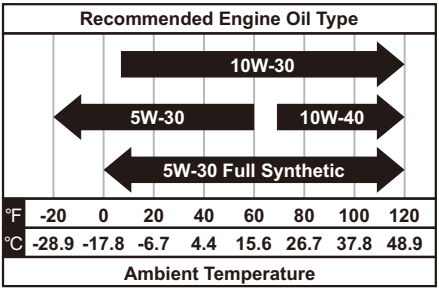
Look around and underneath the engine for signs of oil or gasoline leaks.
Remove any excessive dirt or debris, especially around the muffler and recoil starter.
Look for signs of damage.
Check that all shields and covers are in place, and all nuts, bolts, and screws are tightened.

NOTICE

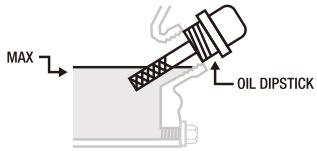
THIS ENGINE HAS BEEN SHIPPED WITHOUT OIL. Do not attempt to crank or start engine before it has been properly serviced with recommended oil. Failure to add engine oil before starting will result in serious engine damage.

NOTICE

The recommended oil type for typical use is 10W-30 automotive oil. However, using the listed conventional oils shown in the "Recommended Engine Oil Type" chart may be used for typical use including the first 5 hours of the break-in run time period of the engine. If running engine in extreme temperatures, refer to the "Recommended Engine Oil Type" chart.



1. Remove the oil dipstick, and use the oil funnel to add oil. DO NOT OVERFILL.
2. Check engine oil level and add as needed.



NOTICE

Once the oil has been added, a visual check should show oil about 1-2 threads from running out of the fill hole. When using the dipstick to check the oil level, DO NOT screw in the dipstick while checking.

3. Tighten the oil dipstick.

⚠ CAREFUL

This engine is equipped with a low oil shut-off and will stop when the oil level in the crankcase falls below a critical level.

ADD GASOLINE

⚠ WARNING

TO PREVENT SERIOUS INJURY FROM FIRE: Fill the gasoline tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding gasoline. Do not smoke.

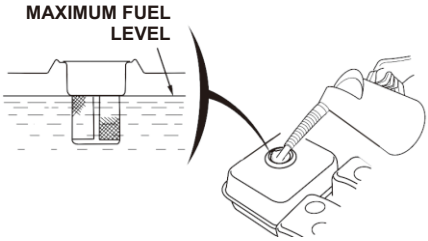
⚠ DANGER

Refuel in a well-ventilated area before starting the engine. If the engine has been running, allow it to cool. Refuel carefully to avoid spilling fuel. Do not fill above the fuel strainer shoulder. After refueling, tighten the fuel tank cap securely.

- To ensure the engine runs smoothly, only fresh, unleaded gasoline is used.
- Never use an oil/gasoline mixture. Never use old gasoline.
- Avoid getting dirt or water in the gasoline tank.
- Gasoline can age in the tank and make it hard to start the engine in the future.
- Never store engine for extended periods of time with gasoline in the tank.

Filling the Fuel Tank - Follow the steps below to fill the fuel tank:
1. Shut off the engine.
2. Allow the engine to cool down so all surface areas of the muffler and engine are cool to the touch.
3. Clean area around the fuel cap.
4. Remove the fuel cap by rotating counterclockwise.

5. Slowly add gasoline into the fuel tank. Be very careful not to overfill the tank. The gasoline level should NOT be higher than the red ring.



NOTICE

Do not overfill the fuel tank. Spilled fuel will damage some plastic parts.
Spilled fuel is not only a fire hazard, it causes environmental damage. Wipe up spills immediately.

6. Install the fuel cap by rotating clockwise.

BATTERY CONNECTIONS

(for electric starter)

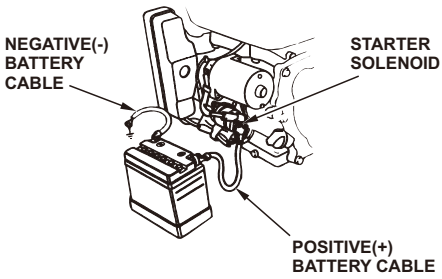
Recommend use a 12-volt battery with an ampere-hour at least 18 Ah.
NOTE: Battery is not included and must be purchased separately.

NOTICE

Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system.

Always connect the positive (+) battery cable to the battery terminal before connecting the negative (-) battery cable, so your tools cannot cause a short circuit if they touch a grounded part while tightening the positive (+) battery cable end.

1. Connect the battery positive (+) cable to the starter solenoid terminal.
2. Attach the negative(-) cable to the negative(-) battery terminal.
3. Connect the negative cable securely to one of the engine mounting bolts.
4. Coat the terminals and cables with a corrosion-preventive coating.



NOTICE

Check the battery cable connections to be sure the cables are secured and free of corrosion. Remove any corrosion and coat the terminals and cable l ends with grease. Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system.

⚠ WARNING

The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging or using batteries in an enclosed space.
The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield. The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.

- If electrolyte gets on your skin, flush with water.
- If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.

Electrolyte is poisonous. If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.

OPERATION

SAFE OPERATING PRECAUTIONS

⚠ WARNING

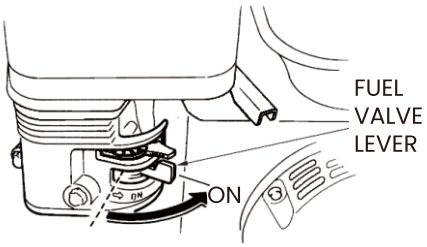
Carbon monoxide gas is toxic. Breathing it can cause unconsciousness and even kill you. Avoid any areas or actions that expose you to carbon monoxide.

Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed in conjunction with engine startup, shutdown, or operation.

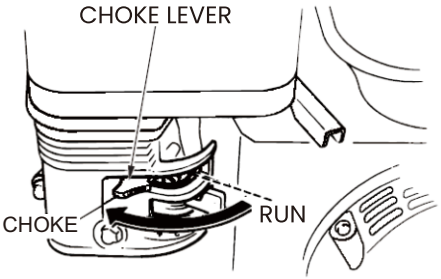
START THE ENGINE

(for recoil start type)

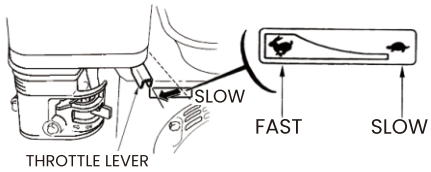
1. Move the fuel valve lever to the “ON” position.



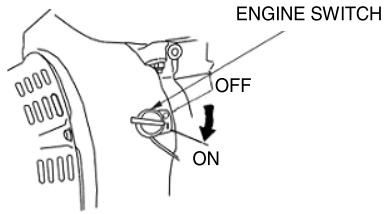
2. (1) To start the engine in cold state, turn the choke lever to the "CHOKE" position.
   (2) To start the engine in hot state, turn the choke lever to the "RUN" position.



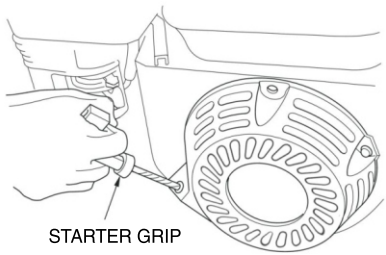
3. Move the throttle lever away from the "SLOW" position, about 1/3 of the way toward the "FAST" position.



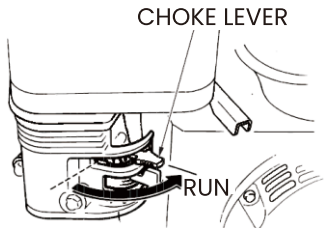
4. Turn the engine switch to the “ON” position.



5. RECOIL START
   Firmly grasp and pull the recoil handle slowly until you feel increased resistance, then pull rapidly.
   Tip: When pulling the hand starter, hold the engine carrying handle firmly, to prevent the engine from overturning.



6. After the engine starts, then turn the choke lever slowly to the "RUN" position.



OPERATION

NOTICE

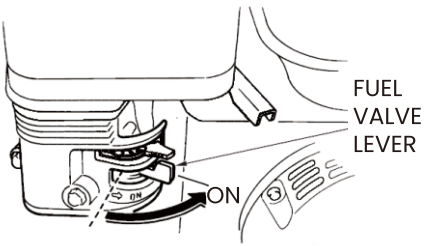
Moving the Choke Lever too fast could stall the engine.

IMPORTANT: Allow the engine to run at no load for five minutes after each start-up so that the engine can stabilize.

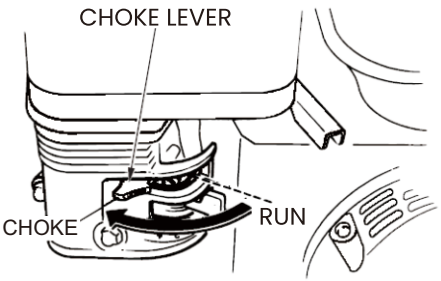
START THE ENGINE

(for electric start type)

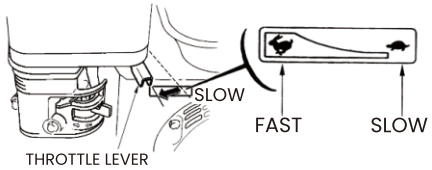
1. Move the fuel valve lever to the “ON” position.



2. (1) To start the engine in cold state, turn the choke lever to the "CHOKE" position.
   (2) To start the engine in hot state, turn the choke lever to the "RUN" position.



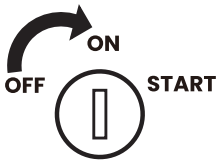
3. Move the throttle lever away from the "SLOW" position, about 1/3 of the way toward the "FAST" position.

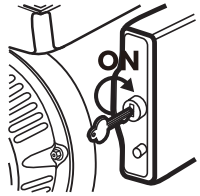


4. CHOOSE START METHOD

(1)RECOIL START

A. Use the supplied key to turn the engine switch to the "ON" position.

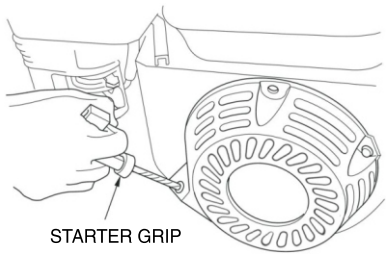




Note: If engine does not start, check engine oil level. Engine will not start with low or no engine oil.

B. Firmly grasp and pull the recoil handle slowly until you feel increased resistance, then pull rapidly.

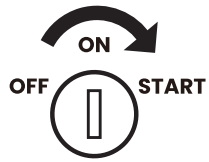
Tip: When pulling the hand starter, hold the engine carrying handle firmly, to prevent the engine from overturning.

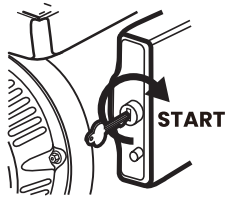


(2)ELECTRIC START:

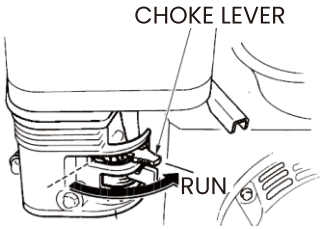
Use the supplied key to turn the engine switch to the "START" position.

Note: If engine does not start, check engine oil level. Engine will not start with low or no engine oil.





6. After the engine starts, then turn the choke lever slowly to the "RUN" position.



NOTICE

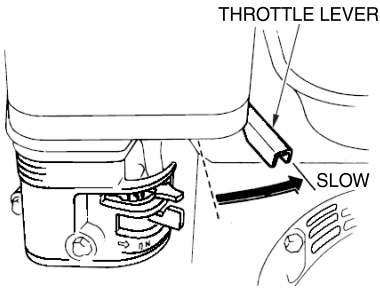
Moving the Choke Lever too fast could stall the engine.

IMPORTANT: Allow the engine to run at no load for five minutes after each start-up so that the engine can stabilize.

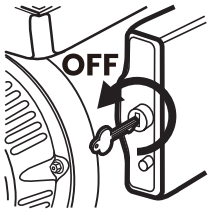
STOP THE ENGINE

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

1. Move the throttle lever to the “SLOW” position.



2. Push the engine switch to the "OFF" position.



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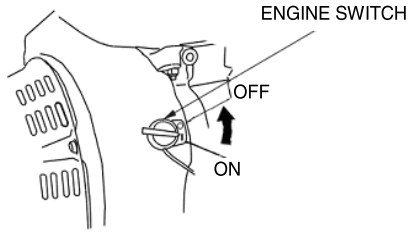
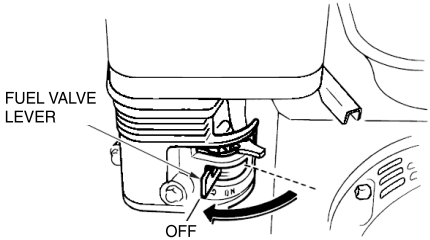


3. Move the fuel valve lever to the “OFF” position.



⚠ CAREFUL

This engine is equipped with a low oil shut-off and will stop when the oil level in the crankcase falls below a critical level.

MAINTENANCE

THE IMPORTANCE OF MAINTENANCE

Good maintenance is essential for safe, economical, and trouble-free operation. It will also help reduce air pollution.

⚠ 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 help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your engine under unusual conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

MAINTENANCE SAFETY

Some of the most important safety precautions are as follows: However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

⚠ 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 off before you begin any maintenance or repairs. This will eliminate several potential hazards:

Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you operate the engine.

Burns from hot parts. Let the engine and exhaust system cool before touching.

Injury from moving parts. Do not run the engine unless instructed to do so.

Read the instructions before you begin, and make sure you have the tools and skills required.

To reduce the possibility of fire or explosion, be careful 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.

Remember that your servicing dealer knows your engine best and is fully equipped to maintain and repair it.

To ensure the best quality and reliability, use only new, genuine parts or their equivalents for repair and replacement.

MAINTENANCE

REGULAR SERVICE PERIOD Performed at every indicated month or operating hour interval, whichever comes first.			Each use	First month or 20 Hrs.	Every 3 months or 50 Hrs.	Every 3 months or 100 Hrs.	Every year or 300 Hrs.
ITEM							
•	Engine oil	Check level	○				
		Change		○		○	
•	Air cleaner	Check	○				
		Clean			○ (1)		
		Replace					○☆
•	Sediment cup	Clean				○	
•	Spark plug	Check-Clean				○	
		Replace					○
	Spark arrester (optional parts)	Clean				○	
•	Idle speed	Check-Adjust					○ (2)
•	Valve clearance	Check-Adjust					○ (2)
•	Fuel tank and strainer	Clean					○ (2)
•	Combustion chamber	Clean	After every 300 Hrs. (2)				
•	Fuel line	Check	Every 2 years (Replace if necessary) (2)				

• Emission-related items.

☆ Replace the paper element type only.

(1) Service more frequently when used in dusty areas.

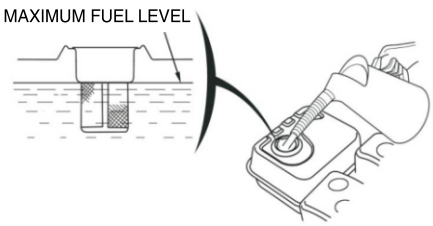
(2) These items should be serviced by your servicing dealer unless you have the proper tools and are mechanically proficient. Refer to manual for service procedures.

CHECKING AND FILLING FUEL

With the engine stopped, remove the fuel tank cap and check the fuel level. Refill the tank if the fuel level is low.

⚠ 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. Handle fuel only outdoors. Wipe up spills immediately.



Refuel in a well-ventilated area before starting the engine. If the engine has been running, allow it to cool. Refuel carefully to avoid spilling fuel. Do not fill above the fuel strainer shoulder. After refueling, tighten the fuel tank cap securely.

Never refuel the engine inside a building where gasoline fumes may reach flames or sparks. Keep gasoline away from appliance pilot lights, barbecues, electric appliances, power tools, etc.

Spilled fuel is not only a fire hazard, it causes environmental damage. Wipe up spills immediately.

NOTICE

Fuel can damage paint and plastic. Be careful not to 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 87 or higher.

These engines are certified to operate on unleaded gasoline. Unleaded gasoline produces fewer engine and spark plug deposits and extends exhaust system life.

Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

Occasionally you may hear a light "spark knock" or "pinging" (metallic rapping noise) while operating under heavy loads. This is no cause for concern.

If spark knock or pinging occurs at a steady engine speed, under normal load, change brands of gasoline. If spark knock or pinging persists, see an authorized servicing dealer.

NOTICE

Running the engine with persistent spark knock or pinging can cause engine damage.

Running the engine with persistent spark knock or pinging is considered misuse, and the Distributor's Limited Warranty does not cover parts damaged by misuse.

CHANGE ENGINE OIL

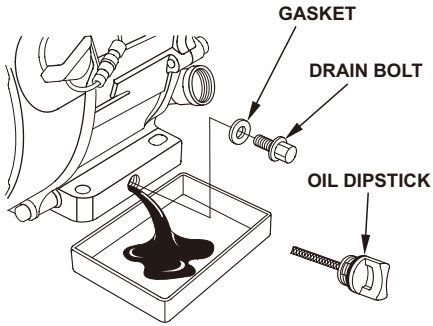
⚠ WARNING

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

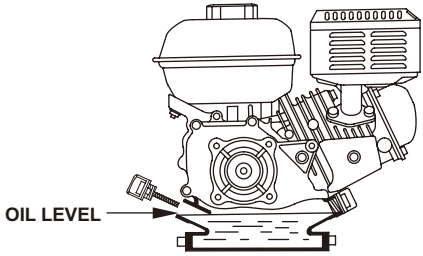
NOTICE

Always maintain proper engine oil level. Failure to maintain proper engine oil level could result in severe damage to the engine and/or shorten the life of the engine. Always use the specified engine oil. Failure to use the specified engine oil can cause accelerated wear and/ or shorten the life of the engine.

1. Always operate or maintain the engine on a flat surface.
2. Stop the engine.
3. Let engine sit and cool for several minutes.
4. Place a suitable container below the engine to catch the used oil.
5. Remove the oil dipstick and the drain plug to discharge the oil.



6. Allow the used oil to drain completely, and then reinstall the drain plug, and tighten it securely.
7. Fill the new engine oil and check the oil level.



8. Tighten the oil dipstick.

NOTICE

1. Long-term and frequent skin contact with engine oil may lead to skin cancer. Although this is not inevitable, it is recommended to wash the skin exposed to engine oil immediately and thoroughly with soap and water.
2. From the perspective of environmental protection, please properly dispose of the used engine oil after use. We strongly recommend that you put the waste engine

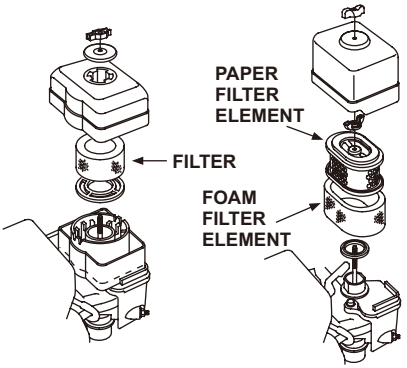
oil in a sealed container and send it to the local service station or waste oil recovery center.

3. Remember: do not throw it into a garbage or dump it on the ground or in a ditch.

CLEAN THE AIR FILTER

A dirty air filter will restrict air flow to the carburetor, reducing engine performance. If you operate the engine in very dusty areas, clean the air filter more often than specified in the MAINTENANCE SCHEDULE.

Remove the air cleaner cover and inspect the filter. Clean or replace dirty filter elements. Always replace damaged filter elements. If equipped with an oil-bath air cleaner, also check the oil level.

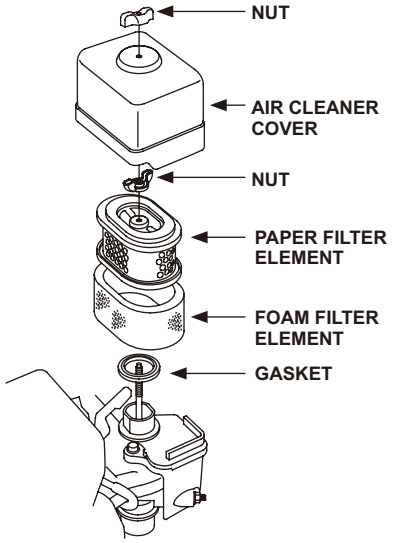


NOTICE

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

DUAL-FILTER-ELEMENT TYPES

1. Remove the wing nut from the air cleaner cover, and remove the air cleaner cover.
2. Remove the wing nut from the air filter, and remove the filter.
3. Remove the foam filter from the paper filter.
4. Inspect both air filter elements, and replace them if they are damaged. Always replace the paper air filter element at the scheduled interval.
5. Clean the air filter elements if they are to be reused.



Paper air filter element: Tap the filter element several times on a hard surface to remove dirt, or blow compressed air [not exceeding 30 psi (207 kPa)] through the filter element from the inside. Never try to brush off dirt; brushing will force dirt into the fibers.

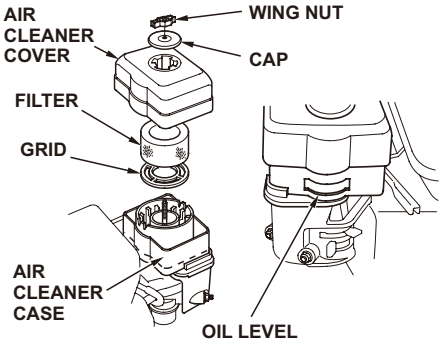
Foam air filter element: Clean in warm soapy water, rinse, and allow drying thoroughly. Or clean in nonflammable solvent and allow drying. Dip the filter element in clean engine oil, and then squeeze out all excess oil. The engine will smoke when started if too much oil is left in the foam.

6. Wipe dirt from the inside of the air cleaner base and cover, using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.
7. Place the foam air filter element over the paper element, and reinstall the assembled air filter. Be sure the gasket is in place beneath the air filter. Tighten the air filter wing nut securely.
8. Install the air cleaner cover, and tighten the cover wing nut securely.

OIL-BATH TYPE

1. Remove the wing nut, and remove the air cleaner cap and cover.

2. Remove the air filter from the cover, Wash the cover and filter in warm, soapy water, rinse, and allow drying thoroughly. Or clean in nonflammable solvent and allow drying.
3. Dip the filter in clean engine oil, and then squeeze out all excess oil. The engine will smoke if too much oil is left in the foam.
4. Empty the used oil from the air cleaner case, wash out any accumulated dirt with nonflammable solvent, and dry the case.
5. Fill the air cleaner case to the OIL LEVEL mark with the same oil that is recommended for the engine. Oil capacity: 2.0 US oz (60 cm^3)
6. Reassemble the air cleaner, and tighten the wing nut securely.



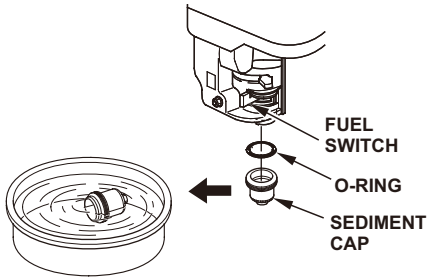
CLEAN THE SEDIMENT CUP

1. Move the fuel valve to the OFF position, and then remove the fuel sediment cup and O-ring.

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.
-Keep heat, sparks and flame away.
-Handle fuel only outdoors.
-Wipe up spills immediately.

2. Wash the sediment cup and O-ring in nonflammable solvent, and dry them thoroughly.
3. Place the O-ring in the fuel valve, and install the sediment cup. Tighten the sediment cup securely.
4. Move the fuel valve to the ON position, and check for leaks. Replace the O-ring if there is any leakage.



REPLACE THE SPARK PLUG

Please replace the spark plug in accordance with the original specification.

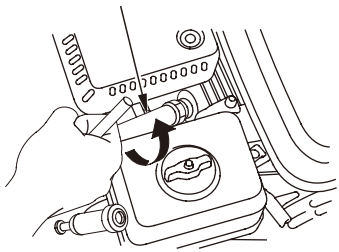
Model	Spark Plug
GM212R/GM212E	F6TC
GM420E	F7TC

NOTICE

An incorrect spark plug can cause engine damage.

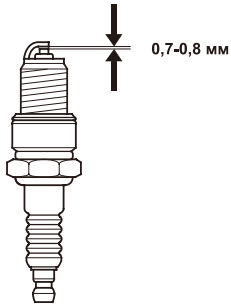
1. Disconnect the spark plug cap, and remove any dirt from around the spark plug area.
2. Remove the spark plug with a spark plug wrench.

SPARK PLUG WRENCH



3. Inspect the spark plug. Replace it if the electrodes are worn, or if the insulator is cracked or chipped.
4. Measure the spark plug electrode gap with a suitable gauge.

The gap should be 0.70- 0.80 mm. Correct the gap, if necessary, by carefully bending the side electrode.



5. Install the spark plug carefully, by hand, to avoid cross-threading.
6. After the spark plug seats, tighten with a spark plug wrench to compress the gasket.

If reinstalling the used spark plug, tighten 1/8-1/4 turn after the spark plug seats.

If installing a new spark plug, tighten 1/2 turn after the spark plug seats.

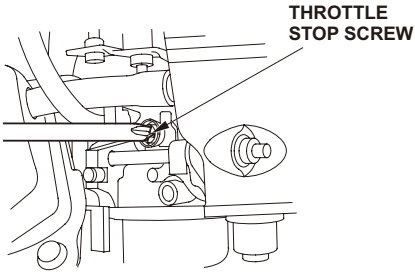
NOTICE

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

7. Attach the spark plug cap.

ADJUSTMENT IDLE SPEED

1. Start the engine outdoors, and allow it to warm up to operating temperature.
2. Move the throttle lever to its slowest position.
3. Turn the throttle stop screw to obtain the standard idle speed.
   Standard idle speed: 1900±100 rpm



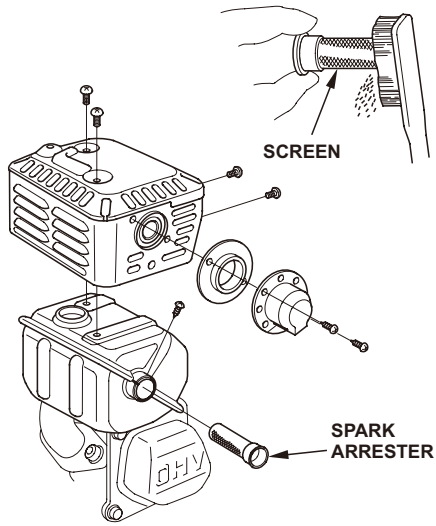
CLEAN THE SPARK ARRESTOR

Your engine is not factory-equipped with a spark arrester. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. A spark arrester is available from authorized servicing dealers.

The spark arrester must be serviced every 100 hours to keep it functioning as designed.

If the engine has been running, the muffler will be very hot. Allow the muffler to cool before servicing the spark arrester.

1. Remove the three screws from the exhaust deflector, and remove the deflector.
2. Remove the four screws from the muffler protector and remove the muffler protector.
3. Remove the screw from the spark arrester, and remove the spark arrester from the muffler.

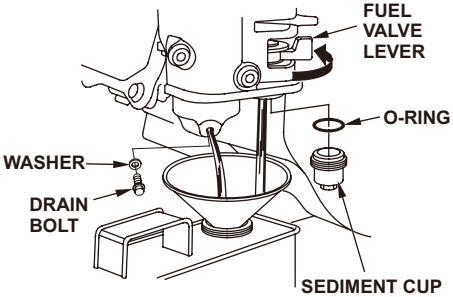


4. Use a brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the screen.
   The spark arrester must be free of breaks and holes. Replace the spark arrester if it is damaged.
5. Install the spark arrester, muffler protector, and exhaust deflector in the reverse order of disassembly.

STORAGE AND TRANSPORT

DRAINING THE FUEL TANK AND CARBURETOR

1. Place an approved gasoline container below the carburetor, and use a funnel to avoid spilling fuel.
2. Remove the carburetor drain bolt and sediment cup, and then move the fuel valve lever to the ON position.



3. After all the fuel has drain into the container, reinstall the drain bolt and sediment cup. Tighten them securely.

TRANSPORT THE ENGINE

NOTICE

Fire hazard. DO NOT turn the engine upside down. Fuel or oil can leak and damage to the engine may occur.

NOTICE

Avoid direct sunlight inside a vehicle. If the engine is left in an enclosed vehicle for many hours, the high temperature could cause the fuel to vaporize and result in a possible explosion.

1. Turn off the engine, tighten the fuel cap, and allow the engine to cool a minimum of 30 minutes.
2. Move the fuel valve lever to the OFF position.
3. Keep the unit level and upright during transport to minimize the possibility of fuel leakage or, if possible, drain the fuel or run the engine until the fuel tank is empty before transport.

STORAGE THE ENGINE

⚠ WARNING

1. In order to avoid burning or fire caused by contact with high-temperature parts of the engine, the engine must be cooled before storage. (Turn off the engine and allow the unit to cool a minimum of 30 minutes.)
2. NEVER place any type of storage cover on the engine while it is still hot. Do not obstruct any ventilation openings.

STORAGE PERIOD	STORAGE PREPARATION
For Short Periods (Less than 30 days)	1. Turn off the engine, allow the engine to cool. 2. Add fuel stabilizer to the gasoline remaining in the tank. 3. Place the engine set in a clean and dry area. If possible, avoid storage areas with high humidity, because that promotes rust and corrosion. 4. Cover the engine to keep out dust.
For long Periods (Over 30 Days)	1. Turn off the engine, allow the engine to cool. 2. Drain the fuel tank and carburetor. 3. Change the engine oil. 4. Remove the spark plug and place about 2 tablespoon of oil in the spark plug opening. While placing a clean rag over the spark plug opening, slowly pull the recoil handle to allow the engine to turn over several times. This will distribute the oil and protect the cylinder wall from corroding during storage. 5. Replace the spark plug. 6. Place the engine set in a clean and dry area. 7. Cover the engine to keep out dust.

TROUBLESHOOTING

ENGINE WILL NOT START	POSSIBLE CAUSE	CORRECTION
1. Electric starting: check battery.	Battery discharged.	Recharge battery.
2. Check control position.	Fuel valve OFF.	Move lever to ON.
	Choke OPEN.	Move lever to START unless engine is warm.
	Engine switch OFF.	Turn engine switch to ON.
3. Check fuel.	Out of fuel.	Refuel.
	Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor. Refuel with fresh gasoline.
4. Remove and inspect spark plugs.	Spark plugs faulty, fouled, or improperly gapped.	Gap, or replace spark plugs.
	Spark plugs wet with fuel (flooded engine).	Dry and reinstall spark plugs. Start engine with throttle lever in FAST position.
5. Take engine to an authorized servicing dealer, or refer to manual.	Fuel filter clogged, carburetor malfunction, ignition malfunction, valve stuck, etc.	Replace or repair faulty components as necessary.

ENGINE LACKS POWER	POSSIBLE CAUSE	CORRECTION
1. Check air filter.	Filter element(s) clogged.	Clean or replace filter element(s).
2. Check fuel.	Out of fuel.	Refuel.
	Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor. Refuel with fresh gasoline.
3. Take engine to an authorized servicing dealer, or refer to manual.	Fuel filter clogged, carburetor malfunction, ignition malfunction, valve stuck, etc.	Replace or repair faulty components as necessary.

Follow all safety precautions whenever diagnosing or servicing the generator or engine.
The table is a general troubleshooting method. If the fault is inconsistent with the table or the fault cannot be resolved, contact the distributor.

TECHNICAL PARAMETERS

Model	GM212R	GM212E	GM420E
Engine Type	Single Cylinder, 4-Stroke, Forced Air Cooling, OHV		
Rated Power(kw/rpm)	3.8/3600	3.8/3600	8.0/3600
Max. Power(kw/rpm)	4.0/3600	4.0/3600	8.8/3600
Max. Torque(N.m/rpm)	12/2500	12/2500	24.5/2500
Bore × Stroke (mm)	70×55	70×55	90×66
Displacement (cc)	212	212	420
Valve Clearance	Input Valve: 0.10~0.15mm, Output Valve: 0.15~0.20mm		
Lubricating Mode	Splash	Splash	Splash
Starting Method	Recoil Start	Recoil / Electrical Start	Recoil / Electrical Start
Ignition Method	Transistorized Ignition	Transistorized Ignition	Transistorized Ignition
Fuel Type	Gasoline	Gasoline	Gasoline
Fuel Tank Volume (gal)	0.95(3.6L)	0.95(3.6L)	1.59(6L)
Lubricating Oil Capacity (gal)	0.16(0.6L)	0.16(0.6L)	0.3(1.1L)
Lubricating Oil Model	SAE 10W/30	SAE 10W/30	SAE 10W/30