



**Kawasaki**

Motorcycle  
Motocyclette  
Motorrad

**Owner's Manual  
Manuel de l'Utilisateur  
Betriebsanleitung**

**KLX110**

**ENGLISH**

# **Motorcycle Owner's Manual**

Original instructions



# Quick Reference Guide

This Quick Reference Guide will assist you in finding the information you're looking for.

**DECLARATION OF CONFORMITY**

**GENERAL INFORMATION**

**MAINTENANCE AND ADJUSTMENT**

**TROUBLESHOOTING GUIDE**

**STORAGE**

A Table of Contents is included after the Foreword.

### **IMPORTANT INFORMATION**

- This vehicle is designed for the operator only, no passengers.
- This vehicle is an off-road motorcycle only and was not manufactured for use on public streets, roads or highways.
- Respect the environment and the rights of other people.
- Read owner's manual.



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.

## **IMPORTANT**

Off-road motorcycling is a wonderful sport, and we hope you will enjoy it to the fullest. However, if improperly conducted, this sport has the potential to cause environmental problems as well as conflicts with other people.

Responsible use of your off-road motorcycle will ensure that these problems and conflicts do not occur. **TO PROTECT THE FUTURE OF YOUR SPORT, MAKE SURE YOU USE YOUR MOTORCYCLE LEGALLY, SHOW CONCERN FOR THE ENVIRONMENT, AND RESPECT THE RIGHTS OF OTHER PEOPLE.**

### **WARNING**

- **THIS VEHICLE IS AN OFF-ROAD VEHICLE ONLY AND WAS NOT MANUFACTURED FOR USE ON PUBLIC STREETS, ROADS, OR HIGHWAYS.**
- **USE YOUR MOTORCYCLE LEGALLY.**
- **RESPECT THE ENVIRONMENT AND THE RIGHTS OF OTHER PEOPLE.**



## **IMPORTANT NOTE TO PARENTS ABOUT SAFE RIDING**

Your youngster's safety will depend on your commitment to always provide a safe riding environment and a properly maintained vehicle. As with any moving vehicle there are possible safety risks; be sure to heed these precautions.

1. Always equip your youngster with suitable protective gear and riding apparel. Be sure he or she always wears a helmet, over-the-ankle footwear or sturdy boots, eye protection, gloves, long pants, and a long-sleeved shirt while riding.
2. Never allow your youngster to carry a passenger. This motorcycle is designed for an OPERATOR ONLY.
3. This motorcycle is designed for off-road riding and should never be operated on public roads or paved surfaces.
4. This motorcycle was not designed for hard riding such as motocross.
5. Always obey local off-road riding laws and regulations. Obtain permission to ride on private property.
6. You, the parent (and most likely "riding instructor/mechanic" as well), must be familiar with motorcycle controls and maintenance requirements plus riding techniques. Read and understand the owner's manual provided with the motorcycle. Review all instructions and warnings with your youngster.
7. You must determine your youngster's readiness to ride this off-road motorcycle. Your youngster should already be familiar with motorcycle controls (location and function) and basic riding techniques. Your youngster should also be physically large enough, and strong enough to be able to straddle the motorcycle and hold it up, plus be able to pick it up if it is on its side.
8. Your youngster's safety depends in part on the good mechanical condition of the motorcycle. Be sure to follow the maintenance and adjustment requirements contained in the Periodic Maintenance Chart, Daily Pre-ride Inspection, and After-Race Check Points. Be sure your youngster understands the importance of checking all items thoroughly before riding the motorcycle. Also, familiarity with the motorcycle is important should a problem occur far from help.
9. Do not allow your youngster to ride unsupervised. He or she should always ride in the company of an experienced adult.

10. Encourage your youngster not to ride beyond his or her skill level or faster than conditions safely allow. Have them practice advanced riding maneuvers under controlled conditions.
11. Tell someone where you and your youngster are planning to ride and when you intend to return. Discuss the ride with your youngster before you leave so he or she will know in advance what riding techniques may be necessary to negotiate the terrain safely. If you are not familiar with the area, lead the way and reduce your speed.

***NOTICE***

**This motorcycle is designed for a rider weighting less than 70 kg (154 lb). Exceeding this limit could damage the motorcycle.**

**PLEASE DO NOT TAMPER WITH NOISE CONTROL SYSTEM**

To minimize the noise emissions from this product, Kawasaki has equipped it with effective intake and exhaust silencing system. They are designed to give optimum performance while maintaining a low noise level. Please do not remove these systems, or alter them in any way which results in an increase in noise level.

# FOREWORD

We wish to thank you for choosing this Kawasaki motorcycle. It is the end product of Kawasaki's advanced engineering, exhaustive testing, and continuous striving for superior reliability, and performance. By giving your motorcycle the proper care and maintenance outlined in this manual, you will be helping to ensure it a long, trouble-free life.

Before starting to ride your motorcycle, please read this manual thoroughly in order to know your motorcycle's capabilities, its limitations, and above all, how to operate it safely.

Due to improvements in design and performance made during production, in some cases there may be minor discrepancies between the actual vehicle and the illustrations and text in this manual.

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

© 2013 Kawasaki Heavy Industries, Ltd.

Mar. 15, 2013. (1)

---

# TABLE OF CONTENTS

---

<b>SPECIFICATIONS</b> .....	13	Air Cleaner .....	50
<b>DECLARATION OF CONFORMITY</b> .....	16	Throttle Cable.....	56
<b>GENERAL INFORMATION</b> .....	18	Carburetor .....	58
Location of Labels .....	18	Clutch .....	59
Location of Parts .....	21	Valve Clearance .....	60
Side Stand.....	24	Spark Arrester .....	60
Fuel .....	24	Drive Chain.....	63
Fuel Requirements:.....	24	Handlebar .....	69
Filling the Tank: .....	25	Brakes .....	70
Fuel Tap:.....	26	Steering .....	75
Throttle Limiting Screw.....	28	Front Suspension .....	78
Engine Stop Switch .....	29	Rear Suspension.....	79
Starter Button .....	30	Wheels .....	79
Kick Pedal .....	31	Hoses Inspection.....	82
Starting the Engine.....	31	Battery .....	82
Moving Off .....	34	Fuse .....	86
Shifting Gears.....	35	Tightening Torques of Nuts and Bolts.....	87
Stopping the Motorcycle.....	36	Cleaning Your Motorcycle.....	91
Stopping the Engine .....	36	Lubrication .....	93
Break-In.....	37	<b>TROUBLESHOOTING GUIDE</b> .....	97
Daily Pre-Ride Checks .....	38	<b>STORAGE</b> .....	105
<b>MAINTENANCE AND ADJUSTMENT</b> .....	40	Before Storage .....	105
Periodic Maintenance Chart .....	40	After Storage .....	106
Engine Oil.....	44	<b>ENVIRONMENTAL PROTECTION</b> .....	107
Spark Plug.....	49	<b>WIRING DIAGRAM</b> .....	108

---

# SPECIFICATIONS

---

## DIMENSIONS

Overall Length	1 560 mm (61.4 in.)
Overall Width	650 mm (25.6 in.)
Overall Height	955 mm (37.6 in.)
Wheelbase	1 075 mm (42.3 in.)
Road Clearance	215 mm (8.5 in.)
Curb Mass	76 kg (168 lb)
Fuel Tank Capacity	3.6 L (1.0 US gal)

## ENGINE

Type	4-stroke, SOHC, single-cylinder, air-cooled
Bore x Stroke	53.0 x 50.6 mm (2.1 x 2.0 in.)
Displacement	112 cm <sup>3</sup> (6.8 cu in.)
Compression Ratio	9.5:1
Fuel System	Carburetor KEIHIN PB18
Starting System	Electric starter and kick starter
Ignition System	SHINDENGEN CDI
Ignition Timing	10° BTDC @1 300 r/min (rpm) ~ 31° BTDC @4 000 r/min (rpm)
Lubrication System	Forced lubrication (wet sump)
Spark Plug	NGK CR6HSA

## TRANSMISSION

Transmission Type	4-speed, constant-mesh, return shift
-------------------	--------------------------------------

## 14 SPECIFICATIONS

Clutch Type	Centrifugal and wet, multi disc
Driving System	Chain drive
Gear Ratio:	
1st	3.000 (36/12)
2nd	1.938 (31/16)
3rd	1.350 (27/20)
4th	1.087 (25/23)
Primary Reduction Ratio	3.409 (75/22)
Final Reduction Ratio	2.923 (38/13)
Overall Drive Ratio	10.832 @Top gear
Engine Oil:	
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2
Viscosity	SAE 10W-40
Capacity	1.1 L (1.2 US qt)

### FRAME

Type	Backbone
Steering Angle	45° to either side
Caster	24.8°
Trail	50 mm (2.0 in.)
Tire Size/Type:	
Front	2.50-14 4P.R./IRC GS-45F
Rear	3.00-12 4P.R./IRC GS-45F

**Rim Size:**

Front 14 × 1.40

Rear 12 × 1.60

**Suspension:**

Front Telescopic fork

Rear Swingarm (mono-shock)

Front Suspension Travel 110 mm (4.3 in.)

Rear Wheel Travel 110 mm (4.3 in.)

**Front Fork Oil:**

Type Kawasaki Fork Oil SS8

Amount (Per One Unit) 165 mL (5.6 US oz.)

**BRAKES****Type:**

Front Drum brake

Rear Drum brake

**ELECTRICAL EQUIPMENT**

Battery 12 V 3 Ah

Specifications are subject to change without notice, and may not apply to every country.



# DECLARATION OF CONFORMITY

MANUFACTURERS  
DECLARATION OF CONFORMITY  
for

**Product identification**

Product : Competition Motocross Motorcycle  
Brand : KAWASAKI  
Model/type : KLX110 / KLX110C & KLX110L / KLX110D  
Starting frame number in range: JKALX110CCD000001~  
& JKALX110DDD000001~

Manufacturer / TCF: KAWASAKI HEAVY INDUSTRIES, LTD.  
1-1 Kawasaki-cho  
673-8666 Akashi, Hyogo Pref.  
Japan

EU Representative: Kawasaki Motors Europe N.V.  
Jacobus Spijkerdreef 1-3  
2132 PZ Hoofddorp  
The Netherlands

**Means of conformity**

The product is in conformity with the Electro Magnetic Compatibility Directive  
2004/108/EC, based on the following harmonized standards applied:

EN55012:2007

Vehicles, boats, and internal combustion engine driven devices --  
Radio disturbance characteristics --

Limits and methods of measurement for the protection of receivers except those  
installed in the vehicle/boat/device itself or in adjacent vehicles/boats/devices

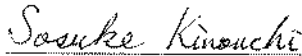
EN61000-6-2:2005

Electromagnetic compatibility (EMC) --

Part 6-2: Generic standards - Immunity for industrial environments

Notified Body: TÜV Rheinland Japan Ltd.,  
Shin Yokohama Daini Center Bldg. 3-19-5,  
Shin Yokohama, Kohoku-ku, Yokohama 222-0033,  
Japan

Signature of representative:



Sosuke Kinouchi

Executive Officer, General Manager of Quality Assurance Division  
Consumer Products & Machinery Company  
Kawasaki Heavy Industries, Ltd.

Place: Akashi, Hyogo Pref., Japan

Date: June 15<sup>th</sup>, 2009

Part No. 99929-0395

---

# GENERAL INFORMATION

---

---

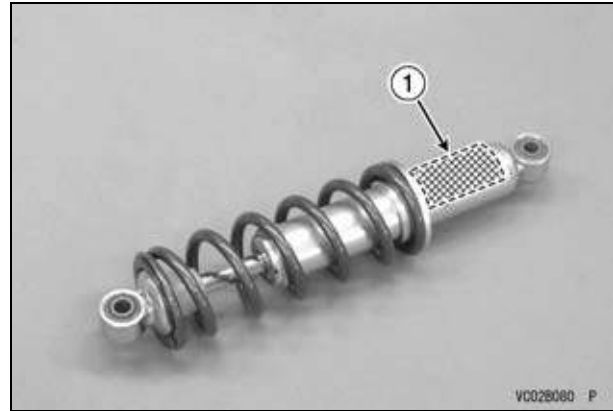
## Location of Labels

---

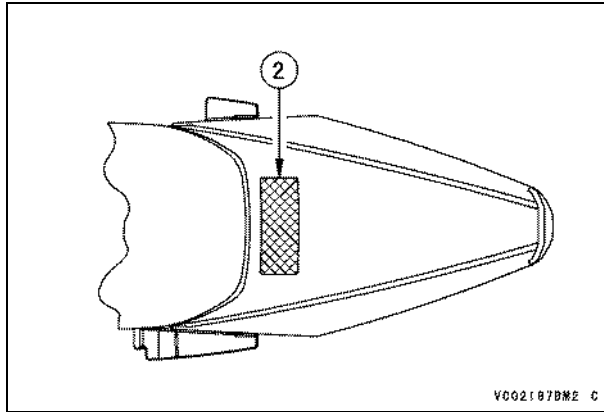
All warning labels which are on your vehicle are repeated here. Read labels on your vehicle and understand them thoroughly. They contain information which is important for your safety and the safety of anyone else who may operate your vehicle. Therefore, it is very important that all warning labels be on your vehicle in the locations shown. If any label is missing, damaged, or worn, get a replacement from your Kawasaki dealer and install it in the correct position.

### NOTE

- *The sample warning labels in this section have part numbers to help you and your dealer obtain the correct replacement.*



**1. Rear Shock Absorber Warning**



## 2. Important Information

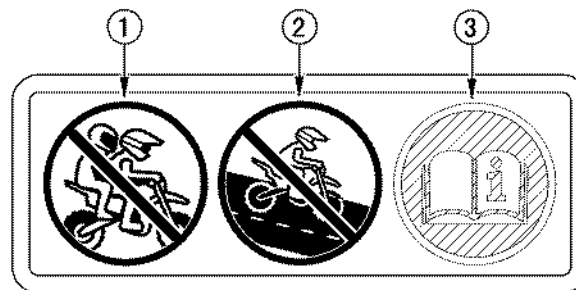
## 20 GENERAL INFORMATION

1)



8D08238C#2 C

2)



56071-0417

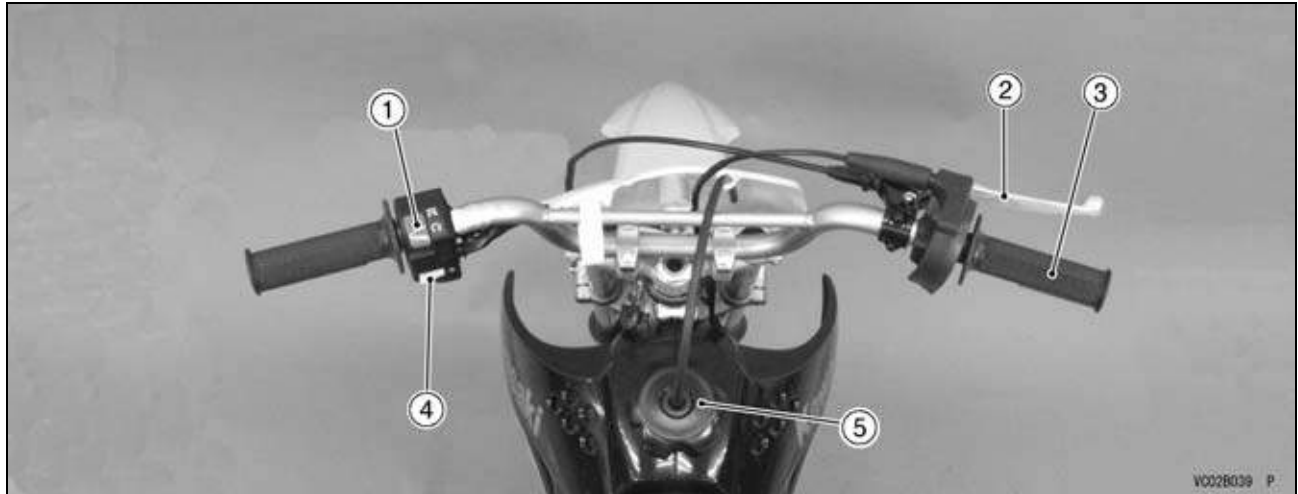
VC02127B S

1. This vehicle is designed for the operator only, no passengers.
2. This vehicle is a competition model only and was not manufactured for use on public streets, roads or highways.
3. Read owner's manual

---

## Location of Parts

---

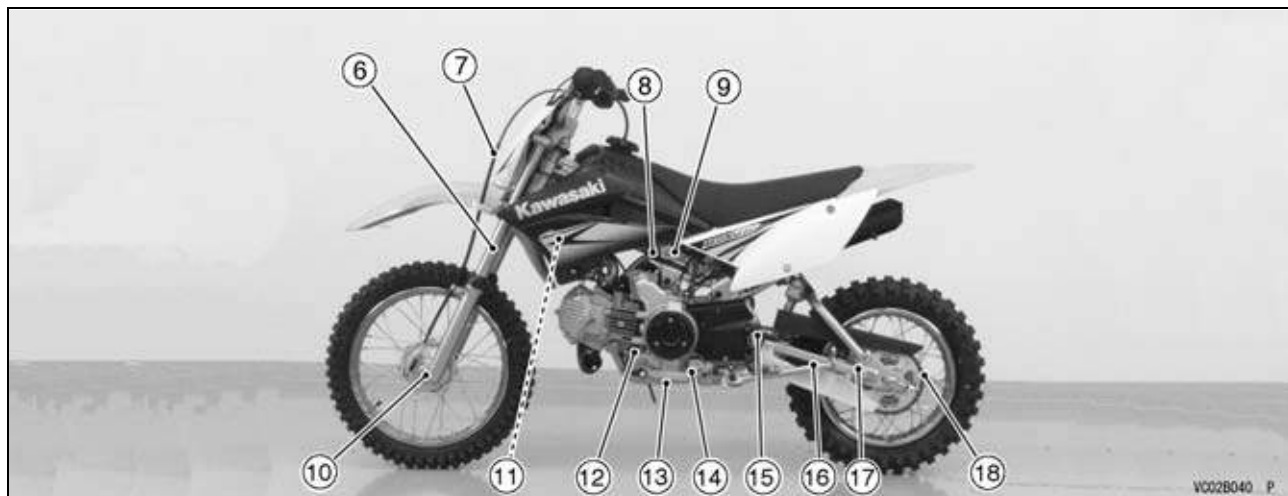


1. Engine Stop Switch  
2. Front Brake Lever

3. Throttle Grip  
4. Starter Button

5. Fuel Tank Cap

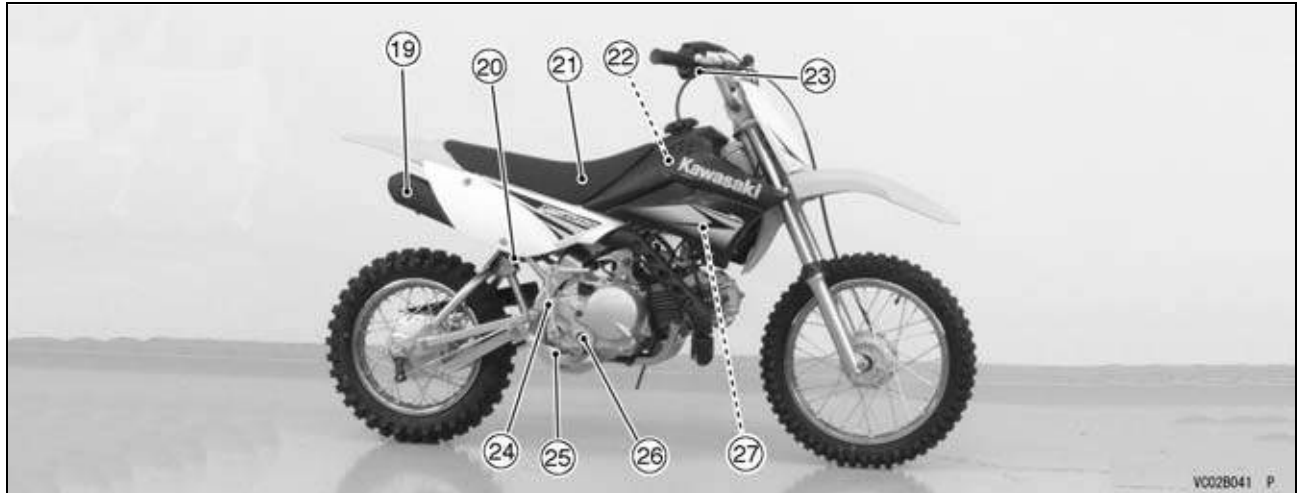
## 22 GENERAL INFORMATION



- 6. Front Fork
- 7. Brake Cable
- 8. Choke Knob
- 9. Fuel Tap
- 10. Brake Cam Lever

- 11. Air Cleaner
- 12. Oil Filter Cap
- 13. Engine Oil Drain Bolt
- 14. Shift Pedal
- 15. Chain Slipper

- 16. Side Stand
- 17. Swingarm
- 18. Drive Chain



- 19. Muffler
- 20. Rear Shock Absorber
- 21. Seat
- 22. Fuel Tank

- 23. Throttle Limiting Screw
- 24. Kick Pedal
- 25. Rear Brake Pedal

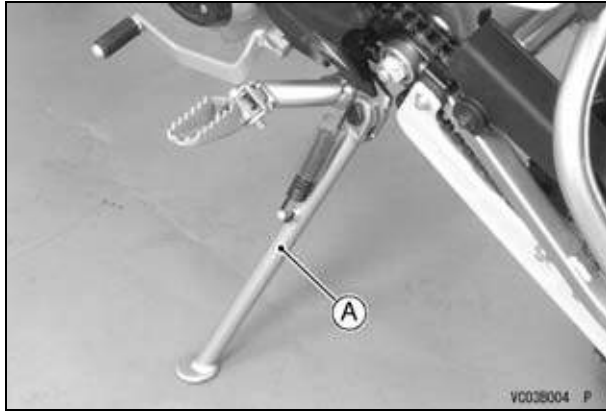
- 26. Oil Level Inspection Window
- 27. Carburetor



## 24 GENERAL INFORMATION

### Side Stand

The motorcycle is equipped with a side stand.



A. Side Stand

Do not sit on the motorcycle while it is on its side stand. Always kick the stand fully up before sitting on the motorcycle.

#### **WARNING**

**Riding with the side stand down could cause an accident resulting in serious injury or death. Always be sure the side stand is fully raised before riding.**

### Fuel

#### Fuel Requirements:

Your Kawasaki engine is designed to use only unleaded gasoline with a minimum octane rating shown below. Never use gasoline with an octane rating lower than the minimum specified by Kawasaki to prevent severe engine damage.

The octane rating of a gasoline is a measure of its resistance to detonation or “knocking”. The term commonly used to describe a gasoline’s octane rating is the Research Octane Number (RON).

#### **NOTICE**

**If engine “knocking” or “pinging” occurs, use a different brand of gasoline of a higher octane rating. If this condition is allowed to continue, it can lead to severe engine damage. Gasoline quality is important. Fuels of low quality or not meeting standard industry specifications may result in unsatisfactory performance.**

#### *Fuel Type and Octane Rating*

Use clean, fresh unleaded gasoline and an octane rating equal to or higher than that shown in the table.

Fuel Type	Unleaded Gasoline
Ethanol Content	E10 or less
Minimum Octane Rating	Research Octane Number (RON) 91

### ***NOTICE***

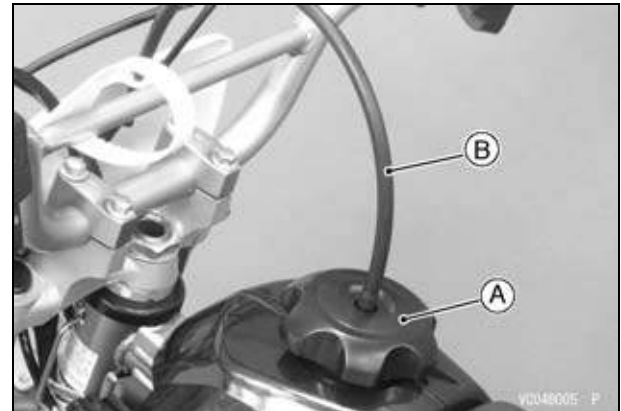
**Do not use any fuel that contains more ethanol or other oxygenates than specified for E10 fuel\* in this vehicle. Damage to the engine and fuel system, or engine starting and/or performance problems may result from the use of improper fuel.**

\*E10 means fuel containing up to 10% ethanol as specified by European directive.

#### **Filling the Tank:**

The capacity of the fuel tank is 3.6 L (1.0 US gal). To open the fuel tank cap, pull out the breather hose

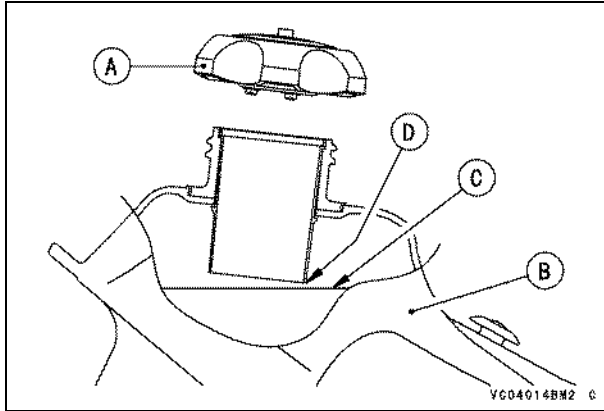
from the hole in the number plate and turn the tank cap counterclockwise.



**A. Fuel Tank Cap**  
**B. Breather Hose**

Avoid filling the tank in the rain or where heavy dust is blowing so that the fuel does not get contaminated.

## 26 GENERAL INFORMATION



- A. Tank Cap
- B. Fuel Tank
- C. Top Level
- D. Filler Neck

### **⚠ WARNING**

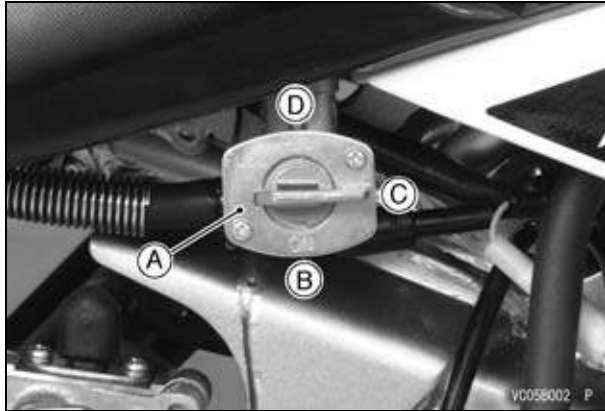
Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light. Never fill the tank so the fuel level rises into the filler neck. If the tank is overfilled, heat may cause the fuel to expand and overflow through the vents in the tank cap. After refueling, make sure the fuel tank cap is closed securely. If gasoline is spilled on the fuel tank, wipe it off immediately.

### **NOTICE**

Certain ingredients in gasoline may cause paint fading or damage. Be extra careful not to spill fuel during refueling.

### **Fuel Tap:**

The fuel tap has three position; OFF, ON, and RES (reserve). For normal operation, turn the fuel tap lever to the ON position. If the fuel runs out with the tap in the ON position, the last approximately 0.4 L (0.11 US gal) of usable fuel remains can be used by turning the tap lever to the RES position.



- A. Fuel Tap
- B. ON Position
- C. OFF Position
- D. RES Position

Turn the fuel tap lever to OFF position when the fuel tank is removed for maintenance and adjustments or the motorcycle is stored for a long time.

#### NOTE

- *Since riding distance is limited when on RES, re-fuel at the earliest opportunity.*
- *Make certain that the fuel tap lever is turned to ON (not RES), after filling up the fuel tank.*

#### **⚠ WARNING**

Practice operating the fuel tap with the motorcycle stopped. To prevent an accident you should be able to operate the fuel tap while riding without taking your eyes off the road. Be careful not to touch the hot engine while operating the fuel tap.

## 28 GENERAL INFORMATION

---

### Throttle Limiting Screw

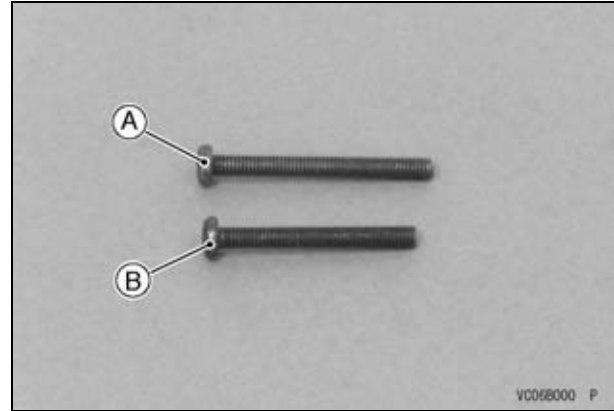
---

A screw-type throttle limiting screw can be equipped to this motorcycle to decrease the maximum engine power for a novice rider. The limiting screws function by restricting the turning degree of the throttle grip so that it opens to either 3/8 or 1/2 of full throttle.

Kawasaki recommends raising the level of the throttle limiting screw step-by-step as follows; The 3/8 degree screw can be used for the beginning rider, 1/2 degree screw for the semi-skilled rider, and no throttle limiting screw for riders with more advanced skills.

#### NOTE

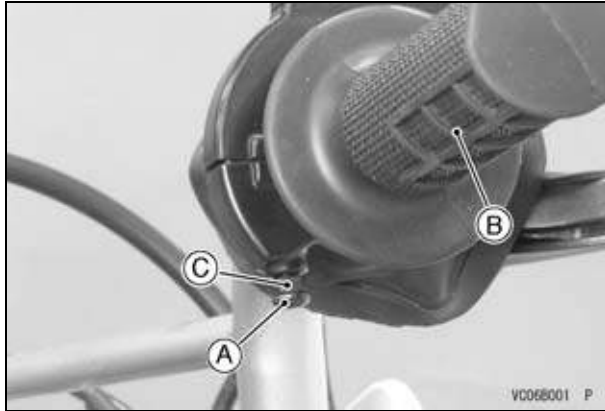
- *Changing the position of the throttle limiting screw should only be done at the parents' discretion.*
- The longer screw is the 3/8 degree limiter, the short screw is the 1/2 degree limiter.



**A. 3/8 Degree Screw 47 mm (1.9 in.)**

**B. 1/2 Degree Screw 42 mm (1.7 in.)**

- Check that the throttle grip has 2 ~ 3 mm (0.08 ~ 0.12 in.) of play and turns smoothly.
- Remove the blank screw and locknut installed to the housing.
- Install the locknut of the blank screw to the throttle limiting screw.
- Screw the throttle limiting screw fully into the throttle housing and tighten the locknut.



- A. Throttle Limiting Screw
- B. Throttle Grip
- C. Locknut



### NOTICE

**Use only the Kawasaki screws supplied with the motorcycle. Substituting non standard screws can damage the throttle housing.**


### NOTE

- Store the uninstalled throttle limiting screw in a location where they will not be lost.
- Do not operate the motorcycle without inserting the throttle limiting screw or blank screw into the throttle housing. This is to keep dirt or water from entering the throttle housing.

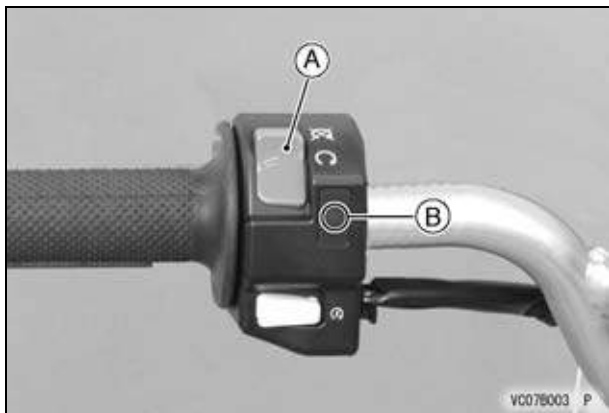
## Engine Stop Switch

The engine stop switch is located on the left side of the handlebar. The engine stop switch must be in the  position for the motorcycle to operate. Move the switch to the  position to stop the engine.

### NOTE

- To avoid battery discharging, check that the engine stop switch is in the  position and the orange indicator light (LED) goes off, when the motorcycle is not used.

## 30 GENERAL INFORMATION



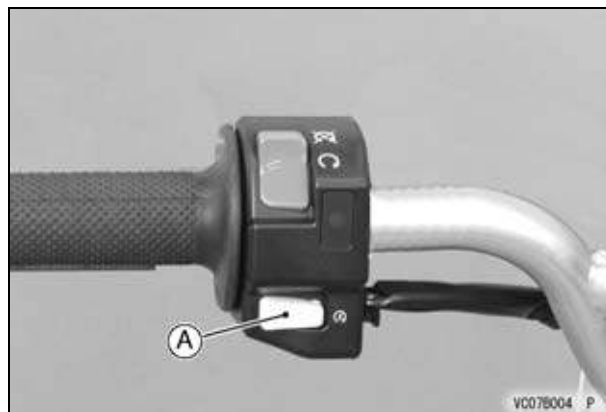
- A. Engine Stop Switch
- B. Indicator Light (LED)

---

### Starter Button

---

This motorcycle has the starter button.



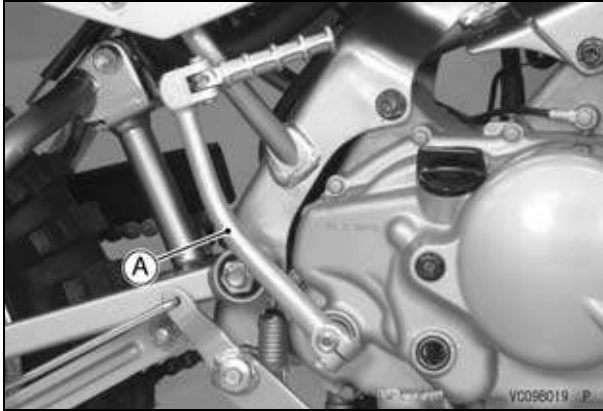
- A. Starter Button

---

## Kick Pedal

---

This motorcycle is equipped with a kick starting system. When using the kick pedal, make sure that the transmission is in neutral.



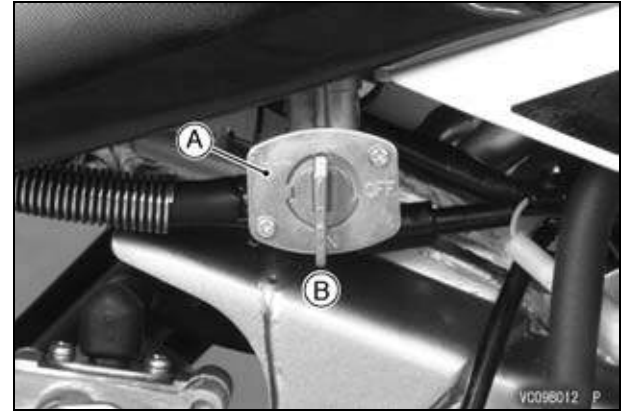
A. Kick Pedal

---

## Starting the Engine

---

- Turn the fuel tap lever to the ON position.



A. Fuel Tap  
B. ON Position


- Shift the transmission into neutral.

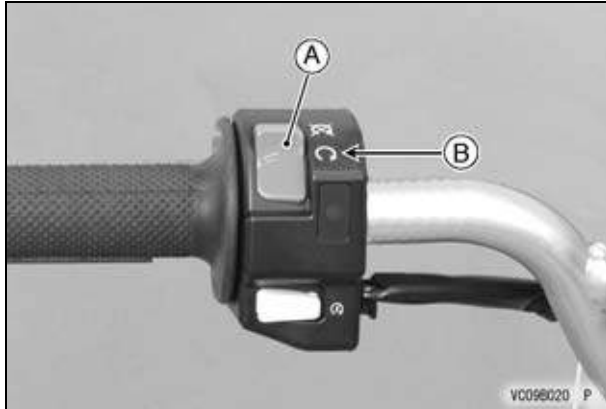
### NOTE

- *This motorcycle is equipped with a gear position switch that prevents the engine from starting when the transmission is not in neutral.*



## 32 GENERAL INFORMATION

- Check that the engine stop switch is in the  position.



**A. Engine Stop Switch**

**B.  Position**

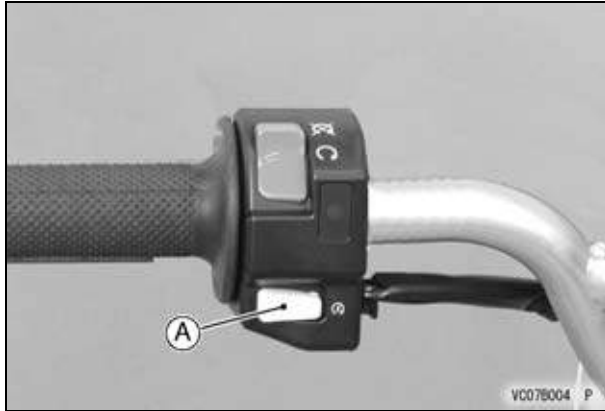
- If the engine is cold, pull out the choke knob.



**A. Choke Knob**

### NOTE

- *When the engine is already warm or on hot days, open the throttle part way instead of using the choke, and then start the engine.*
- Leaving the throttle completely closed, push the starter button until the engine starts.



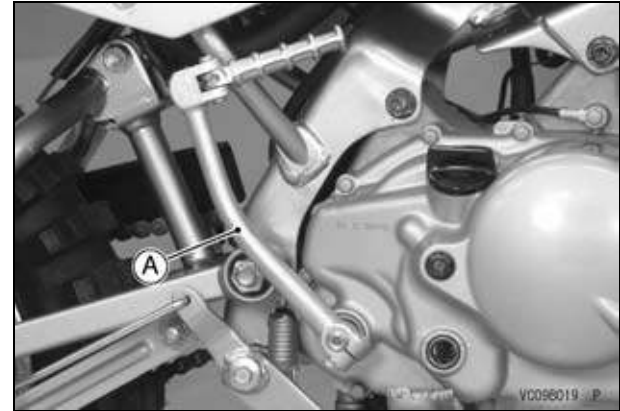
A. Starter Button

### NOTICE

**Do not operate the starter continuously for more than 5 seconds, or the starter will overheat and the battery power will drop temporarily. Wait 15 seconds between each operation of the starter to let it cool and the battery power recover.**

### NOTE

- *When using the kick pedal, make sure that the transmission is in neutral.*



A. Kick Pedal

### NOTE

- *If the engine is flooded, crank the engine over with the throttle fully open until the engine starts.*
- Gradually push the choke knob back a little at a time as necessary to keep the engine running properly during warm-up.
- When the engine is warmed up enough to idle without using the choke, push the choke knob all the way back.

### NOTE

- *If you drive the motorcycle before the engine is warmed up, push the choke knob all the way back as soon as you start moving.*

## 34 GENERAL INFORMATION

### ***NOTICE***

**Do not let the engine idle longer than five minutes, or engine overheating and damage may occur.**

---

### **Moving Off**

---

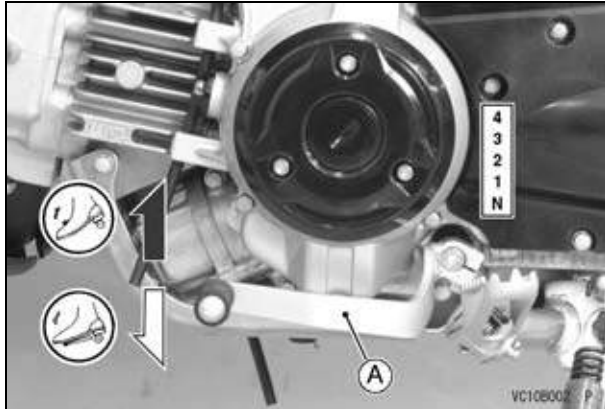
- Check that the side stand is up.
- Shift into 1st gear.
- Open the throttle slowly.

**NOTICE**

When changing gears, press firmly on the shift pedal to ensure proper shifting. Careless, incomplete shifting can cause the transmission to jump out of gear and lead to engine damage.

**Shifting Gears**

- Close the throttle completely.
- Shift into the next higher or lower gear.
- Open the throttle slowly.



A. Shift Pedal

**⚠ WARNING**

Downshifting to a lower gear at high speed causes engine rpm to increase excessively, potentially damaging the engine and it may also cause the rear wheel to skid and cause an accident.

---

### Stopping the Motorcycle

---

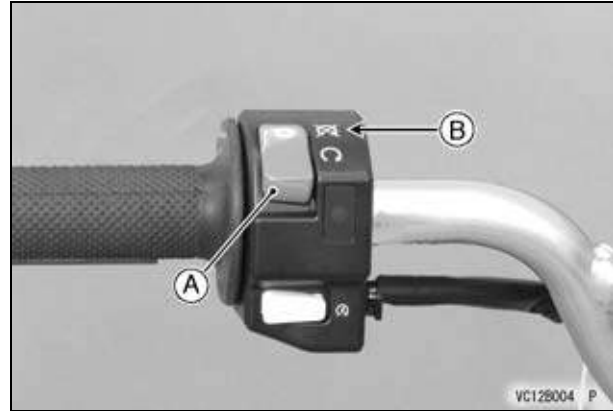
For maximum deceleration, close the throttle and apply both front and rear brakes. Independent use of the front or rear brake may be advantageous in certain circumstances. Shift down progressively to ensure good engine response at all speeds.

---

### Stopping the Engine

---

- Shift the transmission into the neutral position.
- Close the throttle completely.
- Push the engine stop switch to the ☒ position.



**A. Engine Stop Switch**

**B. ☒ Position**

- Turn the fuel tap lever to the OFF position.

#### **NOTE**

- To avoid battery discharging, check that the engine stop switch is in the ☒ position and the orange indicator light (LED) goes off, when the motorcycle is not used.

---

## Break-In

---

The first one hour that the motorcycle is ridden is designed as the break-in period. If the motorcycle is not used carefully during this period, you may very well end up with a “broken down” instead of a “broken in” motorcycle after the long use.

Do not start moving or race the engine immediately after starting it, even if the engine is already warm. Run the engine for two or three minutes at idle speed to give the oil a chance to work up into all the engine parts.

Avoid the quick acceleration or starting and drive prudently for the first one hour of operation. Let the motorcycle cool completely. The motorcycle is ready for regular operation after this procedure is carried out.

## 38 GENERAL INFORMATION

---

### Daily Pre-Ride Checks

---

Check the following items each day before you ride. The time required is minimal, and habitual performance of these checks will help ensure a safe, reliable ride.

If any irregularities are found during these checks, refer to the appropriate section and take the action required to return the motorcycle to a safe operating condition.

#### **WARNING**

**Failure to perform these checks before operation may result in serious damage or an accident. Always perform daily checks before operation.**

#### **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.**

#### Engine

Engine Oil .....	No leakage Level correct
Spark Plug .....	Correctly torqued
Clutch .....	Functions properly
Carburetor .....	Properly adjusted
Air Cleaner .....	Clean Apply oil to air cleaner element Properly installed
Muffler .....	No damage Properly installed
Engine Sprocket .....	No wear or damage

**Frame**

Tires .....	Overall condition good No wear or damage Pressure correct Air valve cap installed
Spokes .....	No looseness
Drive Chain .....	Overall condition good Chain slack correct Oil if necessary
Front and Rear Brakes .....	Function properly Lever and pedal play correct No wear to brake lining
Throttle .....	Functions properly Throttle grip returns smoothly
Steering .....	Smooth but not loose from lock to lock No binding due to control cables
Front Fork .....	Functions properly No oil leakage
Rear Shock Absorber .....	Functions properly No oil leakage
Fuel Tank .....	Mounted securely No fuel leakage
Rear Sprocket .....	No wear or damage
Electrical Equipment .....	Functions properly
Engine Stop Switch .....	Functions properly
Nuts, Bolts, Fasteners .....	Properly tightened



# MAINTENANCE AND ADJUSTMENT

## Periodic Maintenance Chart

The maintenance and adjustments outlined in this chapter are easily carried out and must be done in accordance with the Periodic Maintenance Chart to keep the motorcycle in good running condition.

### 1. Periodic Inspection (Engine Related Item)

OPERATION	FREQUENCY	Every			See Page
		Initial 5 hours (1 month)	50 hours (6 months)	100 hours (12 months)	
Spark plug - clean and inspect †			●	●	49
<b>K</b> Clutch plates - inspect †		●	●	●	–
Clutch - inspect		●	●	●	59
<b>K</b> Valve clearance - inspect †		●		●	60
Air cleaner element - clean †		●	●	●	53
Idle speed - inspect †		Every ride			58
Throttle cable - inspect and adjust		●	●	●	56
<b>K</b> Fuel tap - clean			●	●	–
Spark arrester - clean				●	60
Engine sprocket - inspect †			●	●	68
<b>K</b> Fuel hose, connections - inspect †			●	●	82

**2. Periodic Inspection (Chassis Related Item)**

OPERATION	FREQUENCY	Initial	Every		See Page
		5 hours (1 month)	50 hours (6 months)	100 hours (12 months)	
Brake - adjust †			Every ride		73, 74
Brake lining wear - inspect †			Every ride		70
<b>K</b> Brake camshaft - lubricate			●	●	–
Spoke tightness and rim runout - inspect †		●	●	●	80
Drive chain - inspect and adjust			Every ride		63
Drive chain - lubricate			Every ride		69
Drive chain wear - inspect †		●	●	●	66
Drive chain guide and slipper - inspect †			●	●	68
Front fork - clean and inspect			●	●	78
<b>K</b> Front fork oil - inspect †			Every year		–
Nuts, bolts, fasteners - inspect †		●	●	●	87
Steering play - inspect †		●	●	●	75
<b>K</b> Steering stem bearing - lubricate				●	–
Rear sprocket - inspect †			●	●	68

## 42 MAINTENANCE AND ADJUSTMENT

OPERATION	FREQUENCY	Every			See Page
	Initial	50 hours (6 months)	100 hours (12 months)		
Battery - inspect †		●	●		82
Battery terminal - inspect †		●	●		84
General lubrication - perform	●	●	●		93
Side stand - inspect †	●		●		–
<b>K</b> Wheel bearing - inspect †		●	●		–
<b>K</b> Swingarm pivots - inspect †	●	●	●		–
<b>K</b> Rear shock absorber - inspect †		●	●		79
Frame - inspect	●	●	●		–
Wheels/tires - inspect	●	●	●		79
Cable - inspect		Every year			–

**3. Periodic Replacement (Engine and Chassis Related Item)**

OPERATION	FREQUENCY	Initial	Every		See Page
		5 hours (1 month)	50 hours (6 months)	100 hours (12 months)	
Engine oil - change		●	●	●	45
Oil filter - replace		●		●	45
<b>K</b> Fuel hose - replace		Every 5 years			—
<b>K</b> Front fork oil - change			●	●	—

†: Replace, add, adjust, clean or torque if necessary.

**K**: Should be serviced by referring to the Service Manual or an authorized Kawasaki dealer.

## 44 MAINTENANCE AND ADJUSTMENT

---

### Engine Oil

---

In order for the engine, transmission and clutch to function properly, maintain the engine oil at the proper level, and change the oil and oil filter in accordance with the Periodic Maintenance Chart.

Not only do dirt and metal particles collect in the oil, but the oil itself loses its lubricative quality if used too long.

#### **WARNING**

**Motorcycle operation with insufficient, deteriorated, or contaminated engine oil will cause accelerated wear and may result in engine or transmission seizure, accident, and injury. Check the oil level before each ride and change the oil according to the periodic maintenance chart in the Owner's Manual.**

#### **NOTICE**

**Racing the engine before the oil reaches every part can cause engine seizure.**

#### *Oil Level Inspection*

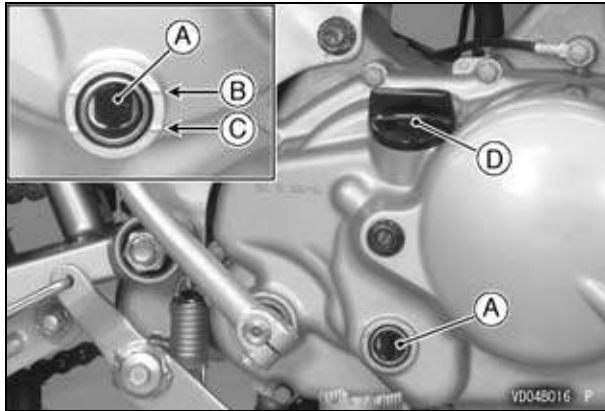
- If the oil has just been changed, let the motorcycle sit a few minutes allowing the oil to settle.
- Start the engine and run it for several minutes **at idle speed. Do not run the engine at high engine speed.**
- Stop the engine and wait several minutes for the oil to settle.
- Check the engine oil level with the motorcycle vertical through the oil level inspection window on the lower right side of the engine. The oil level should come up between the high and low level lines next to the oil level inspection window.

#### **NOTE**

- *If the oil level is too high, remove the excess oil using a syringe or other suitable device.*
- *If the oil level is too low, add the correct amount of oil through the oil filler opening. Use oil of the same type and brand as those of the one that is already in the engine.*

**NOTE**

- *If no oil appears in the oil level inspection window, tip the motorcycle slightly to the right until oil is visible then return to an upright position. If no oil appears even when tipped at an extreme angle, remove the drain bolt to empty any oil that may be in the transmission and crankcase, reinstall the drain bolt and refill with the specified amount of oil.*



- A. Oil Level Inspection Window**
- B. High Level Line**
- C. Low Level Line**
- D. Oil Filler Plug**

**Oil and/or Oil Filter Change**

The engine oil and/or oil filter should be changed periodically to ensure long engine life.

- Warm up the engine thoroughly so that the oil will pick up any sediment and drain easily.
- Set the motorcycle up on its side stand.
- Stop the engine, and place a container beneath it.
- Remove the oil filler plug.
- Remove the oil drain bolt and position the vehicle perpendicular to the ground to allow all the oil to drain.



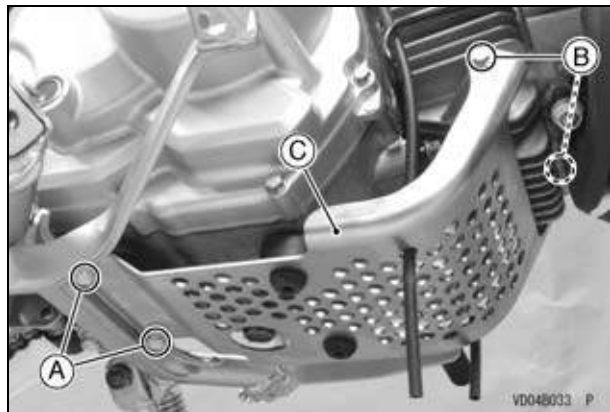
- A. Drain Bolt**

## 46 MAINTENANCE AND ADJUSTMENT

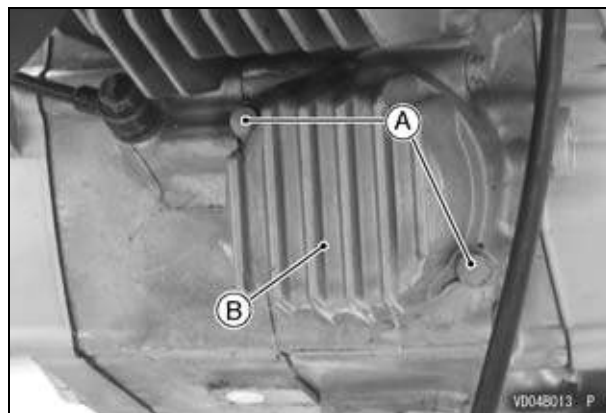
### **⚠ WARNING**

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

- When the oil filter is replaced, remove the engine guard and oil filter cap bolts and take off the cap with O-ring and spring.

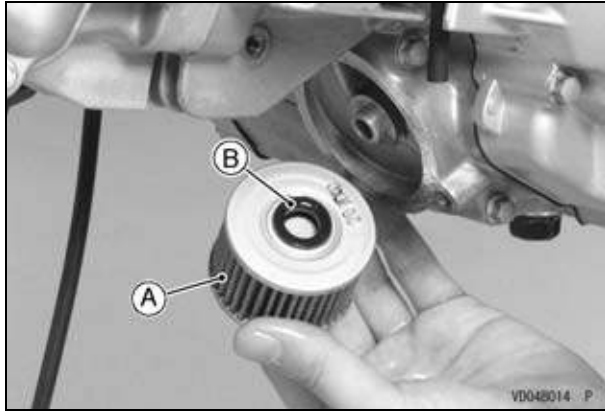


- A. Footpeg Bracket Bolts
- B. Bolts
- C. Engine Guard



- A. Bolts
- B. Oil Filter Cap

- Replace the oil filter element with a new one.
- Install the oil filter element with the grommet toward the engine.

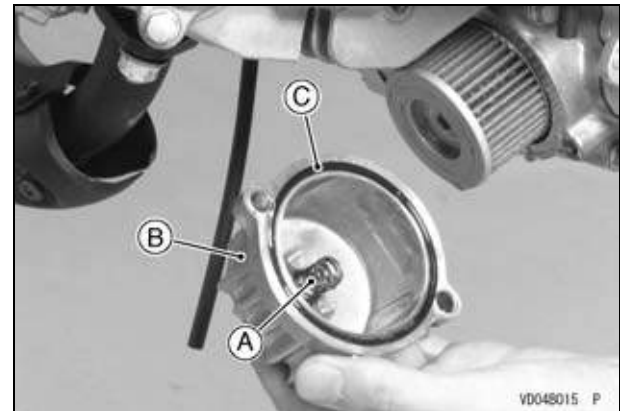


**A. Oil Filter Element**  
**B. Grommet**

- Install the spring to the oil filter cap.
- Install the oil filter cap with the high-temperature grease applied to a new O-ring and tighten its bolts to the specified torque.

### Tightening Torque

Oil Filter Cap Bolts:  
5.2 N·m (0.53 kgf·m, 46 in·lb)



**A. Spring**  
**B. Oil Filter Cap**  
**C. O-ring**

- After the oil has completely drained out, install the drain bolt with its new gasket. Proper torque for it is shown in the table.



## 48 MAINTENANCE AND ADJUSTMENT

### Tightening Torque

Engine Oil Drain Bolt:  
29 N·m (3.0 kgf·m, 21 ft·lb)

#### NOTE

- Replace the gasket and O-ring with a new one.
- Fill the engine up to the high level line with good quality engine oil specified in the table.

### Recommended Engine Oil

Type:  
API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2  
Viscosity:  
SAE 10W-40

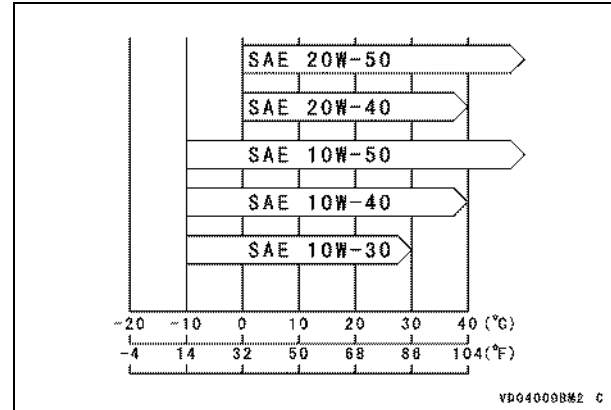
#### NOTE

- Do not add any chemical additive to the oil. Oils fulfilling the above requirements are fully formulated and provide adequate lubrication for both the engine and the clutch.

### Engine Oil Capacity

Capacity:  
0.9 L (1.0 US qt) (When filter is not removed)  
1.0 L (1.1 US qt) (When filter is removed)  
1.1 L (1.2 US qt) (When engine is completely dry)

The oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.



- Tighten the oil filler plug.
- Install the engine guard and tighten the bolts.

### Tightening Torque

Footpeg Bracket Bolts:  
25 N·m (2.5 kgf·m, 18 ft·lb)

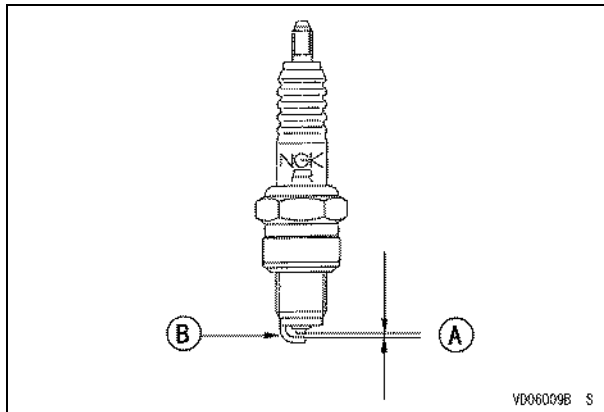
- Start the engine.
- Check the oil level and oil leakage.

## Spark Plug

The spark plug should be taken out periodically for inspection and regapping. Measure the gap with a wire-type thickness gauge. If incorrect, adjust the gap to the specified value by bending the outer electrode.

### Spark Plug Gap

CR6HSA	0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)
--------	----------------------------------



- A. Gap**
- B. Outer Electrode**

If the plug is oily or has carbon built up on it, clean it. The plug may also be cleaned using a high flash -point solvent and a nonmetal brush (nylon etc.). If the spark plug electrodes are corroded, or damaged, or if the insulator is cracked, replace the plug. The standard spark plug is shown in the table below.

### Standard Spark Plug

NGK CR6HSA

### Spark Plug Removal and Installation

- Clean the cylinder head around the spark plug hole before removing the spark plug.
- Pull the spark plug cap off the plug before removing the spark plug.



### A. Spark Plug Cap

- Apply a suitable wrench to the spark plug.
- Loosen and remove the spark plug.

## 50 MAINTENANCE AND ADJUSTMENT

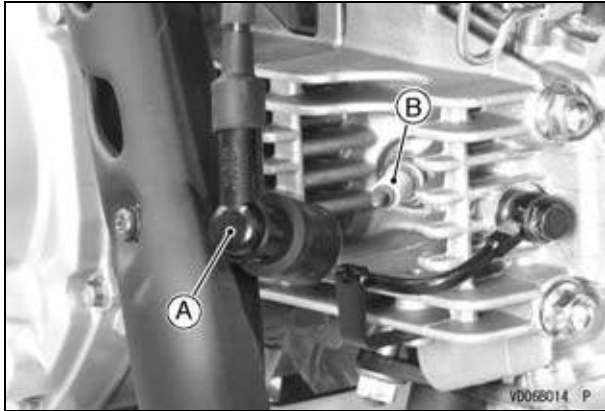
- When reinstalling the spark plug, torque it to specification.

### Tightening Torque

Spark Plug:

13 N·m (1.3 kgf·m, 115 in·lb)

- Fit the plug cap securely onto the spark plug, and pull the cap lightly to make sure that it is properly installed.



A. Plug Cap  
B. Spark Plug

## Air Cleaner

A clogged air cleaner restricts the air intake, increases fuel consumption, reduces engine power, and can cause spark plug fouling. Inspect the air intake system, which includes the air filter and air duct to the carburetor, and the duct clamp and carburetor, before each practice session.

### **⚠ WARNING**

If dirt or dust is allowed to pass through into the carburetor, the throttle may become stuck, possibly causing accident. Be sure to keep the dust from entering during cleaning.

### **NOTICE**

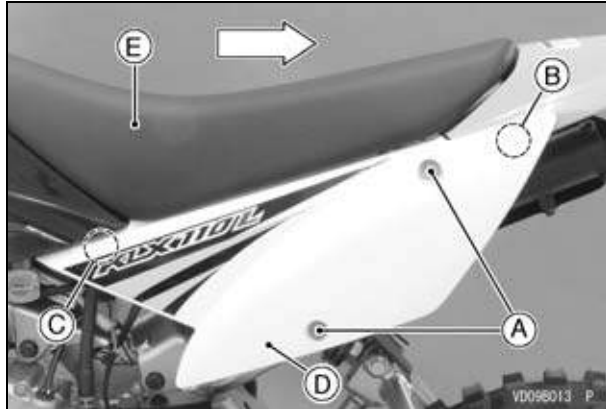
A clogged air cleaner will affect fuel mixture to the engine and reduce engine power and cause spark plug fouling.

### **NOTE**

- *In dusty areas, the element should be cleaned more frequently than recommended interval.*
- *After riding through rain or on muddy roads, the element should be cleaned immediately.*

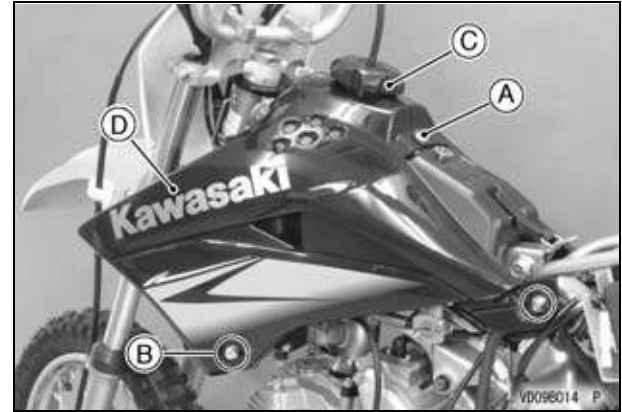
### *Element Removal and Inspection*

- Remove the bolts on the right and left sides.
- Clear the projections from the grommets and hook portions from the slots, and remove the side covers.
- Remove the seat backward.



- A. Bolts**
- B. Projection and Grommet**
- C. Hook Portion and Slot**
- D. Side Cover**
- E. Seat**

- Remove the screw and bolts on the right and left sides.
- Remove the fuel tank cap and shroud.

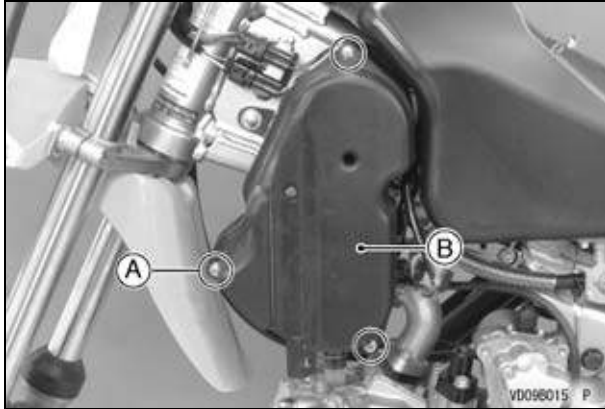


- A. Screw**
- B. Bolts**
- C. Fuel Tank Cap**
- D. Shroud**

- Install the fuel tank cap.

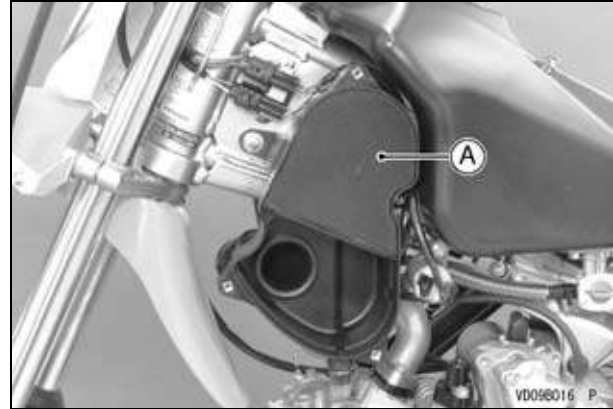
## 52 MAINTENANCE AND ADJUSTMENT

- Remove the screws and air cleaner cover.



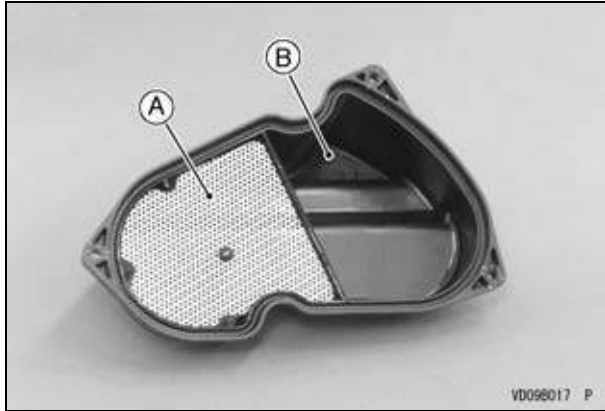
- A. Screws
- B. Air Cleaner Cover

- Take out the air cleaner element.



- A. Air Cleaner Element

- Check inside of the intake tract and carburetor for dirt. If dirty, clean the intake tract and carburetor thoroughly.
- Stuff a clean, lint-free towel on the air cleaner housing to keep dirt from entering the carburetor.
- Wipe out the inside of the air cleaner housing and wire screen of the air cleaner cover with a clean, damp towel.



A. Wire Screen  
B. Air Cleaner Cover

- Inspect the element. If it is dirty, clean it. Also check if the element is in good condition (no tears, hardening or shrinkage). If damaged, replace the element or it will allow dirt into the carburetor.

**⚠ WARNING**

A clogged air cleaner may allow dirt and dust to enter the carburetor and the throttle may stick resulting in a hazardous operating condition. Clean the air cleaner according to the periodic maintenance chart; more often if the motorcycle is used in extremely dusty conditions.

**NOTICE**

A clogged air cleaner may allow dirt and dust to enter the engine, causing it to wear excessively or to become damaged.

*Element Cleaning and Installation*

- Clean the element in a bath of a high flash-point solvent or hot soapy water. Rinse the element with clear water to remove all traces of the cleaning solution.
- Squeeze the element dry in a clean towel.

**NOTICE**

Do not twist, wring or blow the element dry to avoid damaging it.

**⚠ WARNING**

Gasoline and low flash-point solvents can be flammable and/or explosive and cause severe burns. Clean the element in a well-ventilated area, and take care that there is no spark or flame anywhere near the working areas. Do not use gasoline or low flash-point solvents to clean the element.

## 54 MAINTENANCE AND ADJUSTMENT

- After cleaning, let the filter dry completely. Saturate the element with a high-quality foam air filter oil and make sure that the oil is evenly applied throughout the element. Squeeze out the excess oil, but do not wring the element as this could cause tearing. In this case, too much oil is better than too little. Finally pat the element with a paper towel to remove any excess oil.
- Before installation, check the element for damage such as tears, hardening, or shrinkage. If damaged, replace the element.
- Apply grease to all mating surfaces and to the screw hole in the air cleaner housing and intake tract.
- Remove the towel from the carburetor.
- Coat the element lip and lip seat with a thick layer of all-purpose grease to assure a complete seal.



A. Apply grease.

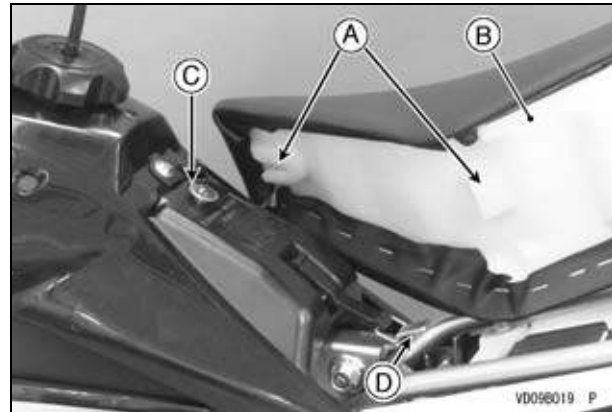
- Install the air cleaner element in the housing, and make sure the sealing surface of the element is seated properly.
- Install the air cleaner cover and tighten the screws.

### Tightening Torque

Air Cleaner Cover Screws:

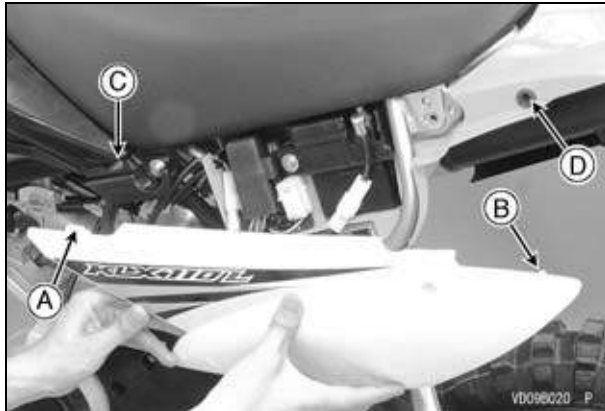
1.5 N·m (0.15 kgf·m, 13 in·lb)

- Remove the fuel tank cap.
- Install the shroud and fuel tank cap.
- Slip the slots of the seat to the tank washer and hook of the frame.



- A. Slots
- B. Seat
- C. Tank Washer
- D. Hook

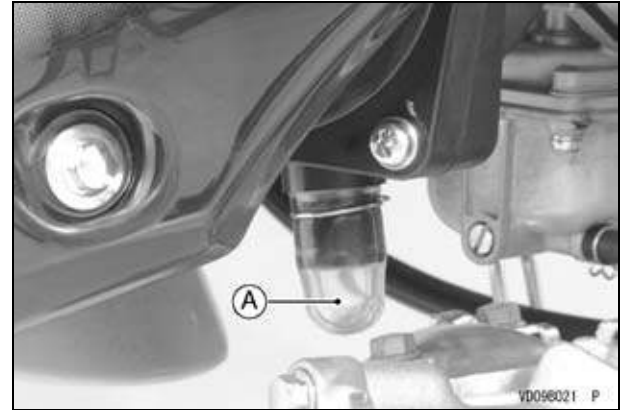
- Insert the hook and projection into the slot and grommet.



- A. Hook
- B. Projection
- C. Slot
- D. Grommet

### Oil Draining

- Inspect the plug to see if any oil or water has run down.



- A. Plug

- If there are any oil, remove the plug and drain the oil.

### **⚠ WARNING**

Oil on tires will make them slippery and can cause an accident and injury. Be sure to install the plug on the air cleaner housing after draining.



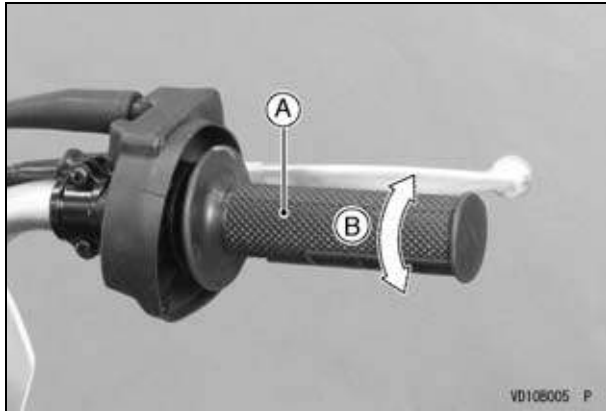
## 56 MAINTENANCE AND ADJUSTMENT

### Throttle Cable

#### *Throttle Cable Adjustment*

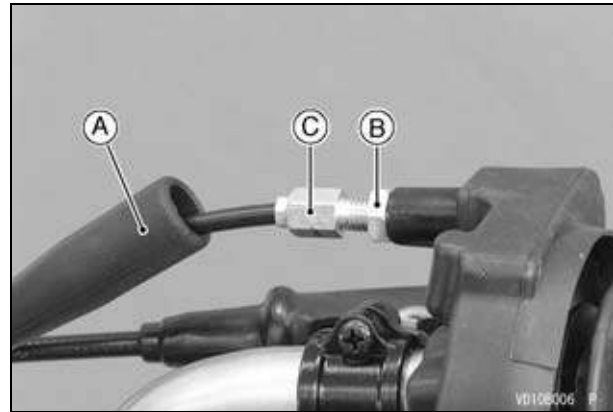
Inspect the throttle grip for smooth operation in all steering positions. Check and adjust the throttle cable in accordance with the Periodic Maintenance Chart.

- Check that the throttle grip has 2 ~ 3 mm (0.08 ~ 0.12 in.) of play and turns smoothly.



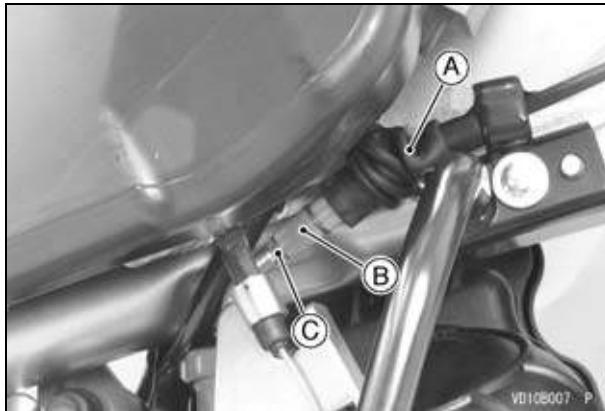
- A. Throttle Grip
- B. 2 ~ 3 mm (0.08 ~ 0.12 in.)

- If there is improper play, adjust it.
- Pull the rubber boot off the upper end of the throttle cable.
- Loosen the locknut on the upper end of the throttle cable and turn the adjuster to obtain the specified play.
- Tighten the locknut.



- A. Rubber Boot
- B. Locknut
- C. Adjuster

- Install the rubber boot.
- If the free play cannot be set by adjusting the upper cable adjuster, use the adjuster on the lower end of the cable.
- Remove the shroud (see Air Cleaner section).
- Pull the rubber boot off the top of the carburetor and make the necessary free play adjustment with the adjuster on the lower end of the cable. Then, tighten the locknut and reinstall the rubber boot.



- A. Rubber Boot
- B. Adjuster
- C. Locknut

- Check if the throttle grip moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring. If not, check the throttle cable routing, grip free play, and cable damage. Then lubricate the throttle cable.
- With the engine idling, turn the handlebar both ways and check if handlebar movement changes the idle speed. If so, the throttle cable may be improperly adjusted or incorrectly routed, or damaged. Be sure to correct any of these conditions before riding.
- Reinstall the removed parts.

### **⚠ WARNING**

**Operation with improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition. Be sure the control cable is adjusted and routed correctly, and is free from damage.**

## 58 MAINTENANCE AND ADJUSTMENT

### Carburetor

The following procedure covers the idle adjustment, which should be performed whenever the idle speed is disturbed.

#### *Idle Speed Adjustment*

- Thoroughly warm up the engine.

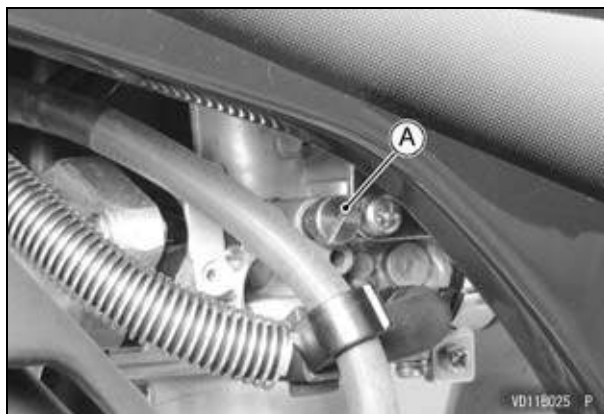
#### **⚠ DANGER**

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**

The engine and exhaust system get extremely hot during normal operation and can cause serious burns. **Never touch a hot engine or an exhaust pipe during idle speed adjustment.**

- Adjust the idle speed 1 600 ~ 1 700 r/min (rpm) by turning the idle adjusting screw.



#### **A. Idle Adjusting Screw**

- Open and close the throttle a few times to make sure the idle speed does not change, and readjust if necessary.
- With the engine idling, turn the handlebar both ways and check if handlebar movement changes the idle speed. If so, the throttle cable may be improperly adjusted, incorrectly routed, or damaged. Be sure to correct any of these conditions before riding.

#### **⚠ WARNING**

**Operation with a damaged cable could result in an unsafe riding condition. Replace a damaged control cable before operation.**

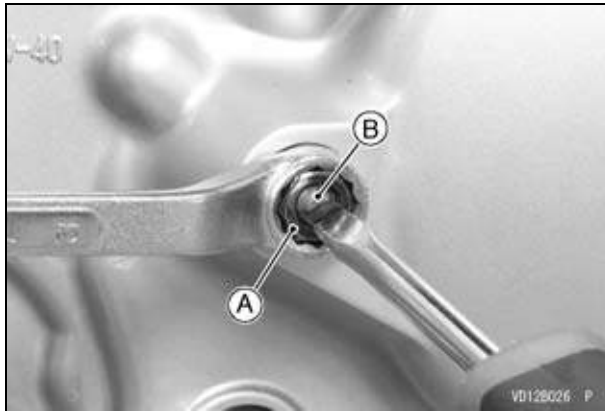
---

## Clutch

---

### *Clutch Adjustment*

- Loosen the locknut.
- Turn the clutch release adjusting screw counter-clockwise until it becomes hard to turn, and then back it out a quarter turn.



**A. Locknut**

**B. Adjusting Screw**

- Tighten the locknut without changing the adjusting screw position.

### **Tightening Torque**

Clutch Adjusting Screw Locknut: 19 N·m (1.9 kgf·m, 14 ft·lb)
---

- Start the engine and check the clutch by operating the shift pedal.

## 60 MAINTENANCE AND ADJUSTMENT

---

### Valve Clearance

---

Valve and valve seat wear decreases valve clearance, upsetting valve timing.

<b><i>NOTICE</i></b>
----------------------

<b>If valve clearance is left unadjusted, wear will eventually cause the valves to remain partly open, which lowers performances, burns the valves and valve seats, and may cause serious engine damage.</b>
--

Valve clearance for each valve should be checked and adjusted in accordance with the Periodic Maintenance Chart. Inspection and adjustment should be done by an authorized Kawasaki dealer.

---

### Spark Arrester

---

This vehicle is equipped with a spark arrester. It must be properly maintained to ensure its efficiency. In accordance with the Periodic Maintenance Chart, clean the spark arrester.

<b><i>NOTICE</i></b>
----------------------

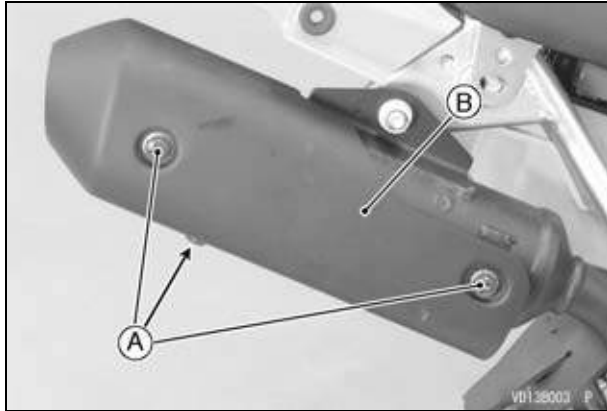
<b>The spark arrester must be installed correctly and functioning properly to provide adequate fire protection.</b>
---

#### *Spark Arrester Cleaning*

<b> <b>WARNING</b></b>
--

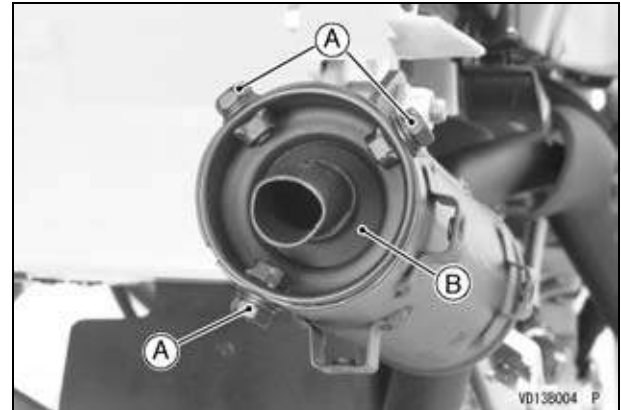
<b>The muffler can become extremely hot during normal operation and cause severe burns. Since the engine must be running during this procedure, wear heat-resistant gloves while cleaning the spark arrester.</b>
---

- Remove the right side cover (see Air Cleaner section).
- Remove the screws and muffler cover.



**A. Screws**  
**B. Muffler Cover**

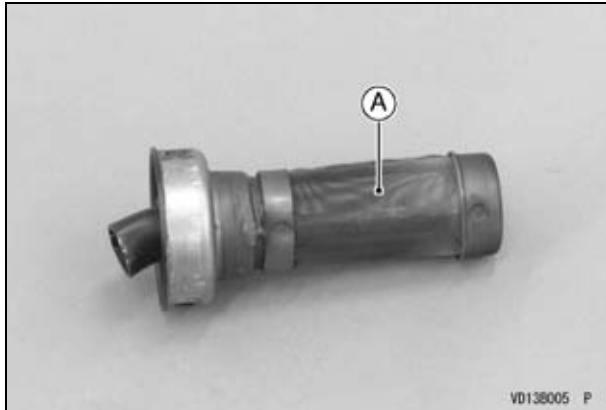
- Remove the bolts and pull the spark arrester.



**A. Bolts**  
**B. Spark Arrester**

## 62 MAINTENANCE AND ADJUSTMENT

- With a wire brush, remove the carbon off the inside of the spark arrester and muffler.



### A. Spark Arrester

- Install the spark arrester into the rear end of the muffler.
- Tighten the spark arrester mounting bolts.

### Tightening Torque

Spark Arrester Mounting Bolts:  
8.8 N·m (0.90 kgf·m, 78 in·lb)

- Install the muffler cover and tighten the screws.

### Tightening Torque

Muffler Cover Screws:  
3.0 N·m (0.31 kgf·m, 27 in·lb)

- Install the removed parts.

## Drive Chain

For safety and to prevent excessive wear, the drive chain must be checked, adjusted, and lubricated before riding. If the chain becomes badly worn or maladjusted - either too loose or too tight - it could jump off the sprockets or break.

### WARNING

A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control. Inspect the chain for damage and proper adjustment before each ride.

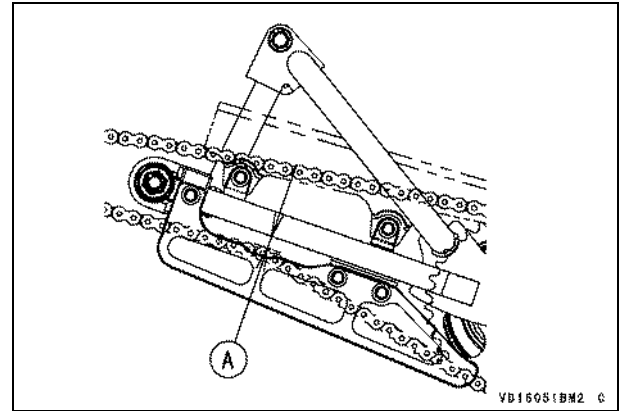
### *Chain Slack Inspection*

- Set the motorcycle up on its side stand, then rotate the rear wheel to find the place where the chain is tightest (because it wears unevenly).
- Push up the drive chain in the middle of the lower chain run to measure the chain slack. The distance between the chain and the swingarm should be within the standard value.

### Drive Chain Slack

Standard	11 ~ 16 mm (0.4 ~ 0.6 in.)
----------	----------------------------

- Adjust the drive chain if its slack is out of specification.



A. Chain Slack

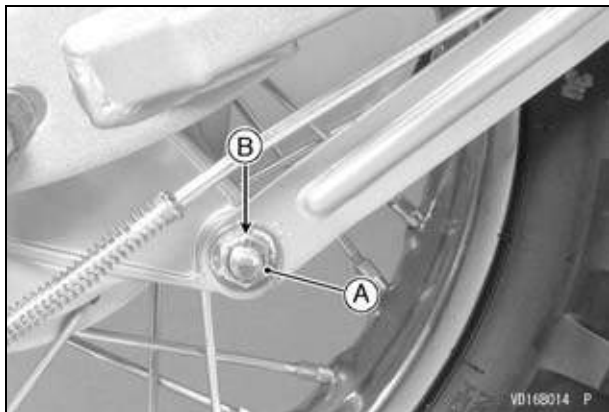
- In addition to checking the slack, rotate the rear wheel to inspect the drive chain for damaged rollers, loose pins and links and the sprockets for unevenly or excessively worn and damaged teeth.
- If there are any such defects, replace the drive chain and/or the sprockets.

### *Chain Slack Adjustment*

- Remove the cotter pin from the torque link nut, and loosen the torque link nut.



## 64 MAINTENANCE AND ADJUSTMENT

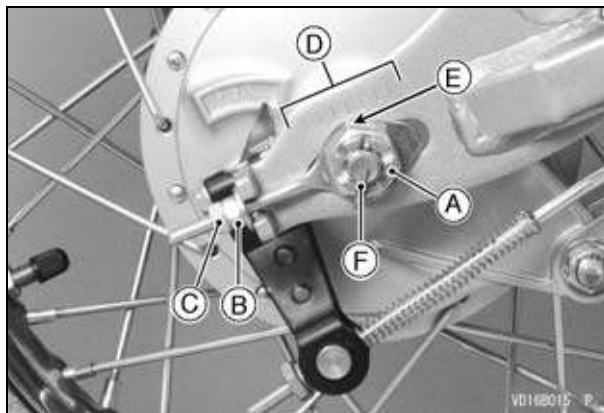


**A. Torque Link Nut**  
**B. Cotter Pin**

- Remove the cotter pin from the rear axle nut.
- Loosen the rear axle nut and both chain adjuster locknuts.
- Turn both chain adjusting nuts evenly until the drive chain slack (measured between the chain and the swingarm) is within the standard value. For the rear wheel to be properly aligned, the notch of the left chain adjuster should align with the same swingarm mark that the notch of the right chain adjuster aligns with.

### Drive Chain Slack

11 ~ 16 mm (0.4 ~ 0.6 in.)



**A. Rear Axle Nut**  
**B. Adjusting Nut**  
**C. Locknut**  
**D. Marks**  
**E. Notch**  
**F. Cotter Pin**

### NOTE

- *Wheel alignment can also be checked using the straightedge or string method.*

### **⚠** WARNING

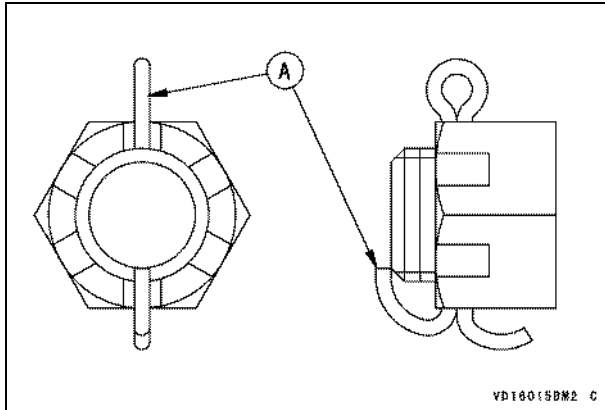
Misalignment of the wheel will result in abnormal wear, and may result in an unsafe riding condition. Align the rear wheel using the marks on the swingarm or measuring the distance between the center of the axle and swingarm pivot.

- Tighten both chain adjuster locknuts.
- Tighten the axle nut to the specified torque.

**Tightening Torque**

Rear Axle Nut:  
64 N·m (6.5 kgf·m, 47 ft·lb)

- Rotate the wheel, measure the chain slack again at the tightest position, and readjust it if necessary.
- Install a new cotter pin through the axle nut and axle, and bend its ends.

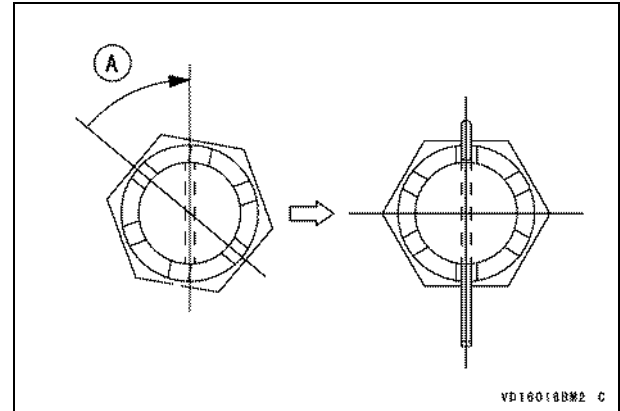


**A. Cotter Pin**

**NOTE**

- *When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle, tighten the nut clockwise up to the next alignment.*

- *It should be within 30 degrees.*
- *Loosen once and tighten again when the slot goes past the nearest hole.*



**A. Turning Clockwise**

- Tighten the torque link nut.

**Tightening Torque**

Torque Link Nut:  
25 N·m (2.5 kgf·m, 18 ft·lb)

- Install a new cotter pin through the torque link bolt, and bend its ends.

## 66 MAINTENANCE AND ADJUSTMENT

### WARNING

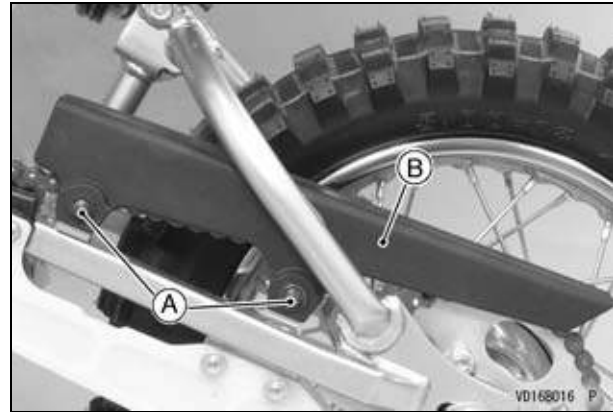
A loose axle nut and torque link nut can lead to an accident resulting in serious injury or death. Tighten the axle nut and torque link nut to the proper torque and install new cotter pins.

- Check the rear brake pedal play.

#### *Chain Wear Inspection*

When the chain has reached its wear limit (i.e., when it has stretched by 1.7% of its original length), it is no longer safe for use and should be replaced. Since it is impractical to measure the entire length of the chain, determine the degree of wear by measuring a 20-link section of the chain.

- Remove the bolts and chain cover.



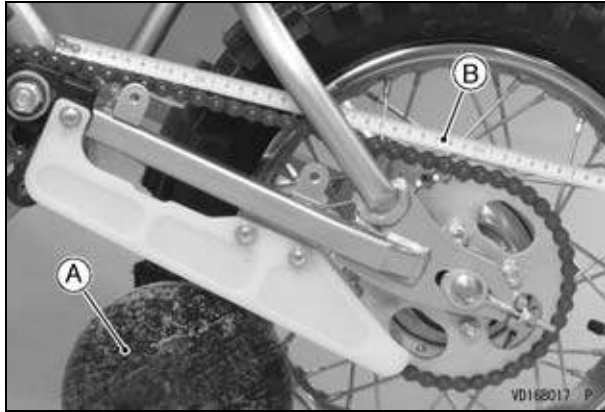
**A. Bolts**

**B. Chain Cover**

- Tighten the chain either by using the chain adjusters or by hanging a 10 kg (22 lb) weight on the chain.
- Measure the 20-link length on a straight part of the chain from the center of the 1st pin to the center of the 21st pin. If the length exceeds the service limit, the chain should be replaced. Since over-worn sprockets will cause a new chain to wear faster, inspect both the engine and rear sprockets whenever the chain is replaced, and replace them if necessary.

### NOTE

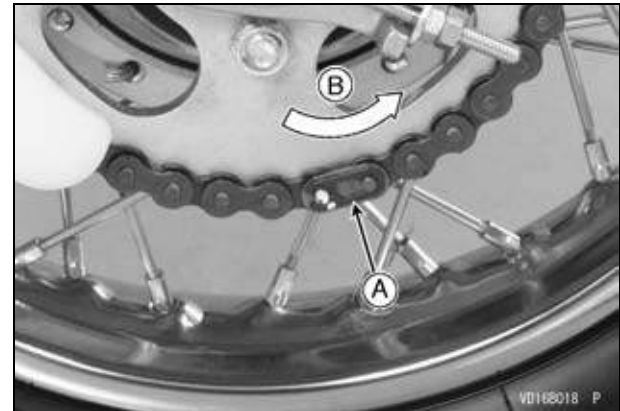
- The drive system was designed for use with a DAIDO DID 420DX 90-links chain. For maximum stretch resistance and safety, a genuine part must be used for replacement.
- To minimize any chance of the master link coming apart, the master link clip must be installed with the closed end of the "U" pointing in the direction of chain rotation.



- A. Weight**
- B. Tape Measure**

### Drive Chain 20-Link Length

Standard	254.0 ~ 254.6 mm (10.00 ~ 10.02 in.)
Service Limit	259 mm (10.2 in.)

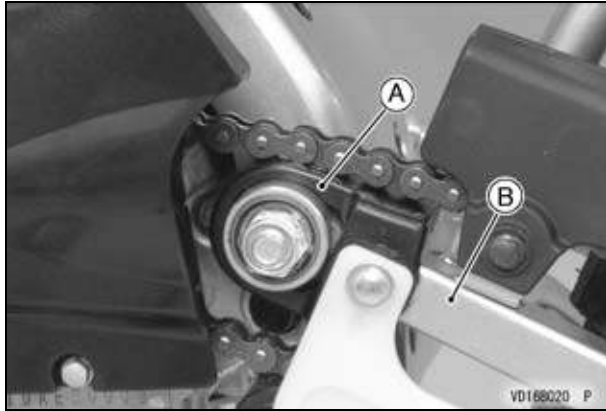


- A. Master Link Clip**
- B. Direction of Chain Rotation**

## 68 MAINTENANCE AND ADJUSTMENT

### Chain Slipper Wear Inspection

- Visually inspect the chain slipper on the swingarm and replace it if worn or damaged.

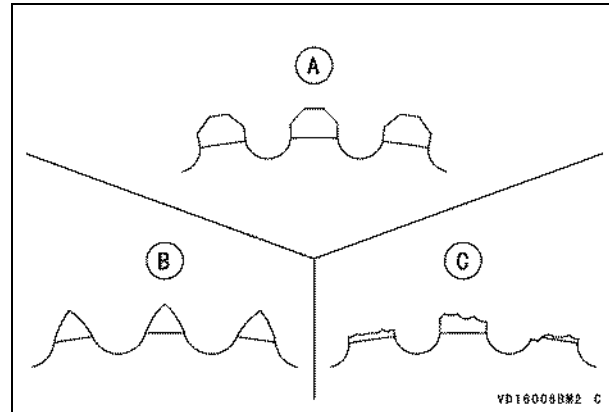


A. Chain Slipper  
B. Swingarm

### Sprocket Wear Inspection

- Visually inspect the sprocket teeth and replace the sprocket if its teeth are worn or damaged.

### Sprocket Teeth Wear



A. Good Teeth  
B. Worn Teeth  
C. Damaged Teeth

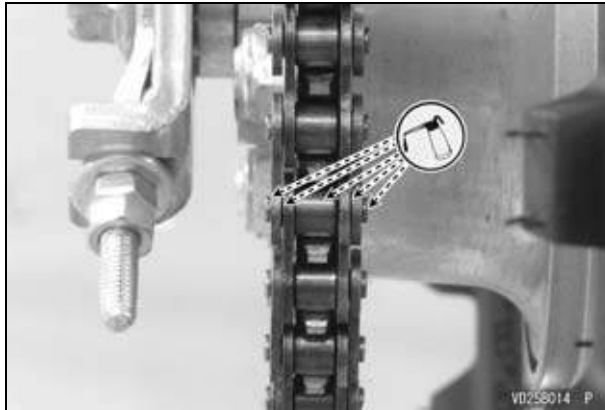
### NOTE

○ Sprocket wear is exaggerated in the illustration.

### Chain Lubrication

Lubrication of the drive chain is necessary after riding in the rain or mud, or any time the chain appears dry with a high quality lubricant for drive chains.

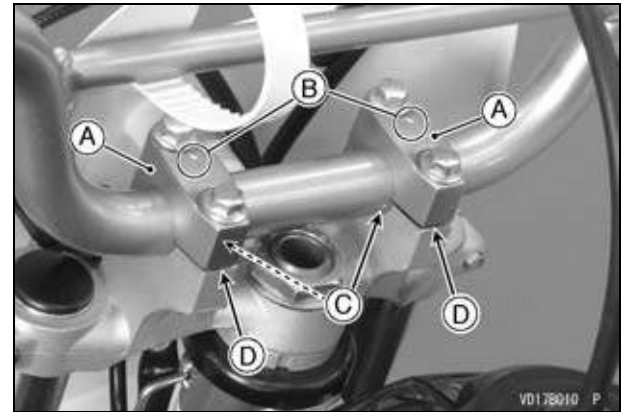
- Apply lubricant to the side of the rollers so that it will penetrate to the rollers and bushings.
- Wipe off any excess lubricant.



### Handlebar

To keep the handlebar properly secured in place, it is necessary to install the handlebar clamps correctly.

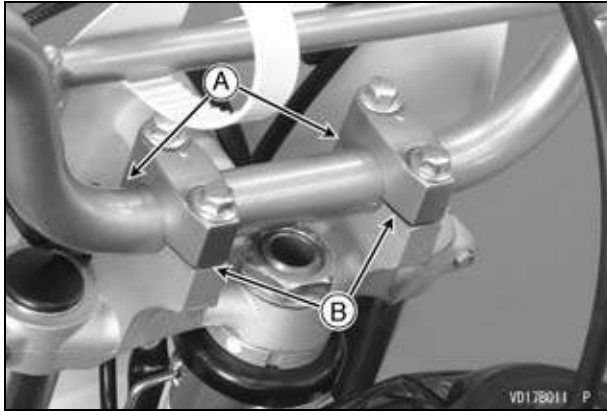
- Mount the handlebar clamps so that the arrows on the clamp face to the front.
- Align the gap at the rear with the punch mark on the handlebar.



- A. Handlebar Clamps
- B. Arrow Marks
- C. Punch Mark
- D. Gap

## 70 MAINTENANCE AND ADJUSTMENT

- Tighten the handlebar clamp bolts, front first, then rear. If the handlebar clamps are correctly installed, there will be no gap at the front and an even gap at the rear of the clamps after the bolts torqued.



- A. No Gap
- B. Gap

### Tightening Torque

Handlebar Clamp Bolts:  
25 N·m (2.5 kgf·m, 18 ft·lb)

- Check the front brake for the proper brake effect, or no brake drag.

## Brakes

Brake lining wear, drum wear, and cable stretch cause the brakes to go out of adjustment, increasing lever and pedal play, and decreasing braking effectiveness. Brake adjustment to compensate for this consists of correcting the cam lever angle, adjusting the front brake lever and rear brake pedal travel.

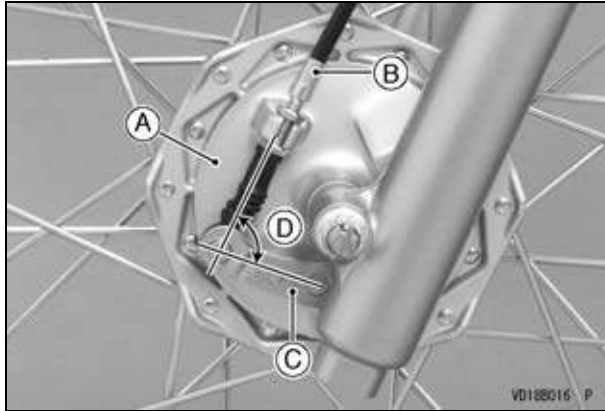
### *Brake Wear Inspection*

#### Front

When the front brake is fully applied, the brake cam lever should come to an 80 ~ 90° angle with the brake cable. Otherwise, remove the cam lever, and then reinstall it in a new position on the shaft to obtain the proper angle. Adjust the brakes.

### **⚠ WARNING**

**Worn brake linings diminish brake performance, can damage brake components and lead to brake failure or cause the brake to lock, resulting in a crash that may cause serious injury or death. If the front brake lever adjustment cannot be moved to provide full braking action, inspect the brake linings for excessive wear before moving the front brake cam lever. Replace excessively worn brake linings. Inspection and replacement of any brake components should be performed by an authorized Kawasaki dealer.**



- A. Front Brake Panel
- B. Brake Cable
- C. Cam Lever
- D. 80 ~ 90°

**⚠ WARNING**

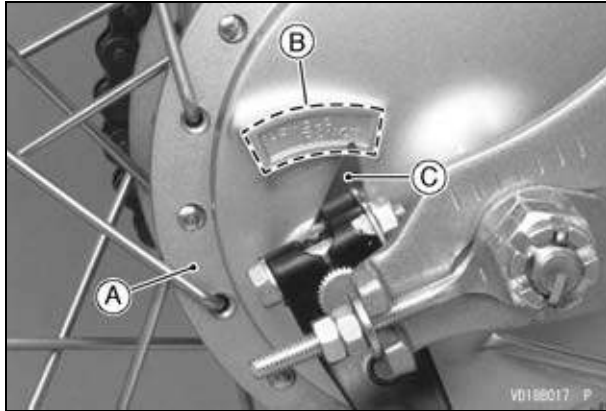
A brake cam lever angle greater than 90 degrees reduces braking effectiveness which can cause a crash resulting in serious injury or death. Whenever the cam lever angle is adjusted, check for brake drag and proper pedal operation. If brake effectiveness is questionable, disassemble and inspect all internal brake parts. Worn brake parts diminish brake performance, can damage brake components and lead to brake failure or cause the brake to lock, resulting in a crash that may cause serious injury or death. Inspection and replacement of any brake components should be performed by an authorized Kawasaki dealer.

**Rear**

On the rear brake panel is a brake lining wear indicator. If the brake lining wear indicator does not point within the USABLE RANGE when the brake is fully applied, the brake shoe linings have worn past the service limit. In this case, the brake shoes must be replaced and the drum and other brake parts examined by an authorized Kawasaki dealer.



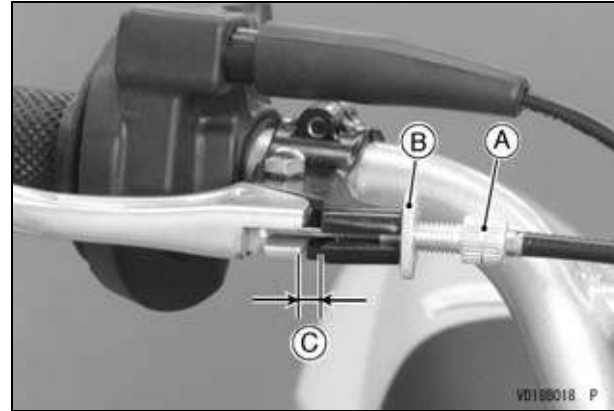
## 72 MAINTENANCE AND ADJUSTMENT



- A. Rear Brake Panel
- B. USABLE RANGE
- C. Brake Lining Wear Indicator

### *Front Brake Lever Play Inspection*

- Slide the front brake lever dust cover back.
- Check that the brake lever has 4 ~ 5 mm (0.16 ~ 0.20 in.) of play when the brake is lightly applied.



- A. Locknut
- B. Adjuster
- C. 4 ~ 5 mm (0.16 ~ 0.20 in.)

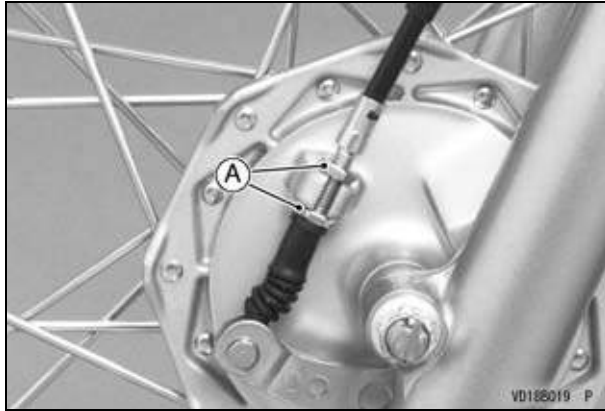
- Rotate the wheel to check for brake drag.
- Operate the lever a few times to see that it returns to its rest position immediately upon release.
- Check braking effectiveness.
- If the lever has improper play, adjust it.

### **⚠ WARNING**

An improperly adjusted brake could drag and cause the brake to overheat, damaging the brake assembly and possibly locking the wheel, resulting in loss of control. Always maintain the proper brake adjustment.

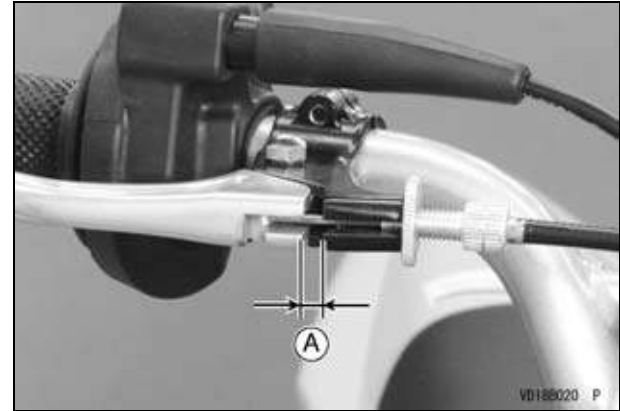
### Front Brake Lever Play Adjustment

- Slide the front brake lever dust cover back.
- Loosen the locknut at the front brake lever, screw the adjuster fully in, and tighten the locknut.
- Loosen the nuts at the lower end of the front brake cable.



**A. Nuts**

- Turn the nuts at the lower end of the front brake cable so that the brake lever play has 4 ~ 5 mm (0.16 ~ 0.20 in.), and tighten the nuts.



**A. 4 ~ 5 mm (0.16 ~ 0.20 in.)**

- If sufficient adjustment cannot be made with the adjuster, complete the adjustment with the adjuster at the brake lever, and then tighten the locknut.
- Check that there is no brake drag.
- Check braking effectiveness.
- Slide the dust cover back into place.

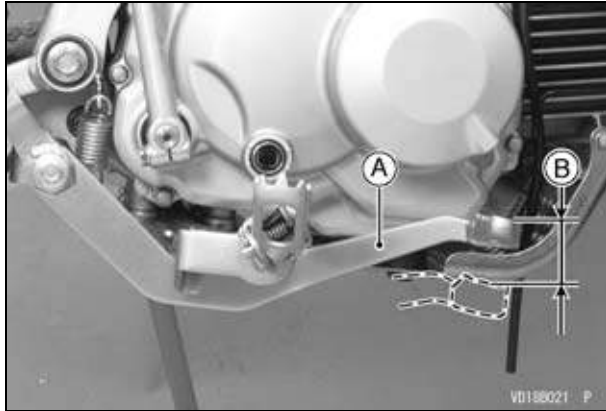
### NOTE

- For minor corrections, use the adjuster at the front brake lever.
- If the brake lever adjustment cannot be made with the adjuster at the brake lever or at the brake panel, move the front brake cam lever to a new position on the brake camshaft.

## 74 MAINTENANCE AND ADJUSTMENT

### Rear Brake Pedal Play Inspection

- The brake pedal play should have 20 ~ 30 mm (0.8 ~ 1.2 in.) when the pedal is pushed down lightly by hand.



- A. Rear Brake Pedal
- B. 20 ~ 30 mm (0.8 ~ 1.2 in.)

- Rotate the wheel to check for brake drag.
- Operate the pedal a few times to see that it returns to its rest position immediately upon release.
- Check braking effectiveness.
- If the pedal has improper play, adjust it.

### WARNING

An improperly adjusted brake could drag and cause the brake to overheat, damaging the brake assembly and possibly locking the wheel, resulting in loss of control. Always maintain the proper brake adjustment.

### Rear Brake Pedal Play Adjustment

- Turn the adjusting nut at the brake rod so that the pedal play has 20 ~ 30 mm (0.8 ~ 1.2 in.).



- A. Adjusting Nut

- Check that there is no brake drag.
- Check braking effectiveness.

---

## Steering

---

The steering should always be kept adjusted so that the handlebar will turn freely but not have excessive play. The steering play must be checked in accordance with the Periodic Maintenance Chart.

### *Steering Inspection*

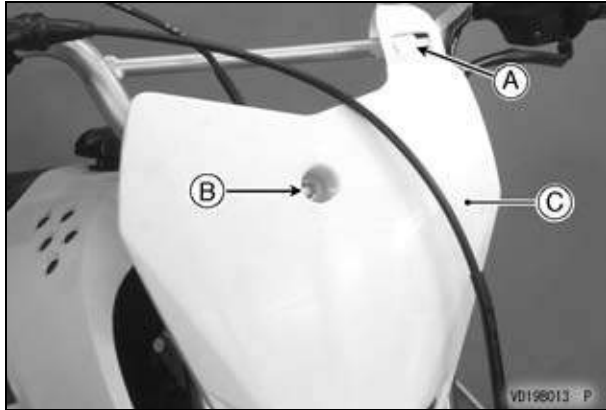
- To check the steering adjustment, raise the front wheel off the ground using a jack (special tool: 57001-1238).
- Push the handlebar lightly to either side. If the handlebar continues moving under its own momentum, the steering is not too tight.
- Squatting in front of the motorcycle, grasp the lower ends of the front fork at the axle, and push and rock the front fork back and forth as shown in the figure. If play is felt, the steering is too loose and needs to be adjusted.



## 76 MAINTENANCE AND ADJUSTMENT

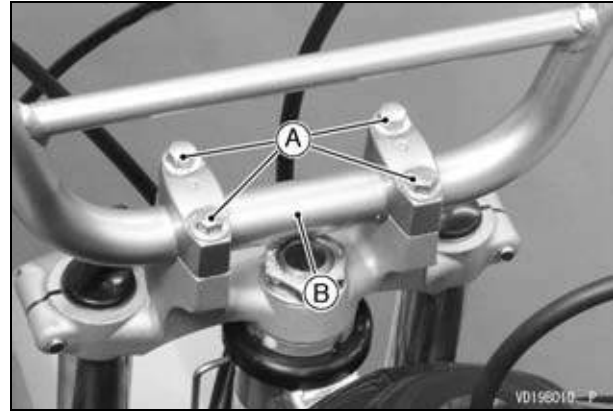
### *Steering Adjustment*

- Raise the front wheel off the ground using a jack (special tool: 57001-1238).
- Unlock the clamp of the number plate.
- Remove the bolt.
- Clear the holes and remove the number plate.



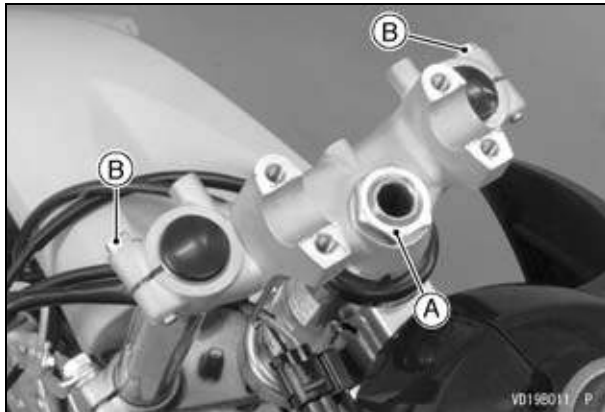
- A. Clamp**
- B. Bolt**
- C. Number Plate**

- Remove the handlebar clamp bolts and take out the handlebar.



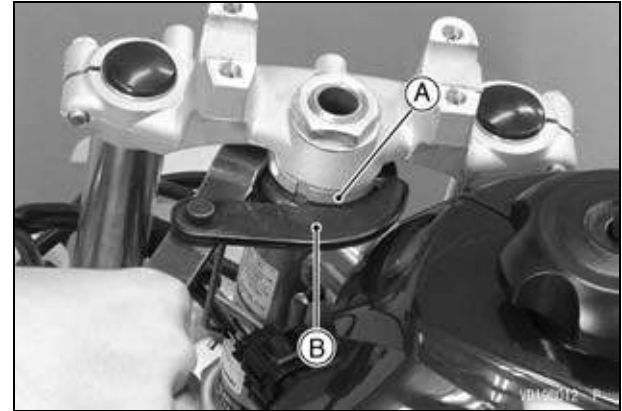
- A. Handlebar Clamp Bolts**
- B. Handlebar**

- Loosen the steering stem head nut and left and right front fork clamp bolts (upper).



**A. Steering Stem Head Nut**  
**B. Front Fork Clamp Bolts (Upper)**

- Turn the steering stem locknut with a stem nut wrench (special tool: 57001-1100) to obtain the proper adjustment.



**A. Steering Stem Locknut**  
**B. Stem Nut Wrench (Special Tool: 57001-1100)**

- Apply the specified torques to the steering stem head nut and front fork clamp bolts (upper).

### Tightening Torque

Steering Stem Head Nut: 44 N·m (4.5 kgf·m, 32 ft·lb)
Front Fork Clamp Bolts (Upper): 20 N·m (2.0 kgf·m, 15 ft·lb)

- Install the handlebar (see Handlebar section), and check the steering again and readjust it if necessary.
- Check the front brake for the proper brake effect, or no brake drag.
- Install the removed parts.

## 78 MAINTENANCE AND ADJUSTMENT

### Front Suspension

The front fork oil change or the front fork inspection/cleaning should be done in accordance with the Periodic Maintenance Chart.

#### *Front Fork Inspection*

#### **NOTICE**

**Sticking muds or dusts on the sliding surface of the front fork could damage to the oil seal, leading to an oil leak. Clean the sliding surface after each ride.**

- Holding the brake lever, pump the front fork back and forth manually to check for smooth operation.
- Visually inspect the front fork for oil leakage, scoring or scratches on the outer surface of the inner tube.
- If necessary, repair or replace by an authorized Kawasaki dealer.



**A. Inner Tube**

#### **NOTICE**

**If the inner tube is badly bent or creased, replace it. Excessive bending, followed by subsequent straitening, can weaken the inner tube.**

---

## Rear Suspension

---

The rear shock absorber inspection should be done in accordance with the Periodic Maintenance Chart.

### *Rear Shock Absorber Inspection*

<b><i>NOTICE</i></b>
----------------------

<p><b>Sticking muds or dusts on the sliding surface of the rear shock absorber could damage to the oil seal, leading to an oil leak. Clean the sliding surface after each ride.</b></p>
---

- Pump the seat down and up by 4 or 5 times, and inspect the smooth stroke.
- If it does not smoothly or noise is found, inspect the oil leak and rear shock absorber mounting.
- Visually inspect the rear shock absorber for oil leakage.
- If necessary, repair or replace by an authorized Kawasaki dealer.

---

## Wheels

---

### *Tire Air Pressure*

Tire air pressure affects traction, handling, and tire life. Adjust the tire air pressure to suit track conditions and rider preference, but keep it close within the recommended range.

- To check the tire air pressure, remove the air valve cap, and make sure to tighten the cap securely after checking the tire pressure.
- Reduce the tire air pressure to increase the tire tread surface on the ground when riding on a wet, muddy, sandy or slippery track.
- Increase the tire air pressure to prevent damage or punctures (though the tires will skid more easily) when riding on a pebbly or hard track.

### **Tire Air Pressure Adjustable Range**

80 ~ 100 kPa (0.8 ~ 1.0 kgf/cm <sup>2</sup> , 12 ~ 14 psi)
--

### **NOTE**

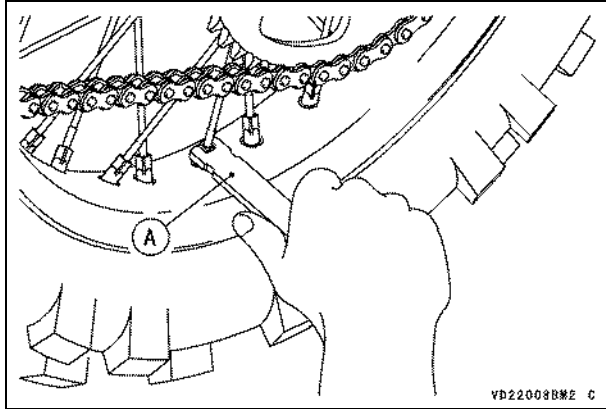
- *Tire air pressure should be checked when the tires are cold, before you ride the motorcycle.*



## 80 MAINTENANCE AND ADJUSTMENT

### *Spokes and Rims*

The spokes on both wheels must all be securely and evenly tightened and not be allowed to loosen. Unevenly tightened or loose spokes will cause the rim to warp, the nipples and spokes to fatigue more quickly, and the spokes to break.



**A. Spoke Wrench**

### *Rim Runout*

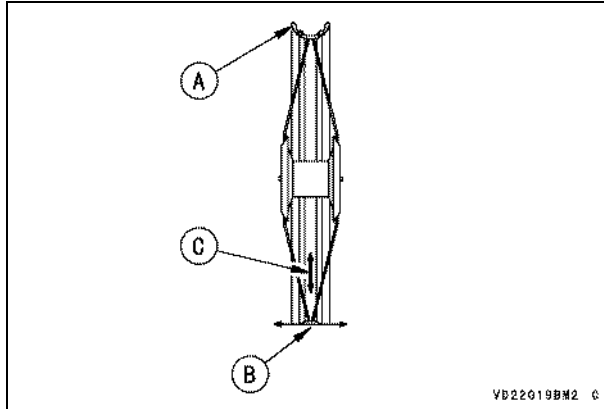
Set up a dial gauge on the side of the rim and rotate the wheel to measure its axial runout. The difference between the highest and lowest readings is the amount of runout.

- Set up the dial gauge on the inner circumference of the rim and rotate the wheel to measure its radial runout. The difference between the highest and lowest readings is the amount of runout.
- A certain amount of rim warpage (runout) can be corrected by recentering the rim, that is, by loosening some spokes and tightening other to change the position of certain portions of the rim. If the rim is badly bent, however, it should be replaced.

**NOTE**

○ The welding spot of the rim may show excessive runout. Disregard this when measuring rim runout.

**Rim Runout**



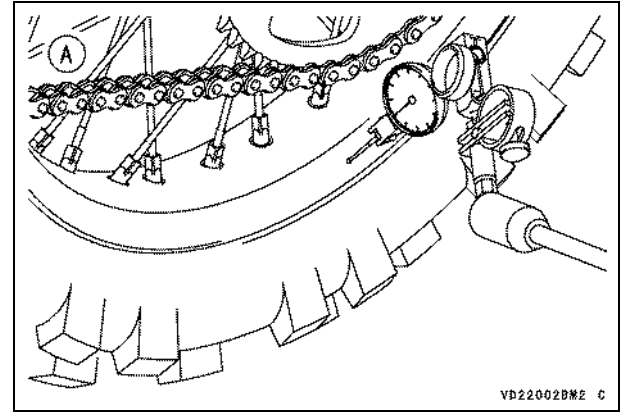
VD22019BM2 C

- A. Rim
- B. Axial Runout
- C. Radial Runout

**Rim Runout Maximum Limit**

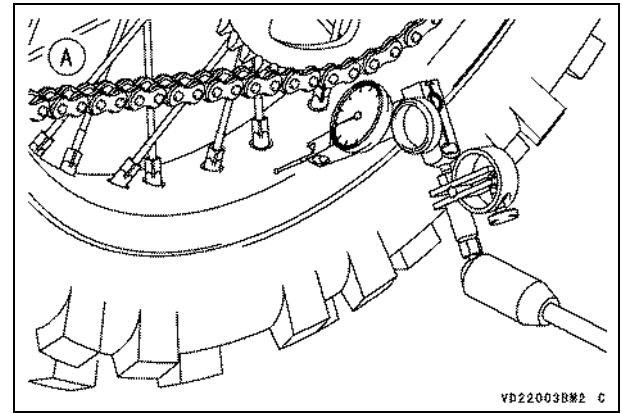
Axial	*TIR 2.0 mm (0.08 in.)
Radial	

\*: Total Indicator Reading



VD22002BM2 C

**A. Axial Rim Runout Measurement**



VD22003BM2 C

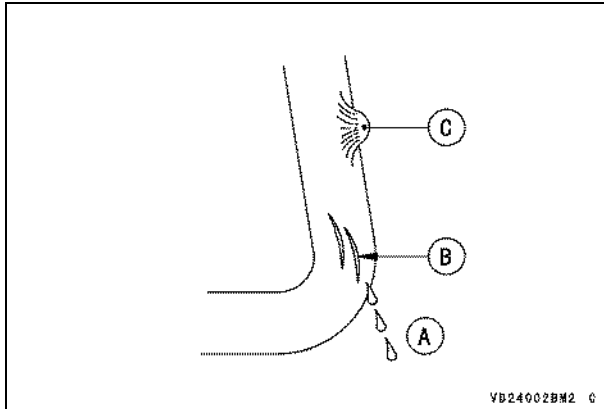
**A. Radial Rim Runout Measurement**

## 82 MAINTENANCE AND ADJUSTMENT

### Hoses Inspection

Check the fuel hose for cracks or deterioration, and the connections for looseness in accordance with the Periodic Maintenance Chart.

- Inspect the fuel hose and fittings for deterioration, cracks and signs of leakage by bending or twisting the hose.
- If damaged, replace the hose.



- A. Leak**
- B. Cracks**
- C. Bulges**

- Check that the hose is securely connected and clamps are held correctly.

### Battery

The battery installed in this motorcycle is a sealed type, so it is not necessary to check the battery electrolyte level or add distilled water.

The sealing strip should not be pulled off once the specified electrolyte has been installed in the battery for initial service.

However, in order to maximize battery life and ensure that it will provide the power needed to start the motorcycle you must properly maintain the battery's charge. When used regularly, the charging system in the motorcycle helps keep the battery fully charged. If your motorcycle is only used occasionally or for short periods of time, the battery is more likely to discharge.

Due to their internal composition, batteries continually self discharge. The discharge rate depends on the type of battery and ambient temperature. As temperature rises, so does the discharge rate. Every 15°C (59°F) doubles the rate.

Self-discharge		
Temperature	Approx. number of days from 100% charged to 100% discharged	
	Lead-Antimony	Lead-Calcium
	Battery	Battery
40°C (104°F)	100 Days	300 Days
25°C (77°F)	200 Days	600 Days
0°C (32°F)	550 Days	950 Days

Current Drain		
Discharging Ampere	Days from 100% charged to 50% discharged	Days from 100% charged to 100% discharged
7 mA	60 Days	119 Days
10 mA	42 Days	83 Days
15 mA	28 Days	56 Days
20 mA	21 Days	42 Days
30 mA	14 Days	28 Days

In extremely cold weather the fluid in an inadequately charged battery can easily freeze, which can crack the case and buckle the plates. A fully charged battery can withstand sub-freezing temperature with no damage.

**Battery Sulfation -**

A common cause of battery failure is sulfation. Sulfation occurs when the battery is left in a discharged condition for an extended time. Sulfate is a normal by product of the chemical reactions within a battery. But when continuous discharge allows the sulfate to crystallize in the cells, the battery plates become permanently damaged and will not hold a charge. Battery failure due to sulfation is not warrantable.

**Battery Maintenance -**

It is the owner's responsibility to keep the battery fully charged. Failure to do so can lead to battery failure and leave you stranded.

If you are riding your vehicle infrequently, inspect the battery voltage weekly using a voltmeter. If it drops below 12.6 volts, the battery should be charged using an appropriate charger (check with a Kawasaki dealer). If you will not be using the motorcycle for longer than two weeks, the battery should be charged using an appropriate charger. Do not use an automotive-type quick charger that may overcharge the battery and damage it.

**NOTE**

- *Leaving the battery connected causes the electrical components to make the battery discharged, resulting the over discharge of the battery. In this case, the repair or replacement of the battery is not included in the warranty. If you do not drive for four weeks or more, disconnect the battery from the vehicle.*

## 84 MAINTENANCE AND ADJUSTMENT

### Kawasaki-recommended chargers are:

Battery Mate 150-9  
OptiMate 4  
Yuasa MB-2040/2060  
Christie C10122S

If the above chargers are not available, use equivalent one.

For more details, ask a Kawasaki dealer.

### Battery Charging -

- Remove the battery from the motorcycle (see Battery Removal).
- Attach the leads from the charger and charge the battery at a rate (amperage x hours) that is indicated on the battery. If it is not possible to read the rate, charge the battery at an amperage that is about 1/10th of the battery capacity.
- The charger will keep the battery fully charged until you are ready to reinstall the battery in the motorcycle (see Battery Installation).

### NOTICE

**Never remove the sealing strip, or the battery can be damaged.**

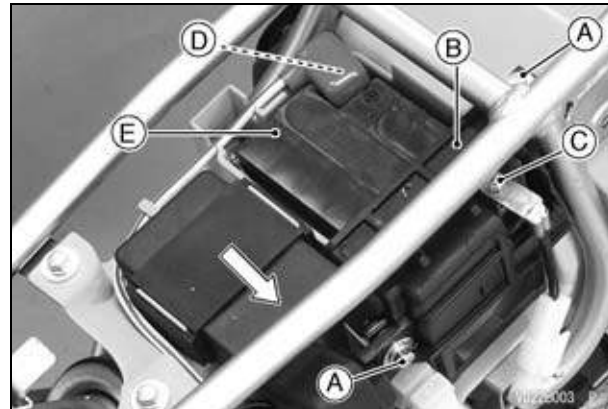
**Do not install a conventional battery in this motorcycle, or the electrical system cannot work properly.**

### NOTE

- If you charge the sealed battery, never fail to observe the instructions shown in the label on the battery.

### Battery Removal

- Remove the side covers and seat (see Air Cleaner section).
- Remove the bolts and battery holder.
- Pull out the battery a little.
- Disconnect the cables from the battery, first from the (-) terminal and then the (+) terminal.
- Take the battery out.



- A. Bolts
- B. Battery Holder
- C. (-) Terminal
- D. (+) Terminal
- E. Battery

- Clean the battery using a solution of baking soda and water. Be sure that the cable connections are clean.

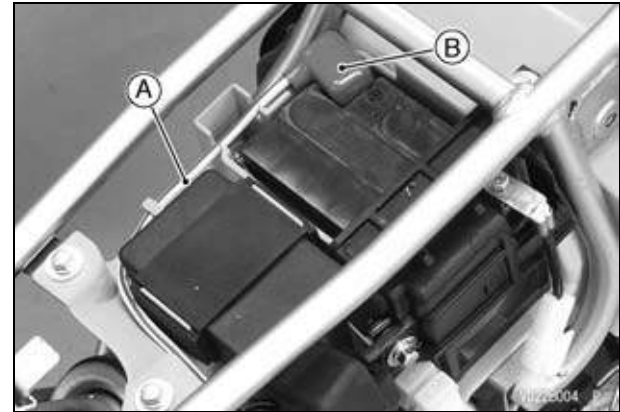
### *Battery Installation*

- Place the battery.
- Install the battery holder and tighten the bolts.
- Run the white/red cable as shown in the figure.
- Connect the white/red cable to the (+) terminal, and then connect the black cable to the (-) terminal.

### **NOTICE**

**Installing the (-) cable to the (+) terminal of the battery or the (+) cable to the (-) terminal of the battery can seriously damaged the electrical system.**

- Put a light coat of grease on the terminals to prevent corrosion.
- Cover the (+) terminal with its protective cap.



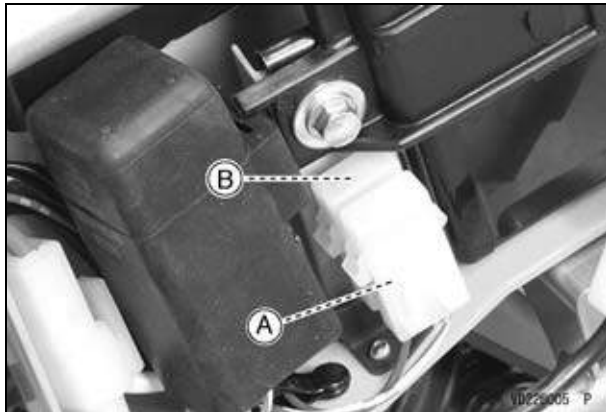
**A. White/Red Cable**  
**B. Protective Cap**

- Reinstall the removed parts.

## 86 MAINTENANCE AND ADJUSTMENT

### Fuse

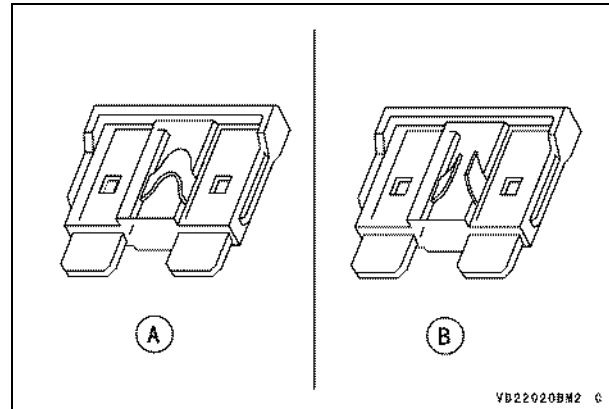
The fuse and spare fuse are mounted behind the left side cover. If a fuse fails during operation, inspect the electrical system to determine the cause, and then replace it with a new fuse of proper amperage.



- A. Fuse
- B. Spare Fuse

### **⚠ WARNING**

Substituting fuses can cause wiring to overheat, catch fire and/or fail. Do not use any substitute for the standard fuse. Replace the blown fuse with a new one of the correct capacity, as specified on the fuse.

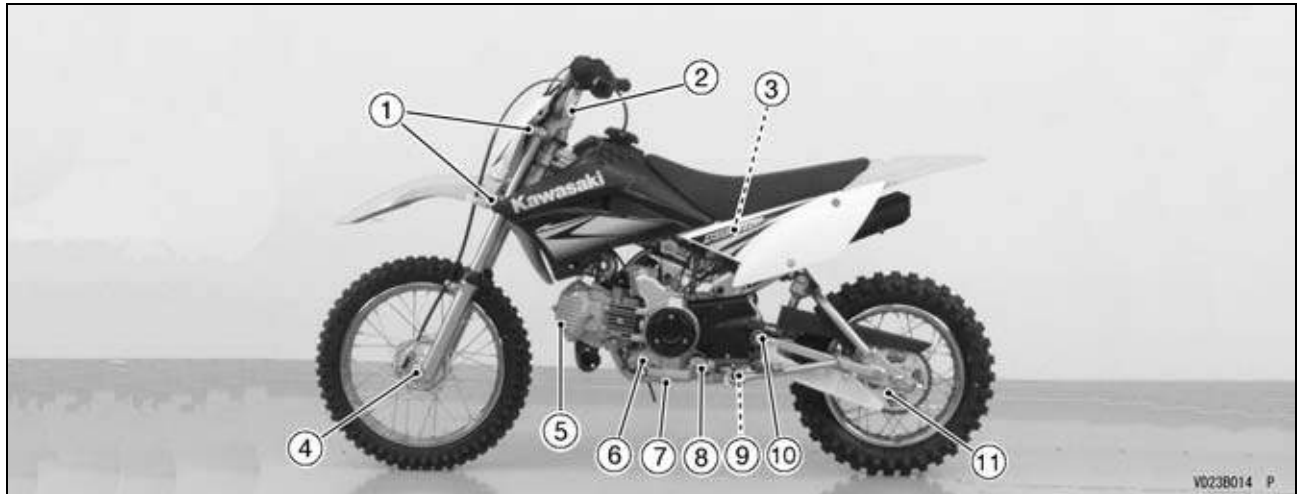


- A. Normal
- B. Failed

## Tightening Torques of Nuts and Bolts

### *Location of nuts and bolts*

Before the first ride of each day of operation, check the tightness of the nuts and bolts shown below. Check also that all cotter pins are in place and in good condition.



- 1. Front Fork Clamp Bolts
- 2. Handlebar Clamp Bolts
- 3. Rear Shock Absorber Bolt and Nut (Upper)

- 4. Front Axle Nut
- 5. Cylinder Head Nuts
- 6. Oil Filter Cap Bolts
- 7. Engine Oil Drain Bolt

- 8. Shift Pedal Bolt
- 9. Side Stand Bolt and Nut
- 10. Swingarm Pivot Shaft Nut
- 11. Rear Sprocket Nuts



## 88 MAINTENANCE AND ADJUSTMENT



- 12. Rear Shock Absorber Nut (Lower)
- 13. Muffler Body Mounting Bolt and Nut
- 14. Engine Mounting Nuts

- 15. Steering Stem Head Nut
- 16. Brake Cam Lever Bolt
- 17. Rear Axle Nut
- 18. Torque Link Nuts
- 19. Brake Pedal Bolt

- 20. Kick Pedal Bolt
- 21. Footpeg Mounting Bolts
- 22. Exhaust Pipe Holder Nuts
- 23. Spark Plug
- 24. Spoke Nipples

*Torque Table*

Tighten all nuts and bolts to the proper torque using an accurate torque wrench. An insufficiently tightened nut or bolt may become damaged or fall out, possibly resulting in damage to the motorcycle and injury to the rider. An overtightened nut or bolt may become damaged, broken, or fall out.

<b>Fastener</b>		<b>N-m</b>	<b>kgf-m</b>	<b>ft-lb</b>	<b>Remarks</b>
<b>ENGINE</b>	Cylinder Head Nuts	22	2.2	16	S
	Clutch Adjusting Screw Locknut	19	1.9	14	
	Engine Oil Drain Bolt	29	3.0	21	
	Oil Filter Cap Bolts	5.2	0.53	46 in-lb	
	Kick Pedal Bolt	8.8	0.90	78 in-lb	
	Shift Pedal Bolt	5.2	0.53	46 in-lb	
	Spark Plug	13	1.3	115 in-lb	
<b>CHASSIS</b>	Exhaust Pipe Holder Nuts	16	1.6	12	
	Muffler Body Mounting Bolt	9.8	1.0	87 in-lb	
	Muffler Body Mounting Nut	30	3.1	22	R
	Engine Mounting Nuts	54	5.5	40	R, S
	Front Axle Nut	44	4.5	32	R
	Rear Axle Nut	64	6.5	47	
	Spoke Nipples	4.0	0.41	35 in-lb	
	Rear Sprocket Nuts	44	4.5	32	R
	Brake Cam Lever Bolt	7.0	0.71	62 in-lb	
	Brake Pedal Bolt	8.8	0.90	78 in-lb	
	Front Fork Clamp Bolts (Lower)	30	3.1	22	
Front Fork Clamp Bolts (Upper)	20	2.0	15		

## 90 MAINTENANCE AND ADJUSTMENT

Fastener		N·m	kgf·m	ft·lb	Remarks
<b>CHASSIS</b>	Rear Shock Absorber Bolt and Nut (Upper)	39	4.0	29	R
	Rear Shock Absorber Nut (Lower)	39	4.0	29	R
	Swingarm Pivot Shaft Nut	78	8.0	58	R
	Torque Link Nuts	25	2.5	18	
	Handlebar Clamp Bolts	25	2.5	18	
	Steering Stem Head Nut	44	4.5	32	
	Footpeg Mounting Bolts	25	2.5	18	
	Side Stand Bolt	9.8	1.0	87 in·lb	
	Side Stand Nut	29	3.0	21	R

R: Replacement Parts

S: Follow the specified tightening sequence.

---

## Cleaning Your Motorcycle

---

### *General Precautions*

Frequent and proper care of your Kawasaki motorcycle will enhance its appearance, optimize overall performance, and extend its useful life. Covering your motorcycle with a high quality, breathable motorcycle cover will help protect its finish from harmful UV rays, pollutants, and reduce the amount of dust reaching its surfaces.

 **WARNING**

**Build-up of debris or flammable material in and around the vehicle chassis, engine, and exhaust can cause mechanical problems and increase the risk of fire. When operating the vehicle in conditions that allow debris or flammable material to collect in and around the vehicle, inspect the engine, electrical component and exhaust areas frequently. If debris or flammable materials have collected, park the vehicle outside and stop the engine. Allow the engine to cool, then remove any collected debris. Do not park or store the vehicle in an enclosed space prior to inspecting for build-up of debris or flammable materials.**

- Be sure the engine and exhaust are cool before washing.
- Avoid applying degreaser to seals, and tires.

- Always use non-abrasive wax and cleaner/polisher.
- Avoid all harsh chemicals, solvents, detergents, and household cleaning products such as ammonia-based window cleaners.
- Gasoline, brake fluid, and coolant will damage the finish of painted and plastic surfaces: wash them off immediately.
- Avoid wire brushes, steel wool, and all other abrasive pads or brushes.
- Use care when washing the plastic parts as they can easily be scratched.
- Avoid using pressure washers; water can penetrate seals and electrical components and damage your motorcycle.
- Avoid spraying water in delicate areas such as in air intakes, carburetor, brake components, electrical components, muffler outlets, and fuel tank openings.

### *Washing Your Motorcycle*

- Rinse your bike with cold water from a garden hose to remove any loose dirt.
- Mix a mild neutral detergent (designed for motorcycles or automobiles) and water in a bucket. Use a soft cloth or sponge to wash your motorcycle. If needed, use a mild degreaser to remove any oil or grease which build up.
- After washing, rinse your motorcycle thoroughly with clean water to remove any residue (residue from the detergent can damage parts of your motorcycle).

## 92 MAINTENANCE AND ADJUSTMENT

- Use a soft cloth to dry your motorcycle. As you dry, inspect your motorcycle for chips and scratches. Do not let the water air dry as this can damage the painted surfaces.
- Start the engine and let it idle for several minutes. The heat from the engine will help dry moist areas.
- Carefully ride your motorcycle at a slow speed and apply the brakes several times. This helps the brakes dry and restores its normal operating performance.
- Lubricate the drive chain to prevent rusting.

### NOTE

- *After riding in an area where the roads are salted or near the ocean, immediately wash your motorcycle with cold water. Do not use warm water as it accelerates the chemical reaction of the salt. After drying, apply a corrosion protection spray on all metal and chrome surfaces to prevent corrosion.*

### *Painted Surfaces*

After washing your motorcycle, coat painted surfaces, both metal and plastic, with a commercially available motorcycle/automotive wax. Wax should be applied once every three months or as conditions require. Avoid surfaces with “satin” or “flat” finishes. Always use non-abrasive products and apply them according to the instructions on the container.

### *Plastic Parts*

After washing use a soft cloth to gently dry plastic parts. When dry, treat the non-painted plastic parts with an approved plastic cleaner/polisher product.

### **NOTICE**

**Plastic parts may deteriorate and break if they come in contact with chemical substances or household cleaning products such as gasoline, brake fluid, window cleaners, thread-locking agents, or other harsh chemicals. If a plastic part comes in contact with any harsh chemical substance, wash it off immediately with water and a mild neutral detergent, and then inspect for damage. Avoid using abrasive pads or brushes to clean plastic parts, as they will damage the part's finish.**

### *Chrome and Aluminum*

Chrome and uncoated aluminum parts can be treated with a chrome/aluminum polish. Coated aluminum should be washed with a mild neutral detergent and finished with a spray polish. Aluminum wheels, both painted and unpainted can be cleaned with special non-acid based wheel spray cleaners.

### *Leather, Vinyl, and Rubber*

If your motorcycle has leather accessories, special care must be taken. Use a leather cleaner/treatment to clean and care for leather accessories. Washing leather parts with detergent and water will damage them, shortening their life.

Vinyl parts should be washed with the rest of the motorcycle, then treated with a vinyl treatment.

The sidewalls of tires and other rubber components should be treated with a rubber protectant to help prolong their useful life.

### **⚠ WARNING**

**Rubber protectants can be slippery and, if used on the tread area, cause loss of traction resulting in accident causing injury or death. Do not apply rubber protectant to any tread area.**

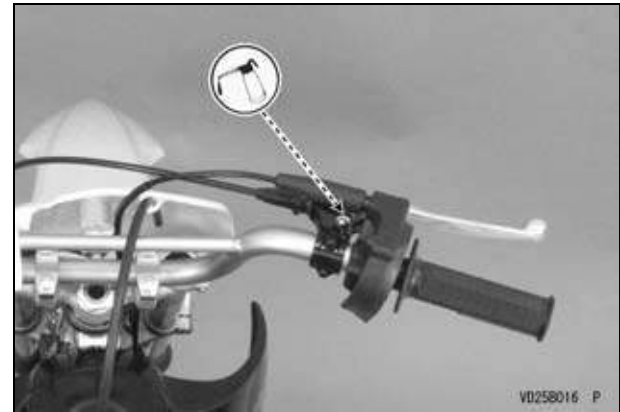
## **Lubrication**

Lubricate the areas shown in the illustrations of this section with either motor oil or regular grease, in accordance with the Periodic Maintenance Chart and whenever the vehicle has been operated under wet or rainy conditions, especially after using a high-pressure spray washer. Before lubricating a part, clean off any rust with rust remover and wipe off any grease, oil, dirt, or grime.

### *General Lubrication*

Apply motor oil to the following pivots:

- Front Brake Lever



VD258016 - P

## 94 MAINTENANCE AND ADJUSTMENT

- Rear Brake Pedal
- Rear Brake Rod Joint
- Kick Pedal
- Footpeg



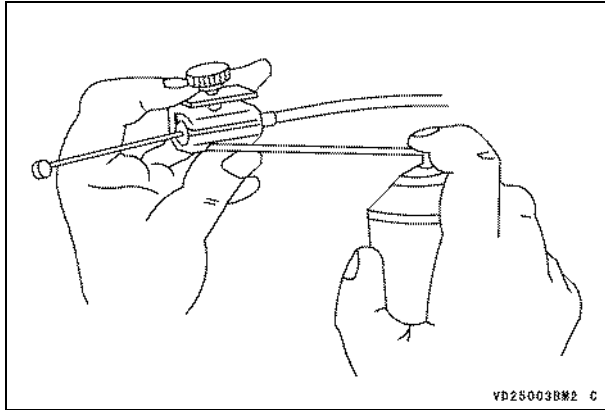
- Shift Pedal
- Side Stand



Apply an aerosol cable lubricant with a pressure lubricator on all cables:

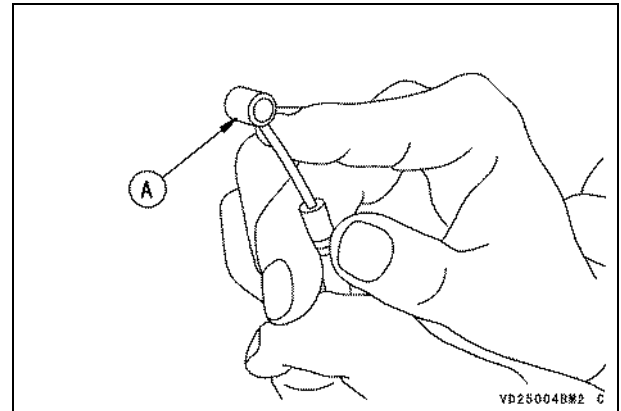
- Throttle Cable

**Cable Lubrication**



Apply grease to the following points:

- Throttle Inner Cable Upper End



**A. Upper End**

***Drive Chain Lubrication***

Lubricate the drive chain after riding through rain or on wet track, or any time that the chain appears dry with a high quality lubricant for drive chains.

- Apply lubricant to the sides of the rollers so that it will penetrate to the rollers and bushings.
- Wipe off any excess lubricant.



96 MAINTENANCE AND ADJUSTMENT




# TROUBLESHOOTING GUIDE

## NOTE

- *This troubleshooting guide is not exhaustive and does not give every possible cause for each problem listed. It is meant simply as a quick guide to assist you in troubleshooting for some of the more common difficulties.*

### Starting failure or difficulties -

#### Starter motor does not rotating:

- Engine stop switch not  position
- Gear position switch trouble
- Starter motor trouble
- Battery voltage low
- Starter relay not contacting or operating
- Starter button not contacting
- Starter system wiring shorted or open
- Engine stop switch trouble
- 10 A fuse blown

#### Starter motor rotating but engine does not turn over:

- Starter clutch trouble
- Starter idle gear trouble

#### Engine does not turn over:

- Valve seized
- Cylinder or piston seized
- Crankshaft seized
- Connecting rod small end seized
- Connecting rod big end seized
- Camshaft seized
- Transmission gear or bearing seized
- Kick shaft return spring broken
- Kick ratchet gear not engaging

#### Fuel does not flow:

- No fuel in tank
- Fuel tap turned off
- Fuel tank cap air vent obstructed
- Fuel tap clogged
- Fuel line clogged
- Float valve clogged

#### Engine flooded:

- Fuel level too high
- Float valve worn or stuck open
- Wrong starting technique (when the engine is flooded, kick with the throttle fully open to allow more air to reach the engine.)

#### Spark missing or weak:

- Engine stop switch turned off
- Spark plug dirty, broken, or gap improperly adjusted

## 98 TROUBLESHOOTING GUIDE

- Spark plug cap or high-tension wiring defective
- Spark plug cap not contacting properly
- Spark plug type incorrect
- Crankshaft sensor defective
- Igniter defective
- Ignition coil defective
- Engine stop switch wiring defective
- Flywheel magneto damaged
- Gear position switch defective
- Wiring shorted or interrupted

### **Fuel/air mixture incorrect:**

- Idle adjusting/pilot screw improperly adjusted
- Pilot jet or air passage clogged
- Air cleaner element clogged, poorly sealed, or not installed

### **Compression low:**

- Spark plug loose
- Cylinder head insufficiently tightened
- Cylinder or piston worn
- No valve clearance
- Crankshaft oil seal leak
- Valve spring broken or weak
- Valve not seating properly (valve bent, worn, or carbon accumulation on the seating surface)
- Piston ring worn, weak, broken, or sticking
- Piston ring side clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder gasket damaged

## **Poor low-speed performance -**

### **Spark weak:**

- Spark plug dirty, broken, or gap improperly adjusted
- Spark plug cap or high-tension wiring defective
- Spark plug cap shorted or not contacting properly
- Spark plug type incorrect
- Igniter defective
- Ignition coil defective
- Crankshaft sensor defective
- Flywheel magneto defective
- Wiring connector not in good contact

### **Fuel/air mixture incorrect:**

- Idle adjusting/pilot screw improperly adjusted
- Pilot jet, needle jet or air passage clogged
- Air cleaner element clogged, poorly sealed, or not installed
- Choke valve closed
- Carburetor fuel level too high or too low
- Fuel tank cap air vent obstructed
- Carburetor holder loose
- Air cleaner duct loose
- Fuel tap clogged

### **Compression low:**

- Spark plug loose
- Cylinder head insufficiently tightened
- Cylinder or piston worn
- No valve clearance
- Valve spring broken or weak

- Valve not seating properly (valve bent, worn, or carbon accumulation on the seating surface)
- Piston ring worn, weak, broken, or sticking
- Piston ring side clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder gasket damaged
- Decompression trouble

**Other:**

- Igniter defective
- Brake dragging
- Clutch slipping
- Engine over heating
- Engine oil level too high
- Engine oil viscosity too high
- Ignition timing incorrect
- Drive chain trouble

**Poor or no high-speed performance -****Firing incorrect:**

- Spark plug dirty, broken, or gap improperly adjusted
- Spark plug cap or high-tension wiring defective
- Spark plug cap shorted or not contacting properly
- Spark plug type incorrect
- Igniter defective
- Ignition coil defective
- Crankshaft sensor defective
- Flywheel magneto defective
- Wiring connector not in good contact

**Fuel/air mixture incorrect:**

- Main jet clogged or wrong size
- Jet needle or needle jet worn
- Jet needle clip in wrong position
- Carburetor fuel level too high or too low
- Air cleaner element clogged, poorly sealed, or not installed
- Choke valve closed
- Fuel contaminated with water or foreign matter
- Fuel tank cap air vent obstructed
- Carburetor holder loose
- Air cleaner duct loose
- Fuel tap clogged
- Fuel line clogged
- Needle jet or air passage clogged

**Compression low:**

- Spark plug loose
- Cylinder head insufficiently tightened
- Cylinder or piston worn
- No valve clearance
- Valve spring broken or weak
- Valve not seating properly (valve bent, worn, or carbon accumulation on the seating surface)
- Piston ring worn, weak, broken, or sticking
- Piston ring side clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder gasket damaged
- Decompression trouble

## 100 TROUBLESHOOTING GUIDE

### **Improper acceleration:**

- Choke valve closed
- Carburetor fuel level too high or too low
- Main jet clogged
- Throttle valve does not fully open
- Air cleaner element clogged
- Muffler clogged
- Fuel contaminated with water or foreign matter
- Brake dragging
- Clutch slipping
- Engine overheating
- Engine oil level too high
- Engine oil viscosity too high
- Crankshaft bearing worn or damaged
- Ignition timing incorrect
- Crankshaft sensor defective

### **Knocking:**

- Carbon built up in combustion chamber
- Fuel quality poor or type incorrect
- Spark plug type incorrect
- Igniter defective

### **Engine overheating -**

#### **Firing incorrect:**

- Spark plug dirty, broken, or gap improperly adjusted
- Spark plug type incorrect
- Igniter defective

### **Fuel/air mixture incorrect:**

- Main jet clogged or wrong size
- Carburetor fuel level too low
- Carburetor holder loose
- Air cleaner element clogged, poorly sealed, or not installed
- Air cleaner duct poorly sealed

### **Compression high:**

- Carbon built up in combustion chamber

### **Engine overloaded:**

- Brake dragging
- Clutch slipping
- Engine oil level too high
- Engine oil viscosity too high
- Drive chain trouble

### **Lubrication inadequate:**

- Engine oil level too low
- Engine oil quality poor or type incorrect

### **Clutch operation faulty -**

#### **Clutch slipping:**

- No clutch release play
- Clutch plate worn or warped
- Clutch spring broken or weak
- Clutch release maladjusted
- Clutch release mechanism defective
- Clutch hub or housing unevenly worn

**Clutch not disengaging properly:**

- Clutch release play excessive
- Clutch spring tension uneven
- Engine oil deteriorated
- Engine oil viscosity too high
- Engine oil level too high
- Clutch housing frozen on drive shaft
- Clutch release mechanism defective
- Clutch hub nut loose
- Clutch plate warped or rough
- Clutch hub spline damaged

**Gear shifting faulty -**

**Transmission does not go into gear; shift pedal does not return:**

- Clutch not disengaging
- Shift fork bent or seized
- Gear stuck on the shaft
- Shift mechanism arm spring broken
- Shift mechanism arm broken
- Shift return spring broken or weak
- Shift return spring pin loose
- Shift pawl broken
- Shift drum broken

**Transmission jumps out of gear:**

- Shift fork worn
- Gear groove worn
- Gear dogs and/or dog grooves worn
- Shift drum groove worn

- Gear positioning lever spring broken or weak
- Shift fork pin worn
- Drive shaft, output shaft, and/or gear splines worn

**Transmission skips gears:**

- Gear positioning lever spring broken or weak
- Shift mechanism arm spring broken or weak

**Engine noise abnormal -**

**Knocking:**

- Carbon built up in combustion chamber
- Fuel quality poor or type incorrect
- Spark plug type incorrect
- Engine overheating
- Igniter defective

**Piston slap:**

- Piston clearance excessive
- Cylinder or piston worn
- Connecting rod bent
- Piston pin or piston pin holes worn

**Valve noise:**

- Valve clearance incorrect
- Valve spring broken or weak
- Camshaft bearing or cam face worn

## 102 TROUBLESHOOTING GUIDE

### Other noise:

- Connecting rod small end clearance excessive
- Connecting rod big end clearance excessive
- Piston ring worn, broken or stuck
- Piston seized or damaged
- Cylinder head gasket leaking
- Exhaust pipe leaking at cylinder head
- Crankshaft runout excessive
- Engine mounts loose
- Crankshaft bearing worn
- Camshaft chain tensioner trouble
- Camshaft chain, sprocket, chain guide worn
- Flywheel magneto loose

### Abnormal drive train noise -

#### Clutch noise:

- Clutch housing/friction plate clearance excessive
- Clutch housing gear excessive
- Metal chip jammed in clutch housing gear teeth

#### Transmission noise:

- Crankcase bearing worn or damaged
- Transmission gear worn or chipped
- Metal chip jammed in gear teeth
- Engine oil level or viscosity too low
- Kick ratchet gear not properly disengaging from kick gear
- Kick shaft idle gear worn or chipped

### Drive chain noise:

- Drive chain slack improperly adjusted
- Drive chain worn
- Rear and/or engine sprocket(s) worn
- Drive chain inefficiently lubricated
- Rear wheel misaligned

### Frame noise abnormal -

#### Front fork noise:

- Oil level or viscosity too low
- Spring broken or weak

#### Rear shock absorber noise:

- Shock absorber damaged

#### Brake noise:

- Brake maladjusted (lever or pedal play excessive)
- Brake linings over worn or worn unevenly
- Brake drum worn unevenly or scored
- Brake spring(s) broken or weak
- Foreign matter in hub

#### Other noise:

- Bracket, nut, bolt, etc. improperly mounted or tightened

**Exhaust smoke -****Excessively white:**

- Piston oil ring worn
- Cylinder worn
- Valve oil seal damaged
- Valve guide worn
- Engine oil level too high

**Black smoke:**

- Air cleaner element clogged
- Main jet too large or fallen out
- Choke valve closed
- Carburetor fuel level too high

**Brownish:**

- Main jet too small
- Carburetor fuel level too low
- Air cleaner duct loose
- Air cleaner poorly sealed or missing

**Poor handling and/or stability -****Handlebar hard to turn:**

- Cable, wiring incorrectly routed
- Steering stem locknut too tight
- Steering stem bearing damaged
- Steering stem bearing inadequately lubricated
- Steering stem bent

- Tire air pressure too low

**Handlebar shakes or vibrates excessively:**

- Tire worn
- Swingarm bushing damaged
- Rim warped or out of balance
- Front and/or rear axle runout excessive
- Wheel bearing worn
- Handlebar clamp loose
- Steering stem head nut loose

**Handlebar pulls to one side:**

- Frame bent
- Rear wheel misaligned
- Swingarm bent or twisted
- Swingarm pivot shaft runout excessive
- Steering maladjusted
- Steering stem bent
- Front fork bent
- Right/left front fork oil level uneven

**Shock absorption unsatisfactory (suspension too hard):**

- Front fork oil excessive
- Front fork oil viscosity too high
- Front fork bent
- Tire air pressure too high



## 104 TROUBLESHOOTING GUIDE

### **Shock absorption unsatisfactory (suspension too soft):**

- Front fork oil level insufficient and/or front fork leaking oil
- Front fork oil viscosity too low
- Front fork and/or rear shock absorber spring weak
- Rear shock absorber leaking oil or gas
- Tire air pressure too low

### **Poor braking performance -**

- Brake maladjusted (lever or pedal play excessive)
- Brake linings over worn or worn unevenly
- Brake drum worn unevenly or scored
- Brake cam, camshaft, shaft hole worn
- Oil, grease on lining and drum
- Dirt, water between lining and drum
- Overheated

### **Battery trouble -**

#### **Battery discharged:**

- Charge insufficient
- Battery faulty (too low terminal voltage)
- Battery cable making poor contact
- Flywheel magneto trouble
- Wiring faulty
- Regulator trouble

#### **Battery overcharged:**

- Flywheel magneto trouble
- Regulator trouble
- Battery faulty

---

# STORAGE

---

---

## Before Storage

---

When the motorcycle is to be stored for any length of time, it should be prepared for storage as follows.


- Clean the entire vehicle thoroughly.
- Run the engine for about five minutes to warm the oil, then stop it and drain the engine oil.

### WARNING

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

- Install the oil drain bolt and fill in fresh engine oil.
- Empty the fuel tank and the carburetor float bowl (Fuel will deteriorate if left for a long time.).

### WARNING

**Gasoline is extremely flammable and can be explosive under certain conditions, creating the potential for serious burns. Move the engine stop switch to the  position. 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. Gasoline is a toxic substance. Dispose of gasoline properly. Contact your local authorities for approved disposal methods.**

- Remove the spark plug and spray fogging oil directly into the cylinder. Turn the engine over several times with the starter button to coat the cylinder wall. Install the spark plug.
- Lubricate the drive chain and all the cables.
- Spray oil on all unpainted metal surfaces to prevent rusting. Avoid getting oil on rubber parts and on the brakes.
- Lift the motorcycle on a box or stand so that both wheels are raised off the ground (If this cannot be done, put boards under the front and rear wheels to keep dampness away from the tire rubber.).
- Tie a plastic bag over the muffler to prevent moisture from entering.
- Cover the motorcycle to keep dust and dirt away from it.

## 106 STORAGE

---

### After Storage

---

- Remove the plastic bag from the muffler.
- Make sure the spark plug is tight.

#### NOTE

- *Fit the plug cap securely onto the spark plug, and pull the cap lightly to make sure that it is properly installed.*
- Fill the fuel tank with fuel.
- Check all the points listed in the Daily Pre-Ride Checks section.
- Perform a lubrication procedure in the Lubrication section.

---

## ENVIRONMENTAL PROTECTION

---

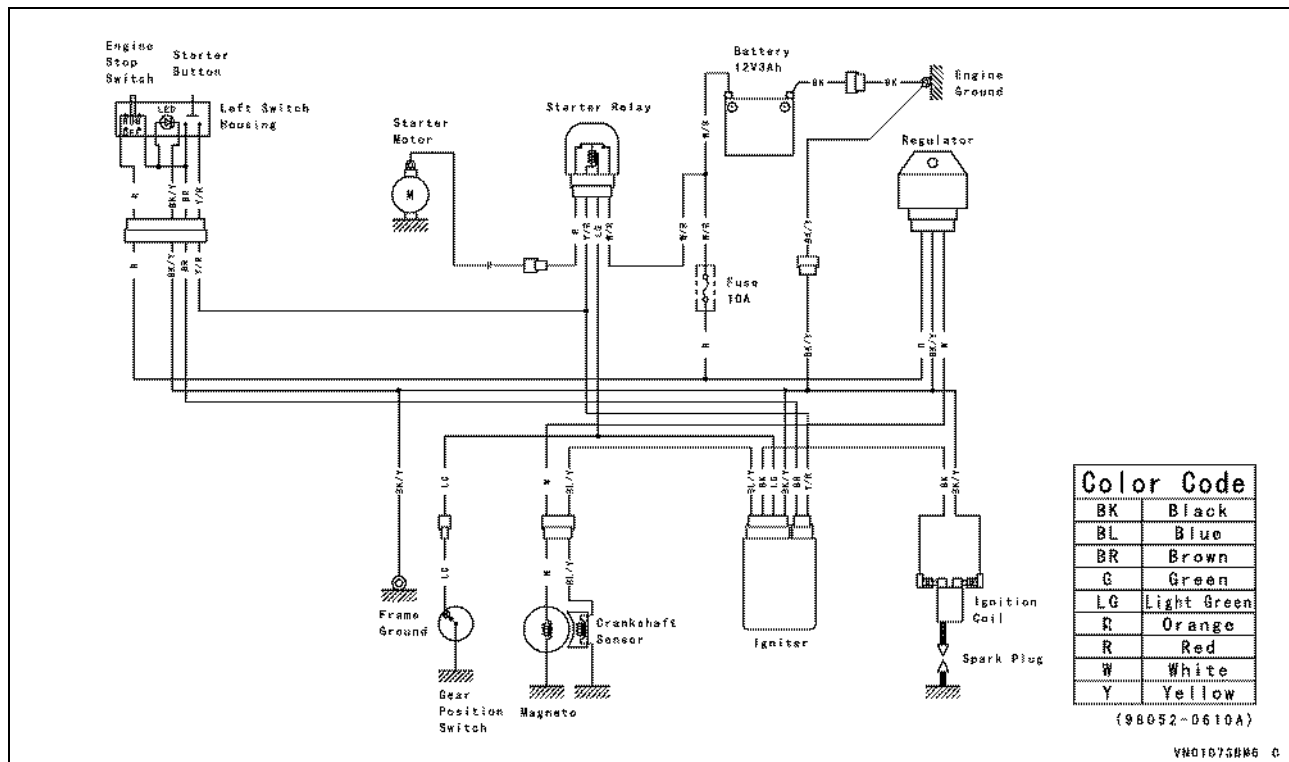
Off-road motorcycling is a wonderful sport, and we hope you will enjoy it to the fullest. However, if improperly conducted, this sport has the potential to cause environmental problems as well as conflicts with other people.

Responsible use of your vehicle will ensure that these problems and conflicts do not occur. **TO PROTECT THE FUTURE OF YOUR SPORT, MAKE SURE YOU USE YOUR VEHICLE LEGALLY, SHOW CONCERN FOR THE ENVIRONMENT, AND RESPECT THE RIGHTS OF OTHER PEOPLE.**

To help preserve the environment, properly discard used batteries, tires, oils and fluids, or other vehicle 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 vehicle at the end of its life.

Also take special care not to spill fuel, oil or other fluids onto the ground.

# WIRING DIAGRAM



Color Code	
BK	Black
BL	Blue
BR	Brown
G	Green
LG	Light Green
R	Orange
Y	Yellow

(98052-0610A)

# KLX110CE



\* 9 9 9 7 6 - 1 7 8 0 \*



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

**Part No. 99976-1780**

Printed in Thailand

GB

FR

DE