

Gasoline Engine Owners Manual DHT720E



Thank you for your purchasing the Engine.

Keep this manual in proper place so as to read it for reference at any time.

This manual should be considered a permanent part of the engine and should remain with the engine if resold.

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Safety

1. Safety

Consumers' responsibility

- Before operating the engine, it is required to read the manual carefully and understand it, otherwise hurt to body or damage to engine may occur.
- Be familiar with controlling and operating the engine and emergency stop, it is only allowed to operate the engine by authorized person.
- Children are not allowed to operate the engine on no account and children and pets must be far away from the operating site.

Caution for filling fuel

- Petrol has an extreme inflammability. Fill fuel in opening air and in good ventilation condition, the engine is stopped.
- Prohibit smoking, keep flame away from naked flame and spark while filling fuel.
- Do not start engine while the splashed petrol drips remain.

Hot exhaust

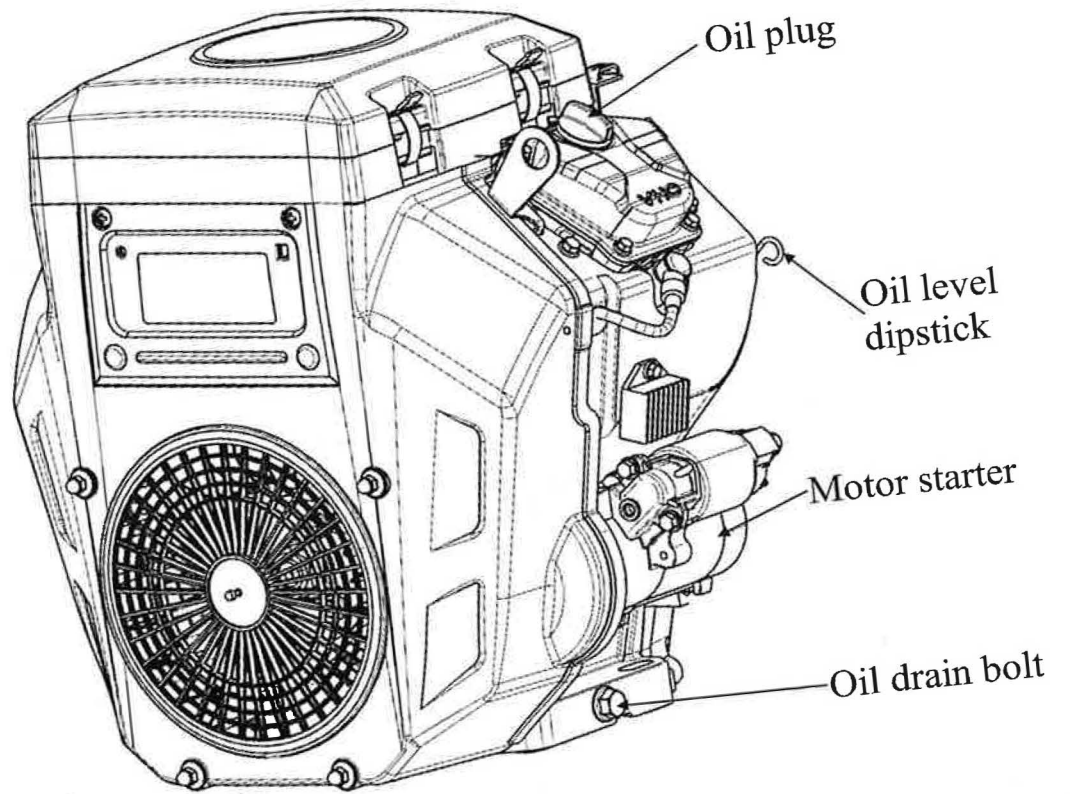
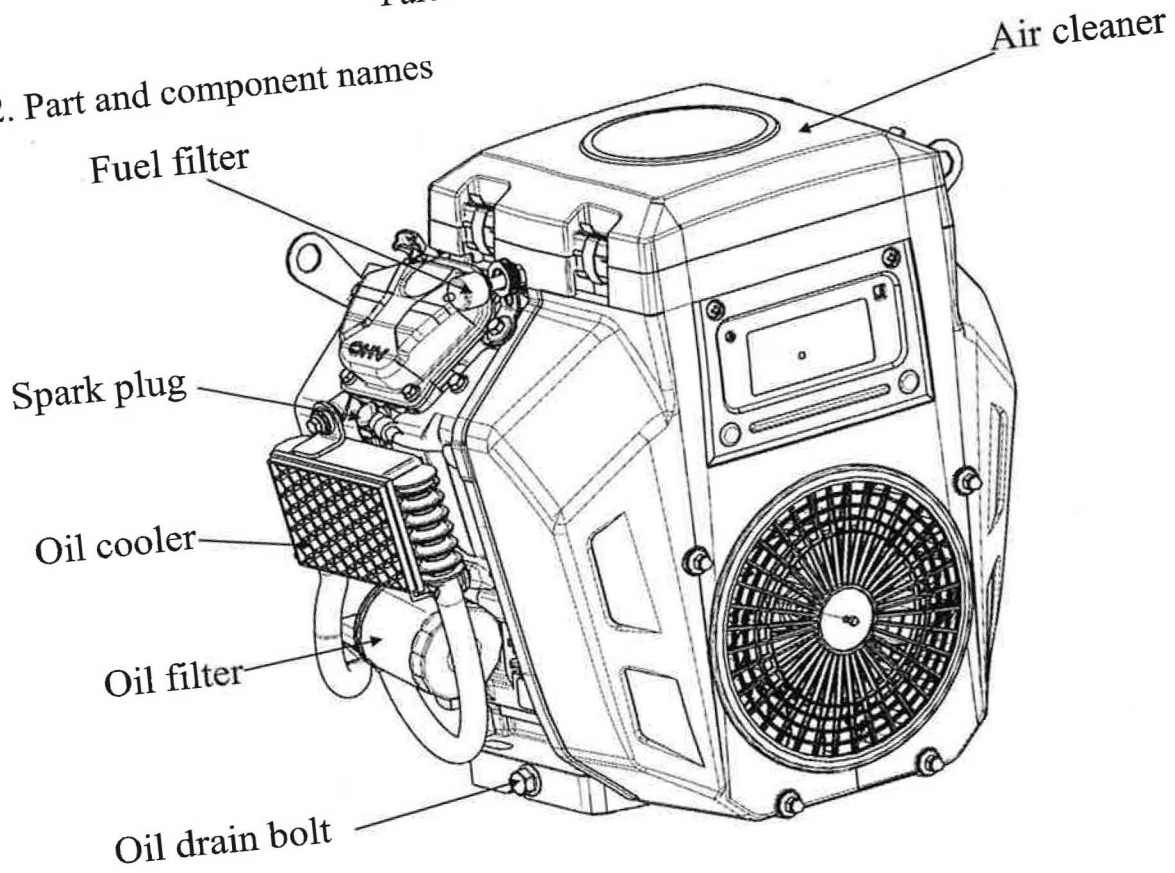
- When the engine works, the muffler is heated to high temperature, even the engine stopped after a while. Be careful to keep your hand beyond the touch with the muffler. Do not store the engine in room till it is cool.
- To prevent fire, keep the engine 1m away from the wall or other devices. And of course, the inflammable substance should be placed further away from the working engine.

Carbon monoxide intoxication

- The emission from the engine contains toxic carbon monoxide, avoid absorbing the emission in.
- Do not operate the engine in enclosed cabinet or in poor ventilation condition.

Part and Component Names

2. Part and component names



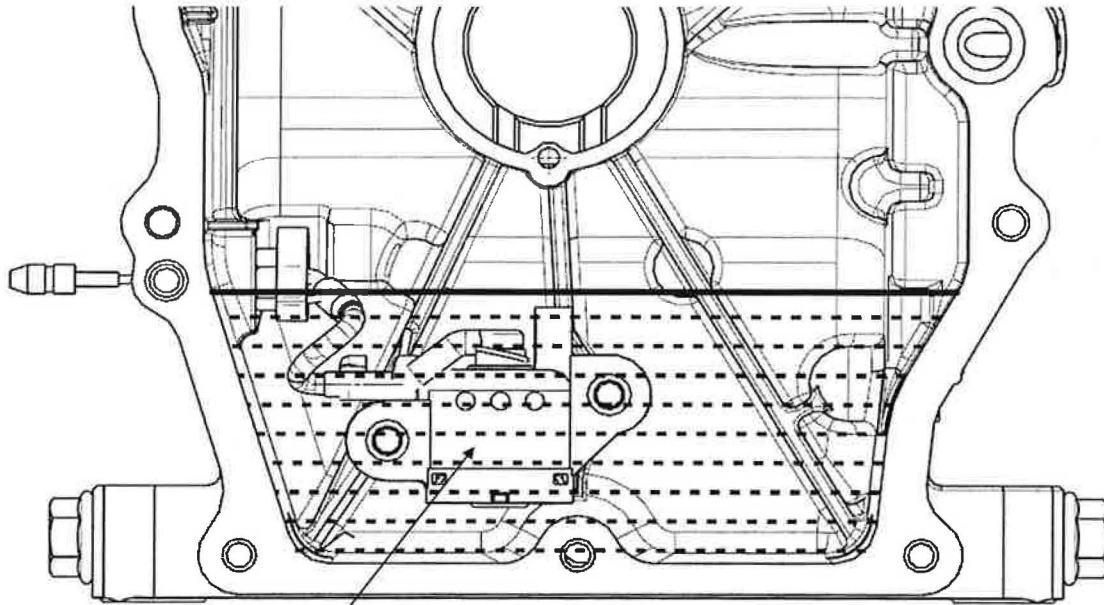
Use of Engine

3. Use of Engine

Engine protecting system

The engine protecting system is designed to protect engine from damage because of lack of oil in the crank case. When the engine oil is lower than the safe level line, the engine protecting system will work to stop the engine automatically (the engine switch is still in "on" position).

If the engine stops automatically but can not start again, first of all, check the oil level, if fault remains, do other inspection.



Oil level switch

Check before Operation

4. Check before operation

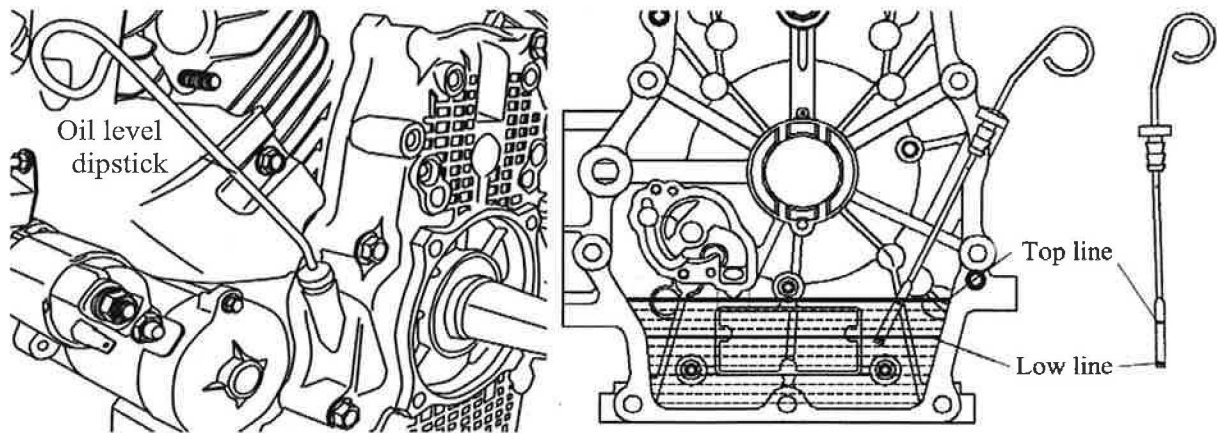
Routine inspection

- Observe the leakage of engine oil and fuel.
- Observe damage.
- Check guard cover and cap position, and the tightness of screw, bolt and nut.

Check engine oil

Caution After stalling, place the engine in level position, then check oil level.

- 1) Pull out the oil level dipstick and clean it.
- 2) Plug in the oil level dipstick thoroughly and take it out again to check the oil level.
- 3) If the oil level is lower than the low limit, remove the oil plug and fill the recommended oil till it goes up to the top limit.
- 4) After filling, keep in mind to reinstall the oil level dipstick and tighten the oil plug.



When the engine oil level is lower than the safe line, the engine protecting system will stop the engine automatically. To avoid engine stalling accidentally, check the oil level before starting the engine each time.

Caution

When filling fuel, the fuel level does not exceed shoulder of fuel filter level(i.e. top level).

It is recommended to fill unleaded gasoline, grade No 90 or higher.

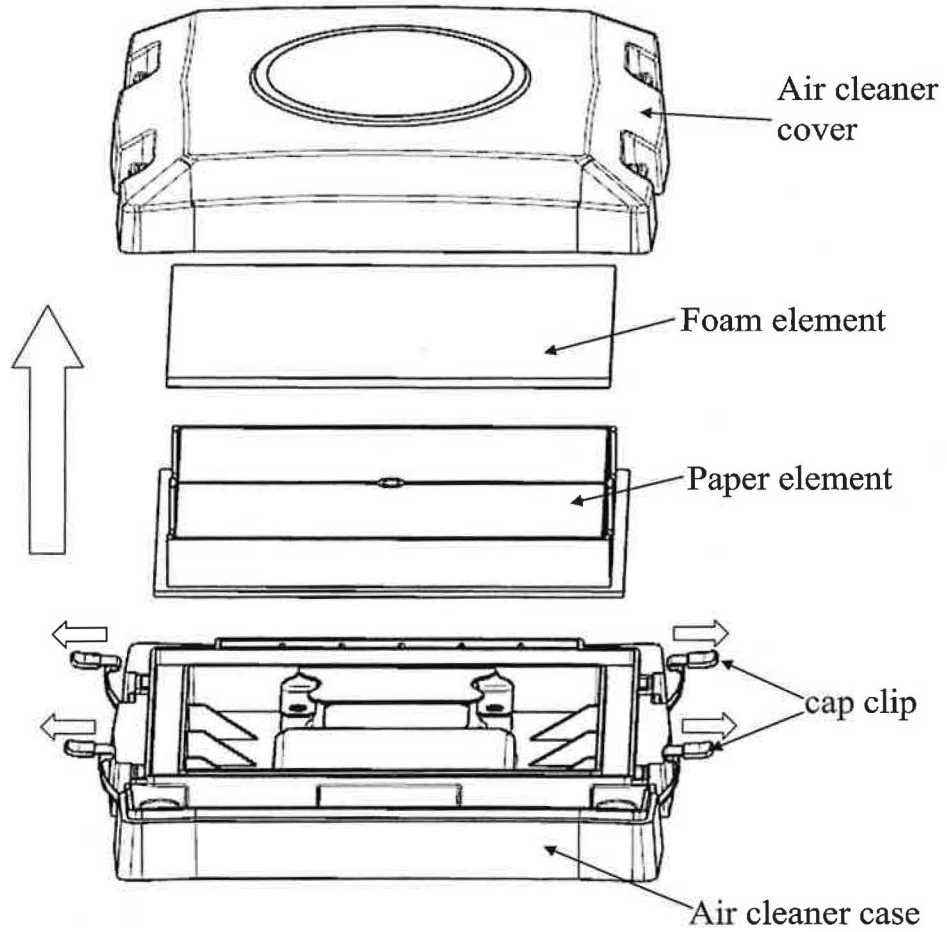
When use unleaded gasoline, carbonized dirt is less, thus it can prolong the service life of exhaust system.

It is prohibited to use waste fuel, contaminated fuel and fuel mixed with engine oil.

Check before Operation

Check air cleaner

Remove the air cleaner cover to check the element, clean or replace, if necessary.



Start and Stop Engine

5. Start and Stop Engine

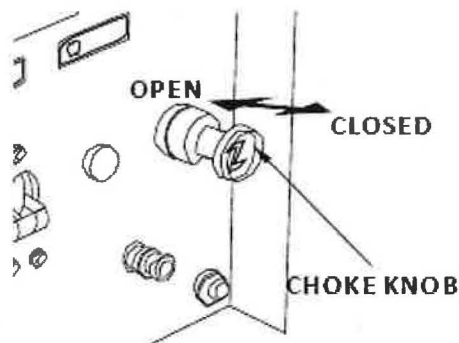
The engine switch and choke knob are installed on the control panel. When coldstart is performed, pull the choke knob to "off" position. When hotstart is done, push the choke knob to "on" position. Turn the engine switch to "on" position for starting, "off" position for stopping.

Choke Knob

The choke knob open and closes the choke valve in the carburetor.

The CLOSED position enriches the fuel mixture for starting a cold engine.

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



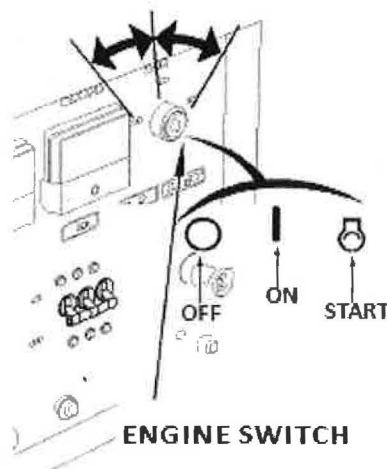
Engine Switch

The engine switch controls the ignition system, and it operates the electric starter.

OFF -- Stops the engine. The engine switch key can be removed/inserted.

ON -- Running position.

START -- Operates the electric starter.



Engine Maintenance

6. Engine Maintenance

Maintenance schedule

Periodical maintenance schedule		Every time	20 hours or the first month	50 hours or every 3 month	100 hours or every 6 month	300 hours or every year
Engine oil	Oil level	○				
	Replace		○		○	
Air cleaner	Check	○				
	Clean			○(1)		
	Replace					○(3)
Fine oil filter	Replace					○(2) or 200 hours
Fuel depositing cup	Clean				○	
Spark plug	Clean				○	Replace
Valve gap	Regulate					○(2)
Fuel pipe	Replace	Every 2 years (2)				

○ Maintenance caution

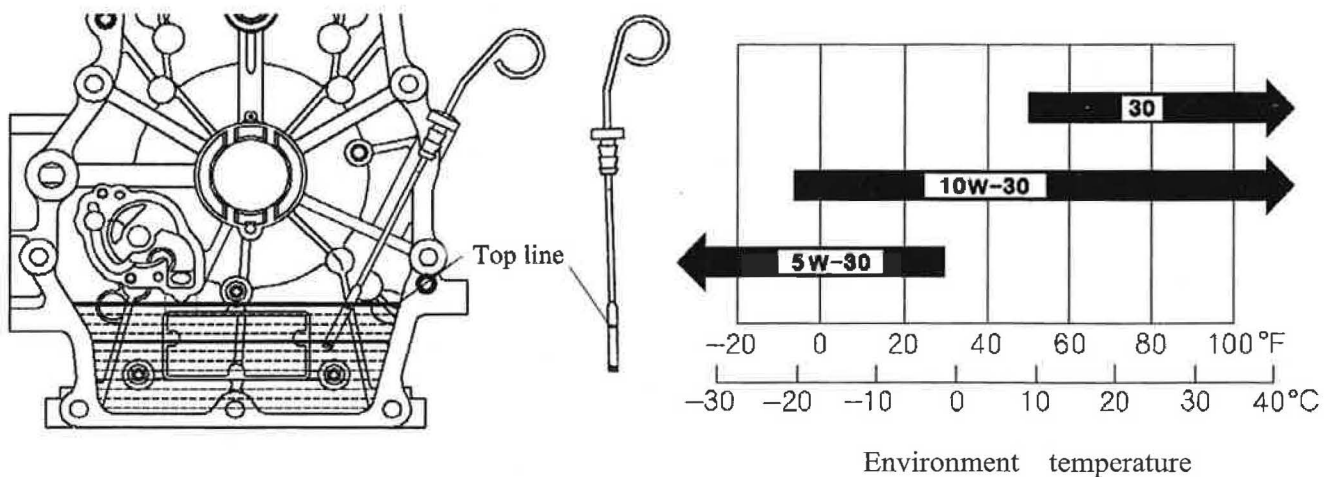
- (1) Maintain the engine more frequently in use of dusty area.
- (2) The maintenance should be performed by your after-service facilitator unless you have proper tools and specialized technique.
- (3) Only replace element.

Engine Maintenance

Replace oil in crankcase

After warming up the engine, it is easy to drain the engine oil to ensure the engine oil is rapidly drained out.

- 1) Place a container under the engine for containing used oil.. Then, remove the oil level dipstick and loosen the oil draining bolt and washer.
- 2) After drainage of used oil, reinstall the draining bolt and washer and tighten them.
In view of environmental protection, please take a proper way to dispose the waste oil.
It is recommended to send the waste oil to the local service station or recycle center.
Never throw waste oil barrel to refuse tip, dump the waste oil on ground or in ditches.
- 3) Place the engine in level position, refill recommended oil to the top line.
The filling capacity of the engine:
Not replace oil filter: 1.4L
Replace oil filter: 1.6L
- 4) Reinstall the oil level dipstick and tighten oil plug.
Recommended engine oil:
Engine oil for 4-stroke engine:
API classification: SE、 SF or equivalent to SG, SAE 10W-30.



If the range of temperature change in your area is limited in the above chart, this oil grade can be selected according to it.

Engine Maintenance

Maintain air cleaner

If the air cleaner is dirty, it affects air inlet, the power of engine reduced. If the running place is dust, maintenance must be done more frequently than that shown in maintenance schedule.

Caution In the case of no element or element damaged, the dust will be sucked into the engine and result in rapid wear of the engine.

Double-element air cleaner

- 1) Unscrew the cap clip, and remove the case.
- 2) Take out the paper and foam elements.
- 3) Separate the paper element from the foam one.
- 4) Check the elements and replace if necessary. As a rule, when reaching the period specified in maintenance schedule, replace the paper element

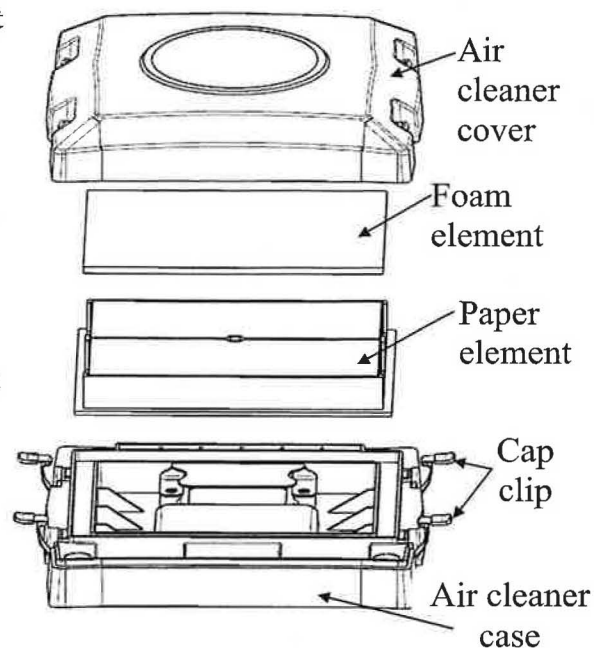
Clean paper element:

Strike the element several times to remove dust deposited on it or blow out with high pressure draft (less than 2.1kg/cm^2), from inside to outside of the element, or the dust will enter the fiber to block the vent holes.

Clean foam element:

Clean the foam element with soap water, rinse and dry it; or clean it with high fire-point resolvent and dry it.

- 5) Clean air cleaner bracket and case. Prevent dust from sucking into the carburetor along the inlet pipe.
- 6) Assemble the foam element and paper element.
- 7) Install the case and tighten the cap clip.



Never remove the dust with brush,

Engine Maintenance

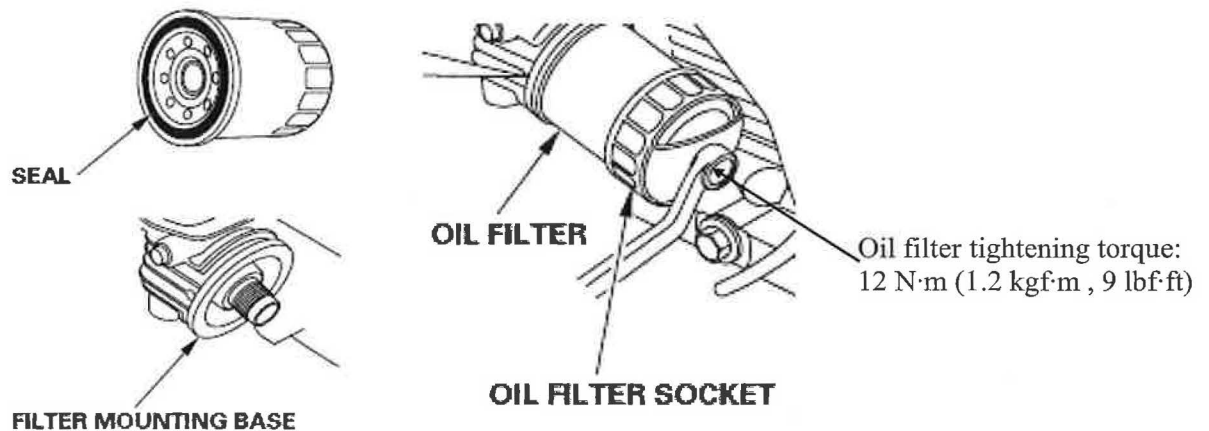
OIL FILTER

Change

1. Drain the engine oil, and retighten the drain bolt securely.
2. Remove the oil filter, and drain the oil into a suitable container.
Dispose the used oil and filter in a manner compatible with the environment.

Caution

Use an oil filter socket, rather than a strap wrench, to avoid striking and damaging the oil pressure switch.



3. Clean the filter mounting base, and coat the seal of the new oil filter with clean engine oil.
4. Screw on the new oil filter by hand until the seal contacts the filter mounting base, then use an oil filter socket tool to tighten the filter an additional 3/4 turn.
5. Refill the crankcase with the specified amount of the recommended oil (see page9). Reinstall the oil filler cap and oil level dipstick.
6. Start the engine, and check for leaks.
7. Stop the engine, and check the oil level as described on page5.
If necessary, add oil to bring the oil level to the upper limit mark on the oil level dipstick.

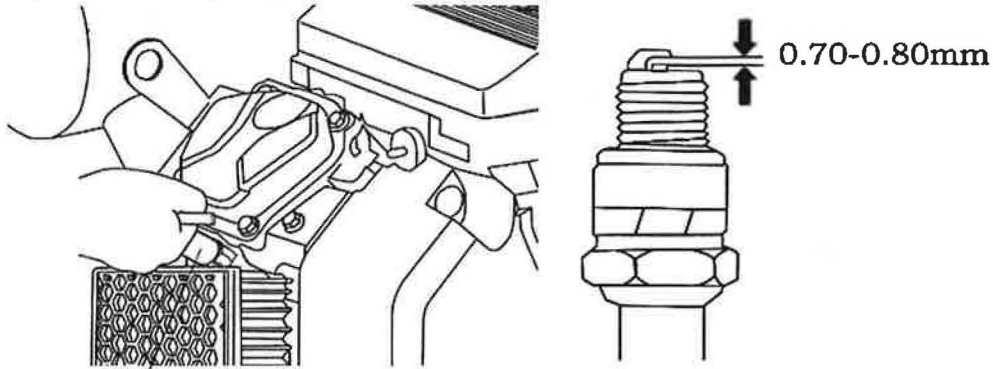
Engine Maintenance

Spark plug

Recommended spark plug:F7TC or equivalent one.

Caution Spark plug of incorrect type may damage the engine.

- 1) Remove the spark plug cap, Clean dust around the spark plug.
- 2) Remove the spark plug with a spark plug wrench.



Spark plug wrench

- 3) Check spark plug. If the electrode has damaged, or isolator has broken, replace the spark plug. The clearance of the spark plug electrode should be 0.70-0.80mm. Adjust the side electrode, if necessary.
- 4) Install the spark plug carefully by hand to avoid cross-threading.
- 5) When the spark plug is in position, tighten the spark plug with the spark plug wrench and depress the washer.
When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer.
When installing the original spark plug, tighten 1/8-1/4 turn after the spark plug seats to compress the washer.
- 6) Attach the spark plug caps to the spark plugs.

Engine Storage

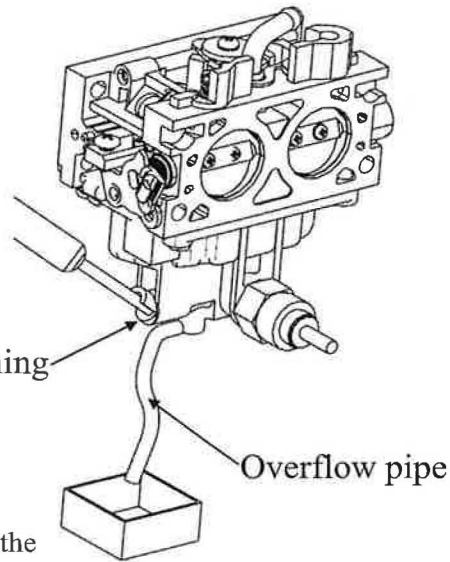
7. Engine storage

After the engine stalling, do not clean the engine till it cools for over half an hour. Clean all surfaces of the engine and mend the damaged paint film, apply antirust oil on the rusting area.

Caution

Do not rinse the engine with high pressure water, because the water may enter the air cleaner and the muffler, even enter the cylinder along the inlet line, thus rust may occur. Do not clean the engine till it is cool, because the water splashed on the hot engine is harmful to the engine.

- 1) Place a container under the carburetor (under overflow pipe).
- 2) Unscrew the draining bolt of the carburetor, drain the fuel in the carburetor from the overflow pipe to the container. After finishing that, tighten the draining bolt.



- 3) When using the engine again, replace oil.
- 4) Remove two spark plugs.
- 5) Fill 5lm-10lm clean engine oil into each cylinder.
- 6) Turn the engine for a few seconds by turning the engine switch to the "start" position to distribute the oil in the cylinders.
- 7) Reinstall the spark plugs.
- 8) Rotate the engine slowly till a drag is felt. In such case, all valves are closed to prevent the humidity from air.
- 9) Cover the engine with a dust cap, and place it in dry and ventilating area.
- 10) If installed,remove the battery and store it in a cool,dry place.Recharge the battery once a month while the engine is in storage.This will help to extend the service life of the battery.

Troubleshoot

8. Troubleshoot

1) Difficult to start

Phenomena				Causes	Elimination
Cylinder Pressure normal	Spark plug normal	Fuel system abnormal	Fuel line blocked	No fuel, or fuel cock off	Fill fuel, turn on fuel cock
				Vent on fuel tank cap blocked	Unblock
				Fuel cock blocked	Clean
				Orifice improperly regulated or blocked	Regulate, clean, blow off
			Needle valve or float jammed	Repair or replace	
			Fuel line unblocked	Dirt fuel or deterioration	Replace fuel and clean carburetor
				Fuel mixed with water	Replace fuel and clean carburetor
				Exceeded fuel in cylinder	Drain fuel and dry spark plug
	Fuel grade not correct	Fill specified fuel			
	Fuel system normal	Spark normal	Spark Plug poor	carbonized, electrode dirt	Clean carbonized dirt
				Isolator damaged	Replace spark plug
				Electrode burnt out	Replace spark plug
				Improper spark plug clearance	Regulate clearance
		Spark plug normal		No spark	High tension wire damaged
Ignition coil damaged					Replace high tension coil
Magnetic intensity inefficient	Magnetize or replace				
Cylinder Pressure abnormal	Fuel system normal	Ignition System normal	Spark plug normal	Piston ring worn out or broken	Replace
				Piston ring agglutinated	Clean carbonized dirt
				Spark plug without washer or tightened loosely	Fit washer or tighten
				Leakage between head and block	Replace cylinder
				Poor air tight at valve	Grind or replace

Troubleshoot

2) Inefficient power

Phenomena	Causes		Elimination
Speed increase slowly while accelerating , even decrease or engine stall in severe condition	Ignition system	Improper timing	Replace ignition coil
	Fuel system	Air mixed in fuel line	Exhaust air
		Orifice regulated improperly	Regulate
		Needle valve or orifice blocked	Clean , blow off
		Fuel cock blocked	Clean or replace
		Carbonized in combustion chamber	Clean carbonized dirt
	Inlet system	Air cleaner block	Clean or replace element
		Inlet system leakage	Repair or replace
	Poor compression	Piston , cylinder , piston ring worn out	replace
		Leakage between block and head	Replace gasket
		Incorrect valve clearance	Regulate
Valve untight		Grind or replace	

3) Sudden stall

Phenomena ^o	Causes ^o		Elimination ^o
Sudden stall at run ^o	Fuel system ^o	Fuel run out ^o	Fill fuel, unblock ^o
		Carburetor blocked ^o	Check fuel line, unblock ^o
		Oil leaked from carburetor ^o	Repair float ^o
		Needle valve jammed ^o	Repair needle valve ^o
	Ignition system ^o	Spark plug sparked through Carbonized dirt makes short circuit ^o	Replace spark plug ^o
		Spark plug electrode dropped off ^o	Replace spark plug ^o
		High tension wire dropped off ^o	Repair or replace ^o
		Ignition coil broken down ^o	replace ^o
	Others ^o	Severely scuffing of cylinder bore or valve dropped off ^o	Repair or replace damaged part ^o

Troubleshoot

4) Engine overheating

Phenomena ^o	Causes ^o	Elimination ^o
Engine overheating ^o	Improper timing ^o	Replace ignition coil ^o
	Insufficient engine oil ^o	Fill engine oil ^o
	Outlet blocked ^o	Clean outlet ^o
	Ventilation hood leakage ^o	Repair damaged place ^o
	Air conduit blocked with foreign thing ^o	Clean radiator ^o
	Cool fan failed ^o	Reinstall fan ^o
	Piston ring failed to result in cylinder and crank case flowing by ^o	Replace worn part ^o
	Engine runs at over speed ^o	Check regulating system or replace regulating gear ^o

5) Abnormal noise

Phenomena ^o	Causes ^o	Elimination ^o
Slap ^o	Piston, piston ring worn out ^o	Replace worn part ^o
	Connection rod, piston pin, pin hole worn out ^o	Replace worn part ^o
	Crank worn ^o	Replace or repair ^o
	Piston ring broken ^o	Replace piston ring ^o
Knocking with metallic sound ^o	Exceeded carbonized dirt in combustion chamber ^o	Clean carbonized dirt ^o
	Spark plug electrode clearance too small ^o	Regulate electrode clearance ^o
	Severely enriched fuel ^o	Check Carburetor ^o
	Improper fuel grade ^o	Replace fuel ^o
	Engine overheating ^o	Refer to overheat fault column ^o
Abnormal noise ^o	Regulate valve improperly ^o	Regulate valve clearance ^o
	Loose connection between flywheel and crank ^o	Replace connecting key and reinstall ^o

ENGINE PARAMETER

9. Engine parameters

Engine Type	V-Twin OHV
Power Rating(W)	13.8 kW@ 3600 rpm
Power MAX(W)	14.5 kW@ 3600 rpm
Displacement (cc)	713
Bore × Stroke(mm)	2V80×71
Max Torque(N.m/rpm)	46.0 N.m @ 2,800 rpm
Starting System(Recoil/ES)	Electric Start
Fuel rate(g/kW·h)	≤389
Compression ratio	8.7:1
Valve gap (mm)	Inlet:0.08~0.12
	Outlet:0.10~0.15
Engine Lubricant Volume (L)	1.6
Ignition System	TCI
Lubrication System	Forced
Outer Carton dimension(mm) (L x W x H)	490×535×465
Unit Gross Weight(kgs)	47(include muffler)

WIRING DIAGRAM

10. Wiring diagram

