

# **Kawasaki**

**Engines**

# **FX850V**

**4-Stroke Air-Cooled V-Twin Gasoline Engine**

# **OWNER'S MANUAL**

Part No. 99920-2232-04

# 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.

## **CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

## *NOTICE*

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

## **NOTE**

- *This note symbol indicates points of particular interest for more efficient and convenient operation.*

# 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 burnable 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 your 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. 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 lean 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 Emission Compliance Period Engines Greater Than or Equal To 225 cc**

Model Year - 2007 and later

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 recommends the following Environmental Protection Agency (EPA) approved modifications.

However, the models with DFI (Digital Fuel Injection system) does not require high altitude performance adjustment.

### **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.*

#### **Installation Instructions:**

High altitude adjustment requires replacement of carburetor main jets. Installation of these optional parts may be performed by an authorized Kawasaki dealer, or the consumer, following repair recommendations specified in the appropriate Kawasaki Service Bulletin.

#### **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 prohibits the following acts or the causing there of: (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 are the acts listed below:

Do not tamper with the original emission related parts:

- Carburetor or DFI system, and their internal parts
- Spark Plug
- Magneto or electronic ignition system
- Fuel filter element
- Air cleaner element
- Crankcase
- Cylinder head
- Breather chamber and internal parts
- Intake pipe and tube

# 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 HEAVY INDUSTRIES, LTD.**  
**Motorcycle & Engine Company**

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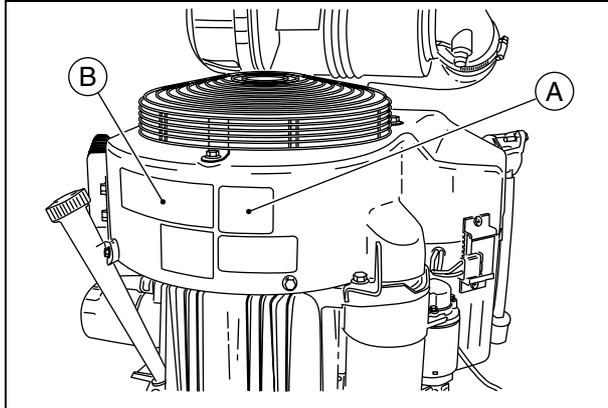
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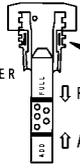
# GENERAL INFORMATION

## Location of Safety Related Labels

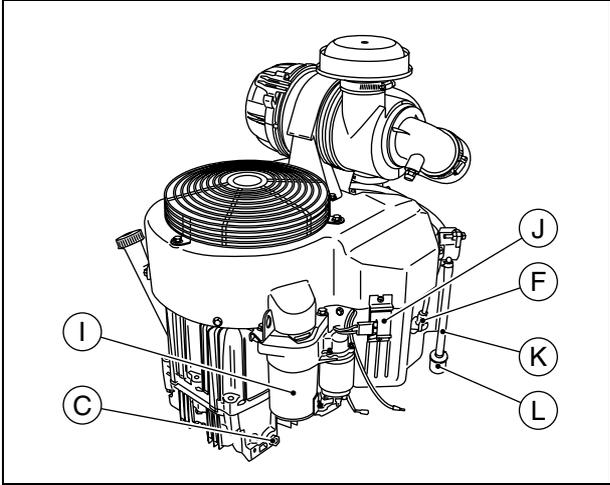
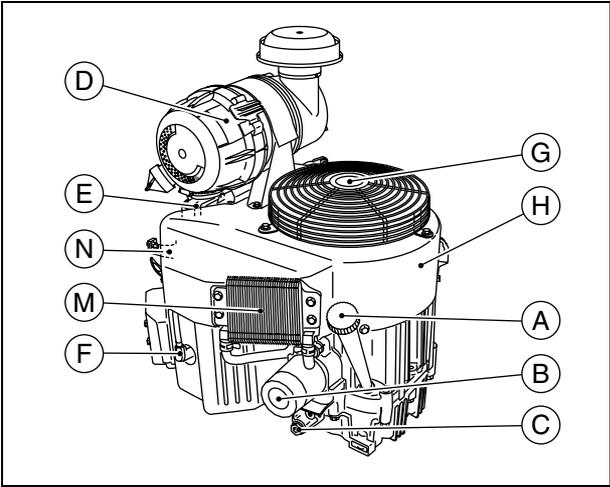


- A. Warning Label
- B. Engine Maintenance



ENGINE MAINTENANCE	CHECK OIL BEFORE STARTING
<ol style="list-style-type: none"><li>1. CHECK OIL LEVEL</li><li>2. CHECK &amp; CLEAN AIR CLEANER</li><li>3. CLEAN FINS &amp; SCREEN</li><li>4. CHANGE OIL &amp; OIL FILTER</li></ol>	 <p>DO NOT TURN CAP ON THREADS WHEN CHECKING OIL LEVEL.</p> <p>(TIGHTEN CAP WHEN FINISHED CHECKING)</p>
REFER TO OWNER'S MANUAL FOR FURTHER INFORMATION	

Location of Parts



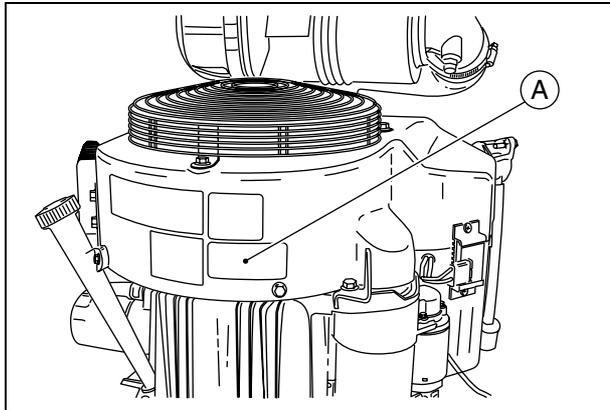
- A. Oil Gauge Filler
- B. Oil Filter
- C. Oil Drain Plug
- D. Air Cleaner
- E. Carburetor
- F. Spark Plug Cap/Spark Plug
- G. Guard
- H. Fan Housing
- I. Electric Starter
- J. Voltage Regulator
- K. Fuel Tube
- L. Fuel Filter
- M. Oil Cooler
- N. Control Panel

## 10 GENERAL INFORMATION

### Engine Serial Number

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 your dealer when ordering parts.



**A. Engine Serial Number**

### Tune-up Specifications

ITEM	Specifications
Ignition Timing	Unadjustable
Spark Plugs: Gap	NGK BPR4ES 0.75 mm (0.030 in)
Low Idle Speed	1550 r/min (rpm)
High Idle Speed	3600 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.*

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**Engine Oil Capacity**

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**Engine Oil Capacity**

FX850V	2.1 L (2.2 US·qt) [when oil filter is not removed]
	2.3 L (2.4 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.

### 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 oxygenates, be sure it is unleaded and meets the minimum octane rating requirement.

The followings 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)

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.

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## Engine Oil

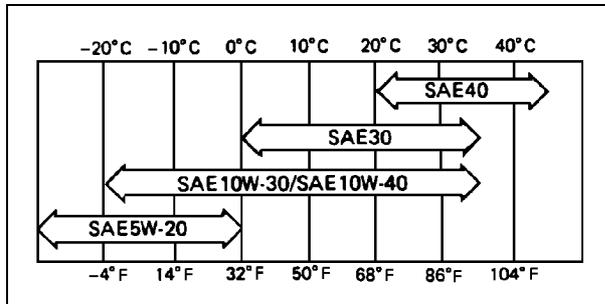
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The following engine oils are recommended.

API Service Classification : SF, SG, SH, SJ or SL.

### Oil Viscosity

Choose the viscosity according to the temperature as follows:



### NOTE

- Using multi grade oils (5W-20, 10W-30, and 10W-40) will increase oil consumption. Check oil level more frequently when using them.

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## PREPARATION

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### Fuel

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 **WARNING**

**Gasoline is extremely flammable and can be explosive under certain conditions, creating the potential for serious burns. Turn the ignition switch to “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.**

- Place the engine on level surface before fueling.
- Remove the fuel tank cap.
- Slowly pour fuel into the tank through the fuel strainer.
- Close the tank cap securely.

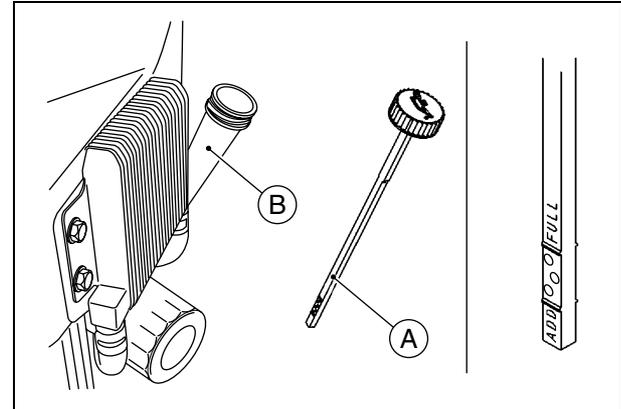
## Engine Oil

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 and wipe it with a clean cloth.
- Pour the oil slowly to "FULL" mark on the oil gauge.
- Insert the oil gauge into tube **WITHOUT SCREWING IT IN.**
- Remove the oil gauge to check the oil level. The level should be between "ADD" and "FULL" marks. Do not overfill.
- Install and tighten the the oil gauge.

## Engine Oil Capacity

FX850V	2.1 L (2.2 US·qt) [when oil filter is not removed]
	2.3 L (2.4 US·qt) [when oil filter is removed]



**A. Oil Gauge**  
**B. Tube**

### NOTICE

**The engine is shipped without engine oil.**

# STARTING

## Start 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

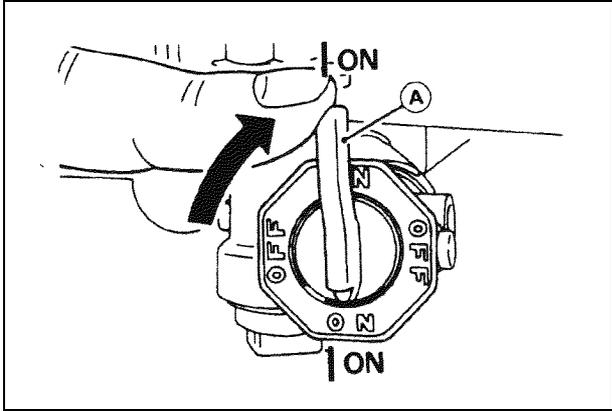
- *Be aware of the following in order to start the engine easily in cold weather.*

- 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.
- Before starting the engine, disconnect all possible external loads.
  - Open the fuel valve on the equipment.
  - Put the engine switch key into the engine switch. For Control Panel Switch Type, move the throttle lever on the equipment to its halfway position between "SLOW" speed and "FAST" speed. Moving the lever away from its low speed end turns ignition on.

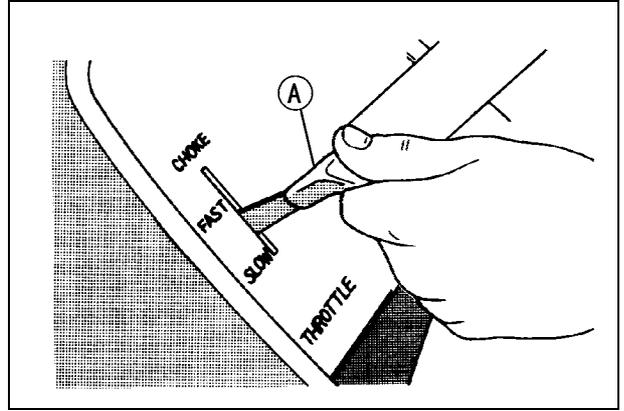
### [Separate Choke type]

**For a Cold Engine** - Place the choke control lever into "CHOKE" position.

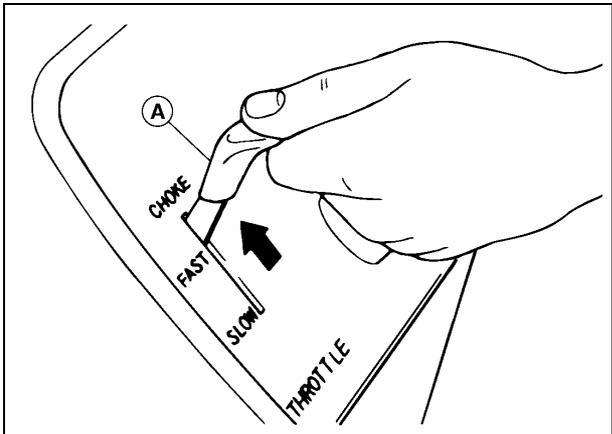
- After starting the engine, gradually return the choke control lever to the fully open position.



A. Fuel Valve



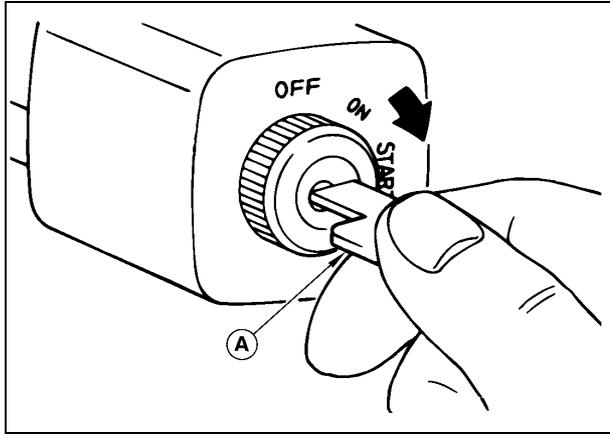
A. Throttle Lever



A. Throttle Lever

## 18 STARTING

- Put the switch key into the engine switch.
- Turn the switch key to the START position on the equipment. Normally the engine will start within 3 seconds.



A. Switch Key

### **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**

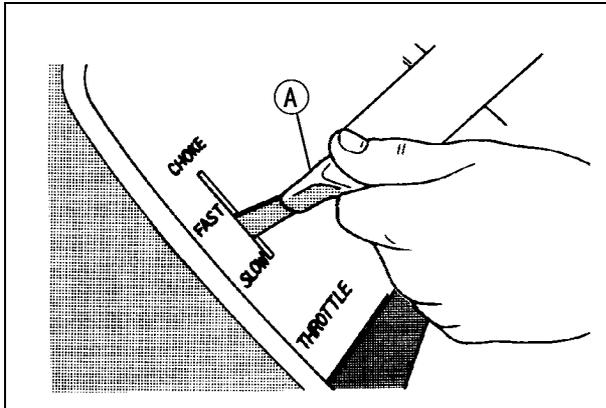
**Whenever you start engine, make sure warning light is not illuminated after engine starts. If warning light comes on, stop engine immediately and check oil level (If equipped).**

# 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 load position (halfway) before putting the equipment under load. Then, move the throttle lever on the equipment to its "FAST" position.



A. Throttle Lever

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

## 20 OPERATING

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### Engine Inclination

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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

### Ordinary Stop

- Move throttle lever to "SLOW" position.
- Lower the engine speed to the idle speed. Keep running at the idle 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.

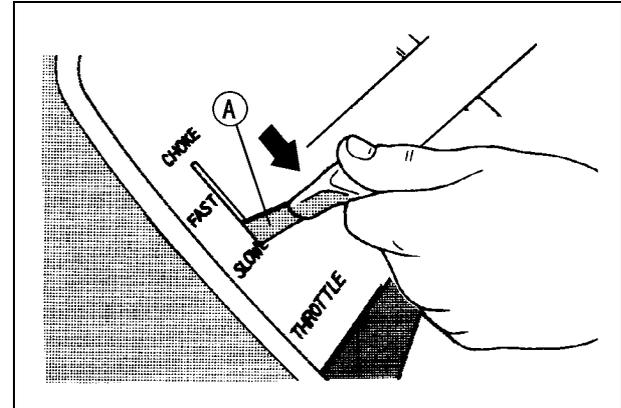
For Control Panel Switch Type, move the throttle lever against its low speed end to turn the ignition off.

### Emergency Stop

- Immediately turn the engine switch or the switch key to "OFF" position.

- Close the fuel valve on the equipment.

For Control Panel Switch Type, move the throttle lever on the equipment to its low speed end. Moving the lever to its low speed end turns ignition off.



A. Throttle Lever

### 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.

# ADJUSTMENT

## Separate Choke Type

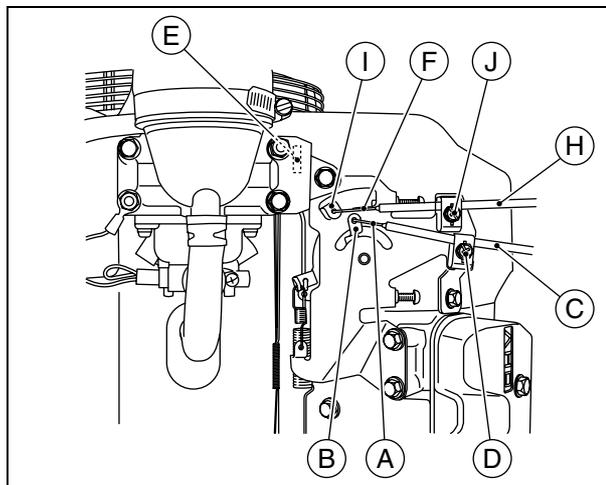
### Throttle Cable Installation, Adjustment

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

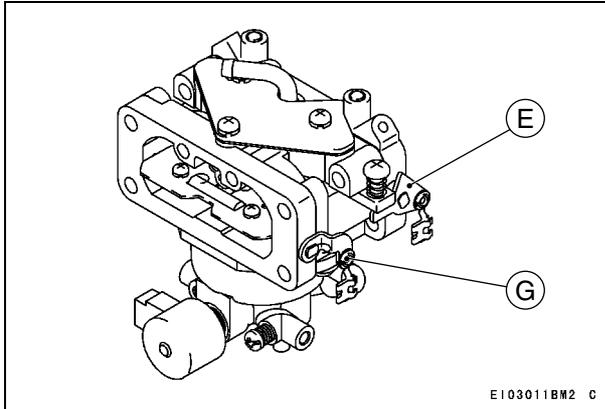
### Choke Cable Installation, Adjustment

- Link the choke cable to the choke lever, and loosely clamp the choke cable outer housing with the cable clamp bolt.
- Move the equipment choke control to "OPEN" position. Make sure that the carburetor choke valve (pivot arm) is fully opened.
- Pull up the outer housing of the choke cable until the inner wire has almost no slack, and tighten the cable clamp bolt.

- Move the equipment choke control to "CHOKE" position. Make sure that the carburetor choke valve (pivot arm) is completely closed.
- Make sure that the choke valve turns from fully close position to fully open position when actuating the equipment choke control.



- |                                 |                       |
|---------------------------------|-----------------------|
| <b>A. Throttle Cable</b>        | <b>E. Pivot Arm</b>   |
| <b>B. Speed Control Lever</b>   | <b>F. Choke Cable</b> |
| <b>C.H. Cable Outer Housing</b> | <b>I. Choke Lever</b> |
| <b>D.J. Cable Clamp Bolt</b>    |                       |



**E. Throttle Valve Pivot Arm**  
**G. Choke Valve Pivot Arm**

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## Engine Speed Adjustment

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### 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 cap or stop plate is installed on each mixture screw.
- If any adjustment is necessary, see your authorized Kawasaki Engine dealer to perform the adjustment.

# 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.

K : Service to be performed by an authorized Kawasaki dealer.

MAINTENANCE	INTERVAL						
	Daily	First 8 hr.	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 inlet screen.	●						
◆ K Clean dust and dirt from cylinder and cylinder head fins.			●				

MAINTENANCE	INTERVAL						
	Daily	First 8 hr.	Every 100 hr.	Every 200 hr.	Every 250 hr.	Every 300 hr.	Every 500 hr.
Tighten nuts and screws.			•				
Change engine oil.		•	•				
◆ Check and clean oil cooler fins.			•				
Clean and regap spark plugs.			•				
Change oil filter.				•			
◆ Replace air cleaner primary element.					•		
◆ Check air cleaner secondary element.					•		
K Clean combustion chamber.						•	
K Check and adjust valve clearance.						•	
K Clean and lap valve seating surface.						•	
◆ Replace air cleaner secondary element.							•

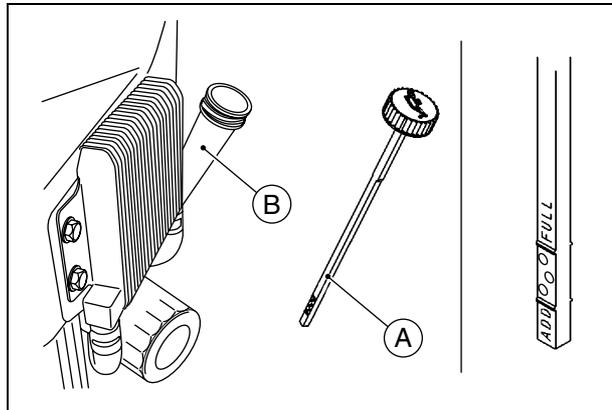
## 26 MAINTENANCE

### Oil Level Check

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

### Engine Oil Capacity

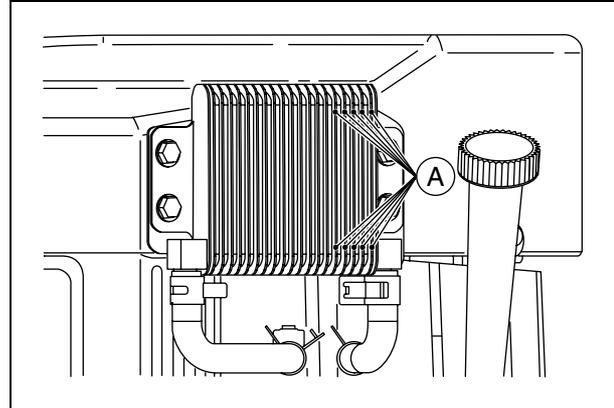
FX850V	2.1 L (2.2 US-qt) [when oil filter is not removed]
	2.3 L (2.4 US-qt) [when oil filter is removed]



A. Oil Gauge  
B. Tube

### Oil Cooler Service

- Check and clean oil cooler fins every 100 hours.
- Clean dirt off the outside fins with a brush or compressed air.



A. Oil Cooler Fins

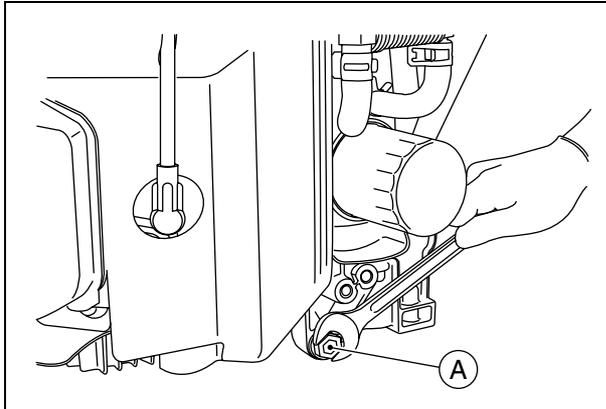
## Oil Change

Change oil after first 8 hours of operation. Thereafter change oil every 100 hours.

- Run the engine to warm oil.
- Be sure the engine (equipment) is on level surface.
- Stop the engine.
- Remove the oil drain plug and drain the oil into a 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.**



**A. Oil Drain Plug**

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

### **⚠ 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**

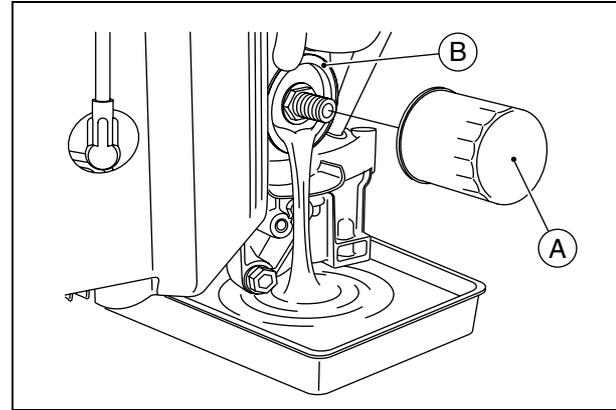
**Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm level before attempting to remove oil filter.**

- Drain the engine oil into a suitable container.

#### **NOTICE**

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

- Rotate the oil filter counterclockwise to remove it.
- Coat a film of clean engine oil on the seal of new filter.
- Install new filter rotating it clockwise until the seal contacts the mounting surface. Then rotate the filter 2/3 turn more by hand.
- Supply engine oil as specified.
- Run the engine for about 3 minutes, stop the engine, and check any oil leakage around the filter.
- Add oil to compensate for oil level drop due to oil filter capacity (see PREPARATION chapter).



**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.**

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**Air Cleaner Service**

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***NOTICE***

**Do not run the engine with the air cleaner removed.**

**Air Cleaner**

This 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.*

**Primary Element**

Replace the primary element every 250 hrs.

**Secondary Element**

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

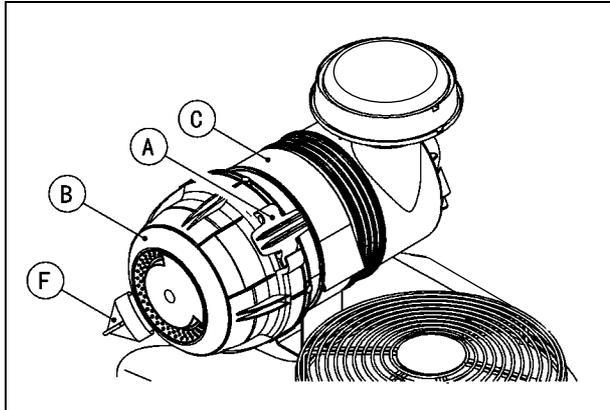
**Cap (Dust Ejector Valve)**

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

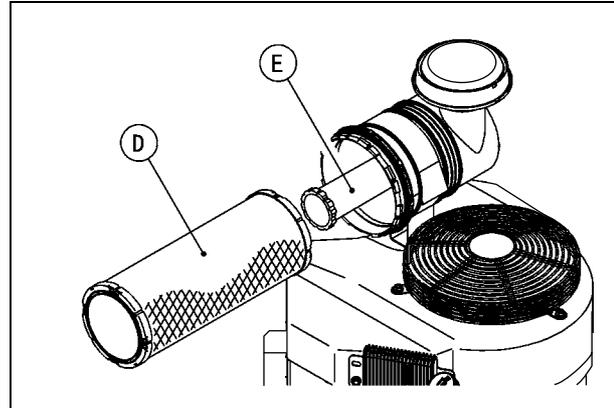
- Unfasten the two retaining clamps and remove the case from the air cleaner body.
- Remove the primary element and the secondary element from the air cleaner body by pulling out them.

## 30 MAINTENANCE

- Install the new air cleaner elements into the air cleaner body.
- Reinstall the case and the cap then securely fasten the two retaining clamps.



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



- D. Primary Element
- E. Secondary Element

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## Fuel Filter and Fuel Pump Service

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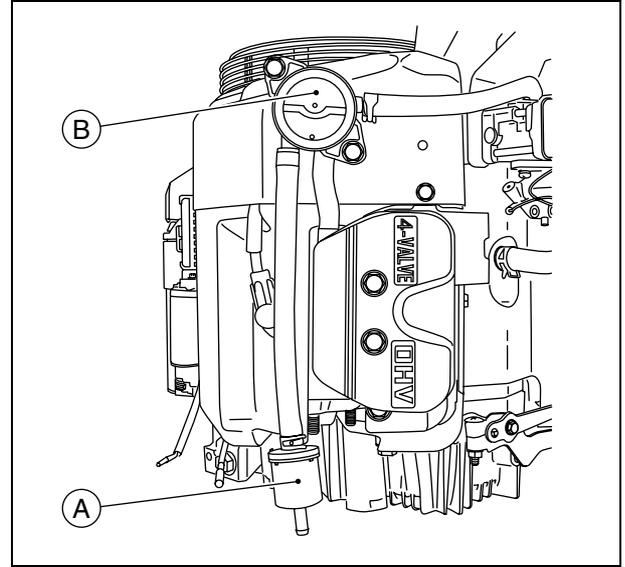
### WARNING

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.



A. Fuel Filter  
B. Fuel Pump

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### Spark Plug Service

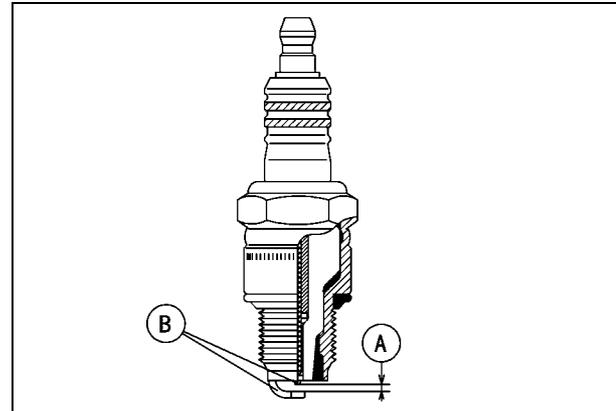
#### **WARNING**

**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 the gap every 100 hours of operation.

- Disconnect the spark plug caps from the spark plugs and remove the spark plugs.
- Clean the electrodes by scraping or using a wire brush to remove carbon deposits.
- Inspect for cracked porcelain, other wear or damage. Replace the spark plug with a new one if necessary.
- Check the spark plug gap and reset it 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).
- 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.

#### RECOMMENDED SPARK PLUG NGK .....BPR4ES



**A. Spark Plug Gap**  
**B. Electrodes**

## Cooling System Cleaning

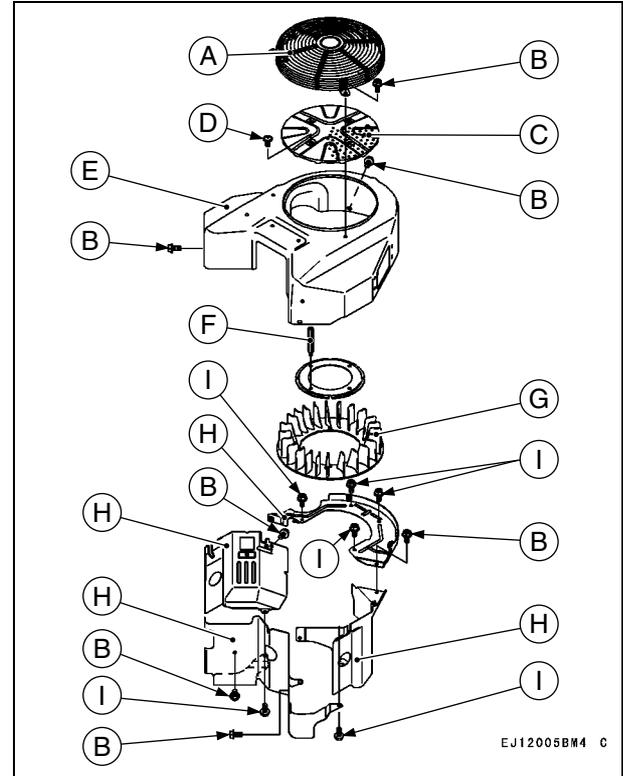
Before each operation, check that the air inlet (rotary) screen is free from grass and debris. Clean the screen if necessary. Every 100 hours of operation, check and clean the cooling fins and the inside of engine shrouds to remove grass, chaff or dirt clogging the cooling system and causing overheating. When cleaning, remove the guard and air inlet screen, then remove the fan housing and engine shrouds (includes removing the air cleaner, fuel pump, oil cooler and the voltage regulator parts) if necessary.

### NOTICE

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

### [Bolts Size, Tightening Torque]

Bolts	Size	Length	Tightening torque
B	M6	12 mm	5.9 N·m (0.6 kgf·m, 4.3 ft·lb)
D	M6	10 mm	5.9 N·m (0.6 kgf·m, 4.3 ft·lb)
F	M6	81 mm	5.9 N·m (0.6 kgf·m, 4.3 ft·lb)
I	M6	12 mm	8.8 N·m (0.9 kgf·m, 6.5 ft·lb)



- A. Guard
- B. D.F.I. Bolt
- C. Air Inlet Screen
- E. Fan Housing
- G. Cooling Fan
- H. Shroud

EJ12005BM4 C

# STORAGE

## Fuel System Draining

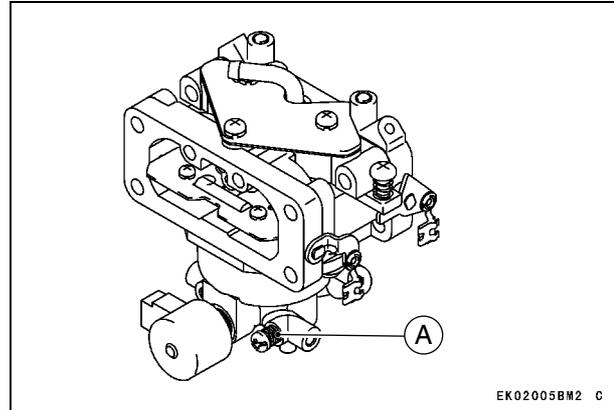
Engine to be stored over 30 days should be completely drained of fuel to prevent gum deposits forming on essential carburetor parts, the fuel filter and the tank.

### **⚠ 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.**

- Clean every part of the engine.
- Be sure that the engine switch or switch key is positioned at "OFF" position.
- Close the fuel valve and remove the sediment bowl.
- Put a pan under the fuel valve to receive the drained gasoline and open the fuel valve to drain the gasoline from fuel tank completely.

- Install the sediment bowl.
- Put a pan under the carburetor and loosen the drain screw of the carburetor to drain the gasoline completely.
- Tighten the drain screw.

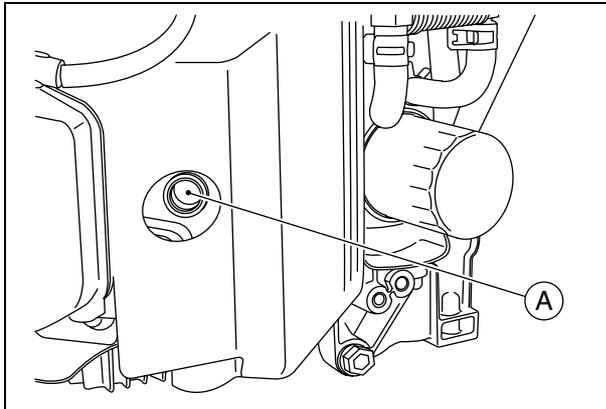


**A. Fuel Drain Screw**

### **⚠ 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 (0.06 - 0.1 cu in.) of engine oil through the spark plug holes then screw the spark plugs in after turning the engine a few times. Slowly turn the engine until you feel the compression then leave it there. This traps the air inside the cylinders 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 MAINTENANCE chapter for Oil Change section).



**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		Probable Cause	Remedy
Engine won't start or output is low	Insufficient compression	Faulty pistons, cylinders, piston rings, and head gaskets	<b>K</b>
		Faulty valves	
		Loose spark plugs	Tighten properly
		Loose cylinder head bolts	
	No fuel to combustion chamber	No fuel in fuel tank	Fill fuel tank
		Fuel valve is not in "ON" position.	Open fuel valve lever.
		Clogged fuel filter or tube	Change fuel filter or fuel tube
		Clogged air vent in tank cap	Clean fuel tank cap
		Faulty carburetor	<b>K</b>
	Spark plugs fouled by fuel	Over-rich fuel/air mixture	Open choke. Rotate engine with spark plugs removed to discharge excess fuel. Clean spark plugs.
		Clogged air cleaner	Clean
		Faulty carburetor	<b>K</b>
		Incorrect grade/type of fuel	Change fuel
		Water in fuel	

Symptom		Probable Cause	Remedy
	No spark or weak spark	Faulty spark plugs	Replace spark plugs
		Faulty ignition coils	<b>K</b>
		Engine switch is in "OFF" position	Turn engine switch to "START" position (See <b>M</b> )
Low output	Engine overheats	Clogged air cleaner	Clean
		Air inlet screen or cooling air path clogged with dirt	
		Insufficient engine oil	Replenish or change oil
		Carbon build-up in combustion chamber	<b>K</b>
		Poor ventilation around engine	Select a better location
	Engine speed won't increase	Faulty governor	<b>K</b>

**K** : Service to be performed by an authorized Kawasaki dealer.

**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.

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# **ENVIRONMENTAL PROTECTION**

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To help preserve the environment, properly discard used batteries, oils and fluids, or other engine components that you might dispose of in the future.

Consult your authorized Kawasaki dealer or local environmental waste agency for their proper disposal procedure. This also applies to disposal of the entire engine at the end of its life.

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## SPECIFICATIONS

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	FX850V
Type	Air- cooled, 4-stroke OHV 4Valves, V-twin cylinder, gasoline engine
Bore x Stroke	84.5 x 76 mm (3.33 x 2.99 in.)
Displacement	852 mL (52 cu.in.)
Ignition System	Solid-state ignition
Direction of rotation	Counterclockwise facing the PTO Shaft
Starting system	Electric starter
Dry weight : kg (lbs)	56.4 kg (124 lbs)

### NOTE

- *Specifications are subject to change without notice.*
- *Dry weight excludes that of the fuel tank and the muffler.*

# WIRING DIAGRAM

## Wiring Diagram (With 12 V - 15 A Charging Coil)

### ⚠ WARNING

For electrical safety, always remove cable from negative (-) side of battery before attempting any repair or maintenance.

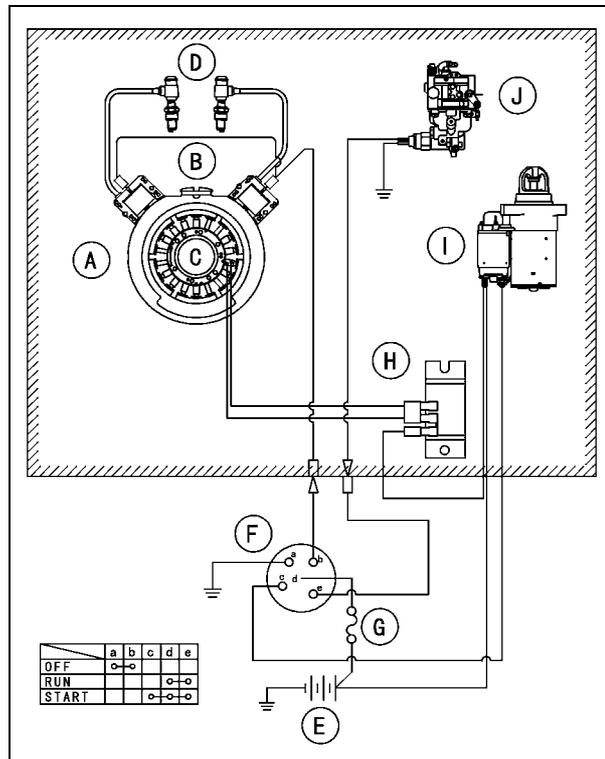
### Battery Capacity Recommended

Model	Battery Capacity
Lawn Mower	12 V 550 CCA Class
Snow Thrower	12 V 550 CCA Class

### NOTE

○ Portion surrounded by hatching shows Kawasaki procurement parts.

- |                   |                      |
|-------------------|----------------------|
| A. Flywheel       | F. Key Switch        |
| B. Ignition Coils | G. Fuse              |
| C. Charging Coil  | H. Voltage Regulator |
| D. Spark Plugs    | I. Electric Starter  |
| E. Battery        | J. Carburetor        |



	a	b	c	d	e
OFF		○			
RUN				○	○
START			○	○	○



## **WARNING:**



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

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

For repair/warranty assistance please contact your local Kawasaki Authorized Dealer, email [kawpower-website@kmc-usa.com](mailto:kawpower-website@kmc-usa.com) or call toll-free 1-877-364-6404

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

**Kawasaki**  

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**Engines**