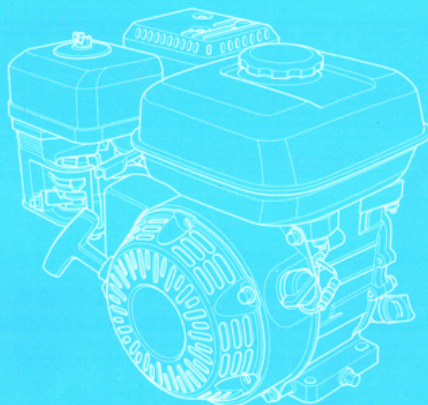




# **Gasoline Engine**

## **GX160**



# **Operational Manual**



生产许可证 XX06-002-00012

Thank you for choosing HONDA gasoline engine.

This manual contains the operation & maintenance of GX160 gasoline engine.

All the contents of this manual are accomplished by newest information when printed.

Do not copy any contents of this operation manual, unless agreed by us in writing.

This manual is one part of this gasoline engine. Please company it together with the engine when reselling.

Please especially pay attention to the information on the warning mark as follows:

**Danger** expresses the unsafe factor that will cause body damage or death.

**Warning** expresses the unsafe factor that is possible to cause body damage or death.

**Notice** express the unsafe factor that is possible to cause body damage.

**Important matters** expresses the unsafe factor that is possible to cause property loss.

**Remark** expresses important information of installation, operation and maintenance.

If there are any problems, or you have any questions about this gasoline engine, please contact the dealer authorized by J JIALING—HONDA.

**Warning**

**If used the engine in accordance with this manual, it will be run safely and reliably. Please read carefully and understand fully before operation, otherwise it may cause body injuries or engine damage.**

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## Chapter 1 Safety rules

Make sure fully understand all the safety tips as follows:

**If used in accordance with this manual, it will be run safely and reliably. Please read carefully and understand all of them before operation, or it may cause body damage or machine damage.**

**\*Please read carefully before operation.**

- Before starting, do inspect before operation(details please see Page) in case of causing property loss or body damage.
- In order to avoid fire & assure good ventilation, the engine shall be at least 1.0 meters away from building and other equipment during operation.
- The children and animals shall be far away from the area of operation, in order to avoid burning by spare parts of engine or harmed by the engine.
- Learn how to shut off the engine and all the controlling components quickly. Only the trained person can operate the engine.
- Keep the flammable material away from the running engine, like gasoline, firewood.
- Do refuel after stopping the engine in a good ventilation. The fuel oil is quite easy to flame up, even cause explosion.
- Do not overfill the fuel tank. The place around fuel tank mouse shall be clean, not with fuel.
- Make sure the fuel tank cap tighten up.
- If fuel is spilt, wipe it away carefully and wait until the fuel has dried before starting the engine.
- Make sure there is not smoking, fire or spark around the place for refueling the engine or stocking the fuel oil.
- To avoid sucking the poisonous carbon monoxide exhausting from the engine, never use the engine indoors or in a poorly ventilated area.
- The engine should be operated on a table level surface. If the engine is tilted from surface above 20 degree, fuel spillage may result.

## Safety rules

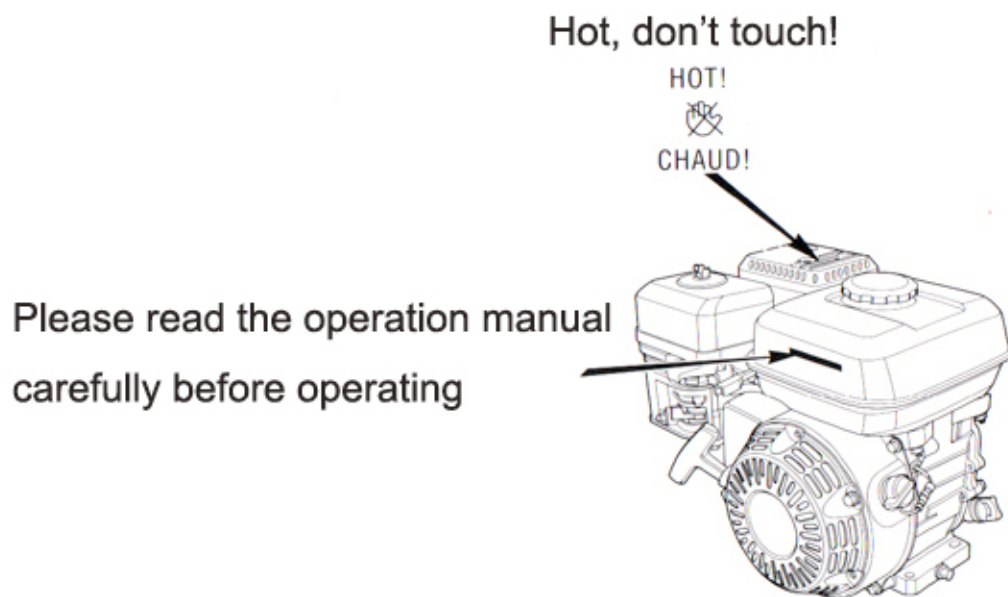
### **Warning**

Make sure fully understand all the safety tips as follows:

- In order to avoid fire, do not put anything on the engine.
- There are spark plug eliminator for purchasing choice. If run the engine without installing spark plug eliminator, it's illegal. Please refer to the relevant legal documents.
- The muffler is very hot during the operation, and will last after stopping. Please do not touch it, when the muffler still is hot. In order to avoid the scald or fire, please do not remove or stock the engine until it is cooling.

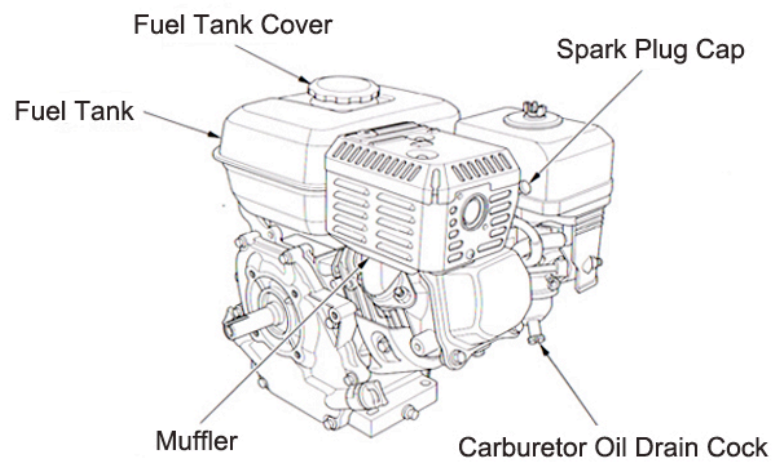
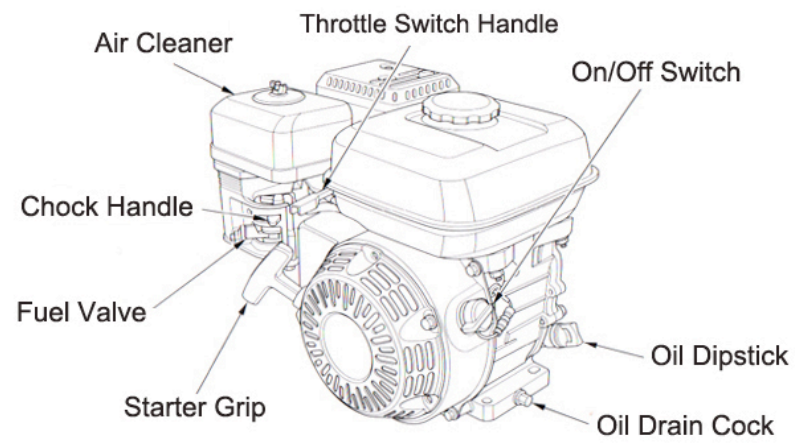
### Safety rules warning location

Please read carefully as these warnings express the unsafe factor that may cause damage. If the labels drop off or the contents are not clear, please contact the dealer authorized by HONDA



## Chapter 2 Operation parts& its characteristic

### Spare parts/operation



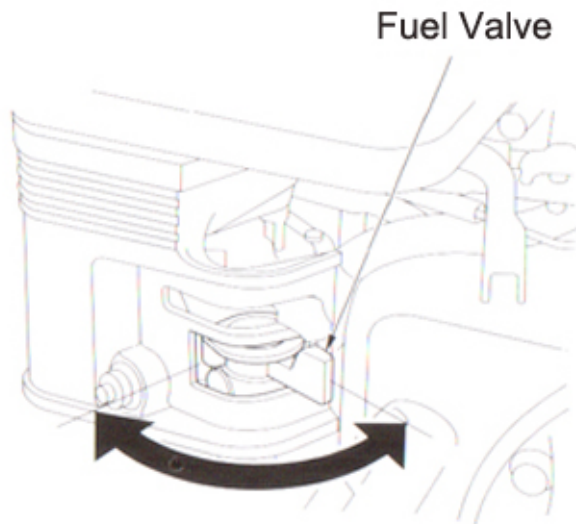
## Operation parts

### Fuel valve

Fuel valve is used in the alleyway between controlling oil tank and carburetor.

Fuel valve shall be adjusted to ON when the engine runs.

Fuel valve shall be adjusted to OFF in case that the oil spill from the carburetor, reducing the possibility of oil spillage when the engine is stopped.

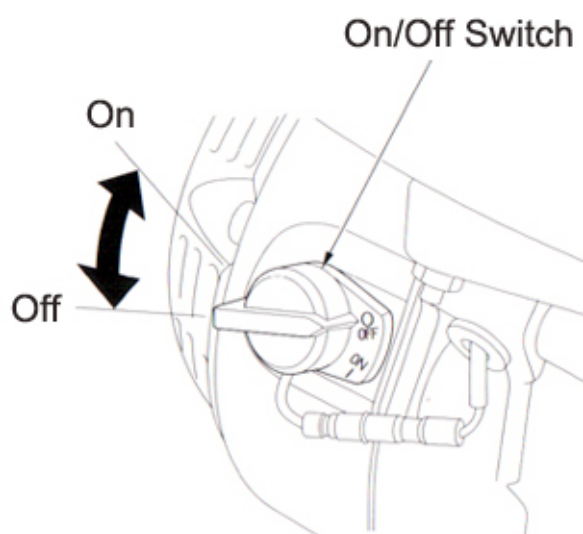


### On/Off Switch

On/Off Switch controls ignition system.

Adjust the On/Off Switch to ON, then the engine will start.

Adjust the On/Off Switch to OFF, then the engine will stop.





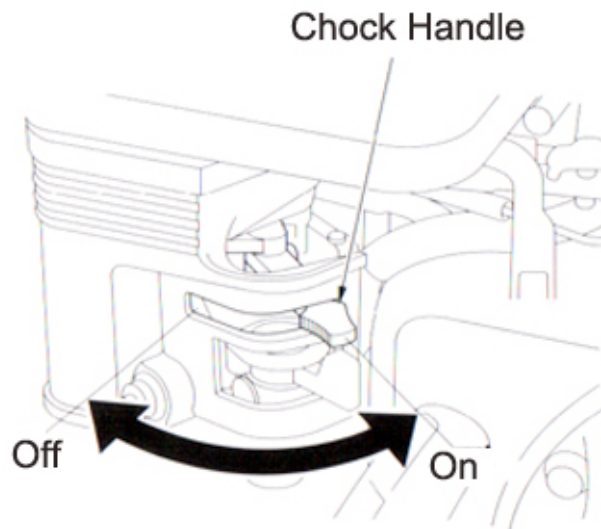
### **Chock Handle**

Chock Handle controls the chock of carburetor.

Adjusting the chock handle to OFF could provide high concentrations of fuel materials to make the engine start.

After starting the engine, adjust the chock handle to ON will not only provide proper fuel materials for running but also supply proper fuel materials for restarting.

Some engines adopt distant chock controlling, not controlled by chock handle as the below illustration.

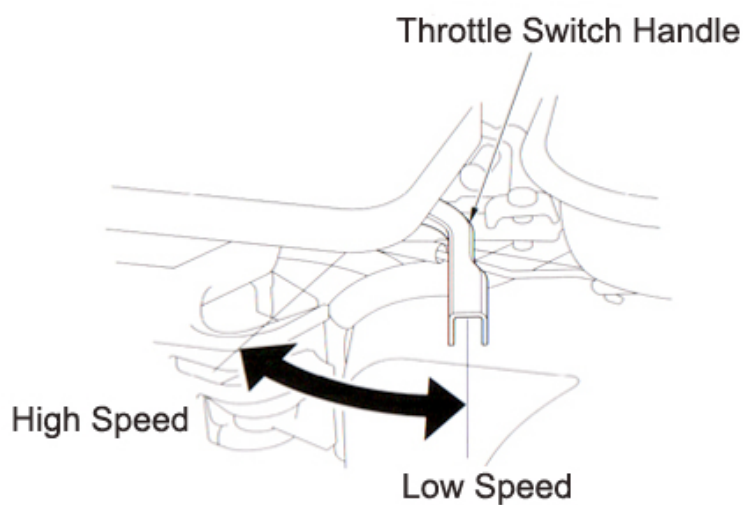


### **Throttle Switch Handle**

Throttle Switch handle controls the speed of the engine.

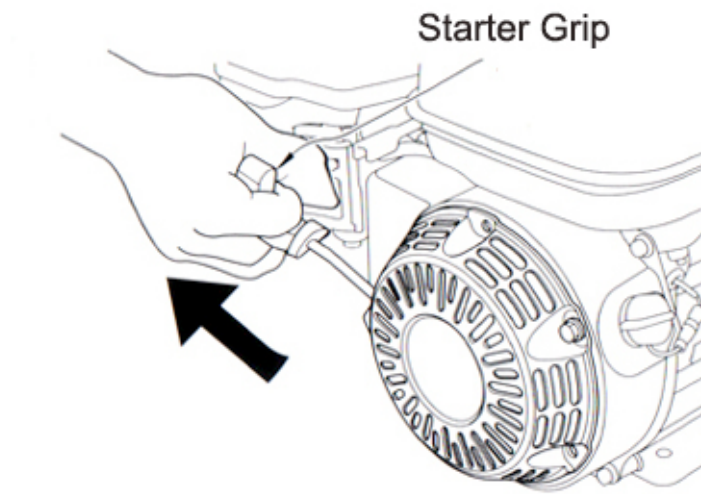
Adjust the throttle switch handle to proper running speed that engine need.

Some engine adopt distant throttle switch controlling, not controlled by throttle switch as the below illustration.



### **Starter Grip**

Pulling the starter grip will make crank run.



### **Characteristic**

#### **Fuel alarm system**

**In case of engine damage due to scanty fuel of crankcase, some models design the fuel alarm system. When the lube oil under the safe fuel level, the alarm system will shut off the engine automatically, but the ON/OFF Switch will be still ON.**

**If the engine can't restart after stopping, please inspect the fuel level prior to other problems (Refer to page22)**

## Chapter 3 Inspection before operation

For your safe and extend the lifespan to longest of this engine as well, it's very important to take your time to inspect the engine before starting. Make sure all the problems you found have been solved before starting.

### **WARNING!!!**

**It may cause engine trouble, result in serious injuries if incorrectly repair or not correct all the problems found.**

**Please do inspection before operation and solve all the problems found every time.**

Make sure the engine is put at a level state, the switch is turned to OFF during the inspection before operation.

### **Inspection of the engine under general condition**

- Inspect the appearance and bottom of the engine to check if oil leakage.
- Wipe off the dust and residue, especially around the muffler and starter grip.
- Inspect the places marked with damage.
- Inspect appearance, including checking if the nuts, bolt and screw is tighten up.

**Inspect gasoline engine**

- Inspect the fuel (Refer to Page22), scanty fuel may cause engine damage.

When the fuel level is lower than safe level, fuel alarm system will shut off the engine automatically. In order to avoid the inconvenience caused by sudden stop, please inspect the fuel level before starting.

- Inspect air filter (Refer to Page25), the dirty air filter will limit air flow into carburetor, and lower down the power.
- Inspect the fuel level (Refer to Page20), the crankcase shall be full of fuel in case of refueling during the operation.

**Inspect the power equipment matched with the engine**

All the equipments matched with the engine shall be used in accordance with all the notice tips and this manual before starting.

## Chapter 4 Operation

### Safety tips

If you are the first time to operate gasoline engine, please refer to the important safety rules on Page 4.

In order to make this engine fully use, we suggest run the new engine about 15 minutes before use.

### **WARNING!!!**

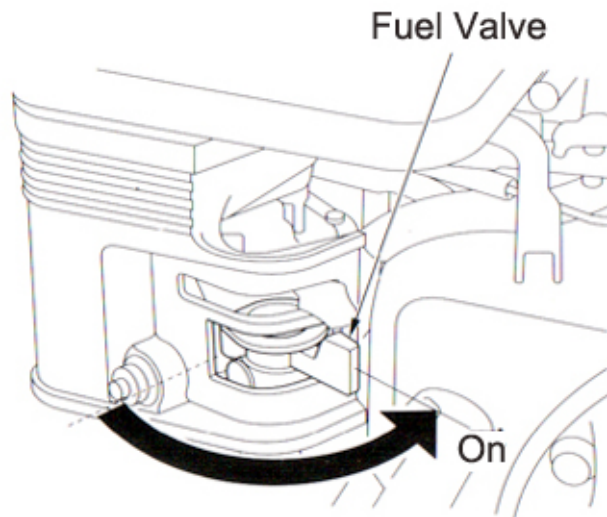
**CO is poisonous, sucking into it may result in unconscious, even death.**

**Keep away from the place surrounded by the CO.**

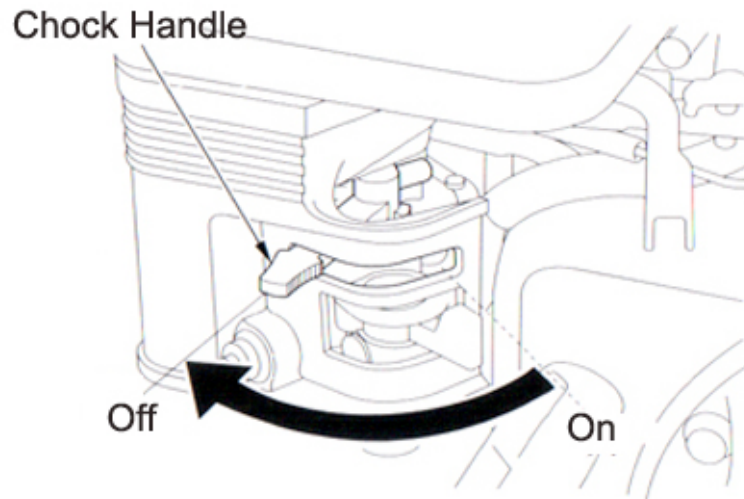
All the equipments matched with the engine shall be used in accordance with all the notice tips and this manual before starting.

### Start the gasoline engine

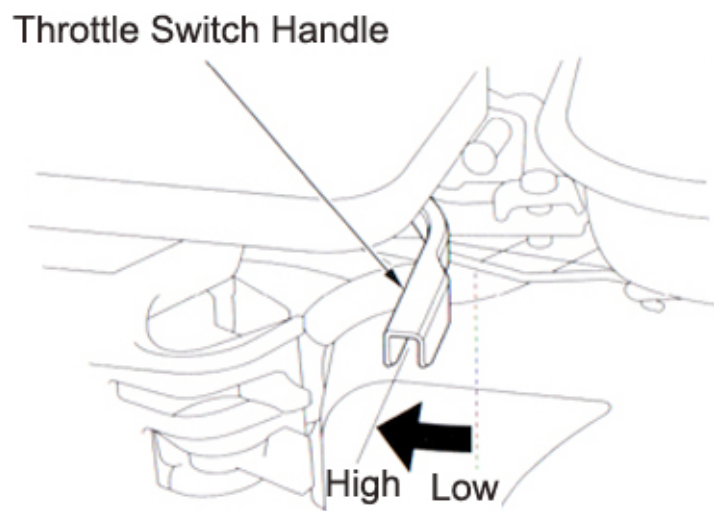
1. Adjust the fuel valve to ON.



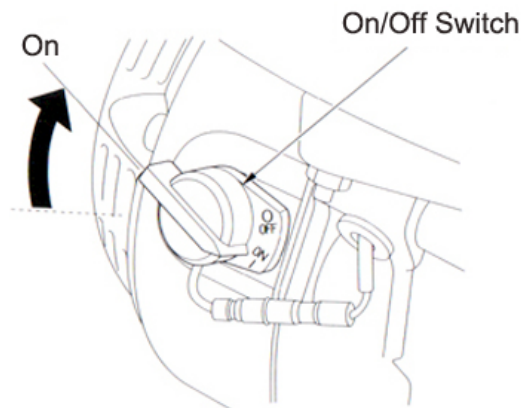
2. Start the engine, then adjust the chock handle to OFF  
Restart the engine which is at a hot state, then adjust the chock handle to ON.  
Some engines adopt distant chock controlling, not controlled by chock handle as the below illustration.



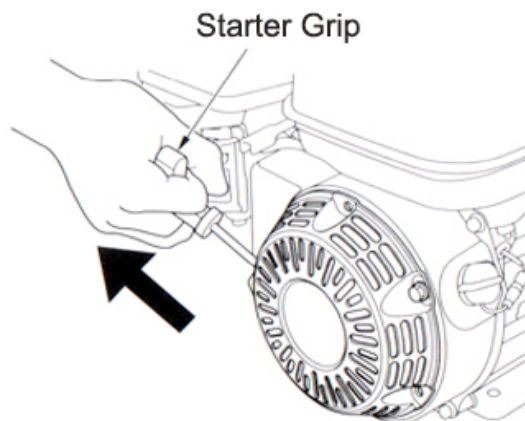
3. Remove the throttle switch handle about 1/3 from low to high.  
Some engine adopt distant throttle switch controlling, not controlled by throttle switch as the below illustration.



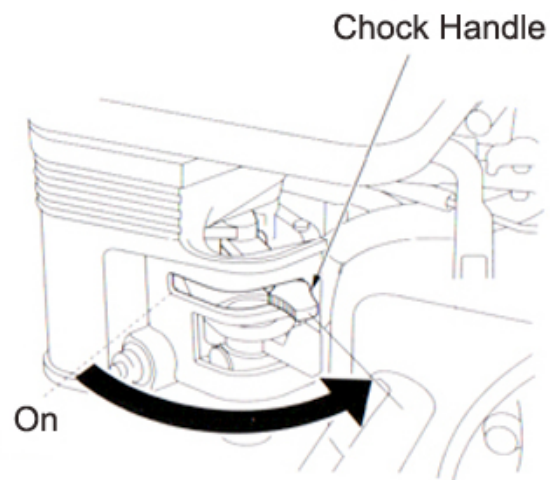
4. Turn the ON/OFF Switch to ON.



5. Lightly pull the starter grip until feeling of resistance, then quickly pull it with force, and slowly release handle finally.



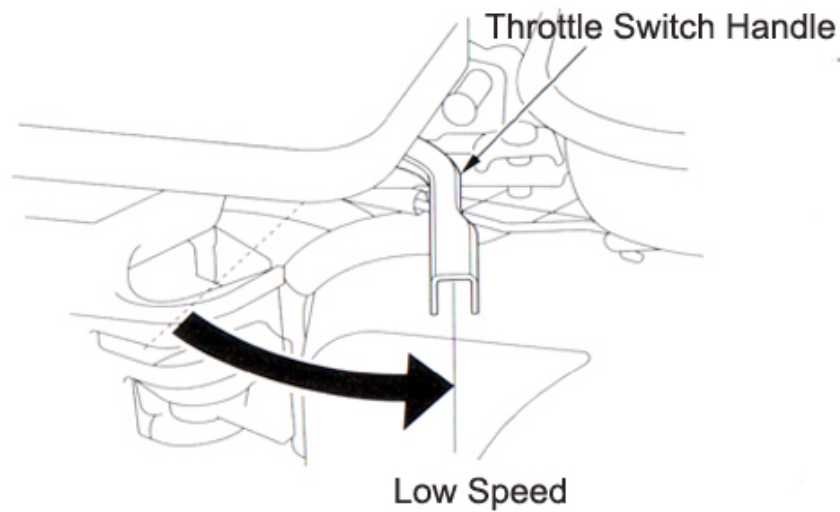
6. Start the engine. If the choke handle is adjusted to OFF, turn it to ON, and preheat the engine at the same time.



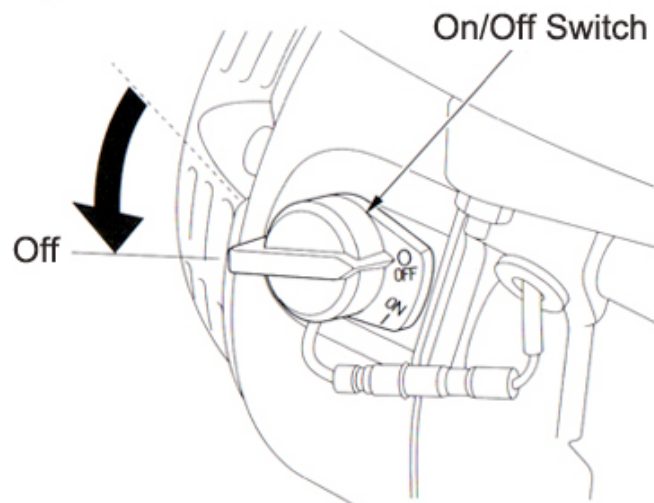
### Stop the gasoline engine

Stop the engine when happen to emergency, only need turn the ON/OFF Switch to OFF. Usually, please stop the engine by the below step.

1. Turn the throttle switch handle to low speed position  
Some engine adopt distant throttle switch controlling, not controlled by throttle switch as the below illustration.

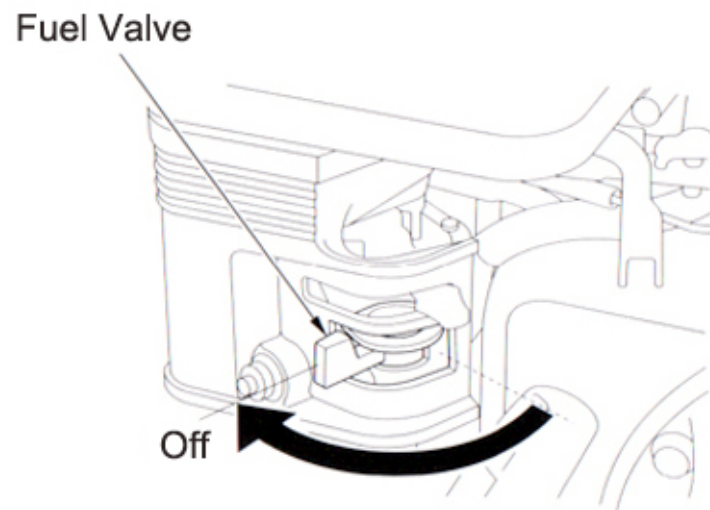


2. Turn the ON/OFF Switch to OFF.





3. Turn the fuel valve to OFF

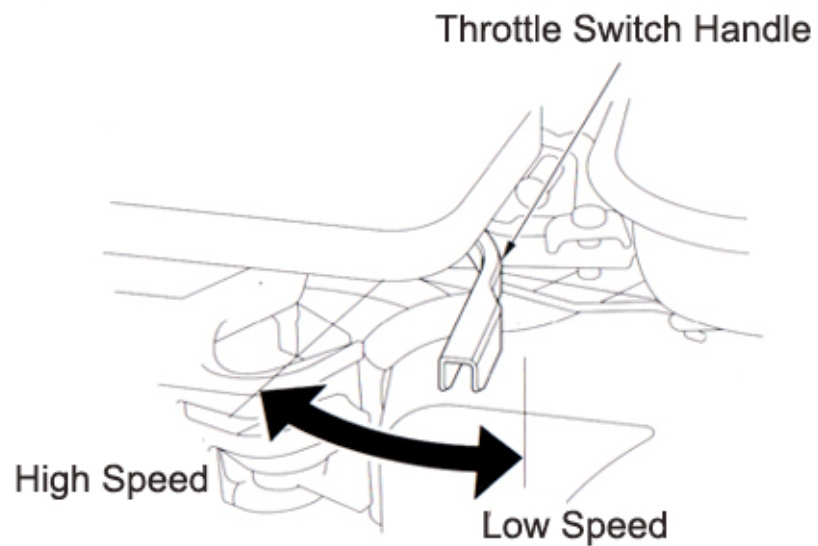


### **Adjust speed**

Turn the throttle switch handle to the speed what the engine need.

Some engine adopt distant throttle switch controlling, not controlled by throttle switch as the below illustration.

Regarding the recommendation of speed, please refer to power equipment instruction matched with the engine



## Chapter 5 Maintenance

### The importance of maintenance

Safely economically and comfortably operate engine is based on good maintenance, and also favorable to reduce air pollution.

#### **WARNING!!!**

**Without correct maintenance or solving the problems found before operation may cause engine damage even serious injuries.**

**Please inspect and maintain the engine in accordance with the maintenance instruction and form in this manual.**

In order to help you maintain the engine correctly, the coming pages contain time of maintenance sheet, regular inspection procedure and general tools procedure to repair. When it's more difficult to repair or need the special tools to repair, it's better repaired by trained person. Usually, it is repaired by HONDA technician or the service store authorized by HONDA.

The maintenance sheet is only apply to regular running condition. If start the engine under abnormal condition, like overload or high temperature, use in wet or dusty circumstance, please consult the service store, and design the maintenance sheet as per your need.

#### **Important matters**

**The maintenance of exhausting controlling system, replacing & repairing shall be separately operated by gasoline engine special maintenance organization. All the spare parts shall use the special accessories supplied by HONDA.**

## Safely maintenance tips

Something important safety precaution as follows, it's impossible for us to alarm the possible unsafe factor without maintenance. Only you could decide whether do maintenance or not.

### **WARNING!!!**

**Maintaining the engine without complying maintenance indication and precaution measures may result in serious injuries, even death.**

**Please maintain the engine in accordance with the procure and precaution measures in this manual.**

#### Safety precautions

- Make sure the engine stop before maintenance. It will be favorable to eliminate potential danger.

##### **Exhaust poisonous CO:**

Make sure it is enough ventilated conditions whether you operate the engine.

##### **Scald by the parts of overheating:**

Do not touch the engine and the exhausting system before cooling in case of scald.

##### **Running accessories may cause injuries.**

Do not run the engine unless you need.

- Before maintenance, please read carefully this instruction and make sure you have the tools to repair and maintenance skills.
- Be careful when there is gasoline around the working circumstance in case of the possibility of explosion and burning. Only use nonflammable impregnant. No smoking, spark and fire.

Keep in mind that your supplier who learn more about the engine and have the power to maintain. In order to assure highest quality and most reliable performance., please repair and replace the engine with the spare parts supplied by HONDA, or the spare parts whose quality won't be inferior to HONDA.

Maintenance cycle(3) As shown by the month or the actual operating hours comes first		First time	First month or 20hours	Every 6month or 100hours	Every year or 300hours	See page
Item						
● Fuel of gasoline engine	check the oil level	○				22
	Re-fill		○	○		23
● Air cleaner	check	○				25
	clean			○(1)		25
	replace				○*	
● Sediment chamber	clean					29
● Spark plug	check-adjustment					30
	replace				○	
● Spark eliminator(optional parts)	clean					32
● Idle	check-adjustment				○(2)	31
● Valve clean	check-adjustment				○(2)	-
● Chamber	clean					-
● Fuel tank/air cleaner	clean			○(2)		-
● Fuel pipe	check	Every 2years (if it's necessary to replace)				-

### Remark

- is maintenance items
- is the relative items with the emission
- \* replace the washer
- (1) operation in the place of big dust, you have to increase the maintenance time
- (2) if the user have suitable tools or maintenance capacity, otherwise, these items have to ask the Honda service department to maintain.
- (3) if this machine is used for business function, please record the operation time to make sure the maintenance time.

When the engine is stopped, unscrew the fuel tank cap to check the fuel level. If it is too low, please fill in the gasoline.

## **DANGER!!!**

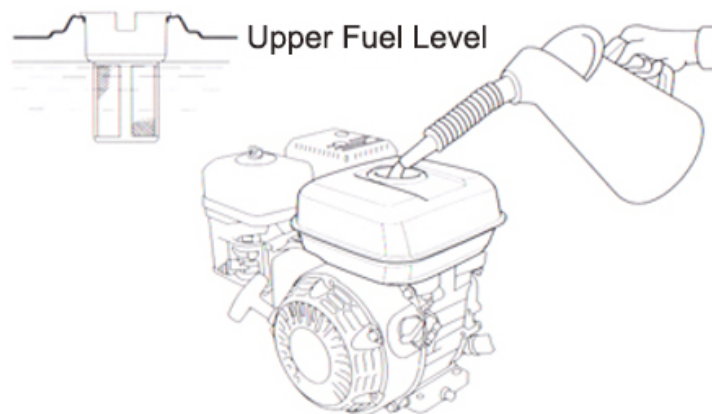
**The gasoline is flammable and explosive**

**It may be burnt when dealing with the gasoline**

**Shut off the engine, keep away from the heat and fuel material.**

**Refuel the engine at outdoors.**

**Wipe off the fuel oil spilt from the engine.**



Inject the fuel in a good ventilation. If the engine has been started, please do not refuel after stop until cooling. When refueling, do not spill out the fuel oil. Do not excess the mouse of the fuel tank. Tighten up the fuel tank cap after refueling.

Do not refuel indoors since the gasoline steam may touch the high temperature and fuel material. Keep the fuel oil away from optical test vessel, high temperature articles, electrical instrument, power tools, etc.

The fuel spilt shall be wiped off immediately, because they may cause fire and pollution.

## **Important matters**

**Fuel oil could erode the paint and rubber. Please assure it won't happen oil spillage. Because all the troubles caused by the fuel spillage couldn't claim for compensation.**

Unleaded gasoline class #90 or up is preferred.

Using the unleaded gasoline not only makes the sediments of the gasoline and spark plug relevant parts less but also extends the lifespan of the exhausting system.

Don't use expired or contaminated gasoline. Don't mix the gasoline with the engine oil. Make sure fuel oil to be clean and free of dust or water or any impurity.

It's normal phenomena if you hear the noise of spark striking the cylinder or metal-beating noise when overload.

If you hear the noise of striking cylinder when the engine is normally loading, we suggest you replace it with qualified gasoline. If the problem still occurs, please contact the special service department authorized by JIALING-HONDA.

**Remark**

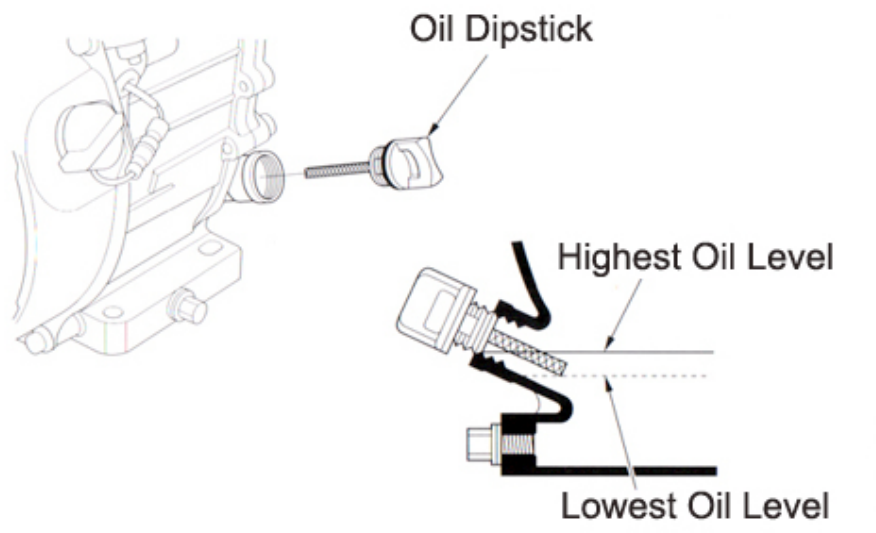
**If there is still the noise of the spark striking cylinder or “bang” noise when loading, it may result in engine damage.**

The spark strikes cylinder or bang noise happening in the operation is regarded as improperly use. It won't belong to the contents of maintenance conditions.

## Check fuel oil level

Stop the engine when checking fuel oil level, and make the engine on a surface level.

1. Dismantle the oil dipstick, and clean it.
2. Insert the fuel oil level to fill-in hole. But don't screw it and read the correct fuel oil level from the oil dipstick.
3. If the fuel level is lower than lowest oil level, fill in the gasoline oil through the fill-in hole till the fuel level reach highest oil level.
4. Tighten the oil dipstick.



## Remark

Run the engine if the gasoline is not enough, it will result in engine serious damage.

If the fuel level is lower than safe level, the fuel alarm system will stop the engine automatically. In order to avoid the inconvenience of stopping the engine, please check the fuel level.

## Replace fuel oil

Drain out fuel oil when the engine is still hot, it will assure the fuel oil drain completely and quickly.

1. Put a proper vessel under the engine, and unscrew oil dipstick, release oil drain cock, then drain the fuel oil into the vessel.
2. Drain out the used fuel oil completely, and tighten up the oil dipstick.

Please deal with the waste oil and vessel as per environmental protection. We suggest load the waste oil with a sealed vessel, and delivery it to local waste oil recycle place. Don't throw it to dustbin or gutter.

3. Put the engine at a level of plane, and fill in recommended gasoline (Refer to Page 24)

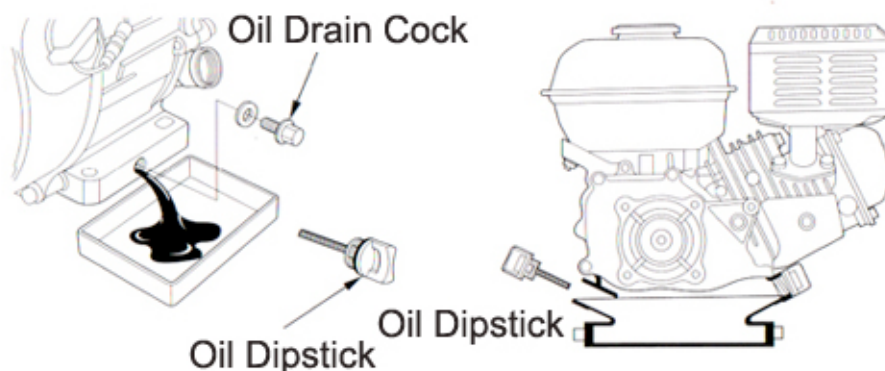
Gasoline engine fuel oil: 0.6L

### **Important matters**

**Run the engine if the gasoline is not enough, it will result in engine serious damage.**

**If the fuel level is lower than safe level, the fuel alarm system will stop the engine automatically. In order to avoid the inconvenience of stopping the engine, please add the fuel oil to meet highest oil level and check the fuel level regularly.**

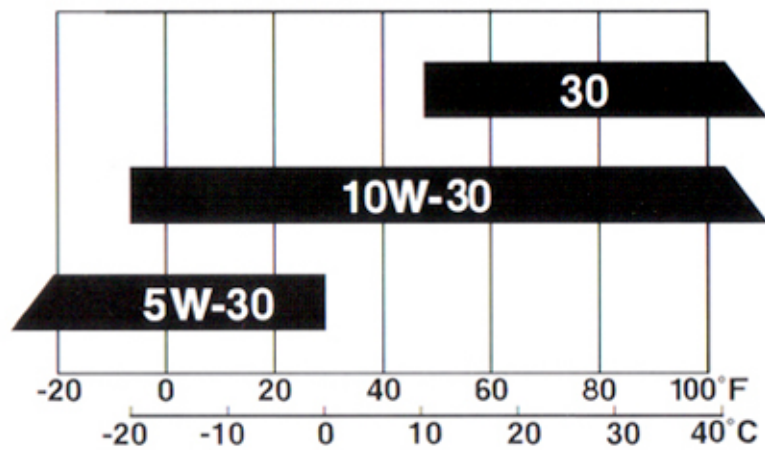
4. Tighten the oil dipstick.





Lube oil is an important factor of operation and maintenance of this engine. We suggest use JIALING-HONDA specific lube oil (SJ 10W-30)

SE 10W-30 is lowest general lube oil. If the average temperature belongs to relevant recommended scopes, other viscous lube oil as below illustration will be also available.



## JIALING-HONDA specific lube oil

Characteristics of specific lube oil

1. Excellent abrasion resistance.
2. Stable viscosity.
3. Good oxidated safety.
4. Wonderful desperation of clean.
5. Effective anti-corrosion rust resistance.



### Check the air cleaner

Take off the air cleaner cover, and check the air cleaner. Clean or replace the air filter-elements. If the air cleaner is oil-bath type, you have to check the oil level.

### The maintenance of air cleaner

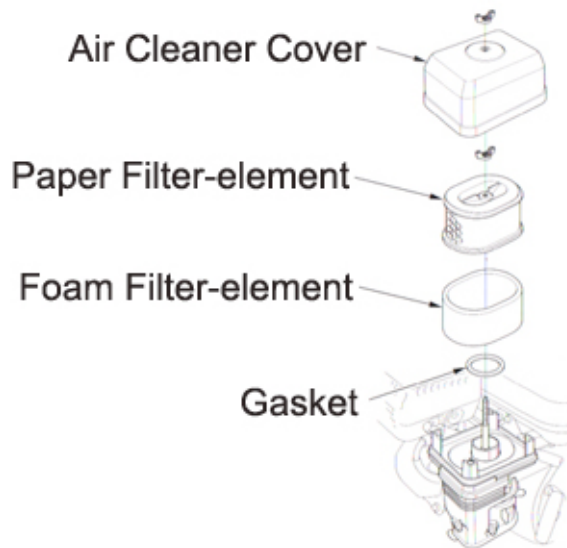
A dirty air filter-element will stop the air go into the carburetor, then reduce the capacity of gasoline engine, if the gasoline engine running under a condition full with dust, then you have to increase the maintenance times.

#### **Important matters**

**Don't running the gasoline engine without using the air cleaner, also, don't running the gasoline engine when the air filter-element is broken or there is dirty material go into the gasoline engine, otherwise, it will accelerate the damage of gasoline engine, and these damage is not in the field of warranty claim.**

### Double-filter element type

1. Take off the butterfly nuts from the air cleaner cover, and unload the air cleaner cover.
2. Unload the butterfly nuts, and remove the filter-elements.
3. Take the foam filter element from the paper filter-element.
4. Check the paper filter-element and foam filter-element. If it's broken, please replace it. Please check the maintenance table to update the paper filter-element.

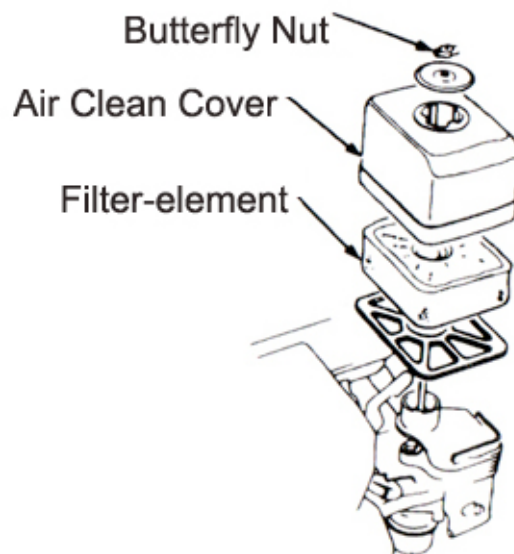


5. Clean the air filter-element.

Paper filter-element: tap the filter element to make the dust off , or blow the filter element from inside to outside by using high-pressure air flow (not excess 207kPa, 2.1kgf/cm<sup>2</sup>). Never use brush to clean the filter element, as the brush will make the dust go into the fiber of paper filter element.

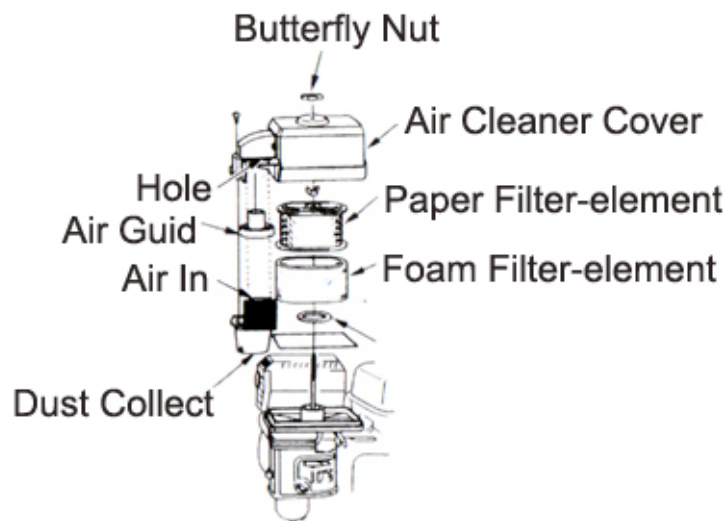
Foam filter-element: use soap with warm water to clean, rinse and dry the foam filter-element, or using non-flammable solvent to clean and dry the foam filter-element. Make the filter-element soak on the clean fuel, then squeezing out the extra fuel. If there have extra fuel in the foam filter-element, it will case the gasoline engine smoke during first start.

6. Using a wet wiper wipe the dust on the air cleaner cover and inside bottom, notice don't let the dust go into the air pipe of connecting to the carburetor.
  7. Put the foam filter element upper to paper filter element, and return back to the air cleaner, make sure the washer is under the air cleaner, then tightening the butterfly of the air cleaner.
  8. Re-load back the air cleaner cover , and tightening the butterfly of the air cleaner cover.
1. unload the butterfly nuts and air cleaner cover, remove the filter element.
  2. using non-flammable solvent to clean and dry it.
  3. Make the filter-element Soaked the clean fuel, then squeezing out the extra fuel.
  4. Re-load back the filter-element and air cleaner cover.



### Dust collect type

1. take off the butterfly nuts and the air cleaner cover, and remove and separate the filter element, check the 2 filter element carefully. If there is hole or tearing, please replace it.
2. Foam filter-element: use soap with warm water to clean, rinse and dry the foam filter-element. Or using non-flammable solvent to clean and dry the foam filter-element. Make the filter-element Soaked the clean fuel, then squeezing out the extra fuel. If there have extra fuel in the foam filter-element, it will case the gasoline engine smoke during first start.
3. Paper filter-element: tap the filter element to make the filter element off the dust.  
Or blow the filter element from inside to outside by using high-pressure air flow (not excess 207kPa, 2.1kgf/cm<sup>2</sup>). Never use brush to clean the filter element, as the brush will make the dust go into the fiber of paper filter element. If the filter element is too dirty, please replace it.



(clean the dust collect )

When the dust collect is dirty, please remove the 3 bolts, and clean the dust collect with water, then dry it, at the end, put it back carefully.

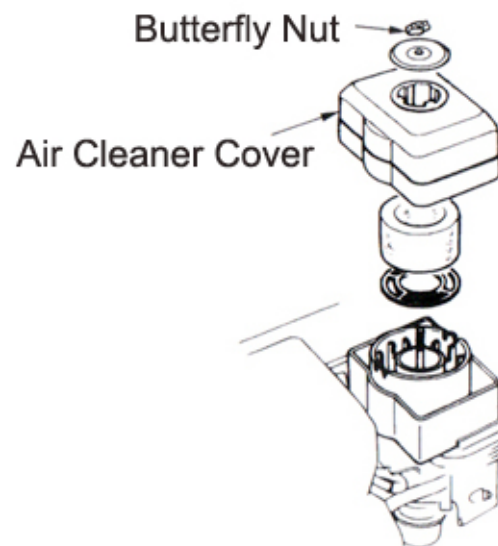
### **Important matters**

**When you return back the dust collect, make sure the air inlet prominent position is inlay the hole of air cleaner cover.**

**Make sure the air guider is right.**

### Oil-bath type

1. take off the butterfly nuts and the air cleaner cover, and remove and separate the filter element, check the 2 filter element carefully. If there is hole or tearing, please replace it.
2. Foam filter-element: use soap with warm water to clean, rinse and dry the foam filter-element. Or using non-flammable solvent to clean and dry the foam filter-element.
3. Make the filter-element Soaked the clean fuel, then squeezing out the extra fuel. If there have extra fuel in the foam filter-element box, it will case the gasoline engine smoke during first start.
4. Discharge out the fuel of air cleaner. Using non-flammable or high-lit solvent to clean the dust. Then dry the air clean box.
5. inject the same oil lubricate of the gasoline engine to the air cleaner box, the level position of the oil (please see page 22)
6. re-load back the filter element and cover.



### Clean the sediment chamber

1. put the fuel valve to Off, then install the sediment chamber and O-ring.

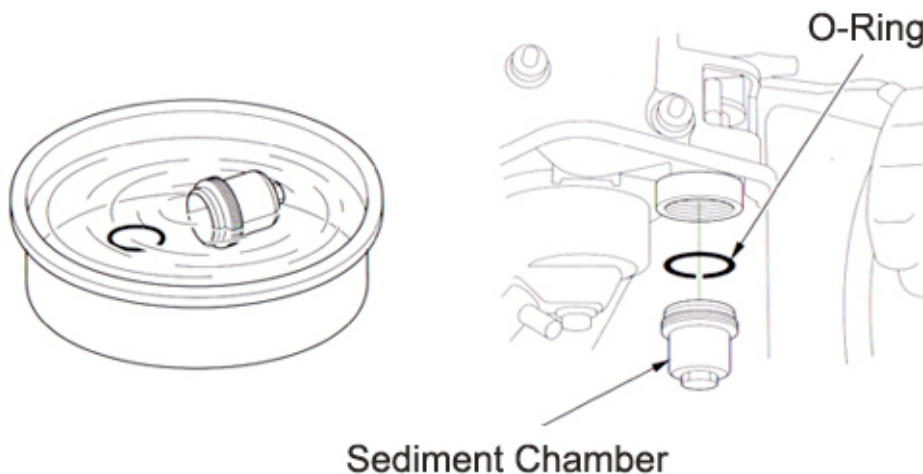
**Dangerous !!!**

**The fuel is easy to burn and easy to explosion**

**Treatment the fuel have to be careful**

- **Far away to the flog, spark , fire, and so on.**
- **Treatment the fuel in outdoor**
- **Clean the spill fuel immediately**

2. Clean the sediment chamber and O-ring by the uneasy burning solvent, then dry them.
3. Put the O-ring back to the fuel pipe, then install the sediment chamber back and fixed.
4. put the fuel valve to On, check whether there is oil leakage, if yes, please replace the O-ring.



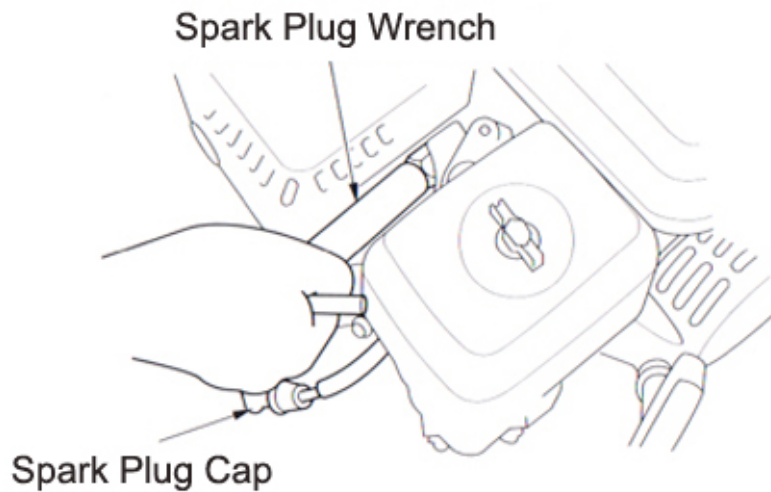
## Spark plug maintenance

Recommend spark plug model: BPR6ES(NGK)

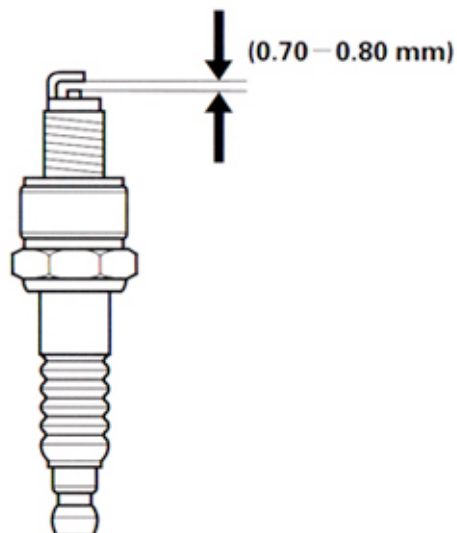
### **Important matters**

**The unsuitable spark plug may cause the gasoline engine damage.**

1. Take off the cap of spark plug, and clean its around dirty material.
2. Please use the professional spark plug wrench to take off the spark plug.



3. Check the spark plug, if you find it has wore or has gas in insulator, or broken, please replace it or clean it by wire brush.
4. Use thickness measurement to measure the gap of spark plug, if the spark plug need adjust, bending the side electrode and adjustment, the correct gap between 0.70 to 0.80mm.
5. To prevent the thread Waterloo, please install back the spark plug by hand carefully.



6. After put back the spark plug, please screw it by professional wrench.  
Install the used spark plug, press the washer , then screw more 1/8 to 1/4 circle.  
Install the new spark plug, press the washer more 1/2 circle..

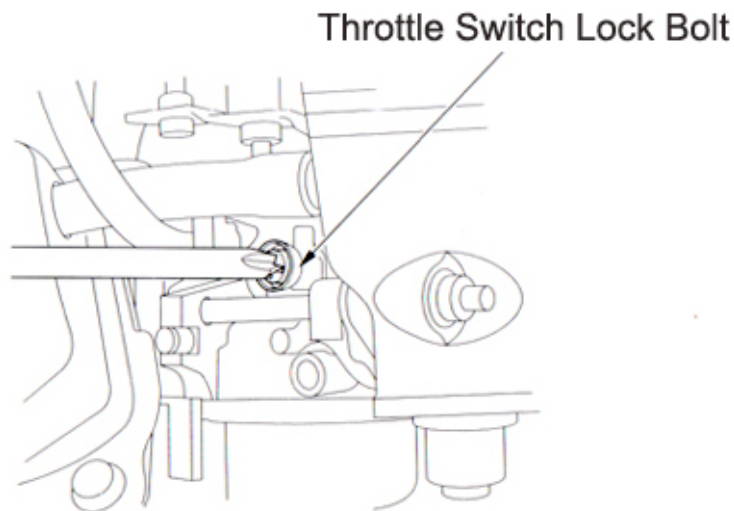
### **Important matters**

**The unscrewed spark plug may too hot and damage the gasoline engine.**

7. Unload the spark plug cap.

### **Adjust the idle**

1. Start the gasoline engine outdoor, and preheating the gasoline engine to normal running temperature.
  2. Put the throttle switch handle to the lowest speed
  3. Adjustment the throttle switch stopper nuts to get the standard idle.
- Standard idle: 1440 r/min





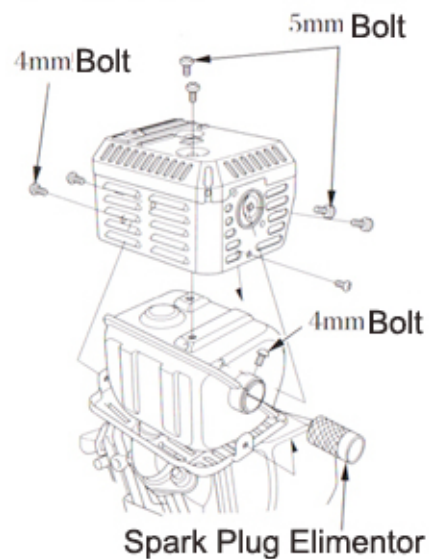
### **The maintenance of spark eliminator (optional accessories)**

The gasoline engine did not equip the spark plug eliminator, in some area, running the gasoline engine without spark plug eliminator is illegal. You have to check your rule, and if you need the spark plug eliminator, please ask Honda service office to equip it.

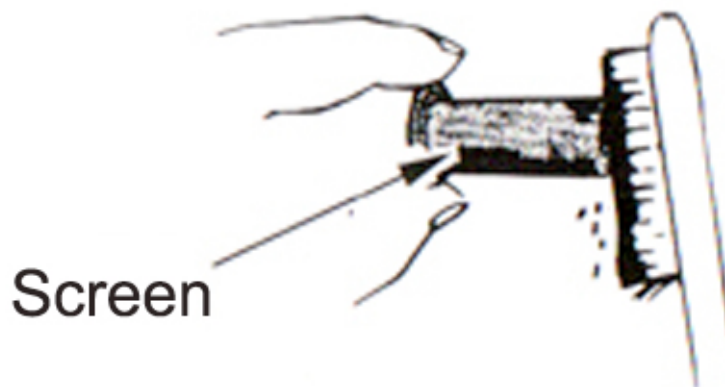
The spark plug eliminator have to maintenance every 100 hours to keep is effective.

If you has been running the gasoline engine, the eliminator is very hot, you have to cool it, then maintenance the spark plug eliminator.

1. Unload the 3pcs of 4mm and 4pcs of 5mm bolts from the muffler, and take off the cover of muffler.
2. Unload the 4mm bolts from the spark plug eliminator.



3. Using brush to clean the dust of the screen of spark eliminator. Notice don't damage the screen.  
Spark eliminator should not be broken, if it's broken, please replace it.
4. Install back the spark eliminator.



## Chapter 6 Troubleshooting

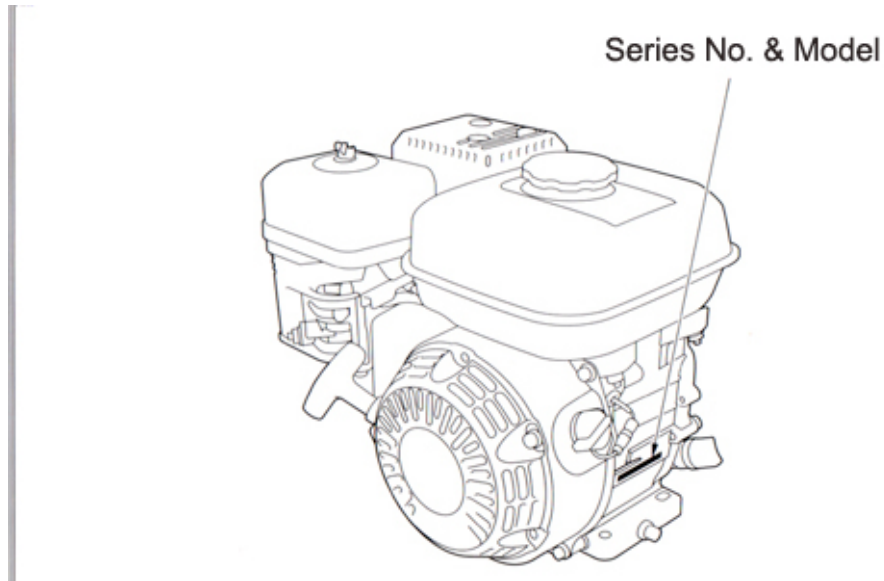
No starting or starting difficult	Cause	Solution
1. Check the controller	Fuel valve did not open	Open the valve
	The chock is open	Close the clock, except the gasoline engine is hot
	Gasoline engine on/off switch did not open	Put the on/off switch on
2. Check the Fuel	Fuel is used up	Refill fuel (refer to page20)
	Gasoline metamorphic or inject the bad fuel	Charge out the fuel of fuel tank and carburetor, (refer to page44)re-inject the new fuel (refer to page20)
3.Take off and check the spark plug	The spark plug is broken, dirty or incorrect gap	Clean, adjust the gap or replace the spark plug (refer to page30)
	The spark plug is socked on fuel	Dried and re-loading the spark plug, and put the valve handle on high speed
4. Take the machine to Honda special maintenance office or distributor	Fuel air cleaner is clogged, or carburetor default, or spark default, oil pipe is stuck	Replace or repair the parts

No enough power	Cause	Solution
1.check the air cleaner	Filter-element is clogged	Clean or replace the filter-element
2. check the fuel	Gasoline metamorphic or inject the bad fuel	Charge out the fuel of fuel tank and carburetor, re-inject the new fuel
3. Take the machine to Honda special maintenance office or distributor	Fuel air cleaner is clogged, or carburetor default, or spark default, oil pipe is stuck	Replace or repair the parts

## Chapter 7 Technique & user's information

### Technique information

Series Number



Please fill the series number of gasoline engine under the underline, it will be useful when you order the spare parts or consult the technique information and claim.

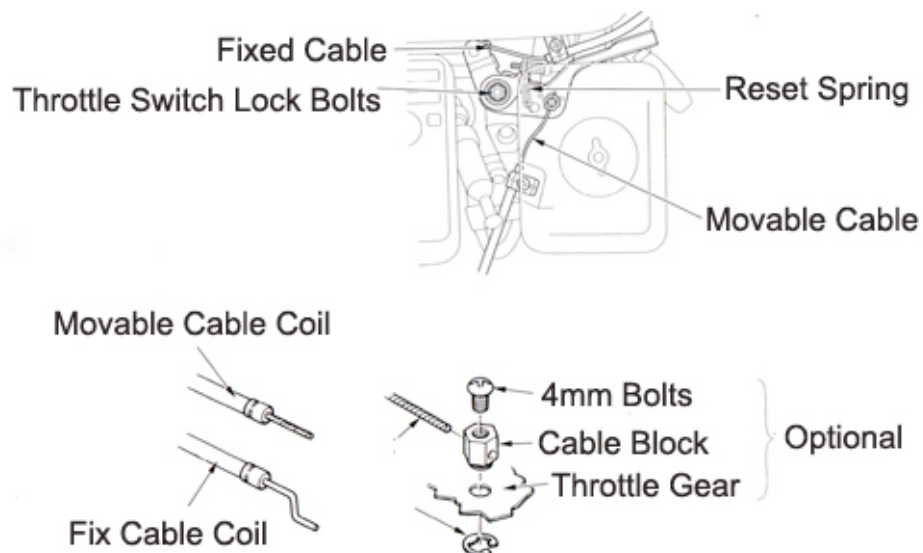
Series number\_\_\_\_\_

### Far distance control connection

The throttle switch control pole has assemble the hole of cables, these holes can assemble the fixed cable, movable cable and collective cable. If assemble the movable and collective cable, it need add a reset spring, as the follow diagram.

Using the far distance operating the throttle switch, please loose the lock nuts of throttle switch handle.

### Far distance control connection



### **Adjust the carburetor to suitable the Plateau region use**

In the plateau region, the standard carburetor will make the air and fuel mixed too concentrated, which will lower the running performance of the gasoline engine, and increasing the fuel consumption. The fuel mixing ratio too concentrated will clog the spark plug, and make the spark plug start failure. Using the standard carburetor in plateau region will increasing the emissions.

Adjustment the carburetor will improve the performance in the plateau region. If you always use the gasoline engine in the plateau region higher than 1,800m, please ask the Honda distributor adjustment the carburetor. The adjustment gasoline engine using in plateau region would ensure the emissions standard in the warranty period.

The gasoline engine, which has adjusted the carburetor, its power will lower 3.5% once the altitude increase 300m, if the carburetor did not adjust well, the affection will increase.

### **Important matters**

**If the carburetor is adjusted according to the plateau region, the gasoline engine running altitude lower than 1,800m, the air-fuel mixed will too lower, which will cause the gasoline engine over heat, then damage. Running in the lower altitude, please ask the Honda distributor adjustment the carburetor to be original data where the factory sets.**

### **The fuel contain alcohol**

Some fuel was admixture the Ethanol and Ether, this type of fuel, we called it alcohol fuel. In order to suitable the air clean standard, in some area of USA and CANADA, they using alcohol fuel to reduce the pollution emission.

If we using the alcohol fuel, please make sure it's without Lead, also, it have to meet the lowest Octane value request.

Before using the alcohol fuel, please try to confirm the ingredients. Some state or provincial request there have to label the fuel ingredients beside the oil pump.

Below is the proportion of EPA standard alcohol fuel.

Ethanol-(Ethyl or Alcohol) 10% of the volume

You can use the fuel which the Ethanol content within 10% of the volume.

MTBE- (Aldehyde-butyl ether) 15% of the volume

You can use the fuel which the Aldehyde-butyl ether content within 15% of the volume.

Methanol-(Methyl or wood alcohol) 5% of the volume

You can use the fuel which the Methanol content within 5% of the volume, once it contain the Cosolvent and Preservatives to protect the oil pipe. The fuel contain more than 5% Methanol, which will cause the problem of starting and performance. Also, it will damage the metal, rubber and plastic parts of oil pipe system.

### **Important matters**

- **Due to using alcohol fuel, cause fuel system damage or engine performance failure, it's not in the warranty. Honda company won't bear the fuel contain the alcohol, because its applicability still has not been approved .**
- **Before purchase the fuel on the oil supplier, first, please try to know whether the fuel contains alcohol. If it contains, please make sure the style and alcohol proportion. Once you using the fuel contain alcohol or you think the fuel contains alcohol, if the running performance is not reach the level you expected, replace the fuel to be the fuel which you know it has not contain alcohol.**

## **Emission control system**

### **Emission Source**

During combustion, it will produce CO, Nitrogen oxides and Hydrocarbons. Controlling the emission of Nitrogen oxides and Hydrocarbons are very important. Under certain conditions, such as under sunshine, these both material will interactive and formation of photochemical smog, but the CO have not such interactive, it's toxic.

The Honda company using the lean carburetor and other system to reduce the emission of CO, Nitrogen oxides and Hydrocarbons.

### **Modified gasoline engine**

The modified gasoline engine will make the emission increase and excess the legal rules, the modified parts as below:

- Move or change the vent, which it's belong to one of the fuel system or exhaust system.
- Change the connection method of adjustor or speed adjustor, which make the gasoline running speed excess its design data request.

### **Possibility problem of effecting the emission**

If you found any of the following situation, please ask the maintenance shop to check and repair.

- Difficult to start or can't stop after start
- Non-standard idle
- Can't ignition or temper under overload
- Temper
- Emission black flog or Oil consume is bigger

### **Replace the true spare parts**

During maintenance the gasoline engine, we suggest you using the true spare parts come from Honda, because the replace spare parts are products by the same standard design, and you can take care its performance. If you use difference replace parts, it may damage the emission control system.

The replace parts supplier have to approve the spare parts is meet the emission request rules, and have to bear the responsibility of damage the emission system.

### **Maintenance**

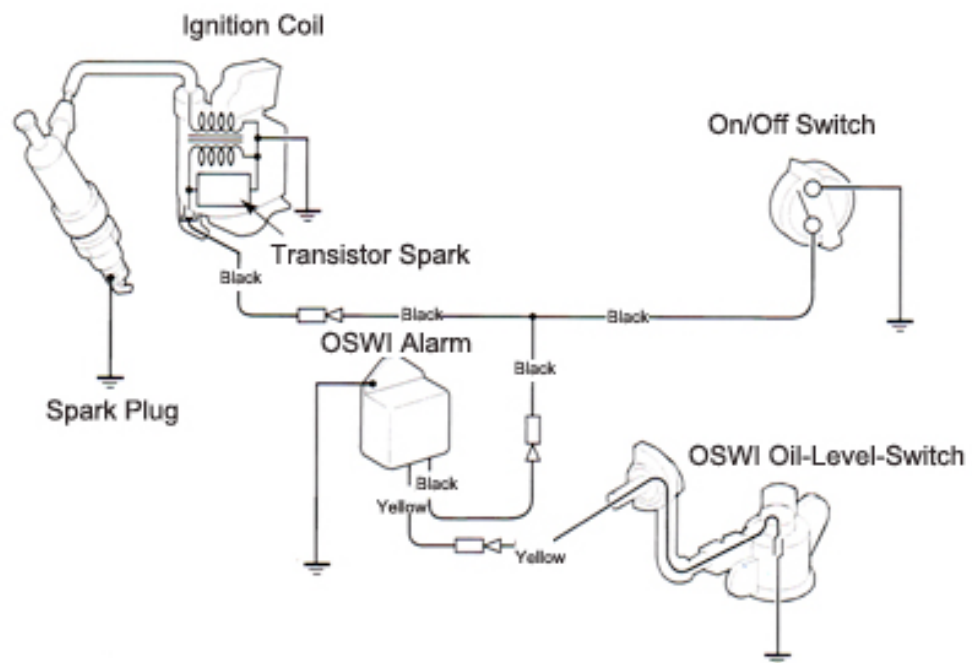
According to maintenance table maintenance the gasoline engine(Refer to Page19), please remember the table is design for correct using gasoline engine, once the gasoline engine operation in the place of overload, high temperature operation or abnormal humidity and big dust, please increase the maintenance.



## Main technique specification

No.	Item		Technique parameter
1	Model No.		JH168F (GX160)
2	Function		Normal use
3	Style		Single-cylinder, 4-stroke, Forced air cooling
Main specification parameter			
4	Max. power and running speed		3.05kW/3600r/min
5	Min. no-load stable running speed		≤1440
6	Max. torque and running speed		8.6N.m/2500r/min
7	Fuel consume ratio		≤395
8	Oil consume ratio		≤6.8
9	Starting performance		30(-5℃ ~ 40℃ )
10	Speed adjust feature	Stable adjust ratio	≤10%
		Running speed volatility	≤3%
Main frame parameter			
11	Cylinder Dia. ×Stock(mm)		68×45
12	Exhaust		163mL
13	Compression Ratio		8.5:1
14	Spark advance		BTDC 25°±3°(300r/min-4200r/min)
15	Cooling valve clearance	Air-in	0.15±0.02
		Air-out	0.20±0.02
16	Spark plug clearance(mm)		0.7~0.8
17	Rotation direction		Anti-clockwise
Accessories			
18	Model No. of spark plug		NGK: BPR6ES
19	Ignition way		Transistor Magnet ignition
Fuel and oil			
20	Fuel		#90 or lead-free fuel
21	Oil		SE and above 10W-30
22	Volume of oil		0.6
Size and Weight			
23	Dimension		304×362×335 (S type)
24	Weight		15.0 (S type)

## Chapter 8 Wiring diagram



## **Chapter 9 Appendix/Suggestion**

### **Storage**

#### **Storage preparation**

Correct storage is necessary for keeping the good performance of gasoline engine, the following steps will avoid the gasoline engine rusty, corrosion, and damage the performance and appearance of the gasoline engine. Correct storage will make the gasoline engine easy to start.

#### **Clean**

Complete operation of the gasoline engine, please allow it at least half an hour to cooling, then clean it. Clean the gasoline engine appearance, painting the damage parts, and film oil to the place easy to rusty.

### **Important matters**

**Using the hose of water flower or pressure water gun will make the water go into the air cleaner and mufflers, and the water of air cleaner will soak the filter-element. The water will go into the cylinder through filter-element and muffler, and damage the gasoline engine.**

**The water encounter the hot gasoline engine will make the gasoline engine damage, if the gasoline engine is just operation, please cooling the machine at least half an hour before clean.**

### **Fuel**

The fuel will go bad during storage, the bad fuel will make the gasoline engine hard to start, at the same time, the bad fuel will produce something to clog the fuel system. If in storage, the fuel goes bad, please clean or replace the carburetor and other fuel system.

The fuel store in the fuel tank or carburetor for a long time will go bad under the following situation, such as the fuel Ingredients, storage temperature and unfilled full. If the fuel unfilled full, the air of the fuel tank will make the fuel go bad; the storage place too hot or the temperature too high will excess the fuel go bad; if the fuel is not fresh, it will go bad in a few month or shorter period.

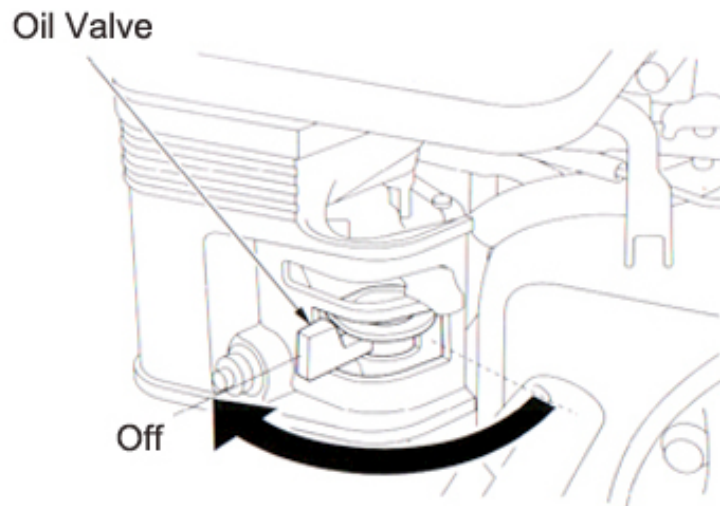
The damage of the gasoline engine which is caused by fuel or storage uncorrected are not in warranty.

Please use the professional fuel stable controller to prolong the life time of the fuel, or discharge the fuel of the fuel tank and carburetor to avoid the fuel go bad.

### **Add a fuel stable controller to prolong the storage life time of the fuel**

When add a fuel stable controller, please inject the fresh fuel to the fuel tank. The fuel have to fill full to avoid the air of the fuel tank go bad. If you inject the fuel from a tank, please make sure the fuel of the tank is fresh.

1. Add the fuel stable controller according to the use manual of supplier.
2. After add the fuel stable, running about 10 minutes in the outdoor to make sure the fuel of the Carburetor is replace by the treated fuel to be untreated.
3. Close the gasoline engine, and put the oil valve to be off.



### **Discharge the fuel of the fuel tank and carburetor**

1. Put a suitable fuel container under the carburetor, it's better to use a hopper to discharge the fuel to avoid the fuel spill out.
2. Release the drain cock of carburetor, move the sediment chamber, and put the fuel valve on Off.

#### **Danger!!!**

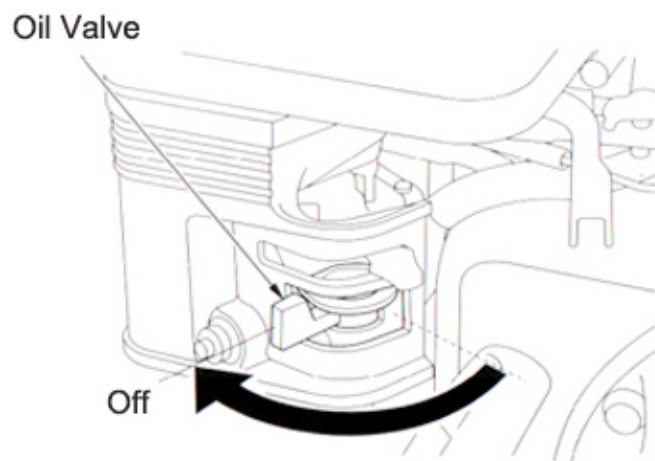
**The fuel easy to burn and easy explosion.**

**Improper handling of fuel may be seriously injured.**

**Stay away from flog, spark , fire and so on.**

**Handling outdoor.**

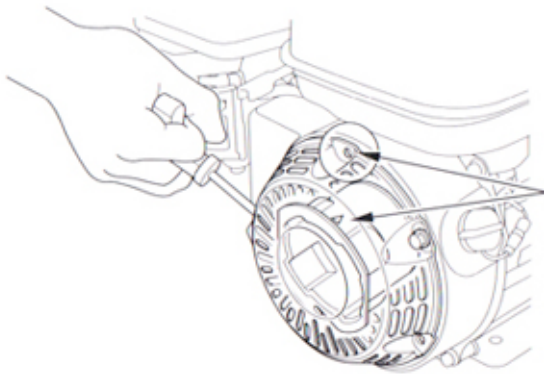
**Please clean the oil immediately when spill out.**



3. After fill the fuel to the fuel tank, screw the oil drain cock, and return it back to the sediment chamber and fix it.

### **Gasoline engine lube oil**

1. Replace (Refer to Page23)
2. Dismantle the spark plug
3. Put a spoon (5-10CC) clean fuel to the inside cylinder.
4. Pull up the starter grip several times, to make the oil decentralized.
5. Install back the spark plug
6. Pull up the starter grip slowly, until you feel there is resistance, then continue to widen, until make the arrow of the starting gear target to hole of recoil starter. The air in and exhaust valve is on Off, which is good to prevent moisture go into the cylinder and rusty. Then release the starter grip back.



**Make the Arrow of the  
Starting Gear Target to  
the Hole of Recoil  
Starter**

### **Storage notice**

If there is fuel in the fuel tank or carburetor when you storage your gasoline engine, and it's very important to reduce the burning dangerous, choose a good ventilation conditions to storage, at the same time, far away from fair, such as: furnaces, water heater, dryer and so on. Also far away to the motor of producing the spark or any power tool operation place.

If possible, avoid storage it the place of moisture, because it will make the gasoline engine rusty. To avoid the fuel leakage, put the fuel valve to off, until the oil of fuel tank is drain out.

Install the gasoline engine in level, because the tilt will lead the fuel or oil leakage.

After the gasoline engine and fuel system cooling, cover the gasoline engine to avoid the dust. The hot gasoline engine or exhaust system may burn or melt some materials, don't use plastic film. The gas-tight cover will make the engine gasoline engine moisture, and acceleration the rusty or corrosion.

### **Move out**

According to the operation manual, before operation, please check the gasoline engine.

If the fuel discharge out before storage, then inject the fresh oil to the fuel tank. If you inject the fuel from a container, please make sure the fuel is fresh, the bad fuel will make the gasoline engine hard to start.

If you smear a layer of oil on the gasoline engine, once you start the gasoline engine, it will produce some flog, it is normal.

### **Transportation**

If the gasoline engine has been running, please let it cool at least 15 minutes, and match the other equipment, the hot gasoline engine and exhaust system may scald you or burning other material.

In transportation, please put the gasoline engine in level to avoid fuel leakage, and put the fuel valve to Off.