Kawasaki

ENGINES

OWNER'S MANUAL
MANUAL DEL PROPIETARIO

4-STROKE AIR-COOLED V-TWIN GASOLINE ENGINE
MOTOR GASOLINA DE 4 TIEMPOS,
V-GEMELO Y REFRIGERADO POR AIRE

FX481V
FX541V
FX600V

P/N 99920-2295-04

ENGLISH

General-purpose Engine
Owner's Manual

Original instructions

SAFETY AWARENESS

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

⚠ 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

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

READ THE OPERATING INSTRUCTIONS OF THE EQUIPMENT THIS ENGINE POWERS.

(2): Apr. 2018. (M)

READ THIS FIRST

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

⚠ 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 cool 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 B)

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 recommends 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

○ *When 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 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 system
- Fuel filter element
- Air cleaner elements
- Crankcase
- Cylinder heads
- Breather chamber and internal parts
- Intake pipe and tube
- Muffler or any internal portion of the muffler

FOREWORD

This Owner's Manual provided to aid you in the safe and reliable operation of your Engine. READ AND UNDERSTAND IT THOROUGHLY BEFORE OPERATING YOUR ENGINE.

READ THE OPERATING INSTRUCTIONS OF THE EQUIPMENT THIS ENGINE POWERS.

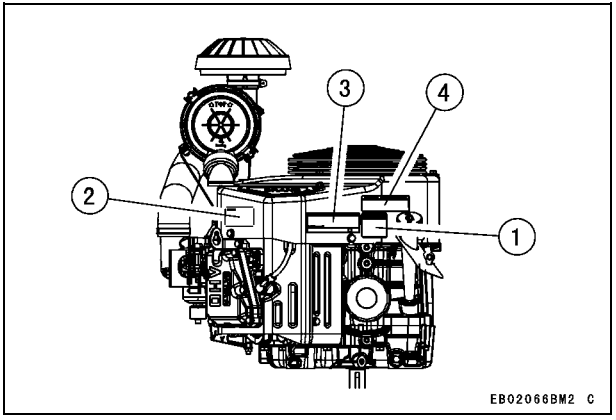
To ensure a long, trouble-free life for your Engine, give it proper care and maintenance in accordance with this Owner's Manual.

Please note that the photographs and illustrations shown in this manual are made based on Model FX600V as a typical example among other similar models.

TABLE OF CONTENTS

GENERAL INFORMATION

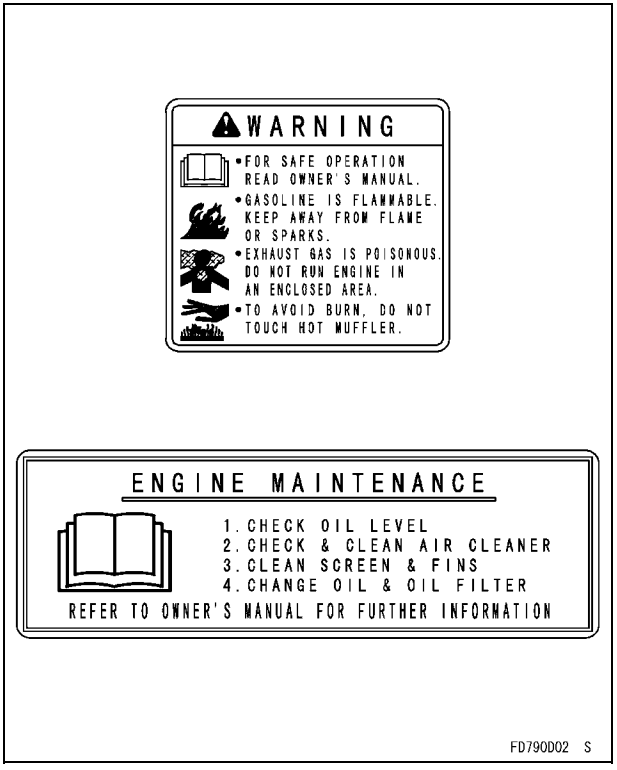
Label Location



1. Warning Label
2. Engine Serial Number Label
3. Important Engine Information Label
4. Engine Maintenance Label

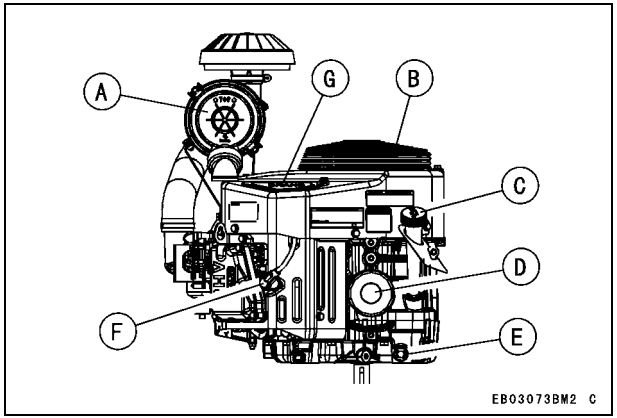
The engine serial number is your only means of identifying your particular engine from others of the same model type.

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

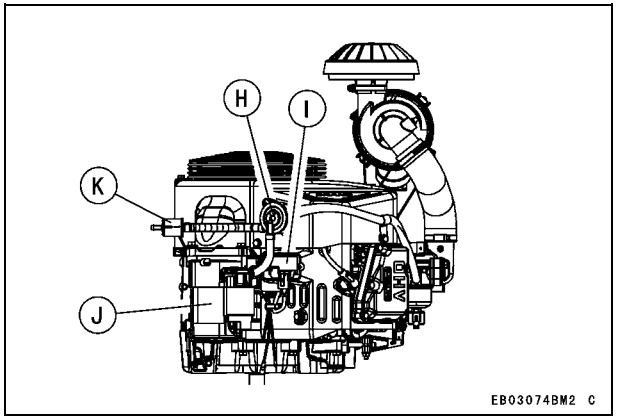


Parts Location

[Electric Starter Model]

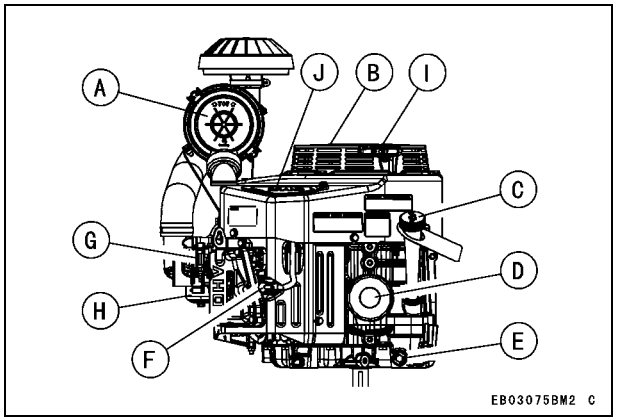


A. Air Cleaner
B. Air Inlet Guard
C. Oil Filler Cap/Oil Gauge
D. Oil Filter
E. Oil Drain Plug
F. Spark Plugs/Spark Plug Caps
G. Cleanout Covers

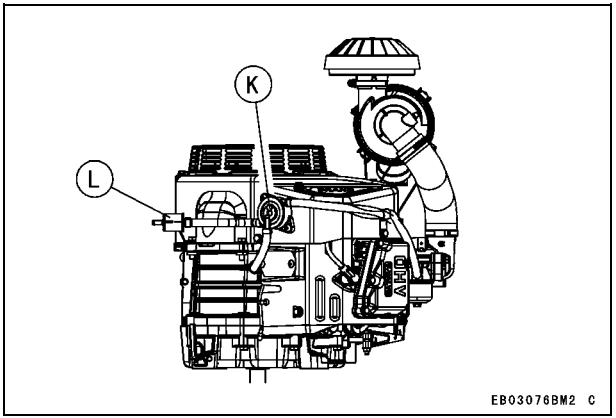


H. Fuel Pump
I. Voltage Regulator
J. Electric Starter
K. Fuel Filter

[Recoil Starter Model]



A. Air Cleaner
B. Recoil Starter
C. Oil Filler Cap/Oil Gauge
D. Oil Filter
E. Oil Drain Plug
F. Spark Plugs/Spark Plug Caps
G. Control Panel
H. Carburetor
I. Recoil Starter Grip
J. Cleanout Covers



K. Fuel Pump
L. Fuel Filter

Tune-up Specifications

ITEM	Specifications
Ignition Timing	Unadjustable
Spark Plugs: Gap	NGK BPR4ES 0.75 mm (0.030 in.)
Low Idle Speed	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

○ *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

FX481V FX541V FX600V	1.5 L (1.6 US·qt) [when oil filter is not removed]
	1.7 L (1.8 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

- *If “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

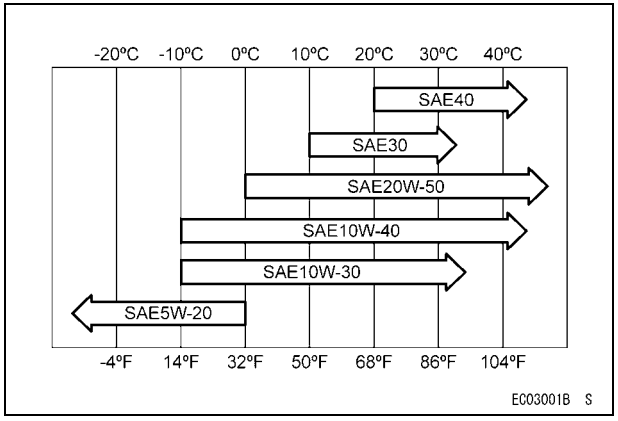
You may use gasoline containing up to 5% methanol by volume, as long as it also contains cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts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

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

○ *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

⚠ 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.

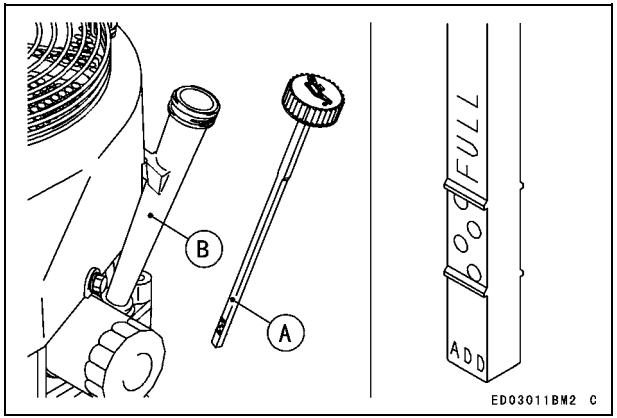
- Place the engine on level surface. Clean area around the oil gauge before removing it.
- Remove the oil gauge (A) and wipe it with a clean cloth.
- Pour the oil slowly to “FULL” mark on the oil gauge.
- Insert the oil gauge into tube (B) WITHOUT SCREWING IT IN.
- Remove the oil gauge (A) to check the oil level. The level should be between “ADD” and “FULL” marks. Do not overfill.
- Install and tighten the oil gauge (A).

NOTICE

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

Engine Oil Capacity

FX481V FX541V FX600V	1.5 L (1.6 US·qt) [when oil filter is not removed]
	1.7 L (1.8 US·qt) [when oil filter is removed]



NOTICE
The engine is shipped without engine oil.

STARTING

Starting the Engine

⚠ 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.

⚠ WARNING

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

○ *Be aware of the following in order to start the engine easily in cold weather.*

○ Use proper oil for expected temperature (See "FUEL AND OIL RECOMMENDATIONS" chapter).

○ Use fresh gasoline.

○ Protect the engine or the equipment from direct exposure to weather when not in operation.

NOTE

○ *Follow the operating instructions of the equipment this engine powers.*

- Before starting the engine, disconnect all possible external loads.
- Open the fuel valve (A) on the equipment.
- Move throttle lever on dash to half throttle position.
- Use full choke when the engine is cold, but in hot weather or when the engine is already warm, use half choke or leave the choke fully open.

[Electric Starter Model]

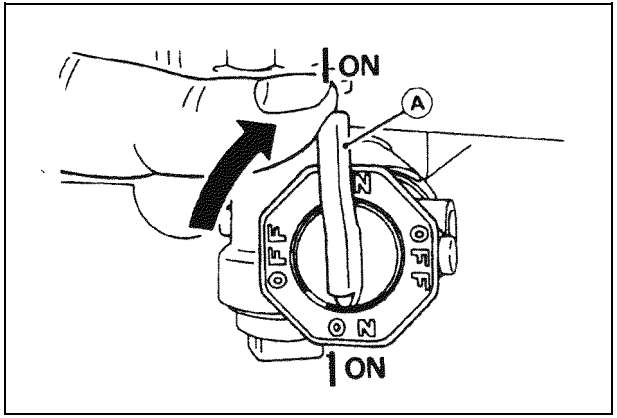
- Put the key into the ignition switch.
- Turn the key (A) to the START position on the ignition switch. Usually engine will start within 3 seconds.

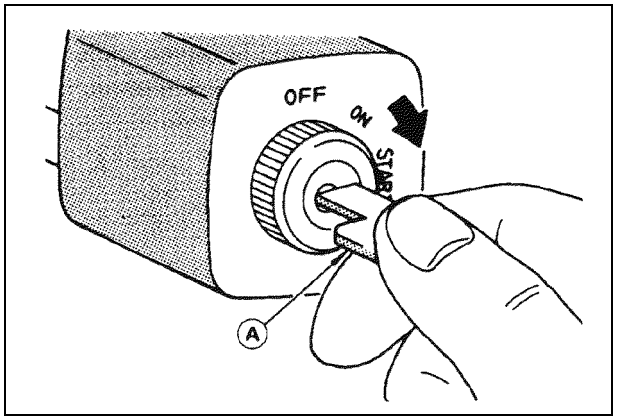
NOTICE

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.

NOTE

○ *When the engine is very warm, or when the engine does not start immediately, DO NOT keep trying to start it with the choke closed as this will cause flooding and make starting more difficult.*
○ *Instead, fully open the choke and start the engine.*





NOTICE

Whenever you start engine, make sure warning lamp is not illuminated after engine starts. If warning lamp comes on, stop engine immediately and check oil level (If equipped).

- After starting the engine, gradually return the choke lever to the fully open position.

[Recoil Starter Model]

- Put the key into the ignition switch.
- Turn the key to the ON position on the ignition switch.
- Pull the recoil starter grip slowly until you feel compression, then pull it briskly.

NOTICE
Do not let recoil cord snap back by itself. This may damage the cord or recoil starter assembly.

NOTE

○ *If the engine won't start in three pulls, open the choke and try again.*

OPERATING

Warming Up

After the engine starts, move the throttle lever on the equipment to halfway between “FAST” and “SLOW”.

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 on the equipment to its “FAST” position.

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 lamp (oil pressure) on dash is not on. The warning lamp must not be illuminated during engine operation (if equipped).

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

⚠ WARNING

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 the throttle lever to **"SLOW"** speed position.
- Keep running at the "SLOW" speed for about one minute.

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.

- Turn the engine switch or the switch key to "OFF" position.

Emergency Stop

- Immediately turn the engine switch or the switch key to "OFF" position.
- Close the fuel valve on the equipment.

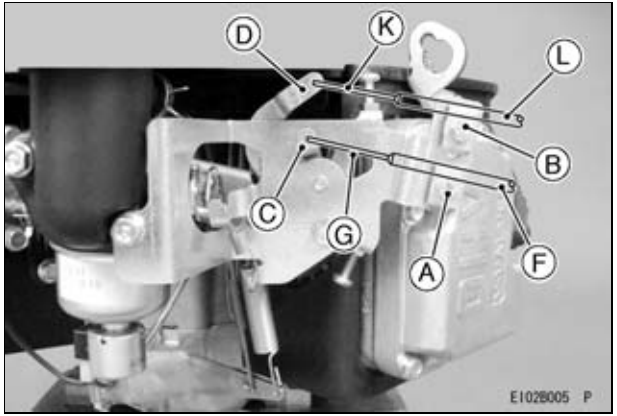
ADJUSTMENT

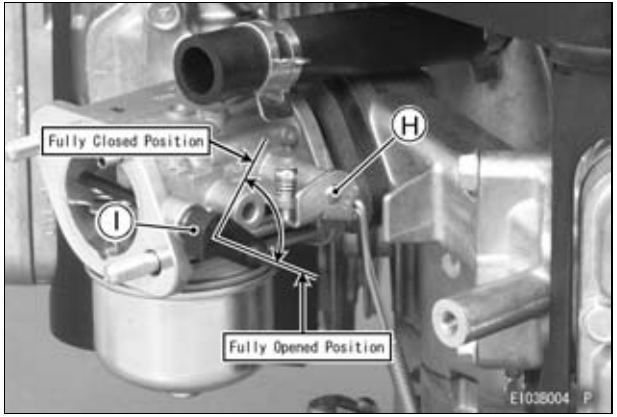
Throttle Cable Installation, Adjustment

- 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 (I) 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 (I) is completely closed.
- Make sure that the choke valve turns from fully closed position to fully opened position when actuating the equipment choke control.





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 is installed on each mixture screw.*
- *If any adjustment is necessary, 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

○ *The service intervals can be used as a guide. Service more frequently as necessary by operating conditions.*

♦ : Service more frequently under dusty conditions.
◊ **:** Service to be performed by an authorized Kawasaki engine dealer or equally qualified service facility.

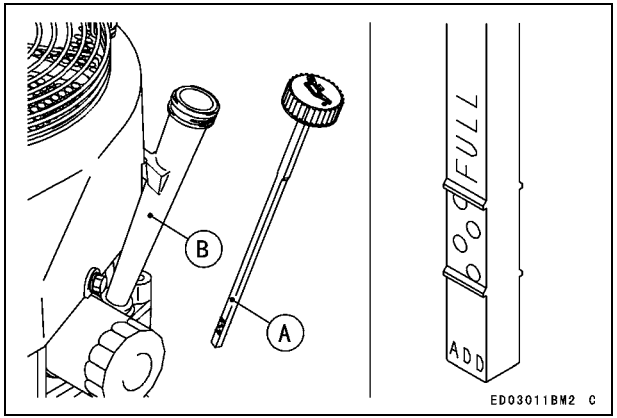
MAINTENANCE	INTERVAL					
	Daily	Every 50 hr.	Every 100 hr.	Every 200 hr.	Every 250 hr.	Every 300 hr.
Check and add engine oil.	●					
Check for loose or lost nuts and screws.	●					
Check for fuel and oil leakage.	●					
Check battery electrolyte level.	●					
♦ Check or clean air inlet screen.	●					
Check cleanout cover.		●				
♦ ◊ Clean dust and dirt from cylinder and cylinder head fins.			●			
Tighten nuts and screws.			●			
Change engine oil.	Every 100 hours or 1 year whichever comes first					
Clean and regap spark plugs.			●			
Change oil filter.				●		
♦ Replace air cleaner element					●	
◊ Clean combustion chamber.						●
◊ Check and adjust valve clearance.						●
◊ Clean and lap valve seating surface.						●

Oil Level Check

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

Engine Oil Capacity

FX481V FX541V FX600V	1.5 L (1.6 US·qt) [when oil filter is not removed]
	1.7 L (1.8 US·qt) [when oil filter is removed]



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 plug (A) and drain the oil into suitable container while engine is warm.

⚠ WARNING

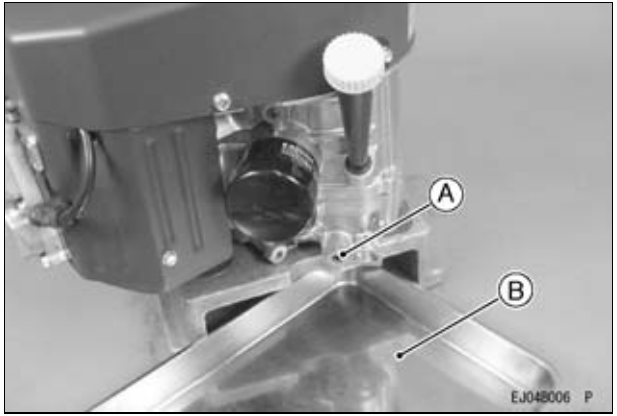
Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm level before draining and handling oil.

- Replace the O-ring of the oil drain plug with a new one.
- Apply grease to the O-ring.
- Tighten the oil drain plug.

Tightening Torque

Oil Drain Plug:
6.9 N·m (0.70 kgf·m, 61 in·lb)

- 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

⚠ WARNING

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

Oil Filter Change

- Change the oil filter every 200 hours of operation.

⚠ WARNING

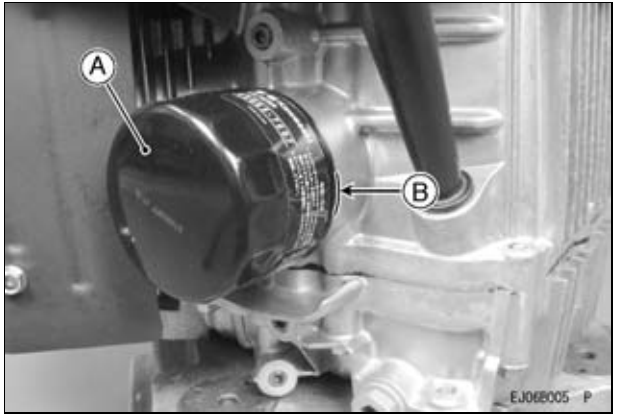
Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm level before attempting to remove oil filter.

- Drain engine oil into a suitable container.

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 (B). 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).



A. Oil Filter
B. Mounting Surface

⚠ WARNING

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

Heavy Duty Air Cleaner

These air cleaner elements are not recommended to be cleaned. Replace each air cleaner element with a 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.*

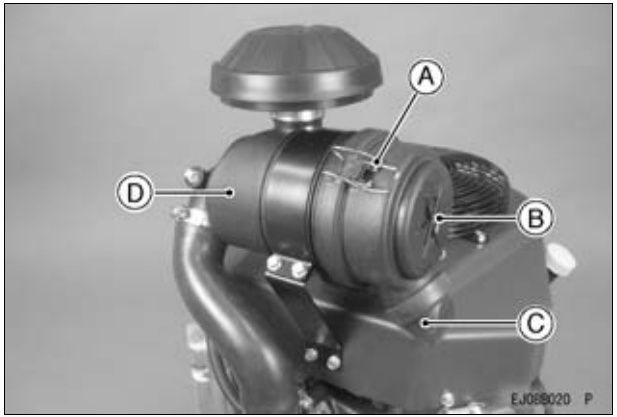
Air Cleaner Element

Replace the air cleaner element every 250 hrs.

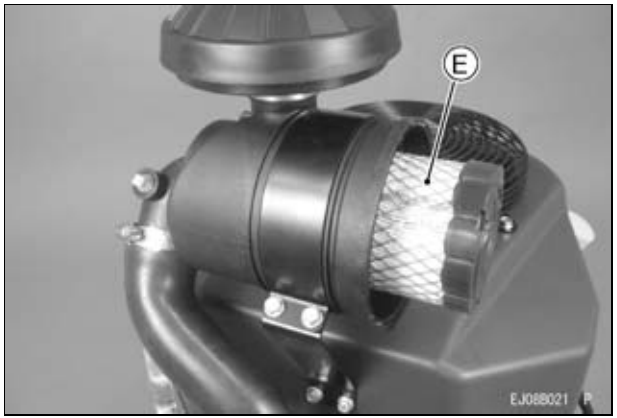
Cap (Dust Ejector Valve)

Push and open the cap (C) 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 (D).
- Remove the air cleaner element (E) from the air cleaner body by pulling out them.



A. Retaining Clamps
B. Case
C. Cap (Dust Ejector Valve)
D. Air Cleaner Body



E. Air Cleaner Element

- Install the new air cleaner element into the air cleaner body.
- Reinstall the case and the cap (C) then securely fasten the two retaining clamps.

Spark Plug Service

⚠ WARNING

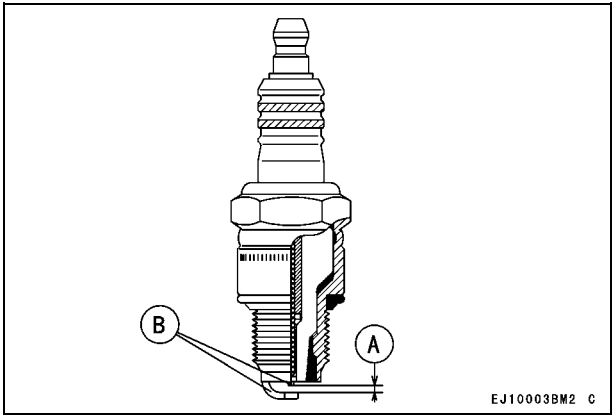
Engines can become extremely hot during normal operation. Hot engine components can cause severe burns. Stop the engine and allow it to cool before checking spark plugs.

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 kgf·m, 16 ft·lb). Connect the spark plug caps.

RECOMMENDED SPARK PLUG

NGK BPR4ES



A. Spark Plug Gap
B. Electrodes

Fuel Filter and Fuel Pump Service

⚠ WARNING

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

Cooling System Cleaning

Before each use, check that the air inlet (rotary) screen (G) is free from grass and debris and clean if necessary. When checking or cleaning the air inlet screen, loosen the screws (B) and remove air inlet guard (A). Every 50 hours of operation, check dust or debris inside fan housing. To check inside, remove the cleanout covers (H) and see inside from the inspection ports of fan housing. Clean or blow the dust if needed. If it is difficult to clean the dust with the ports, remove the fan housing and clean the dirt completely. Every 100 hours of operation, check and clean the cooling fins and inside of engine shrouds to remove grass, chaff or dirt clogging the cooling system and causing overheating. When cleaning, remove the air cleaner (F), guard (A), loosen the bolts (P), inlet screen (G), loosen the bolts (D) (E), and then, remove the fan housing (C).

NOTICE

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

[Recoil Starter Model]

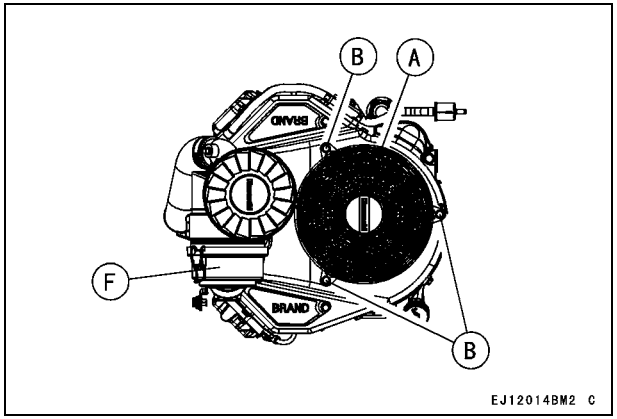
When checking or cleaning the air inlet screen (O), loosen the bolts (J) and remove the recoil starter (I). When checking or cleaning the cooling fins and inside engine shrouds, remove the air cleaner

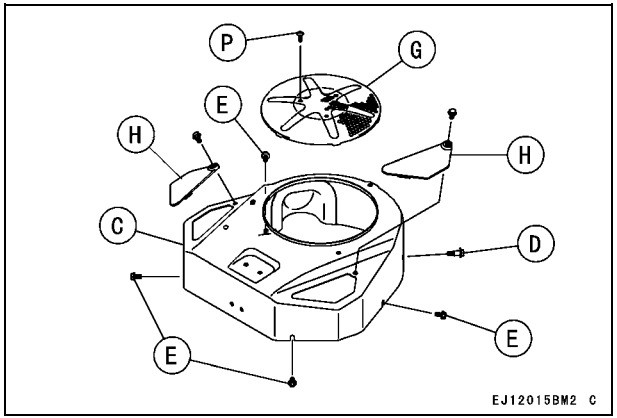
(N) and the recoil starter (I), loosen bolts (L) and (M). And then, remove the fan housing (K).

[Bolts Size, Tightening Torque]

Bolts	Size	Length	Tightening Torque
B	M6	12 mm	5.9 N·m (0.6 kgf·m, 52 in·lb)
D, L	M6	22 mm	8.8 N·m (0.9 kgf·m, 78 in·lb)
E, M	M6	16 mm	8.8 N·m (0.9 kgf·m, 78 in·lb)
P	M5	16 mm	3.0 N·m (0.3 kgf·m, 27 in·lb)

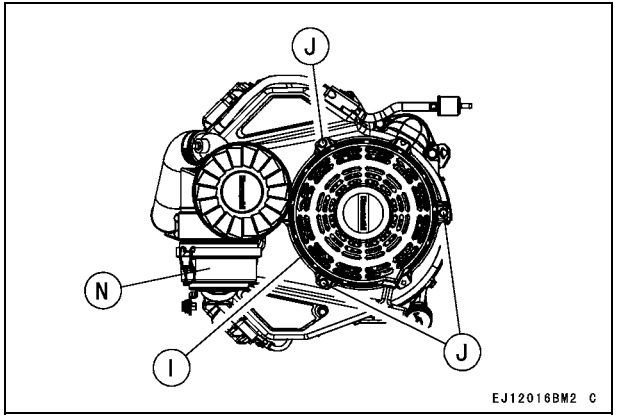
[Electric Starter Model]

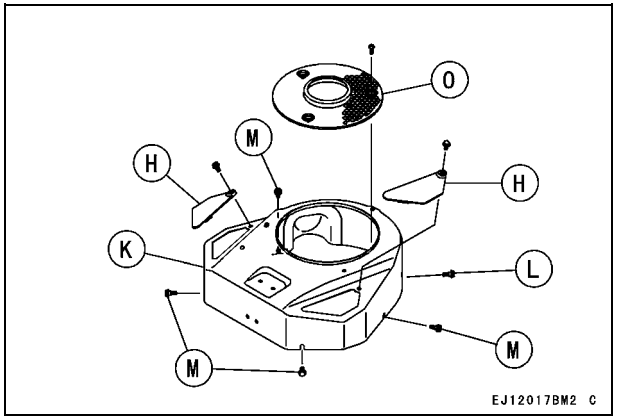




Without Inlet Guard

[Recoil Starter Model]




O
M
H
H
K
L
L
M
M
EJ12017BM2 C

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 engine stalls.

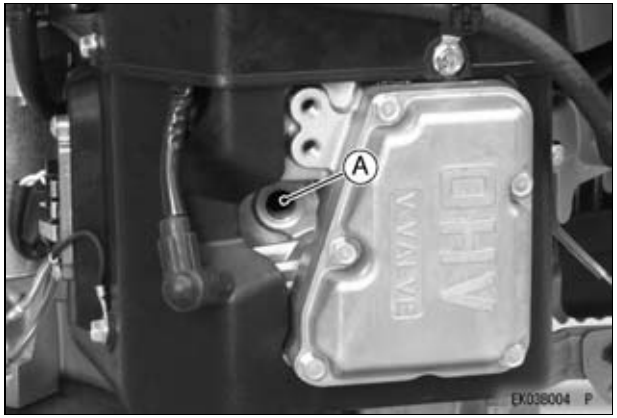
⚠ WARNING

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.

⚠ WARNING

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 (A) 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.
- Wrap the engine with plastic sheeting and store it in a dry place.
- Change engine oil for next use after period of storage (refer to “Oil Change” section in “MAINTENANCE” 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.

Symptom		Probably Cause	Remedy
Engine won't start or output is low	Insufficient compression	Loose spark plugs	Tighten properly
		Loose cylinder head bolts	◊
		Faulty pistons, cylinders, piston rings, or head gaskets	
		Faulty valves	
	No fuel to combustion chamber	No fuel in fuel tank	Fill fuel tank
		Fuel valve not in “ON” position	Open fuel valve lever.
		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	Clogged air cleaner	Clean
		Incorrect grade/type of fuel	Change fuel
		Water in fuel	
		Over rich fuel/air mixture	Open choke. ◊
		Faulty carburetor	◊
	No spark or weak spark	Faulty spark plugs	Replace spark plugs
		Engine switch left in “OFF” position	Turn engine switch to “START” position (See ◊)
		Faulty ignition coil	◊

Symptom		Probably Cause	Remedy
Low output	Engine overheats	Clogged air cleaner	Replace air cleaner element
		Air inlet screen or cooling air path clogged with dirt	Clean
		Insufficient engine oil	Replenish or change oil
		Poor ventilation around engine	Select a better location
		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.
M: For Control Panel Switch Type, move the throttle lever on the equipment away from its low speed end to turn the engine switch to “START” position.

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

	FX481V, FX541V, FX600V
Type	Air-cooled, 4-stroke vertical shaft OHV, gasoline engine
Bore × Stroke	73 × 72 mm (2.88 × 2.84 in.)
Displacement	603 mL (36.8 cu.in)
Ignition Type	Fly wheel magneto fixed timing type
Direction of Rotation	Counterclockwise facing the PTO Shaft
Starting System	Electric starter/Recoil Starter

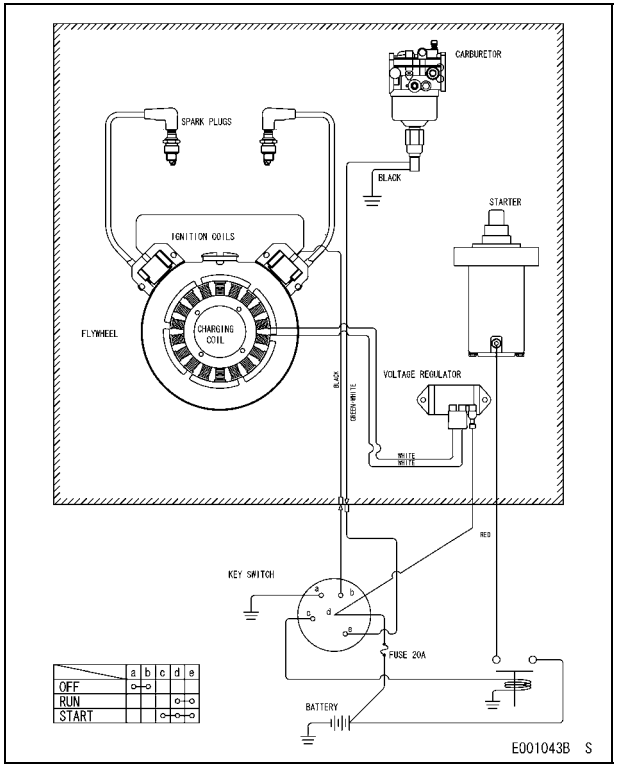
NOTE

○ *Specifications are subject to change without notice.*

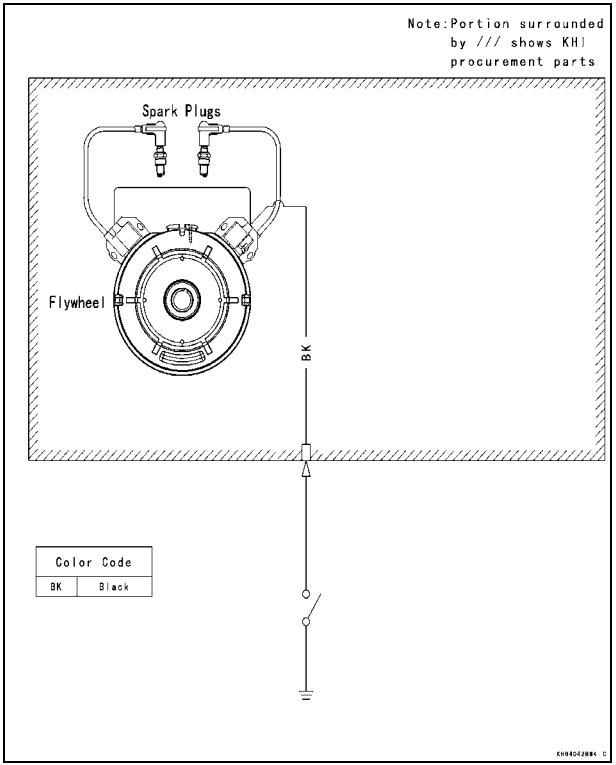
WIRING DIAGRAM

Wiring Diagram

[Electric Starter Model]



[Recoil Starter Model]



NOTE

○ *Portion Surrounded by hatching Shows Kawasaki Procurement Parts.*

⚠ 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

Battery Capacity
12 V 550 CCA Class

⚠ WARNING	⚠ ADVERTENCIA
The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.	El escape del motor de este producto contiene productos químicos que, según el Estado de California, provocan cáncer, defectos de nacimiento o afectan a la fecundidad.

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

Para obtener asistencia en la reparación y mantenimiento, póngase en contacto con un distribuidor autorizado de motores Kawasaki o con un centro de servicio de similar cualificación.
Para obtener asistencia respecto a la garantía, póngase en contacto con un distribuidor autorizado de motores Kawasaki. El localizador de distribuidores de motores Kawasaki se encuentra disponible en nuestro sitio web: www.kawasakienginesusa.com
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