

OWNER'S MANUAL

4-STROKE AIR-COOLED V-TWIN GASOLINE ENGINE

FH770D KAI

SAFETY AWARENESS

Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.

A DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

NOTE

O NOTE indicates information that may help or guide you in the operation or service of the vehicle.

READ THIS FIRST

For your safety, read this Owner's Manual and understand it thoroughly before operating this ENGINE.

A DANGER

Exhaust gas contains carbon monoxide, a colorless, odorless poisonous gas. Inhaling carbon monoxide can cause serious brain injury or death. DO NOT run the engine in enclosed areas. Operate only in a well-ventilated area. Gasoline is extremely flammable and can be explosive under certain conditions, creating the potential for serious burns. When refueling, servicing fuel system. draining gasoline and/or adjusting the carburetor: Stop engine and allow it to gool before refueling. DO NOT smoke. Make sure the area is well-ventilated and free from any source of flame or sparks, including the pilot light of any appliance. DO NOT fill the tank so the fuel level rises into the filler neck or level surface of level gauge. If the tank is overfilled, heat may cause the fuel to expand and overflow through the vents in the tank cap. Wipe off any spilled gasoline immediately. Engines can become extremely hot during normal operation. To prevent fire hazard: Keep the engine at least 1 m (3.3 ft) away from buildings, obstructions and other flammable objects. DO NOT place flammable objects close to the engine. DO NOT expose combustible materials to the engine exhaust. DO NOT use the engine on any forest covered, brush covered or grass covered unimproved land unless spark arrester is installed on the muffler. To avoid getting an electric shock, DO NOT touch spark plugs, plug caps or spark plug leads during engine running. To avoid a serious burn, DO NOT touch a hot engine or muffler. The engine becomes hot during operation. Before you service or remove parts, stop engine and allow the engine to cool. DO NOT place hands or feet near moving or rotating parts. Place a protective cover over pulley, V belt or coupling. DO NOT run engine at excessive speeds. This may result in injury. Always remove the spark plug caps from spark plugs when servicing the engine to prevent accidental starting.

Read warning labels which are on the engine and understand them. If any label is missing, damaged, or worn get a replacement from an authorized Kawasaki engine dealer and install it in the correct position.

EMISSION CONTROL INFORMATION

Fuel Information

THIS ENGINE IS CERTIFIED TO OPERATE ON UNLEADED REGULAR GRADE GASOLINE ONLY. A minimum of 87 octane of the antiknock index is recommended. The antiknock index is posted on service station pumps in the U.S.A.

Emission Control Information

To protect the environment in which we all live, Kawasaki has incorporated an exhaust emission control system in compliance with applicable regulations of the United States Environmental Protection Agency and the California Air Resources Board. Also, depending on when your engine was produced, it may have an assigned emissions durability period.

*See below for the engine emissions durability period that may apply to your engine.

Exhaust Emission Control System

The exhaust emission control system applied to this engine consists of a carburetor and an ignition system having optimum ignition timing characteristics. The carburetor has been calibrated to provide specific air/fuel mixture characteristics and optimum fuel economy with a suitable air cleaner and exhaust system.

A sealed-type crankcase emission control system is also used to eliminate blow-by gasses. The blow-by gasses are led to a breather chamber through the crankcase and from there to the air cleaner.

Engine Emissions Compliance Period

California

All Other States

Engines Greater Than or Equal To 225 cc

Engines Greater Than or Equal To 225 cc

Durability Period – 1 000 hours

Durability Period – 1 000 hours (Category A)

* If your engine has an assigned emissions durability period it will be located on the certification label attached to the engine (IMPORTANT ENGINE INFORMATION).

High Altitude Performance Adjustment Information

To improve the EMISSIONS CONTROL PERFORMANCE of engines operated above 1,000 meters (3 300 feet), Kawasaki requires the following Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) approved modifications. High altitude adjustment requires replacement of carburetor main jets. Installation of these optional parts may be performed by an authorized Kawasaki engine dealer or equally qualified service facility, following repair recommendations specified in the appropriate Kawasaki Service document or parts catalog.

Operating the engine with the wrong engine configuration at a given altitude may increase its emissions and decrease fuel efficiency and performance.

NOTE

OWhen properly performed, these specified modifications only are not considered to be emissions system "tampering" and engine performance is generally unchanged as a result.

Maintenance and Warranty

Proper maintenance is necessary to ensure that your engine will continue to have low emission levels. This Owner's Manual contains those maintenance recommendations for your engine. Those items identified by the Periodic Maintenance Chart are necessary to ensure compliance with the applicable standards.

As the owner of the engine, you have the responsibility to make sure that the recommended maintenance is carried out according to the instructions in this Owner's Manual at your own expense.

The Kawasaki Limited Emission Control System Warranty requires that you return your engine to an authorized Kawasaki engine dealer for remedy under warranty. Please read the warranty carefully, and keep it valid by complying with the owner's obligations it contains.

Tampering with Emission Control System Prohibited

Federal law and California State law prohibit the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new engine for the purposes of emission control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the engine after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering, do not tamper with the original emission related parts below:

- Carburetor and their internal parts
- Spark Plug
- Magneto ignition systemFuel filter element
- Air cleaner element
- Crankcase
- Cylinder heads
- Breather chamber and internal parts
- Intake pipe and tube
- Muffler or any internal portion of the muffler

FOREWORD

We wish to thank you for purchasing this Kawasaki engine.

Please read this Owner's Manual carefully before starting your new engine so that you will be thoroughly familiar with the proper operation of your engine's control, its features, capabilities and limitations.

Also read the manual of the equipment to which this engine is attached.

To ensure a long, trouble-free life for your engine, give it the proper care and maintenance described in this manual. Always keep this manual at your fingertip so that you can refer to it whenever you need information. This manual should be considered a permanent part of the engine and should remain with the engine when it is sold.

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This publication includes the latest information available at the time of printing. However, there may be minor differences between the actual product and illustrations and text in this manual.

All products are subject to change without prior notice or obligation.

KAWASAKI MOTORS, LTD.

Mar. 2017 (2) (M)

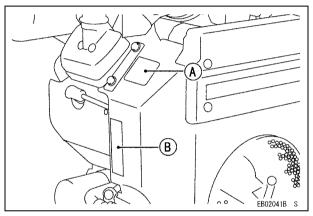
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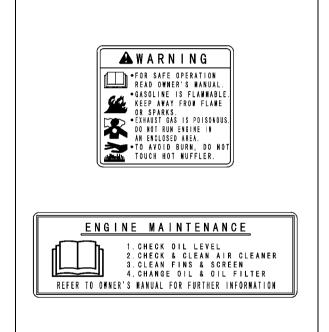
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GENERAL INFORMATION

Location of Safety Related Labels



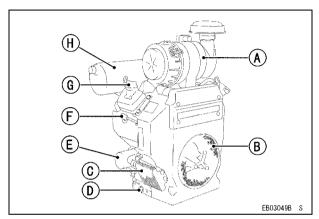
- A. Warning Label
- **B. Maintenance Label**



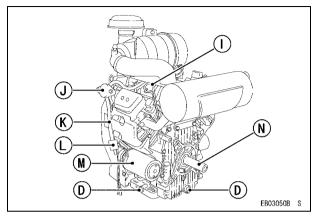
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Location of Parts



- A. Air Cleaner
- B. Air Intake Screen
- C. Oil Cooler
- D. Oil Drain Plugs
- E. Oil Filter
- F. Spark Plugs/Spark Plug Caps
- G. Oil Filler Cap H. Muffler

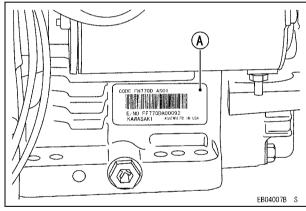


- I. Oil Gauge
- J. Fuel Pump K. Fuel Tube
- L. Fuel Filter
- M. Electric Starter
- N. P.T.O Shaft

Engine Serial Number

The engine serial number (A) is the only means of identifying your particular engine from others of the same model type.

This engine serial number is needed by an authorized Kawasaki engine dealer or equally qualified service facility when ordering parts.



A. Engine Serial Number Label

Tune-up Specifications

ITEM	Specifications
Ignition Timing	Unadjustable
Spark Plugs:	BPR4ES
Gap	0.75 mm (0.030 in.)
Low Idle Speed (Governor)	1 550 r/min (rpm)
High Idle Speed	3 600 r/min (rpm)
Valve Clearance	IN 0.10 ~ 0.15 mm
	(0.004 ~ 0.006 in.)
	EX 0.10 ~ 0.15 mm
	(0.004 ~ 0.006 in.)
Other Specifications	No other adjustment needed

NOTE

O High and low idle speeds may vary depending on the equipment on which the engine is used. Refer to the equipment specification.

Engine Oil Capacity

Engine Oil Capacity

	1.4 L (1.5 US·qt)
FH770D	[when oil filter is not removed]
FHITOD	1.6 L (1.7 US·qt)
	[when oil filter is removed]

FUEL AND OIL RECOMMENDATIONS

Fuel

Use only clean, fresh, unleaded regular grade gasoline.

NOTICE

Do not mix oil with gasoline.

Octane Rating

The octane rating of a gasoline is a measure of its resistance to "knocking". Using a minimum of 87 octane by the antiknock index is recommended. The antiknock index is posted on service station pumps in the U.S.A.

Antiknock Index: (RON + MON)/2 RON = Research Octane Number MON = Motor Octane Number

NOTE

Olf "knocking or pinging" occurs, use a different brand of gasoline or higher octane rating.

Oxygenated Fuel

Oxygenates (either ethanol or MTBE) are added to the gasoline. If you use the oxygenated fuel be sure it is unleaded and meets the minimum octane rating requirement.

The following are the EPA approved percentages of fuel oxygenates.

ETHANOL: (Ethyl or Grain Alcohol)

You may use gasoline containing up to 10% ethanol by volume.

MTBE: (Methyl Tertiary Butyl Ether)

You may use gasoline containing up to 15% MTBE by volume.

METHANOL: (Methyl or Wood Alcohol) 5% by volume

You may use gasoline containing up to 5% methanol by volume, as long as it also contains cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of your fuel system.

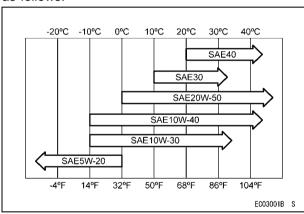
FUEL AND OIL RECOMMENDATIONS 13

Engine Oil

The following engine oils are recommended. API Service Classification: SJ or SL class

Oil Viscosity

Choose the viscosity according to the temperature as follows:



NOTE

O Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions. Using 20W-50 oil in higher ambient temperatures may reduce oil consumption.

PREPARATION

Fuel

A WARNING

Gasoline is extremely flammable and can be explosive under certain conditions, creating the potential for serious burns. Turn the ignition switch off. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light. Never fill the tank completely to the top. If the tank is filled completely to the top, heat may cause the fuel to expand and overflow through the vents in the tank cap. After refueling, make sure the tank cap is closed securely. If gasoline is spilled on the fuel tank, wipe it off immediately.

Engine Oil

Check the engine oil daily before starting the engine otherwise shortage of the engine oil may cause serious damage to the engine such as seizure.

- Place the engine on level surface. Clean area around the oil gauge before removing it.
- Remove the oil gauge (A) and wipe it with clean cloth.
- Insert the oil gauge into oil gauge hole (B) and let its plug firmly fit into the oil gauge hole, then check the oil level.
- The oil level should be between the "H (H)" and "L"
 (L) marks on the oil gauge.
- ★ If the oil level is near or below the "L" mark, remove the oil filler cap (C) and add enough engine oil to bring oil level to the "H" mark.
- Install the oil gauge (A) and tighten the oil filler cap (C).

NOTICE

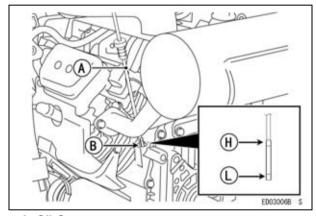
Do not fill above the "H" mark. Excess oil will cause a smoking condition, and may cause the engine to overheat.

★ If the oil level is too high, remove the excess oil by loosening the drain plugs (D).

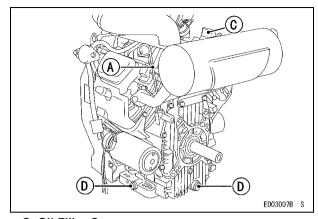
PREPARATION 15

Engine Oil Capacity

	g		
	1.4 L (1.5 US·qt)		
	[when oil filter is not removed]		
FH770D	1.6 L (1.7 US·qt)		
	[when oil filter is removed]		



A. Oil Gauge B. Oil Gauge Hole



C. Oil Filler Cap D. Oil Drain Plugs

STARTING

Start Engine

A DANGER

Exhaust gas contains carbon monoxide, a colorless, odorless poisonous gas. Inhaling carbon monoxide can cause serious brain injury or death. DO NOT run the engine in enclosed areas. Operate only in a well-ventilated area.

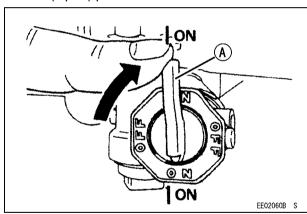
MARNING

Engine exhaust may ignite combustible materials and cause a fire. Keep the area around the exhaust outlet clear. Locate the unit so that the exhaust outlet points toward an open area and is located at least one meter (3.3 feet) from any obstructions.

NOTE

- OBe aware of the following in order to start the engine easily in cold weather.
- Use proper oil for temperature expected (See "FUEL AND OIL RECOMMENDATIONS" chapter).

- Use fresh gasoline.
- Protect the engine or the equipment from direct exposure to weather when not in operation.
- Before starting the engine, insure all possible external loads are disconnected.
- Turn the fuel tap lever (A) on the equipment to "ON" (Open) position.

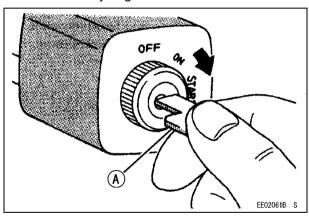


A. Fuel Tap Lever

- Move the throttle lever on the equipment to its halfway position between "FAST" and "SLOW" speed position.
- Turn the choke lever on the equipment to "Close" position.

NOTE

- O Use full choke when the engine is cold, but in hot weather or when the engine is already warm, use halfchoke or leave the choke fully open.
- Put the key (A) into the ignition switch.
- Turn the key to the START position on the ignition switch. Usually engine will start within 3 seconds.



NOTICE

Do not run the electric starter continuously for more than 5 seconds, otherwise the battery may discharge quickly. If the engine does not start right away, wait 15 seconds and try again.

NOTICE

Whenever you start engine, make sure warning light is not illuminated after engine starts. If warning light comes on, stop engine immediately and check oil level. The warning light must not be illuminated during engine operation (if equipped).

OPERATING

Warming Up

NOTICE

Allow engine to warm up sufficiently (3 to 5 minutes at idle) before applying a load. This will allow oil to reach all engine parts, and allow piston clearance to reach design specifications.

NOTICE

While warming up the engine, make sure the warning lights (oil pressure and charging light) on the dash are not on. These lights must not be illuminated during engine operation.

After the engine starts, gradually return the choke lever to the "Fully open" position.

To warm up the engine, run it for 3 to 5 minutes with the throttle lever in the same position (halfway) before putting the equipment under load. Then, move the throttle lever to its "FAST" position.

Engine Inclination

This engine will operate continuously at angles up to 25° in any direction.

Refer to the operating instructions of the equipment this engine powers. Because of equipment design or application, there may be more stringent restrictions regarding the angle of operation.

NOTICE

Do not operate this engine continuously at angles exceeding 25° in any direction. Engine damage could result from insufficient lubrication.

STOPPING

Stopping the Engine

NOTICE

Engine damage can occur from run-on or after-burning if engine is stopped suddenly from high speed loaded operation. Reduce engine speed to idle for one minute before shutting engine off.

AWARNING

Leaving the equipment with the key hanging in the ignition can allow operation by someone who does not know how to operate it. It may cause serious accident with injury. Always remove the key from unattended equipment.

Ordinary Stop

- Move throttle lever to "SLOW" speed position.
- Keep running at the "SLOW" speed for about one minute.
- Turn the ignition key to "OFF" position.
- Turn the fuel tap lever on the equipment to "OFF" position.

Emergency Stop

- Immediately turn the ignition key to "OFF" position.
- Turn the fuel tap lever on the equipment to "OFF" position.

ADJUSTMENT

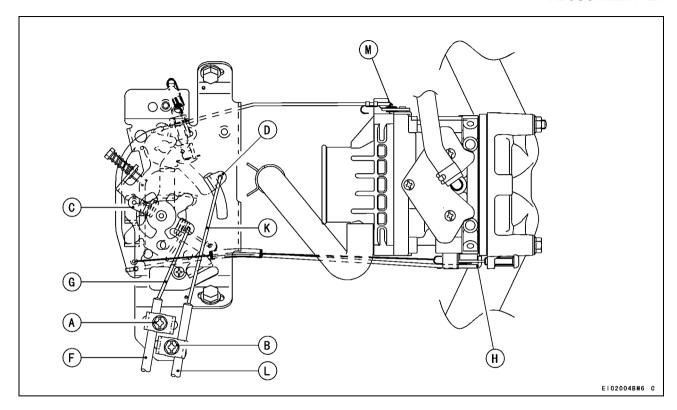
Throttle Cable Installation, Adjustment

- Link the throttle cable (G) to the speed control lever (C) and loosely clamp the throttle cable outer housing (F) with the cable clamp bolt (A).
- Move the throttle lever to "FAST" position.
- Pull up the outer housing (F) of the throttle cable until the inner wire (G) has almost no slack, and tighten the cable clamp bolt (A).
- Move the throttle lever to "SLOW" position. Make sure that the carburetor throttle valve (H) is moved smoothly.

Choke Cable Installation, Adjustment

- Link the choke cable (K) to the choke control lever (D), and loosely clamp the choke cable outer housing (L) with the cable clamp bolt (B).
- Move the equipment choke control to "OPEN" position. Make sure that the carburetor choke valve (M) is fully opened.
- Pull up the outer housing (L) of the choke cable until the inner wire (K) has almost no slack, and tighten the cable clamp bolt (B).
- Move the equipment choke control to "CHOKE" position. Make sure that the carburetor choke valve (M) is completely closed.
- Make sure that the choke valve turns from fully closed position to fully opened position when actuating the equipment choke control.

ADJUSTMENT 21



Engine Speed Adjustment

NOTE

 Do not tamper with the governor setting or the carburetor setting to increase the engine speed. Every carburetor is adjusted at the factory and a cap or stop plate was installed on each mixture screw. Olf adjustment is needed, it must be performed by an authorized Kawasaki engine dealer or equally qualified service facility.

MAINTENANCE

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any nonroad engine repair establishment or individual.

Periodic Maintenance Chart

⚠ WARNING

Prevent accidental starting during engine service by removing the spark plug caps.

NOTE

- O The service intervals indicated are to be used as a guide. Service should be performed more frequently as determined by operating conditions.
 - ♦ : Service more frequently under dusty conditions.
 - ♦ : Service to be performed by an authorized Kawasaki engine dealer or equally qualified service facility.

24 MAINTENANCE

	INTERVAL					
MAINTENANCE		Every 100 hr.	Every 200 hr.	Every 250 hr.	Every 300 hr.	Every 500 hr.
Check and add engine oil.	•					
Check for loose or lost nuts and screws.	•					
Check for fuel and oil leakage.	•					
Check battery electrolyte level.	•					
Check or clean air intake screen.	•					
Check and clean dust and dirt from oil cooler fins.		•				
 Clean dust and dirt from cylinder and cylinder head fins. 		•				
Tighten nuts and screws.		•				
Change engine oil.	Е	very 100 h	nours or 1 y	ear whiche	ever comes	first
Clean and regap spark plugs.		•				
Change oil filter.			•			
Replace air cleaner primary element.				•		
Check air cleaner secondary element				•		
♦ Clean combustion chamber.					•	
♦ Check and adjust valve clearance.					•	
♦ Clean and lap valve seating surface.					•	
◆ Replace air cleaner secondary element						•

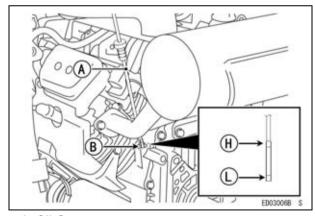
Oil Level Check

Check oil level daily and before each time of operation. Be sure oil level is maintained. See "PREPARATION" chapter.

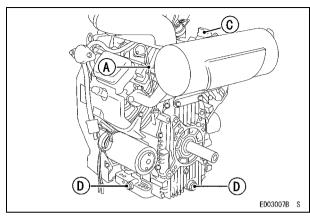
★ If the oil level is too high, remove the excess oil by loosening the drain plugs (D).

Engine Oil Capacity

	1.4 L (1.5 US·qt)
FH770D	[when oil filter is not removed]
רחווטט	1.6 L (1.7 US·qt)
	[when oil filter is removed]



A. Oil Gauge B. Oil Gauge Hole



C. Oil Filler Cap D. Oil Drain Plugs

Oil Change

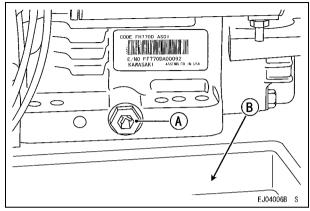
Change oil every 100 hours or 1 year whichever comes first.

- Run the engine to warm oil.
- Be sure the engine (equipment) is level.
- Stop the engine.
- Remove the oil drain plugs (A) and drain the oil into suitable container while engine is warm.

MARNING

Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm level before draining and handling oil.

- Install the oil drain plug.
- Remove oil gauge and refill with fresh oil (See "FUEL AND OIL RECOMMENDATIONS" chapter).
- Check the oil level (See "PREPARATION" chapter for oil level check).



- A. Oil Drain Plug
- B. Suitable Container

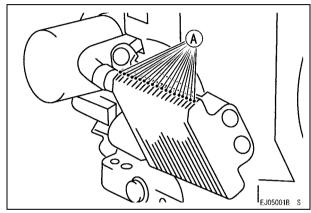
riangle Warning

Engine oil is a toxic substance. Dispose of used oil properly. Contact your local authorities for approved disposal methods or possible recycling.

Oil Cooler Service

Check and clean oil cooler every 100 hours.

 Clean dirt off the outside fins with a brush or with compressed air.



A. Oil Cooler Fins

Oil Filter Change

• Change the oil filter every 200 hours of operation.



Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm before attempting to remove oil filter.

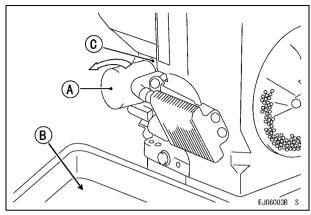
• Drain engine oil into a suitable container (B).

NOTICE

Before removing the oil filter, place suitable pan under filter connection.

- Rotate the oil filter (A) counterclockwise to remove it
- Coat a film of clean engine oil on seal of new filter.
- Install new filter rotating it clockwise until seal contacts mounting surface (C). Then rotate filter 3/4 turn more by hand.
- Supply engine oil as specified.
- Run the engine for about 3 minutes, stop engine, and check oil leakage around the filter.
- Add oil to compensate for oil level drop due to oil filter capacity (See "PREPARATION" chapter for oil level check).

28 MAINTENANCE



- A. Oil Filter
- **B. Suitable Container**
- C. Mounting Surface

MARNING

Engine oil is a toxic substance. Dispose of used oil properly. Contact your local authorities for approved disposal methods or possible recycling.

Air Cleaner Service

These air cleaner elements are not recommended to be cleaned, and each air cleaner element should be replaced with the new one at the maintenance time as shown in the maintenance chart.

NOTICE

To prevent excessive engine wear, do not run the engine with the air cleaner removed.

NOTICE

Do not wash air cleaner elements.

Do not oil air cleaner elements.

Do not use pressurized air to clean air cleaner elements.

NOTE

Operating in dusty condition may require more frequent maintenance then above.

Primary Element

Replace the primary element every 250 hrs.

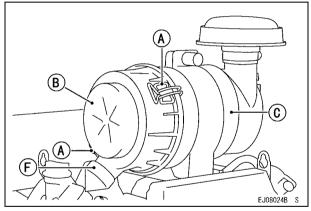
Secondary Element

- Replace the secondary element with a new one if dirty when primary elements is checked.
- Replace the secondary element every 500 hrs.

Cap (Dust Ejector Valve)

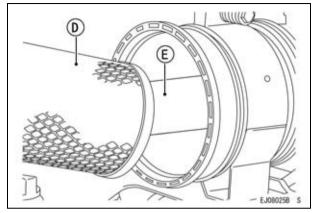
Push open the cap on the case of the air cleaner body to expel dust and/or water accumulated inside.

- Unfasten the two retaining clamps (A) and remove the case (B) from the air cleaner body (C).
- Remove the primary element (D) and the secondary element (E) from the air cleaner body by pulling out them.



A. Retaining Clamps

- B. Case
- C. Air Cleaner Body
- F. Cap (Dust Ejector Valve)



D. Primary Element E. Secondary Element

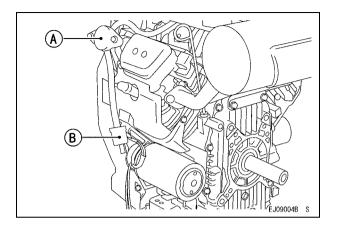
- Install the new air cleaner elements into the air cleaner body.
- Reinstall the case so cap (F) is facing down and securely fasten the two retaining clamps.

Fuel Filter and Fuel Pump Service

MARNING

Many solvents are highly flammable and may cause serious burns. Improper use of solvents can result in fire or an explosion. Do not use gasoline or low flash-point solvents to clean the fuel filter and/or the fuel pump. Clean only in a well-ventilated area away from sources of sparks or flame, including any appliances with a pilot light.

- The fuel filter (B) can not be disassembled. If the fuel filter gets clogged, replace it with a new one.
- The fuel pump (A) can not be disassembled. If the fuel pump fails, replace it with a new one.



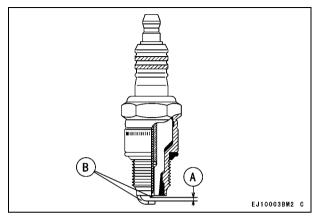
Spark Plug Service

MARNING

Engines can become extremely hot during normal operation. Hot engine components can cause severe burns. Stop the engine and allow it to cool before checking spark plugs.

Clean or replace the spark plugs and reset spark plug gap (A) every 100 hours of operation.

- Disconnect the spark plug caps from the spark plugs and remove the spark plugs.
- Clean the electrodes (B) by scraping with a wire brush to remove carbon deposits.
- Inspect for cracked porcelain or other wear and damage. Replace the spark plug with a new one if necessary.
- Check the spark plug gap and reset if necessary.
 The gap must be 0.75 mm (0.030 in). To change the gap, bend only the side-electrode, using a spark plug tool.
- Install and tighten the spark plugs to 22 N·m (2.2 kg·m, 16 ft·lb).
- Fit the spark plug caps on the spark plugs securely.
- Pull up the spark plug caps lightly to make sure of the installation of the spark plug caps.



A. Spark Plug Gap B. Electrodes

RECOMMENDED SPARK PLUG
NGKBPR4ES

Cooling System Cleaning

MARNING

Prevent accidental starting during engine service by removing the spark plug caps.

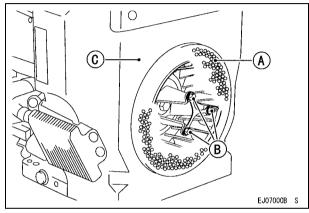
- Before each use, check that the air-intake (rotary) screen (A) is free from grass and debris and clean by removing bolts (B) and air intake screen with spacer if necessary.
- To prevent engine overheating, check and clean the cooling fins and engine shroud (C) every 100 hrs to remove grass, chaff or dirt clogging from the cooling system. To be completed by an authorized Kawasaki engine dealer or equally qualified service facility.

NOTICE

Do not run engine before all cooling system parts are reinstalled to keep cooling and carburetion as intended.

[Bolts Size, Tightening Torque]

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	Bolts	Size	Length	Tightening-torque
	В	M6	12 mm	5.9 N·m (0.6 kg·m, 52 in·lb)



- A. Air Intake Screen
- B. Bolts
- C. Engine Shroud

STORAGE

Engine Storage Procedure

When not operating your Kawasaki engine more than 30 days, add fuel stabilizer to fuel tank and run engine for 5 minutes then drain the fuel tank.

After draining the fuel tank, run the engine at low idle until the engine stalls.

A WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Drain fuel before storing the equipment for extended periods. Drain gasoline in a well-ventilated area away from any source of flame or sparks, including any appliances with a pilot light. Store gasoline in an approved container in safe location.

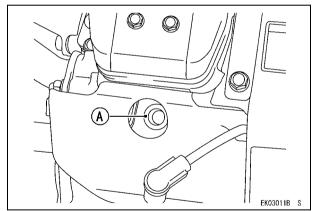
AWARNING

Gasoline is a toxic substance. Dispose of gasoline properly. Contact your local authorities for approved disposal methods.

Remove the spark plugs and pour approx. 1 ~ 2
 mL (1/2 teaspoon) of engine oil through the spark

plug holes and then screw the spark plugs in after turning the engine a few times. Slowly turn the engine until you feel compression and then leave it there. This blocks the air inside the cylinder and prevents rust inside the engine.

- Wipe the body with oily cloth.
- Change engine oil for next use after period of storage (refer to "Oil Change" section in "MAINTE-NANCE" chapter).



A. Spark Plug Hole

TROUBLESHOOTING GUIDE

If the engine malfunctions, carefully examine the symptoms and the operating conditions, and use the table below as a guide to troubleshooting.

TROUBLESHOOTING GUIDE 35

Symptom		Probably Cause	Remedy
Engine won't	Insufficient	Loose spark plugs	Tighten properly
start or output is low	compression	Loose cylinder head bolts	♦
low		Faulty pistons, cylinders, piston rings, or head gaskets	
		Faulty valves	
	No fuel to	No fuel in fuel tank	Fill fuel tank
	combustion chamber	Fuel tap lever not in "ON" position	Turn fuel tap lever to "ON" position.
	Chamber	Blocked fuel filter or tube	Change fuel filter or fuel tube
		Blocked air vent in tank cap	Clean fuel tank cap
		Faulty carburetor	♦
	Spark plugs fouled by fuel	Over-rich fuel/air mixture	Open choke.
		Clogged air cleaner elements	Change air cleaner elements
		Faulty carburetor	♦
		Incorrect grade/type of fuel	Change fuel
		Water in fuel	
	No spark or weak spark	Faulty spark plugs	Replace spark plugs
		Faulty ignition coil	♦
		Engine switch left in "OFF" position	Turn engine switch to "ON" position

36 TROUBLESHOOTING GUIDE

Symptom		Probably Cause	Remedy
Low output	Engine	Clogged air cleaner	Change air cleaner elements
	overheats	Air-intake screen or cooling air path clogged with dirt	Clean
		Insufficient engine oil	Replenish or change oil
		Carbon build-up in combustion chamber	♦
	Engine speed won't increase	Faulty governor	⋄

♦ : Service to be performed by an authorized Kawasaki engine dealer or equally qualified service facility.

ENVIRONMENTAL PROTECTION

To protect our environment, properly discard used batteries, engine oil, gasoline, coolant, or other components that you might dispose of in the future.

Consult an authorized Kawasaki engine dealer or equally qualified service facility or local environmental waste agency for their proper disposal procedure.

SPECIFICATIONS

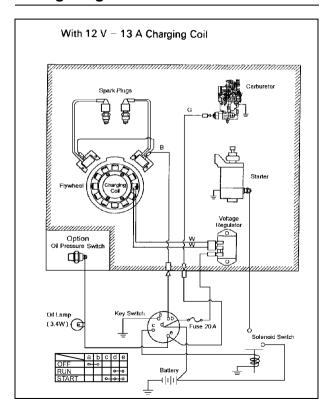
	FH770D
Type of engine	Air- cooled, 4-stroke OHV, V-twin cylinder, gasoline engine
Bore × Stroke	80 × 76 mm (3.15 × 2.99 in.)
Displacement	764 mL (46.6 cu.in)
Ignition System	Magneto ignition
Direction of rotation	Counterclockwise facing the PTO Shaft
Starting system	Electric starter

NOTE

O Specifications subject to change without notice.

WIRING DIAGRAM

Wiring Diagram



NOTE

O Portion Surrounded by hatching Shows Kawasaki Procurement Parts.

A WARNING

Prevent sparks and/or electrical system damage by removing the negative (-) cable from the battery before attempting any repair or maintenance.

Battery Capacity Recommended

Model	Battery Capacity
Lawn Mower	12 V 200 CCA Class
Snow Thrower	12 V 280 CCA Class

! WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

For repair or maintenance assistance contact an authorized Kawasaki engine dealer or equally qualified service facility.

For warranty assistance please contact an authorized Kawasaki engine dealer.

Kawasaki engine dealer locator can be found on our website: www.kawasakienginesusa.com

For further assistance email:

kawasakienginesupport@kmc-usa.com or call 877-364-6404



