OWNER'S MANUAL & OFF-ROAD HANDBOOK

2019 CRF450L

This manual should be considered a permanent part of the motorcycle and should remain with the motorcycle when it is resold.

All information in this publication is based on the latest product information available at the time of approval for printing. Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation.

This vehicle pictured in this owner’s manual may not match your actual vehicle.

2019
Honda CRF450L
OWNER'S MANUAL & OFF-ROAD HANDBOOK

Introduction

Congratulations on choosing your Honda motorcycle.

When you own a Honda, you're part of a worldwide family of satisfied customers – people who appreciate Honda's reputation for building quality into every product.

Before riding, take time to get acquainted with your motorcycle and how it works. To protect your investment, we urge you to take responsibility for keeping your motorcycle well maintained. Scheduled service is a must, of course. But it's just as important to observe the break-in guidelines, and perform all the pre-ride and other periodic checks detailed in this manual.

You should also read the owner's manual before you ride. It's full of facts, instructions, safety information, and helpful tips. To make it easy to use, the manual contains a table of contents, a detailed list of topics at the beginning of each section, and an index at the back of the book.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. This information is intended to help you avoid damage to your motorcycle, other property, or the environment.

Unless you are mechanically qualified and have the proper tools, you should see your dealer for the service and adjustment procedures discussed in this manual.

An official Honda Service Manual for your motorcycle is available (page 194). It is the same manual your dealer uses. If you plan to do any service on your motorcycle beyond the standard maintenance procedures in this manual, you will find an official Honda Service Manual a valuable reference.

Read the Warranties Booklet (page 195) thoroughly so you understand the coverages that protect your new Honda and are aware of your rights and responsibilities.

If you have any questions, or if you ever need a special service or repairs, remember that your Honda dealer knows your motorcycle best and is dedicated to your complete satisfaction.

Please report any change of address or ownership to your dealer so we will be able to contact you concerning important product information.

You may also want to visit our website at
USA: www.powersports.honda.com.
Canada: www.honda.ca.

Happy riding!

ABBREVIATION
Throughout this manual, the following abbreviations are used to identify the respective parts or system.

Abbrev. term	Full term
CKP sensor	Crankshaft Position sensor
DLC	Data Link Connector
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
ECT sensor	Engine Coolant Temperature sensor
IAT sensor	Intake Air Temperature sensor
MAP sensor	Manifold Absolute Pressure sensor
MIL	Malfunction Indicator Lamp
PGM-FI	Programmed Fuel Injection
TDC	Top Dead Center
TP sensor	Throttle Position sensor

A Few Words About Safety

Your safety, and the safety of others, is very important. Operating this motorcycle safely is an important responsibility.

To help you make informed decisions about safety, we have provided operating procedures and other information on labels and in this manual. This information alerts you to potential hazards that could hurt you or others.

Of course, it is not practical or possible to warn you about all hazards associated with operating or maintaining a motorcycle. You must use your own good judgment.

You will find important safety information in a variety of forms, including:

- **Safety Labels** — on the motorcycle.
- **Safety Messages** — preceded by a safety alert symbol ⚠ and one of three signal words: **DANGER**, **WARNING**, or **CAUTION**.

These signal words mean:

⚠ DANGER **You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.**

⚠ WARNING **You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.**

⚠ CAUTION **You CAN be HURT if you don't follow instructions.**

- **Safety Headings** — such as Important Safety Reminders or Important Safety Precautions.
- **Safety Section** — such as Motorcycle Safety.
- **Instructions** — how to use this motorcycle correctly and safety.

This entire manual is filled with important safety information — please read it carefully.

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Motorcycle Safety

This section presents some of the most important information and recommendations to help you ride your motorcycle safely. Please take a few moments to read these pages. This section also includes information about the location of safety labels on your motorcycle.

Important Safety Information

Important Safety Precautions

Your motorcycle can provide many years of service and pleasure, if you take responsibility for your own safety and understand the challenges you can meet while riding.

There is much that you can do to protect yourself when you ride. You'll find many helpful recommendations throughout this manual. The following are a few that we consider to be most important.

Always Wear a Helmet.
It's a proven fact: helmets and protective apparel significantly reduce the number and severity of head and other injuries. So always wear an approved motorcycle helmet and protective apparel (page 18).

Never Carry a Passenger.
Your motorcycle is designed for one person only. There are no handholds, footrests, or seat for a second person–so never carry a passenger. A passenger could interfere with your ability to move around to maintain your balance and control of the motorcycle.

Take Time to Learn & Practice
Even if you have ridden other motorcycles, practice riding in a safe area to become familiar with how this motorcycle works and handles, and to become accustomed to the motorcycle's size and weight.

We recommend that all riders take a certified course approved by the Motorcycle Safety Foundation (MSF). New riders should start with the basic course, and even experienced riders will find the advanced course beneficial.

For information about the MSF training course nearest you, call the national toll-free number: (800) 446-9227.

Other riding tips can be found in the You and Your Motorcycle Riding Tips booklet that came with your motorcycle (USA only).

Developing off-road riding skill a gradual step-by step process. Start by practicing at low speeds in a safe area and slowly build your skills.

Ask your dealer if there are off-road riding groups in your area where you can learn from experienced riders. Also be sure to read Tips & Practice Guide for the Off-Highway Motorcyclist that came with your new motorcycle.

Ride Defensively
Always pay attention to other vehicles around you, and do not assume that other drivers see you. Be prepared to stop quickly or perform an evasive maneuver.

Make Yourself Easy to See
Make yourself more visible, especially at night, by wearing bright reflective clothing, positioning yourself so other drivers can see you, signaling before turning or changing lanes, and using your horn when necessary.

Be Alert for Off-road Hazards
The terrain can be present a variety of challenges when you ride off-road. Continually "read" the terrain for unexpected turns, drop-offs, rocks, ruts and other hazards. Always keep your speed low enough to allow time to see and react to hazards.

Ride within Your Limits
Never ride beyond your personal abilities or faster than conditions warrant. Fatigue and inattention can impair your ability to use good judgment and ride safely.

Don't Drink and Ride.
Alcohol and riding don't mix. Even one alcoholic drink can reduce your ability to respond to changing conditions, and your reaction time gets worse with every additional drink. Don't drink and ride, and don't let your friends drink and ride either.

Keep your Honda in Safe Condition.
It's important to keep your motorcycle properly maintained and in safe riding condition. Having a breakdown can be difficult, especially if you are stranded off-road far from your base. Follow the loading guidelines (page 21), and do not modify your motorcycle (page 3) or install accessories that would make your motorcycle unsafe (page 3).

Lithium-Ion (Li-Ion) Battery.
If you smell an unusual odor coming from the lithium-ion (li-ion) battery, park your motorcycle in a safe place outside and away from flammable objects, then turn the ignition switch to the OFF position. Have your motorcycle inspected by your dealer immediately.

Accessories & Modifications

We strongly advise that you do not add any accessories that were not specifically designed or approved for your motorcycle by Honda or make modifications to your motorcycle from its original design. Doing so can make it unsafe.

Modifying your motorcycle may also void your warranty and make your motorcycle illegal to operate on public roads and highways. Before deciding to install accessories on your motorcycle be certain the modification is safe and legal.

⚠ WARNING

Improper accessories or modifications can cause a crash in which you can be seriously hurt or killed.

Follow all instructions in this owner's manual regarding accessories and modifications.

Do not pull a trailer with, or attach a sidecar to, your motorcycle. Your motorcycle was not designed for these attachments, and their use can seriously impair your motorcycle's handling.

Do not attempt modify the motorcycle to carry a passenger. The subframe was not designed to carry the additional weight of a passenger.

Off-Road Safety

Off-Road Safety

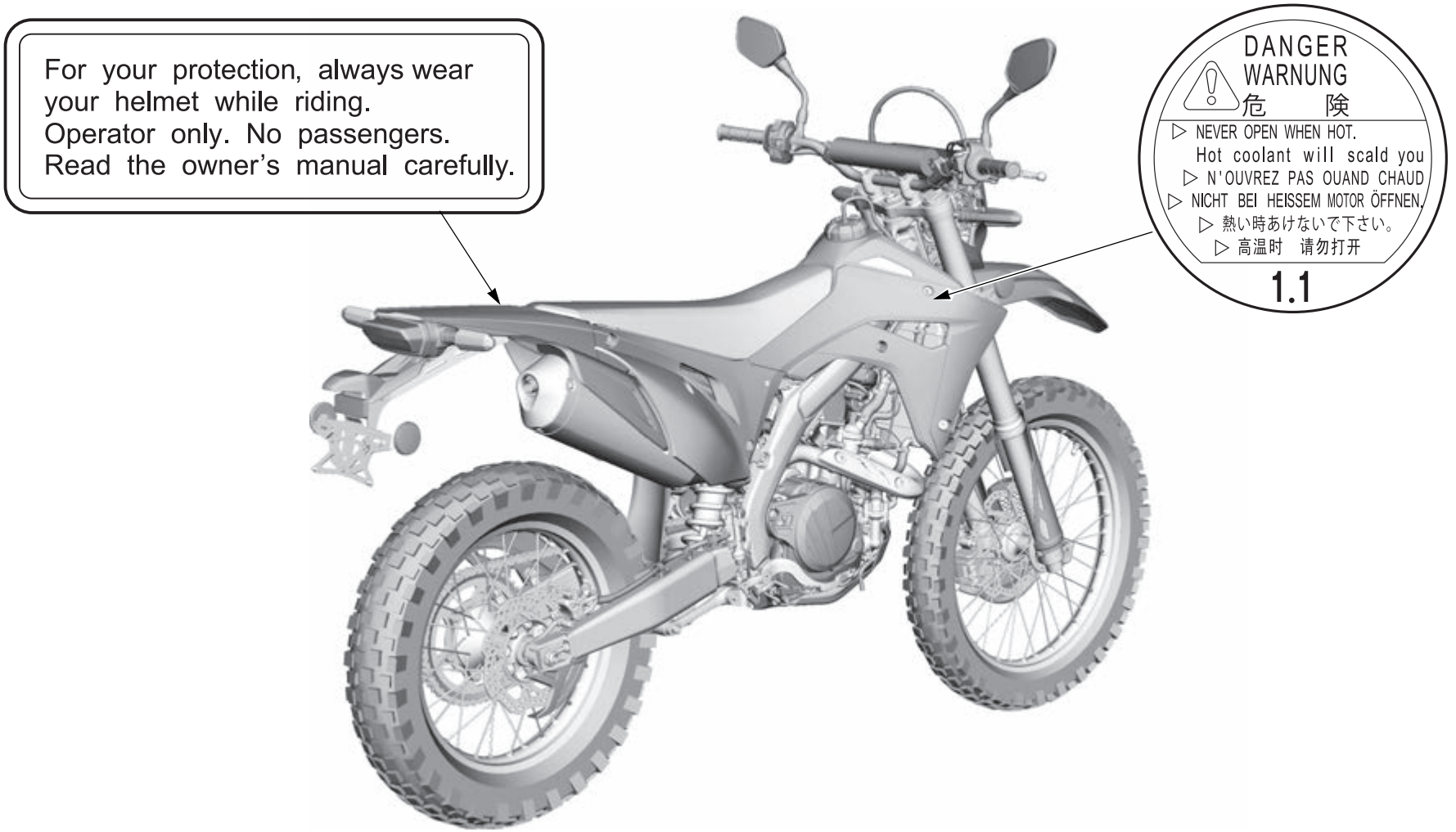
Learn to ride in an uncongested off-road area free of obstacles before venturing onto unfamiliar terrain.

- Always obey local off-road riding laws and regulations.
- Obtain permission to ride on private property. Avoid posted areas and obey “NO Trespassing” signs.
- Ride with a friend on another motorcycle so that you can assist each other in case of trouble.
- Familiarity with your motorcycle is critically important should a problem occur far from help.
- Never ride beyond your ability and experience or faster than conditions warrant.
- If you are not familiar with the terrain, ride cautiously. Hidden rocks, holes, or ravines could spell disaster.
- A muffler is required in most off-road areas. Don't modify your exhaust system. Remember that excessive noise bothers everyone and creates a bad image for motorcycling.

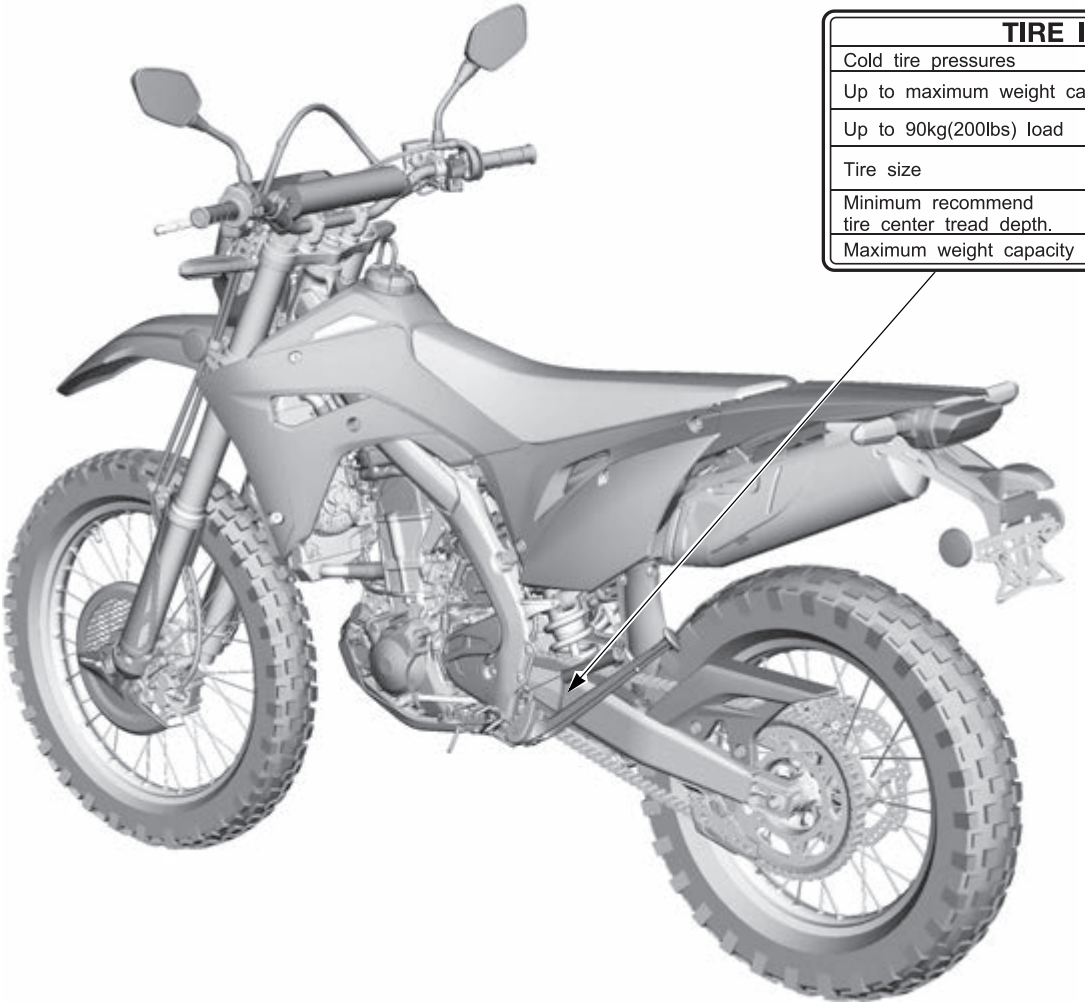
Safety Labels

Safety and information labels on your motorcycle provide important safety information and may warn you of potential hazards that could cause serious injury. Read these labels carefully and don't remove them.

If a label comes off or becomes hard to read, contact your dealer for replacement.



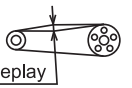
Safety Labels



TIRE INFORMATION				
Cold tire pressures		kPa	kgf/cm²	psi
Up to maximum weight capacity	Front	150	1.50	22
	Rear	150	1.50	22
Up to 90kg(200lbs) load	Front	150	1.50	22
	Rear	150	1.50	22
Tire size	Front	80/100-21M/C 51P		
	Rear	120/80-18M/C 62P		
Minimum recommend tire center tread depth.	Front	3.0mm (0.12in.)		
	Rear	3.0mm (0.12in.)		
Maximum weight capacity	100kg(220lbs)			

DRIVE CHAIN

Keep chain adjusted and lubricated.
30 mm (1 1/4 in.) Freeplay

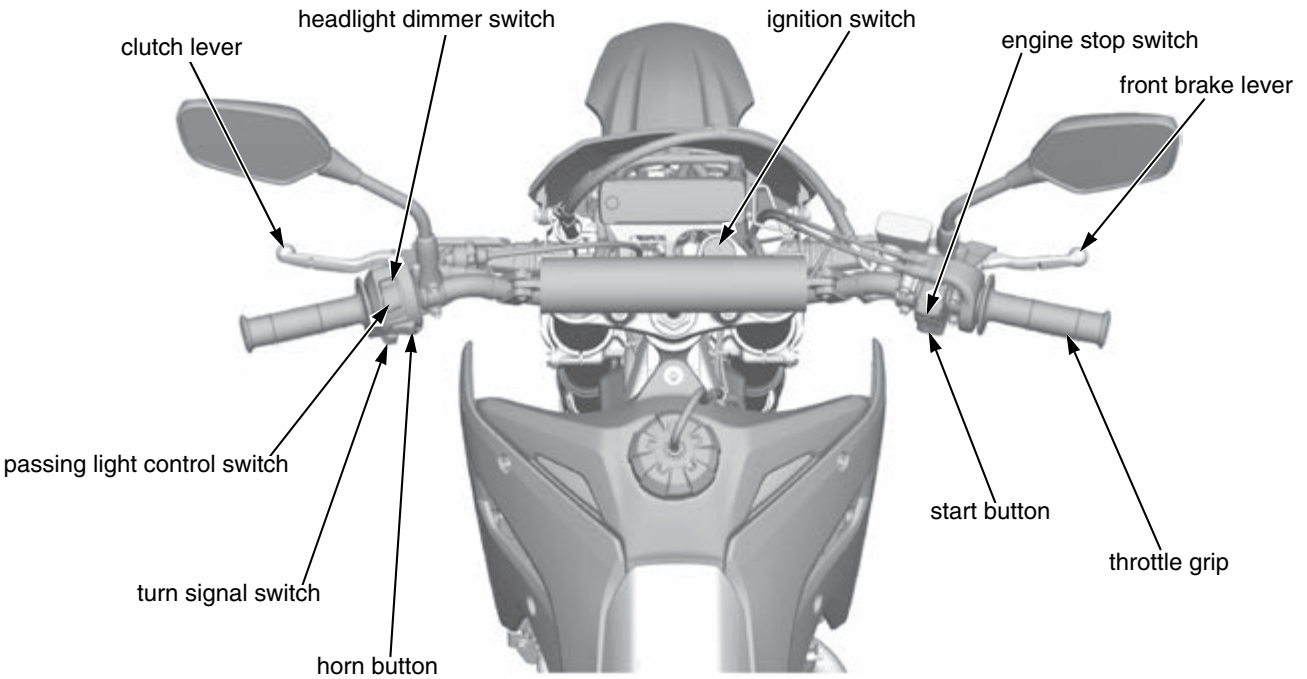


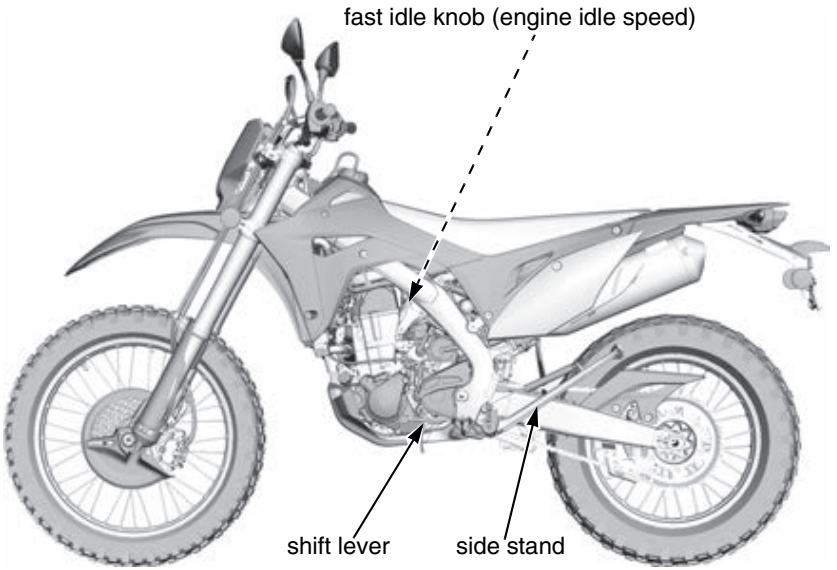
Read owner's manual.

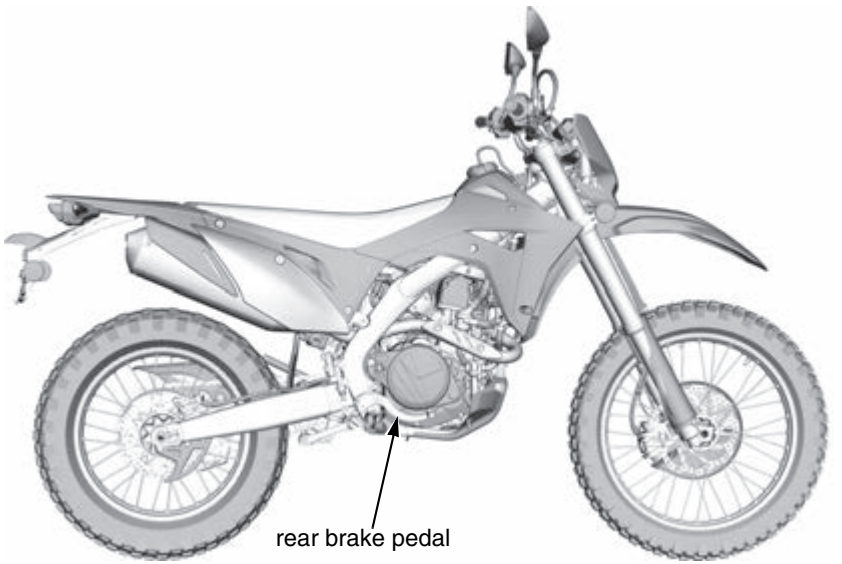
This section shows the location of all indicators, and controls you would normally use before or while riding your motorcycle.

The items listed on this page are described in this section. Instructions for other components are presented in other sections of this manual where they will be most useful.

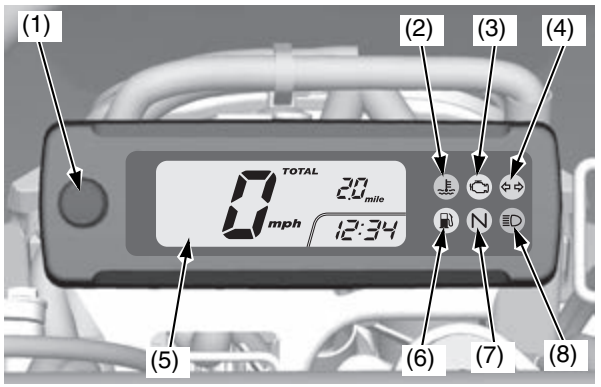
Operation Component Locations







The indicators and display on your motorcycle keep you informed, alert you to possible problems, and make your riding safer and more enjoyable. Refer to the indicators and display frequently. Their functions are described on the following pages.



(1) SEL button
(2) high coolant temperature indicator
(3) PGM-FI (Programmed Fuel Injection) malfunction indicator lamp (MIL)
(4) turn signal indicator
(5) multi-function display
(6) fuel reserve indicator
(7) neutral indicator
(8) high beam indicator

Lamp Check

Most of the indicator lights come on when you turn the ignition switch ON so you can check that they are working. Some indicators turn off after a few seconds.

When applicable, the high beam and neutral indicators come on when you turn the ignition switch ON and remain on until you select the low beam or shift out of neutral.

These indicators are identified in the table on page 10 with the words: *Lamp Check.*

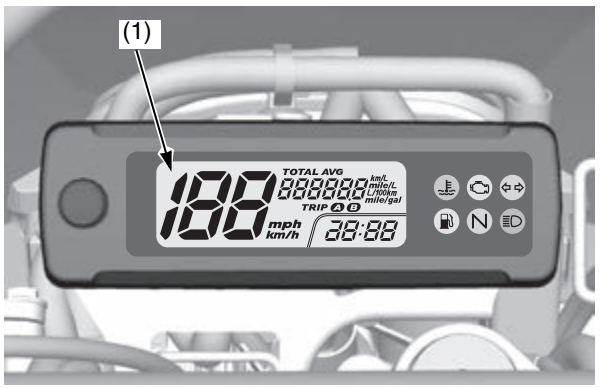
If one of these indicators does not come on when it should, have your dealer check for problems.

Display Check

When the ignition switch is turned ON, the multi-function display (1) will temporarily show all the modes and digital segments so that you can make sure the liquid crystal display is functioning properly.

The displays are identified in the table on page 10 with the words: *Display Check.*

If any part of these displays does not come on when it should, have your dealer check for problems.



(1) multi-function display

(cont'd)

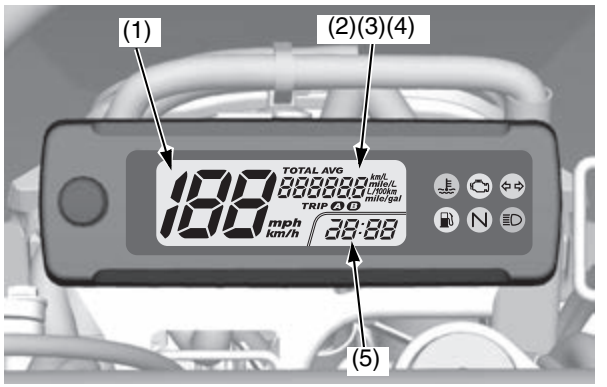
1	SEL button	Uses this button for the following purposes. • To change the 12/24 hour • To adjust time • To adjust display illumination • To select and reset the fuel mileage meter • To change the mileage units for the odometer/tripmeter and available driving distance • To select and reset the tripmeter
2	High coolant temperature indicator	Lights when the coolant is over the specified temperature. If the indicator comes on, pull safely to the side of the road. See page 170. *Lamp Check.*
3	PGM-FI (Programmed Fuel Injection) malfunction indicator lamp (MIL)	Lights when there is any abnormality in the PGM-FI (Programmed Fuel Injection) system. Should also light for a few seconds and then go off when the ignition switch is turned ON and the engine stop switch is at (Run) position. If the indicator comes on at any other time, reduce speed and take your motorcycle to your dealer as soon as possible. *Lamp Check.*
4	Turn signal indicator	Flashes when either turn signal operates.
5	Multi-function display	The display includes the following functions. *Display check.*
	Speedometer	Shows riding speed in miles or kilometers per hour (page 12).
	Digital clock	Shows hour and minute (page 13).
	Odometer	Shows accumulated mileage (page 12).
	Tripmeter A & B	Shows the number of miles or kilometers ridden since you last reset the meter (page 12).
	Fuel mileage meter	Shows current fuel mileage, average fuel mileage, or fuel consumption (page 12).
6	Fuel reserve indicator	When this indicator comes on while riding, fuel reserved in the tank is about: 0.58 US gal (2.2 ℓ) *Lamp Check.*
7	Neutral indicator	Lights when the transmission is in neutral.
8	High beam indicator	Lights when the headlight is on high beam.

Multi-function Display

The multi-function display includes the following functions:

speedometer
odometer
tripmeter A & B
fuel mileage meter
digital clock

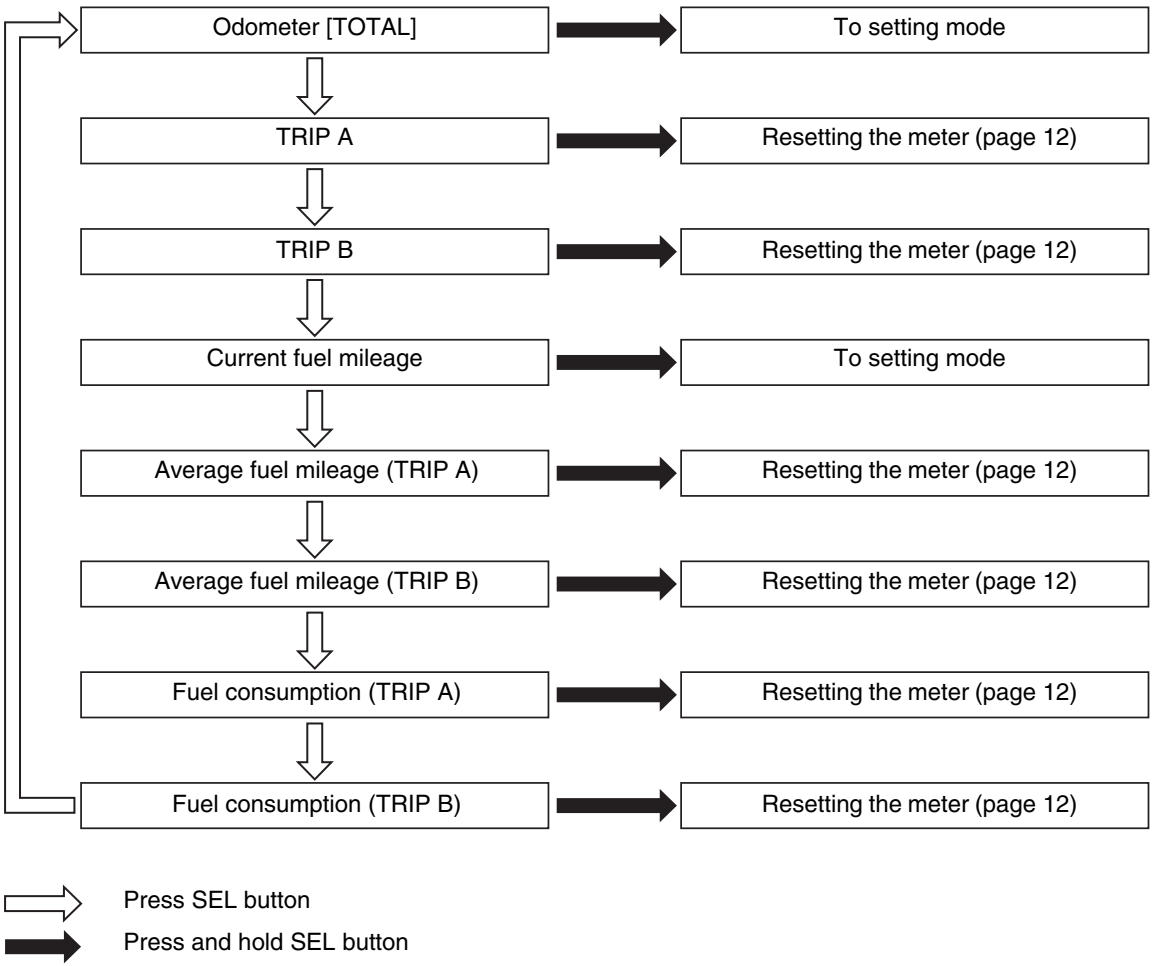
The digital clock will reset if the battery is disconnected.



(1) speedometer
(2) odometer
(3) tripmeter
(4) fuel mileage meter
(5) digital clock

Normal MODE

Press the SEL button to select the Odometer, TRIP A, TRIP B, Current fuel mileage, Average fuel mileage (TRIP A/TRIP B) or Fuel consumption (TRIP A/TRIP B).

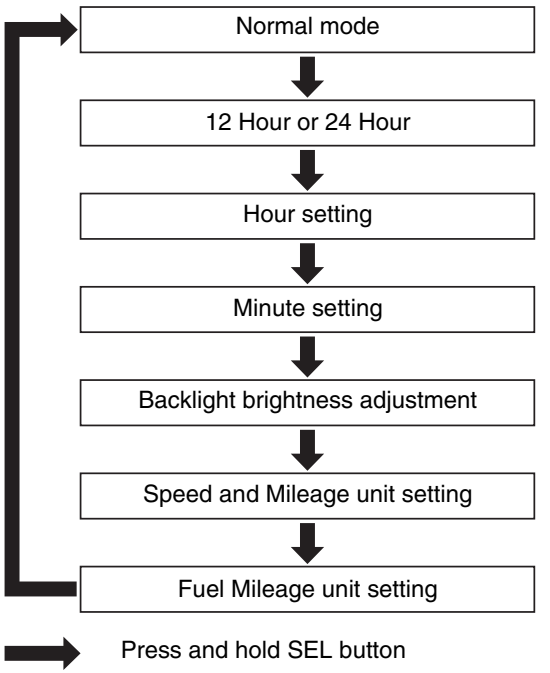


Setting MODE

Press and hold the SEL button, the display turn into the setting mode.

Following items can be changed sequentially.

- Time format setting
- Clock setting
- Backlight brightness adjustment
- Changing of speed and mileage unit
- Changing of fuel mileage unit



In addition, to move the ordinary display at display setting.

- The buttons is not pressed for about 30 seconds.
- Turn the ignition switch to the OFF position and then to the ON position.

Speedometer

The speedometer shows riding speed in miles or kilometers per hour.

Odometer/Tripmeter A & B

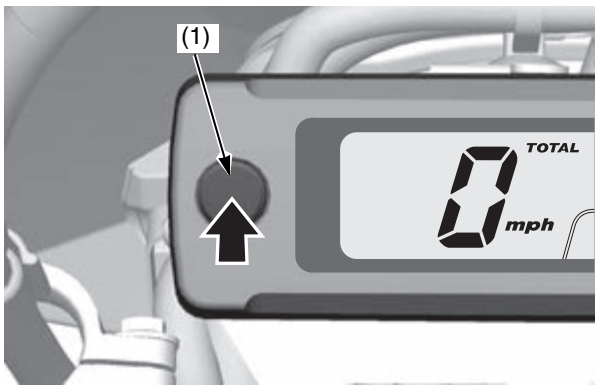
The odometer shows the total miles or kilometers ridden.

The odometer can be displayed from 0 to 999,999 miles (kilometers).

The tripmeter A and tripmeter B show number of miles or kilometers ridden since you last reset the tripmeter.

To select the odometer, tripmeter A or tripmeter B, push the SEL button (1).

The tripmeter return to 0 when the read-out exceeds 9,999.9 miles (kilometers).



(1) SEL button

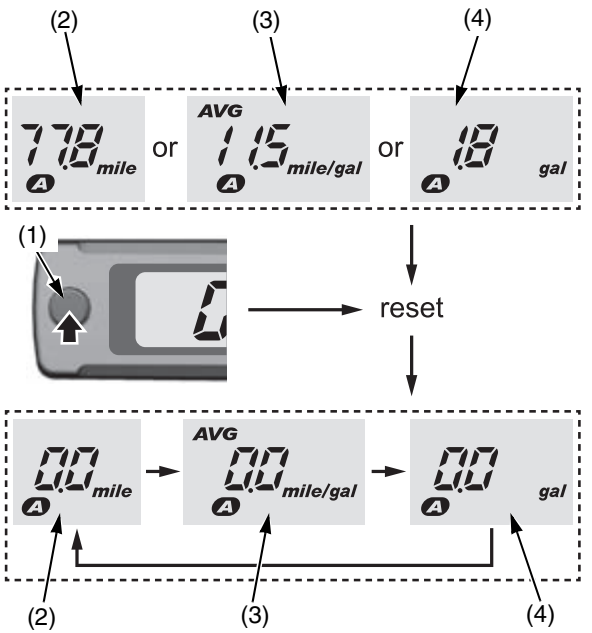
To Reset the Tripmeter, Average Fuel Mileage and Fuel Consumption

Press the SEL button (1) to select the TRIP A (2), average fuel mileage A (3), fuel consumption A (4), TRIP B, average fuel mileage B or fuel consumption B.

To reset tripmeter, average fuel mileage, and fuel consumption, press and hold SEL button with tripmeter, average fuel mileage, or fuel consumption displayed.

When they are reset, reset display appears at each indication. Then, the display returns to the last selected indication.

For example TRIP A, Average Fuel Mileage A and Fuel Consumption A:



(1) SEL button
(2) TRIP A
(3) fuel mileage A
(4) fuel consumption A

Fuel Mileage Meter

The fuel mileage meter includes the following functions:

- current fuel mileage
- average fuel mileage
- fuel consumption

The unit of the indication depends on the unit which you select (page 14).
If the speed and mileage unit is set to ‘‘km/h’’/‘‘km,’’ the indication mode of the current and average fuel mileage can be selected km/L or L/100 km (page 14).
If the speed and mileage unit is set to ‘‘mph’’/‘‘mile’’, the fuel mileage unit shows “mile/gal”.

Press the SEL button to change the indication to the current fuel mileage, average fuel mileage A, average fuel mileage B, fuel consumption A or fuel consumption B.

Current Fuel Mileage

Current fuel mileage shows the current, or instant fuel mileage you are getting. When your motorcycle speed is 4 mph (6 km/h) or below, “---.- (--.-)” is displayed. When “---.- (--.-)” is displayed except for the above mentioned cases, go to your dealer for service.

Average Fuel Mileage

The average fuel mileage is based on the each tripmeter A and tripmeter B. The average fuel mileage since tripmeter was reset. When “---.- (--.-) ” is displayed, see your dealer for service. Average fuel mileage is also reset when the tripmeter is reset (see previous step).

Fuel Consumption

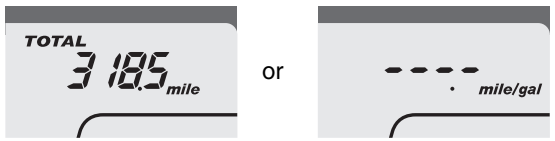
The fuel consumption is based on the each tripmeter A and tripmeter B. The fuel consumption since tripmeter was reset. When “---.-” is displayed, see your dealer for service.

Digital Clock Setting

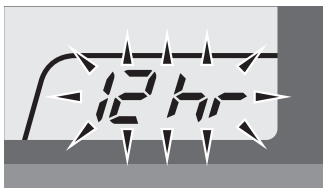
The digital clock shows the hour and minute. To adjust the time format and clock, proceed as follows:

1. Turn the ignition switch ON.
2. Press SEL button to select the odometer or current fuel mileage.

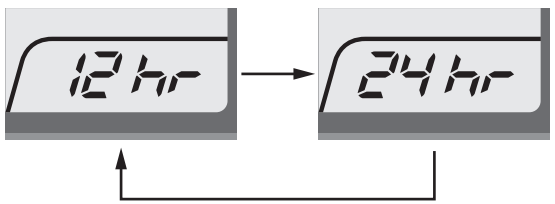
Odometer: Current fuel mileage:



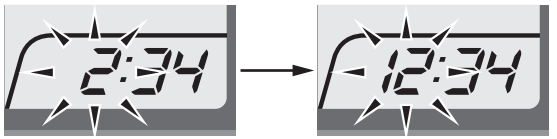
3. Press and hold SEL button until the current time format start flashing.



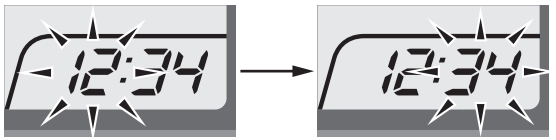
4. Press SEL button to select “12 hr” or “24 hr”.



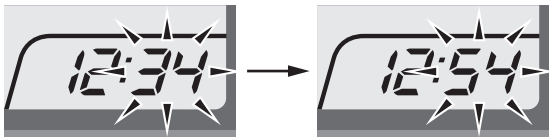
5. Press and hold SEL button. The time format is set, and then the display moves to the clock setting.
6. Press SEL button until the desired hour is displayed.



7. Press and hold SEL button. The minute digits start flashing.



8. Press SEL button until the desired minute is displayed.



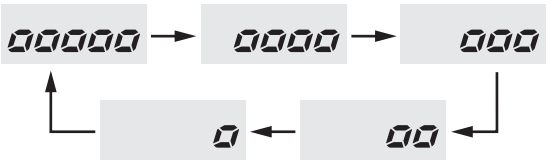
9. Press and hold SEL button. The clock is set, and then the display moves to the backlight brightness adjustment.

The established setting can also be set by turning the ignition switch to the OFF position.
The control is automatically switched from the setting mode to the normal mode if the button is not pressed for about 30 seconds. Even in this case, established setting is maintained.

Backlight Brightness Adjustment

To adjust the backlight brightness, proceed as follows:

1. Refer to Digital Clock on previous step.
2. Press SEL button. The brightness is switched.



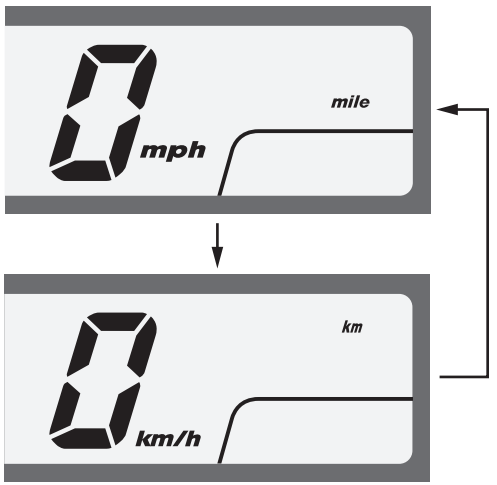
3. Press and hold SEL button. The backlight is set, and then the display moves the changing of the speed and mileage unit.

The established setting can also be set by turning the ignition switch to the OFF position.
The control is automatically switched from the setting mode to the normal mode if the button is not pressed for about 30 seconds. Even in this case, established setting is maintained.

Changing the Speed and Mileage Unit

To adjust the Speed and Mileage Unit proceed as follows:

1. Refer to Backlight Brightness Adjustment on previous step.
2. Press SEL button to select either “mph” and “mile” or “km/h” and “km”.



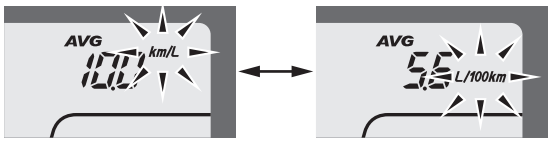
3. <u>When selecting the “mph” and “mile”</u>
   Press and hold SEL button. The speed and mileage unit is set, and then the display will return to the normal mode.
   <u>When selecting the “km/h” and “km”</u>
   Press and hold SEL button. The speed and mileage unit is set, and then the display moves the changing of the fuel mileage unit.

The established setting can also be set by turning the ignition switch to the OFF position.
The control is automatically switched from the setting mode to the normal mode if the button is not pressed for about 30 seconds. Even in this case, established setting is maintained.

Changing the Fuel Mileage Unit

If the “mph” for speed and “mile” for mileage are selected, the fuel mileage unit cannot be select.
To adjust the Fuel Mileage Unit proceed as follows:

1. Refer to Changing the Speed and Mileage Unit on previous step.
2. Press SEL button to switch between “km/L” or “L/100km”.



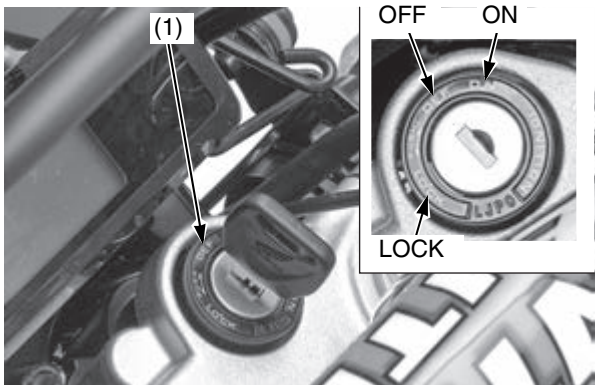
3. Press and hold SEL button. The fuel mileage unit is set, and then the display will return to the normal mode.

The established setting can also be set by turning the ignition switch to the OFF position.
The control is automatically switched from the setting mode to the normal mode if the button is not pressed for about 30 seconds. Even in this case, established setting is maintained.

Ignition Switch

The ignition switch (1) is used for starting and stopping the engine (page 26) and to lock the steering for theft prevention (page 29). Insert the key and turn it to the right for the ON position. Push down on the key and turn it to the left to the LOCK (steering lock) position.

Key Position	Function
ON	Electrical circuits on.
OFF	No electrical circuits function.
LOCK (steering lock)	No electrical circuits function. Locks the steering head.

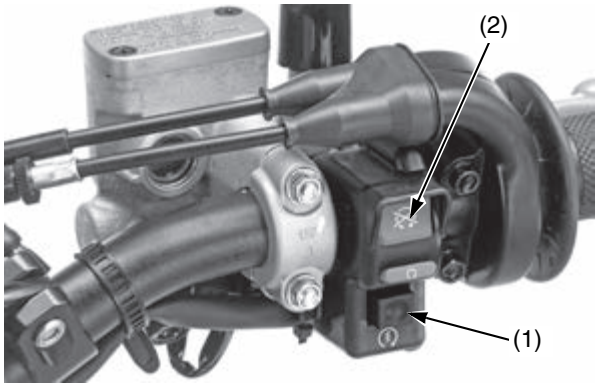


(1) ignition switch

Leaving the ignition switch in the ON position with the engine stopped will drain the battery.

Do not turn the key while riding.

Start Button



(1) start button (2) engine stop switch

The start button (1) is used for starting the engine. Pushing the button in starts the engine. See *Starting Procedure*, page 25.

The starter motor will not operate if the engine stop switch is in the ⊗ (Stop) position when the start button is pushed.

Engine Stop Switch

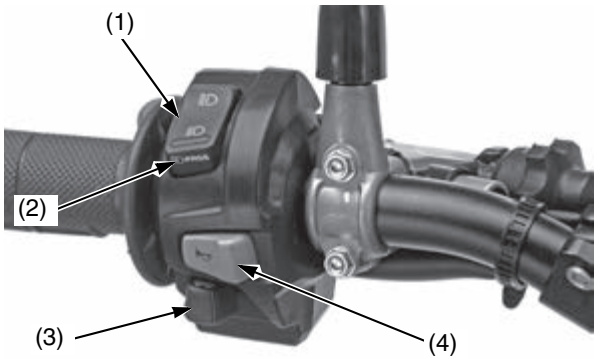
The engine stop switch (2) is used to stop the engine in an emergency. To operate, push the switch to the ⊗ (Stop) position.

The switch must be in the ○ (Run) position to start the engine, and it should normally remain in the ○ (Run) position even when the engine is OFF.

If your motorcycle is stopped with the ignition switch ON and the engine stop switch ⊗ (Stop) position, the headlight, position light, taillight and license light will remain on, resulting in battery discharge.

Headlight Dimmer Switch

The headlight dimmer switch (1) is used to change between the high and low beams of the headlight. To operate, press the switch to ≡D (HI) for high beam, ≡D (Lo) for low beam.



(1) headlight dimmer switch
(2) passing light control switch
(3) turn signal switch
(4) horn button

Passing Light Control Switch

When this switch (2) is pressed, the headlight flashes on to signal approaching cars or when passing.

Turn Signal Switch

The turn signal switch (3) is used to signal a turn or a lane change. To operate, move the switch all the way in the proper direction and release it. The appropriate turn signal lights will start blinking. To cancel the light, push the switch in.

Horn Button

The horn is used to alert other motorists.
To operate, push the horn button (4).

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Before each ride, you need to make sure you and your motorcycle are both ready to ride. To help get you prepared, this section discusses how to evaluate your riding readiness, what items you should check on your motorcycle, and adjustments to make for your comfort, convenience, or safety. This section also includes important information about loading.

For information about suspension and other adjustments, see page 143.

Are You Ready to Ride?

Before you ride your motorcycle for the first time, we urge you to:

- Read this owner's manual
- Make sure you understand all the safety messages
- Know how to operate all the controls

Before each ride, be sure:

- You feel well and are in good physical and mental condition.
- You are wearing an approved motorcycle helmet (with chin strap tightened securely), eye protection, and other protective clothing.
- You don't have any alcohol or drugs in your system.

Always carry this manual and tool kit

This owner's manual and tool kit cannot be stored on this motorcycle. Be sure to carry the owner's manual and tool kit with you when riding.

Protective Apparel

For your safety, we strongly recommend that you always wear an approved motorcycle helmet, eye protection, boots, gloves, long pants and a long-sleeved shirt or jacket whenever you ride. Although complete protection is not possible, wearing proper gear can reduce the chance of injury when you ride. Following are suggestions to help you choose the proper gear.

Helmet and Eye Protection

Your helmet is your most important piece of riding gear because it offers the best protection against head injuries. A helmet should fit your head comfortably and securely. A bright-colored helmet and reflective strips can make you more noticeable in traffic.

An open-face helmet offers some protection, but a full-face helmet offers more. Always wear a face shield or goggles to protect your eyes and help your vision.

Lock for a DOT (Department of Transportation) certification label on any helmet you buy (USA only).

⚠ WARNING

Not wearing a helmet increases the chance of serious injury or death in a crash.

Be sure you always wear a helmet, eye protection and other protective apparel when you ride.

Additional On-road Gear

In addition to a helmet and eye protection, we also recommend:

- Sturdy boots with non-slip soles to help protect your feet and ankles.
- Leather gloves to help protect your hands.
- A motorcycle riding suit or jacket for comfort as well as protection. Bright-colored and reflective clothing can help make you more noticeable in traffic. Avoid loose clothes that could get caught on any part of your motorcycle.

Additional Off-road Gear

On-road apparel may also be suitable for casual off-road riding. But if you plan on any serious off-road riding you will need more serious off-road gear. In addition to your helmet and eye protection, we recommend off-road motorcycle boots and gloves, riding pants with knee and hip pads, a jersey with elbow pads, and a chest/shoulder protector.

Rider Training

Developing your riding skills is an on-going process. Even if you have ridden other motorcycles, take time to become familiar with how this motorcycle works and handles. Practice riding the motorcycle in a safe area to build your skills. Do not ride in traffic until you get accustomed to the motorcycle's controls, and feel comfortable with its size and weight.

We urge all riders to take a motorcycle operator course. New riders should start with the basic course, and even experienced riders will find the advanced course beneficial.

On-Road Use
For your safety, it is very important to inspect your motorcycle before each ride and make sure any problem you find is corrected.
If you plan to ride off-road, a pre-ride inspection is a must, because off-road riding can be tough on a motorcycle and you don't want to have a breakdown far from help. See Pre-ride Inspection (this page) and check the items in the On-Road use.

Off-Road Use
Competitive riding can be tough on a motorcycle, so it's important to inspect your motorcycle and correct any problems you find before each ride. See Pre-ride Inspection (page 20) and check the items in the Off-Road use.

⚠ WARNING

Improperly maintaining this motorcycle or failing to correct a problem before riding can cause a crash in which you can be seriously hurt or killed.

Always perform a pre-ride inspection before every ride and correct any problems.

Pre-ride Inspection

Before riding on-road, or returning to pavement after riding off-road, take a few moments to walk around your motorcycle and look for any loose parts or anything that appears unusual.
Also check the following.

On-Road Use
- Fuel Line
  Check the fuel line for leakage while warming up the engine.
- Tires & Wheels
  Look at the tires. If a tire appears low, use an air pressure gauge to check its pressure. Also look for signs of excessive wear or damage to the tires, rims and spokes (page 126).
- Chain
  Check the condition of the chain. Adjust slack and lubricate as needed (page 130).
- Leaks
  Walk around your motorcycle and look for leaking fluids under the motorcycle.
- Throttle
  Rotate the throttle to check it moves smoothly without binding.
- Brakes
  Pull the brake lever and press on the brake pedal to check that they operate normally.
- Lights
  Make sure the headlight, position light, brake light, taillight, and turn signals are working properly.

When riding at high or continuous speed on the highway, check the following frequently:
- Engine Oil
  Check the level and add oil if needed (page 70).

Before riding off-road check all of the preceding plus the following:
- Spokes & Rims
  Make sure the spokes are tight. Check the rims for any damage (page 126).
- Engine Oil
  Check the level and add oil if needed (page 70).
- Fuel
  Check the fuel level and add as much fuel as needed. Be sure the fuel fill cap is securely fastened (page 60).
- Drive Chain
  Check the condition of the chain. Adjust slack and lubricate as needed (page 130).
- Clutch Lever
  Check for smooth operation and adjust if needed (page 81).
- Cables
  Check for loose cables and other parts, and anything that appears abnormal.
- Nuts & Bolts
  Use a wrench to check the tightness of all accessible nuts, bolts and fasteners.

If you haven't ridden the motorcycle in over a week, you should also check other items, such as the oil level and other fluids. See Periodic Maintenance (page 34).

Periodic maintenance should also be done at least once a month, no matter how often you ride.

Remember, be sure to take care of any problem you find, or have your Honda dealer correct it before you ride.

(cont'd)

Is Your Motorcycle Ready to Ride?

Off-Road Use

Check the following before each ride:

- Engine oil level 70
- Fuel line for condition 61
- Coolant for proper level 72
- Cooling system and hoses for condition 73
- Spark plug for proper heat range, carbon fouling and spark plug wire terminal for looseness 86
- Air cleaner for condition and contamination 75
- Clutch lever freeplay 81
- Breather drain for cleaning 77
- Steering head bearing and related parts for condition 136
- Throttle operation 79
- Tires for damage or improper inflation pressure 127
- Spokes for looseness 126
- Front and rear suspension for proper operation 105, 121
- Front and rear brakes, check operation 122
- Drive chain for correct slack and adequate lubrication 130, 131
- Drive chain sliders and drive chain rollers for damage or wear 130, 131
- Exhaust pipe/Muffler for looseness 133
- Every possible part for looseness (such as cylinder head bolts, engine mounting bolts/nuts, axle nuts, handlebar holder bolts, fork bridge pinch bolts, drive chain adjuster, lock nuts, drive chain roller bolt/nut) 181-183
- MIL operation 9

Your motorcycle was designed as a rider-only motorcycle. It was not designed to carry a passenger or cargo. A passenger or cargo could interfere with your ability to move around to maintain your balance and control of the motorcycle.

In addition, exceeding the weight limits or carrying an unbalanced load can seriously affect your motorcycle's handling, braking, and stability. Adding accessories or making modifications that change this motorcycle's design and performance can also make it unsafe. Also, the weight of any accessories will reduce the maximum load the motorcycle can carry.

More specific information on load limits, accessories, and modifications follows.

Loading

How much weight you put on your motorcycle, and how you load it, are important to your safety. If you decide to carry cargo, you should be aware of the following information.

⚠ WARNING

Overloading or improper loading can cause a crash and you can be seriously hurt or killed.

Follow all loading guidelines in this manual.

Load Limits

Following are the load limits for your motorcycle:

Maximum weight capacity
220 lb (100 kg)
includes the weight of the rider and any accessories.

Loading Guidelines

As discussed on this page , we recommend that you do not carry any cargo on this motorcycle. However, if you decide to carry cargo, ride at reduced speeds and follow these commonsense guidelines:

- Keep cargo small and light. Make sure it cannot easily be caught on brush or other objects, and that it does not interfere with your ability to shift position to maintain balance and stability.
- Place weight as close to the center of the motorcycle as possible.
- Do not attach large or heavy items (such as a sleeping bag or tent) to the handlebar, fork, or front fender.
- Make sure that all cargo is tied down securely.
- Never exceed the maximum weight limit.
- Check that both tires are inflated properly.
- Do not place objects near the lights or the muffler.
- If you change your normal load, you may need to adjust the front suspension (page 144) and the rear suspension (page 147).
- Balance cargo weight evenly on both sides.

Basic Operating Instructions

This section gives basic riding instructions, including how to start and stop your engine, and how to use the throttle, clutch, and brakes.

To protect your new engine and enjoy optimum performance and service life, refer to Break-in Guidelines (page 30).

To protect the catalytic converter in your motorcycle's exhaust system, avoid extended idling and the use of leaded gasoline.

Safe Riding Precautions

Before riding your motorcycle for the first time, please review the *Important Safety Precautions* beginning on page 2 and the previous section, titled *Before Riding*.

Even if you have ridden other motorcycles, take time to become familiar with how this motorcycle works and handles. Practice in a safe area until you build your skills and get accustomed to the motorcycle's size and weight.

Carbon Monoxide Hazard

Exhaust contains poisonous carbon monoxide, a colorless, odorless gas. Breathing carbon monoxide can cause loss of consciousness and may lead to death.

If you run the engine in confined or even partly enclosed area, the air you breathe could contain a dangerous amount of carbon monoxide.
Never run your motorcycle inside a garage or other enclosure.

⚠ WARNING

Running the engine of your vehicle while in an enclosed or even partially enclosed area can cause a rapid build-up of toxic carbon monoxide gas.

Breathing this colorless, odorless gas can quickly cause unconsciousness and lead to death.

Only run your vehicle's engine when it is located in a well ventilated area outdoors.

Always follow the proper starting procedure described below.

Your motorcycle can be started with the transmission in gear by pulling in the clutch lever before operating the starter.

Your motorcycle is equipped with a side stand ignition cut-off system. If the side stand is down — the engine cannot be started unless the transmission is in neutral.
If the side stand is up — the engine can be started in neutral, or in gear with the clutch lever pulled in. After starting with the side stand down, the engine will stop if the transmission is put in gear before raising the side stand.

Fast Idle Knob

The fast idle knob has two functions:
- When pulled out, the fast idle knob assists in first-time start-up for cold weather starting.
- When pushed in, it acts like an idle adjustment screw. Refer to *Idle Speed Adjustment on page 80*.

Preparation

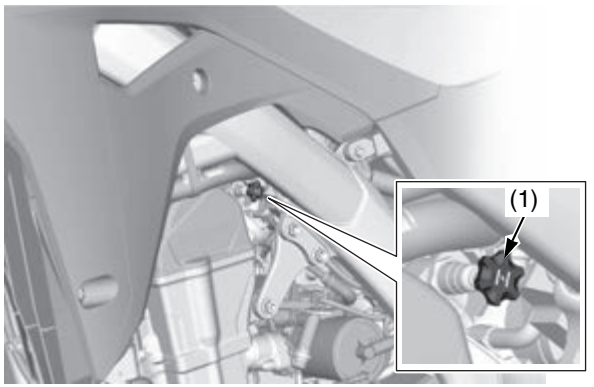
Before starting, insert the key, turn the ignition switch to the ON position, and confirm the following:
- The transmission is in neutral (neutral indicator is ON).
- The engine stop switch is set to ◯ (Run) position.
- The PGM-FI malfunction indicator lamp (MIL) is OFF.

Starting Procedure

Always follow the proper starting procedure described as follows.

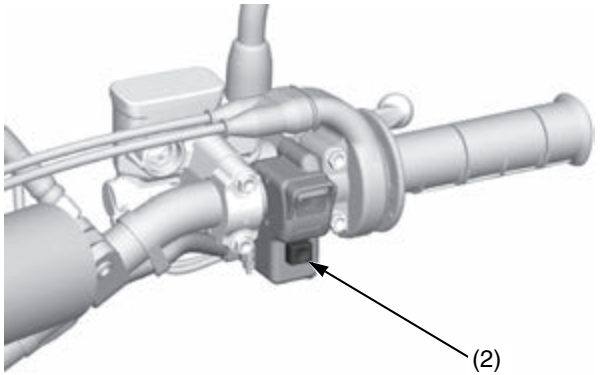
Check the engine oil and coolant levels before starting the engine (pages 70, 72).

Cold Engine Starting
1. Shift the transmission into neutral.
2. If the temperature is 50°F (10°C) or below, pull the fast idle knob (1) fully up.



(1) fast idle knob

3. With the throttle closed.
   Pull the clutch lever all the way in, and depress the start button (2).



(2) start button

4. About a minute after the engine starts, push the fast idle knob back all the way to fully off.
   If idling is unstable, open the throttle slightly.

(cont'd)

Starting & Stopping the Engine

Warm Engine Starting
1. Shift the transmission into neutral.
2. Pull the clutch lever and depress the start button. (Do not open the throttle.)

Starting the engine excessively charged with fuel by throttle blipping or other reasons
1. Shift the transmission into neutral.
2. With the throttle fully opened, pull the clutch and depress the start button for 5 seconds to discharge excessive fuel from the engine.
3. Pull the clutch lever and depress the start button. (Do not open the throttle.)

Snapping the throttle or fast idling for more than about 5 minutes may cause exhaust pipe and muffler discolorations.

Bank Angle Sensor Ignition Cut-off System

Your motorcycle's banking (lean angle) sensor system is designed to automatically stop the engine if the motorcycle is overturned.
Before restarting the engine, you must turn the ignition switch to the OFF position and then back to the ON position. The engine will not restart until you perform this procedure.

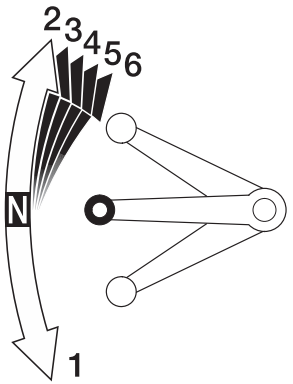
How to Stop the Engine

Normal Engine Stop
To stop the engine, shift into neutral and turn the ignition switch to the OFF position.

The engine stop switch should normally remain in the ⟳ (Run) position even when the engine is OFF.

If your motorcycle is stopped with the ignition switch in the ON position and the engine stop switch ⊠ (Stop), the headlight, position light, tailllight and license light will remain on, resulting in battery discharge.

Emergency Engine Stop
To stop the engine in an emergency, use the engine stop switch. To operate, press the switch to the ⊠ (Stop) position.



Your motorcycle has 6 forward gears in a one-down, five-up shift pattern.
To start riding, after the engine has been warmed and the side stand raised.

1. Close the throttle and pull the front brake lever in.
2. Pull the clutch lever all the way in.
3. Depress the shift lever from neutral down to first gear.
4. Release the front brake lever. Gradually open the throttle while you slowly release the clutch lever. If the engine rpm (speed) is too low when you release the clutch lever, the engine will stall.
   If the engine rpm (speed) is too high or you release the clutch lever too quickly, your motorcycle may lurch forward.
5. When you attain a moderate speed, close the throttle, pull the clutch lever in, and raise the shift lever. After shifting, release the clutch lever and apply the throttle.
6. To continue shifting up to each higher gear, repeat step 5.
7. To shift down to a lower gear, close the throttle, pull the clutch lever in, and depress the shift lever. After shifting, release the clutch lever and apply the throttle.

Remember to close the throttle and pull the clutch lever in completely before shifting.

NOTICE

Improper shifting may damage the engine, transmission, and drive train.

Learning when to shift gears comes with experience. Upshift to a higher gear or reduce throttle before engine rpm (speed) gets too high. Downshift to a lower gear before you feel the engine laboring (lugging) at low rpm.

NOTICE

Downshifting can help slow your motorcycle, especially on downhills. However, downshifting when engine rpm is too high can cause engine damage.

NOTICE

To prevent transmission damage, do not coast or tow the motorcycle for long distances with the engine off.

Recommended Shift Points
Ride in the highest gear that lets the engine run and accelerate smoothly. This will give you good fuel economy and effective emissions control. When changing gears under normal conditions, use these recommended shift points:

Shifting Up:
From 1st to 2nd: 25 mph (40 km/h)
From 2nd to 3rd: 34 mph (55 km/h)
From 3rd to 4th: 50 mph (80 km/h)
From 4th to 5th: 62 mph (100 km/h)
From 5th to 6th: 75 mph (120 km/h)

Shifting Down:
From 6th to 5th: 75 mph (120 km/h)
From 5th to 4th: 62 mph (100 km/h)
From 4th to 3rd: 50 mph (80 km/h)

Pull the clutch lever in when speed drops below 9 mph (15 km/h), when engine roughness is evident, or when engine stalling is imminent; and shift down to 1st gear for acceleration.

Braking

Your motorcycle is equipped with disc braking systems which are hydraulically activated. Operating the brake lever applies the front disc brake. Depressing the brake pedal applies the rear disc brake.

As a general rule, the front braking system provides about 70 percent of total stopping power.

For full braking effectiveness, use both the pedal and lever simultaneously. Using both braking systems will stop your motorcycle faster with greater stability.

To slow or stop, apply the brake lever and brake pedal smoothly, while downshifting to match your speed.

Gradually increase braking as you feel the brakes slowing your speed. The increase in engine compression from downshifting will help slow your motorcycle.

To prevent stalling the engine, pull the clutch lever in before coming to a complete stop. For support, put your left foot down first, then your right foot when you have finished braking.

Applying the brakes too hard may cause the wheels to lock and slide, reducing control of your motorcycle. If this happens, release the brake controls, steer straight ahead until you regain control, then reapply the brakes more gently.

When possible, reduce your speed or complete braking before entering a turn. Avoid braking or closing the throttle quickly while turning. Either action may cause one or both wheels to slip and reduce your control of your motorcycle.

Your ability to brake in a turn and to brake hard in an emergency situation are important riding skills. We suggest attending a experienced rider training course (page 18) to retain these skills.

When riding in wet or rainy conditions, or on loose surfaces, the ability to maneuver and stop will be reduced. All of your actions should be smooth under these conditions. Rapid acceleration, braking or turning may cause loss of control.

For your safety, exercise extreme caution when braking, accelerating or turning.

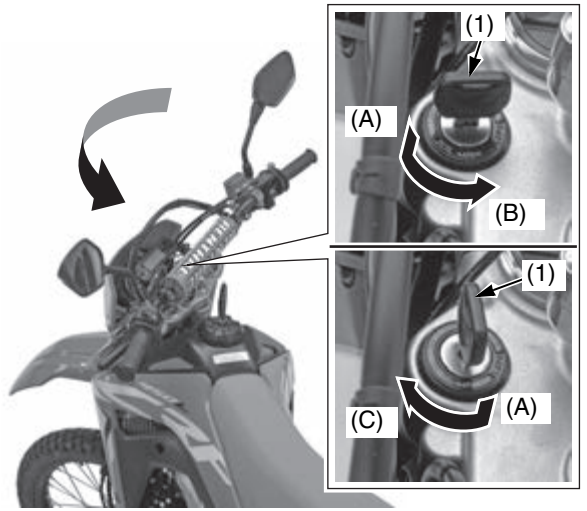
When descending a long, steep grade, use engine compression braking by downshifting, with intermittent use of both brakes. Continuous brake application can overheat the brakes and reduce their effectiveness.

Riding with your foot resting on the brake pedal or your hand on the brake lever may actuate the brake light, giving a false indication to other drivers. It may also overheat the brakes, reducing effectiveness.

1. Look for a level parking area. If you can't park on a paved surface, make sure the ground surface is firm, especially under the side stand. If you must park on a hill, leave the transmission in gear and position the rear tire against the curb at a 45 degree angle.

Make sure flammable materials such as dry grass or leaves do not come in contact with the exhaust system when parking your motorcycle. Refer to *Catalytic Converter*, page 186.

2. Use the side stand to support the motorcycle while parked.
   - To lower the side stand, use your foot to guide it down. Remember that lowering the side stand with the transmission in gear will stop the engine, even if the clutch lever is pulled in. That is a function of the side stand ignition cut-off system.
   - Check that the side stand is down all the way so that the side stand ignition cut-off system (page 25) is activated.
   - If you have to park on a soft surface, insert something solid under the side stand for support.
3. Use the steering lock, which locks the handlebar in place. Turn the handlebar all the way to the left. Push in on the ignition key (1) and turn it to LOCK. Remove the key. (To unlock the steering lock, insert the key, push it in and turn it to the right to the OFF position.)



(1) ignition key

(A) push in
(B) turn to LOCK
(C) turn to OFF

Theft-prevention Tips

- Park your motorcycle in a locked garage whenever possible. If a garage isn't available, park in a concealed area or in a well-lit area with enough pedestrian traffic to discourage a thief.
- Always take the ignition key with you.
- Always use the steering lock, even if you're parking for just a minute or two. A thief can easily push an unlocked motorcycle to a waiting truck.
- In addition to the steering lock, use a good quality anti-theft device made specifically to lock a motorcycle to a secure object.
- If you decide to use an anti-theft device, select one of good quality and be sure to follow the manufacturer's instructions.

Break-in Guidelines

On-Road Use
Help assure your motorcycle’s future reliability and performance by paying extra attention to how you ride during the first 300 miles (500 km).

During this period, avoid full-throttle starts and rapid acceleration.

Off-Road Use
Help assure your motorcycle's future reliability and performance by paying extra attention to how you ride during the first operating day or 15 miles (25 km).
During this period, avoid full-throttle starts and rapid acceleration.

This same procedure should be followed each time when:

- piston is replaced
- piston rings are replaced
- cylinder is replaced
- crankshaft or crank bearings are replaced

Keeping your motorcycle well maintained is absolutely essential to your safety. It's also a good way to protect your investment, get maximum performance, avoid breakdowns, and have more fun.

To help keep your motorcycle in good shape, this section includes a Maintenance Schedule for required service, a list of periodic checks you should perform at least once a month, and step-by-step instructions for specific maintenance tasks. You'll also find important safety precautions, information on oils, and tips for keeping your motorcycle looking good.

For information about the exhaust emission and noise emission requirements of the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and the Environment and Climate Change Canada (ECCC) see page 184.

For information about replacing fuses, see page 172.

USA only

Maintenance, replacement or repair of the emission control devices and systems may be performed by any motorcycle repair establishment or individual using parts that are ''certified'' to EPA standards.

An ECM system is used on this motorcycle; consequently, routine ignition timing adjustment is unnecessary. If you want to check the ignition timing, refer to an official Honda Service Manual (page 194).

An optional tool kit may be available. Check with your dealer's parts department.

The Importance of Maintenance

Keeping your motorcycle well-maintained is absolutely essential to your safety. It's also a good way to protect your investment, get maximum performance, avoid breakdowns, and have more fun. A properly maintained motorcycle will also help to reduce air pollution.

Since this motorcycle is capable of being ridden over rough off-road terrain as well as on pavement, careful pre-ride inspections and good maintenance are especially important.

Remember, proper maintenance is your responsibility. Be sure to inspect your motorcycle before each ride, perform the periodic checks, and follow the Maintenance Schedule in this section.

⚠ WARNING

Improperly maintaining this motorcycle or failing to correct a problem before you ride can cause a crash in which you can be seriously hurt or killed.

Always follow the inspection and maintenance recommendations and schedules in this owner's manual.

If your motorcycle overturns or is involved in a crash, be sure your dealer inspects all major parts, even if you are able to make some of the repairs yourself.

This section includes instructions on how to perform some important maintenance tasks. Some of the most important safety precautions follow. However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed.

Always follow the procedures and precautions in this owner's manual.

Important Safety Precautions

- Make sure the engine is off before you begin any maintenance or repairs.
  This will help eliminate several potential hazards:

  Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you operate the engine.

  Burns from hot motorcycle parts. Let the engine and exhaust system cool before touching.

  Injury from moving parts. Do not run the engine unless instructed to do so.

- Read the instructions before you begin, and make sure you have the tools and skills required.

- To help prevent the motorcycle from falling over, park it on a firm, level surface, using the side stand, an optional workstand or a maintenance stand to provide support.

- To reduce the possibility of a fire or explosion, be careful when working around gasoline. Use only a non-flammable (high flash point) solvent such as kerosene –not gasoline– to clean parts. Keep cigarettes, sparks, and flames away from all fuel-related parts.

Remember that your Honda dealer knows your motorcycle best and is fully equipped to maintain and repair it. To ensure the best quality and reliability, use only new Honda Genuine Parts or their equivalents for repair and replacement. If you have the tools and skills required for additional maintenance jobs, you can purchase an official Honda Service Manual (page 194).

Periodic Maintenance

In addition to the regularly scheduled maintenance (page 35) and daily pre-ride inspection (page 19), consider performing the periodic checks on the following page at least once a month, even if you haven't ridden your motorcycle, or as often as once a week if you ride frequently or for long distances. It's a good idea to perform this maintenance any time you clean your motorcycle.

Check the odometer reading and perform any scheduled maintenance checks that are needed (page 35). Remember, more frequent checks may be needed for riding in severe conditions.

Tires & Wheels	Check the air pressure with a gauge and add air if needed (page 127). Examine the tread for wear (page 127). Look closely for nails, embedded objects, cuts, and other types of damage (page 127). Roll your motorcycle so you can inspect the entire surface. Check the condition of the rims and spokes.
Fluids	Check the levels of the engine oil (page 70), coolant (page 72) and brake fluid (page 123). Add the correct fluid as necessary, and investigate the cause of any low fluid level.
Lights	Make sure the headlight, position lights, brake light, taillight, and turn signals are working properly.
Freeplay	Check the freeplay of the clutch lever (page 81) and throttle grip (page 79).
Drive Chain	Check condition, adjust slack, and lubricate as needed (page 130).
Fuses	Make sure you have a full supply of spare fuses.
Nuts & Bolts	Check the major fasteners and tighten as needed.

To maintain the safety and reliability of your motorcycle, regular inspection and service is required as shown in the Maintenance Schedules – On-Road Use and Off-Road Use – that follow.

The Maintenance Schedule lists items that can be performed with basic mechanical skills and hand tools. Procedures for these items are provided in this manual.

The Maintenance Schedule also includes items that involve more extensive procedures and may require special training, tools, and equipment. Therefore, we recommend that you have your dealer perform these tasks unless you have advanced mechanical skills and the required tools. Procedures for items in this schedule are provided in an official Honda Service Manual available for purchase from your dealer (page 194).

Service intervals in the maintenance schedule are expressed in terms of races and riding hours. To avoid overlooking required service, we urge you to develop a convenient way to record the number of races and/or hours you ride (Off-Road Use only).

If you do not feel capable of performing a given task or need assistance, remember that your Honda dealer knows your motorcycle best and is fully equipped to maintain and repair it. If you decide to do your own maintenance, use only Honda Genuine Parts or their equivalents for repair or replacement to ensure the best quality and reliability.

(cont'd)

Maintenance Schedule

MAINTENANCE SCHEDULE

Perform the *Pre-ride Inspection* (page 19) at each scheduled maintenance period.
I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. A: Adjust. L: Lubricate.

	FREQUENCY / ITEMS	WHICHEVER COMES FIRST ⇨		INITIAL MAINTENANCE	REGULAR MAINTENANCE INTERVAL (NOTE 1)							Regular Replace	Refer to Page:
			mi	100	600	1200	1800	2400	3000	3600	19000		
			Km	150	1000	2000	3000	4000	5000	6000	30000		
		NOTE	MONTH	1	4	8	12	16	20	24			
*	FUEL LINE						I			I			61
**	FUEL FILTER						R			R			63 – 67
*	THROTTLE OPERATION						I			I			79
*	AIR CLEANER	(NOTE 2)			C	C	C	C	C	C		3 years	75, 76
	CRANKCASE BREATHER	(NOTE 3)			I	I	I	I	I	I			77
	SPARK PLUG						I			I			86
*	VALVE CLEARANCE						I			I			87 – 95
	ENGINE OIL				R	R	R	R	R	R			70, 71
	ENGINE OIL FILTER				R	R	R	R	R	R			70, 71
*	DECOMPRESSOR SYSTEM						I			I			92
**	ENGINE IDLE SPEED			I	I	I	I	I	I	I			80
**	INTAKE/EXHAUST VALVE										R		–
**	PISTON AND PISTON RINGS										R		98 – 100
**	PISTON PIN										R		98 – 100
**	CRANKSHAFT										R		–
**	CRANKSHAFT BEARING										R		–
**	TRANSMISSION										I		–
**	CAM CHAIN TENSIONER LIFTER										R		–
	RADIATOR COOLANT	(NOTE 6)					I			I		3 years	72, 74
*	COOLING SYSTEM			I	I	I	I	I	I	I			73
*	SECONDARY AIR SUPPLY SYSTEM						I			I			–
*	EVAPORATIVE EMISSION CONTROL SYSTEM	(NOTE 3)								I			–
	DRIVE CHAIN	(NOTE 4)		I, L	(I, L: every 300 mi (500 km) or 3 months)								130 – 132
	DRIVE CHAIN SLIDER				I	I	I	I	I	I			130
	BRAKE FLUID	(NOTE 6)			I	I	I	I	I	R		2 years	123, 124
	BRAKE PADS WEAR				I	I	I	I	I	I			125
	BRAKE SYSTEM			I	I	I	I	I	I	I			122
	BRAKE LIGHT SWITCH				I	I	I	I	I	I			125
*	HEADLIGHT AIM						I			I			140
	CLUTCH SYSTEM			I			I			I			81 – 82
	SIDE STAND						I			I			129
*	SUSPENSION						I			I			144, 146
*	SPARK ARRESTER	(NOTE 5)		(C: every 1,000 mi (1,600 km) or every 100 operating hours)									135
*	NUTS, BOLTS, FASTENERS	(NOTE 4)		I			I			I			137, 181 – 183
**	WHEELS/TIRES	(NOTE 4)		I	I	I	I	I	I	I			126 – 128
**	STEERING HEAD BEARINGS			I			I			I			136

*Should be serviced by your dealer, unless the owner has proper tools and service data and is mechanically qualified. Refer to the official Honda Service Manual (page 194).
**In the interest of safety, we recommended these items be serviced only by your dealer.

NOTES: 1. At higher odometer reading. Repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. Service more frequently when riding OFF-ROAD.
5. USA only.
6. Replacement requires mechanical skill.

MAINTENANCE SCHEDULE – OFF-ROAD USE

All items should be checked before each off-road event. See your dealer unless you are mechanically qualified and have the proper tools.

Damage from Off-Road use is not covered by the Distributor's Limited Warranty on your Honda.

Perform the *Pre-ride Inspection* (page 19) at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. A: Adjust. L: Lubricate.

FREQUENCY / ITEMS	NOTE	Each race or about 3.5 hours	Every 4 races or about 15.0 hours	Every 8 races or about 30.0 hours	Refer to Page:
FUEL LINE	(NOTE 6)	I		R	61
FUEL PUMP FILTER	(NOTE 6)			R	63 – 67
THROTTLE OPERATION		I			79
AIR FILTER	(NOTE 1)	C			75, 76
CRANKCASE BREATHER		I			77
SPARK PLUG		I			86
VALVE CLEARANCE/DECOMPRESSOR SYSTEM	(NOTE 4)			I	87 – 95
ENGINE OIL	(NOTE 3) (NOTE 5)	I		R	70, 71
ENGINE OIL FILTER	(NOTE 3)			R	70, 71
ENGINE IDLE SPEED		I			80
PISTON AND PISTON RINGS				R	98 – 100
PISTON PIN				R	98 – 100
RADIATOR COOLANT	(NOTE 2)	I			72, 74
COOLING SYSTEM		I			73
DRIVE CHAIN		I, L	R		130 – 132
DRIVE CHAIN SLIDER		I			130
DRIVE CHAIN ROLLER		I			131
DRIVE SPROCKET		I			132
DRIVEN SPROCKET		I			132
BRAKE FLUID	(NOTE 2)	I			123, 124
BRAKE PADS WEAR		I			125
BRAKE SYSTEM		I			122
CLUTCH SYSTEM	(NOTE 5)	I			81 – 85
CONTROL CABLES		I, L			136
EXHAUST PIPE/MUFFLER		I			133 – 135
SUSPENSION		I			105, 121
SWINGARM/SHOCK LINKAGE			L		42, 121
FORK OIL	(NOTE 3)			R	108, 109, 115 – 121
NUTS, BOLTS, FASTENERS		I			137, 181 – 183
WHEELS/TIRES		I			126 – 128
STEERING HEAD BEARINGS				I	136
SIDE STAND		I			129

WE RECOMMEND THESE ITEMS BE SERVICED BY REFERRING TO AN OFFICIAL HONDA SERVICE MANUAL.

This maintenance schedule is based upon average riding condition. Machine subjected to severe use require more frequent servicing.

NOTES:1. Clean after every moto for dusty riding condition.

2. Replace every 2 years. Replacement requires mechanical skill.
3. Replace after the first break-in ride.
4. Inspect after the first break-in ride.
5. Replace the engine oil, if the clutch discs and plates are replaced.
6. Replace every year.

Maintenance Record (On-Road Use Only)

Keeping an accurate maintenance record will help ensure that your motorcycle is properly maintained. Retain detailed receipts to verify the maintenance was performed. If the motorcycle is sold, these receipts should be transferred with the motorcycle to the new owner. Make sure whoever performs the maintenance completes this record. All scheduled maintenance, including the 100 mile (150 km) or 1 month initial maintenance, is considered a normal owner operating cost and will be charged for by your dealer. Use the space under Notes to record anything you want to remind yourself about or mention to your dealer.

Miles (km) or Month	Odometer	Date	Performed By:	Notes
100 (150) or 1				
600 (1,000) or 4				
1,200 (2,000) or 8				
1,800 (3,000) or 12				
2,400 (4,000) or 16				
3,000 (5,000) or 20				
3,600 (6,000) or 24				
4,200 (7,000) or 28				
4,800 (8,000) or 32				
5,400 (9,000) or 36				
6,000 (10,000) or 40				
6,600 (11,000) or 44				
7,200 (12,000) or 48				
7,800 (13,000) or 52				

Perform maintenance on firm, level ground using the side stand, an optional workstand, or equivalent support.

When tightening bolts, nuts or screws, start with the larger diameter or inner fasteners, and tighten them to the specified torque using a crisscross pattern.

Use Honda Genuine Parts or their equivalents when servicing your motorcycle.

Clean parts in non-flammable (high flash point) cleaning solvent (such as kerosene) when disassembling. Lubricate any sliding surfaces, O-rings, and seals before reassembling. Grease parts by coating or filling where specified.

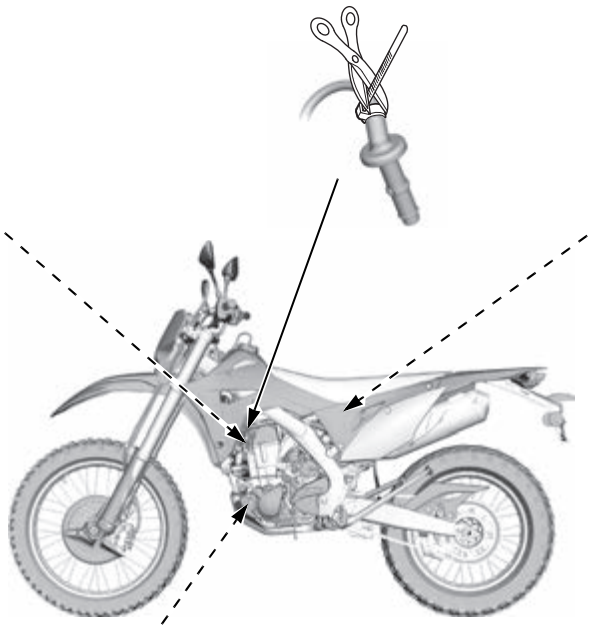
After any engine disassembly, always install new gaskets, O-rings, cotter pins, piston pin clips, snap rings, etc. when reassembling. After reassembly, check all parts for proper installation and operation.

All Pre-ride Inspection Items
Refer to *Pre-ride Inspection* on page 19.

General Competition Maintenance (Off-Road Use Only)

Spark Plug
Some non-resistor plugs may cause ignition problems. Refer to the recommendations elsewhere in this manual for specific types so you will be sure to use the proper reach and heat range. Replace periodically as specified in the Maintenance Schedule (pages 36, 37).

Spark Plug Cap
Install a small plastic wire band around the spark plug cap to reduce any possibility of it loosening or of water penetration.

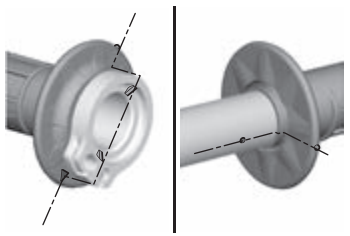


Air Cleaner
Clean and oil your air cleaner regularly because the volume of air able to pass through it has a great effect on performance. Both engine performance and long term durability may be affected by an air cleaner that has deteriorated and allows dirt to pass. Inspect the air cleaner closely each time it's serviced for evidence of small tears or seam separation. Keep a spare air cleaner oiled and ready to install, sealed in a plastic bag. Riding in dusty conditions may require servicing the air cleaner or replacing it with a pre-serviced air cleaner between races. Be careful not to over oil the air cleaner. While it is important to oil the air cleaner thoroughly, over oiling will cause an overall rich running condition, probably more noticeable off idle and in low rpm performance. Follow the servicing instructions in the Maintenance section. Use Pro Honda Foam Air Filter Oil or an equivalent. Be sure to grease the air cleaner flange where it contacts the air cleaner housing. Pro Honda Foam Air Filter Sealer or an equivalent is handy for this because any dirt that penetrates this sealing area will show up clearly (page 75). Use the Honda Genuine air cleaner or an equivalent air cleaner specified for your model.
Using the wrong Honda air cleaner or a non-Honda air cleaner which is not of equivalent quality may cause premature engine wear or performance problems.

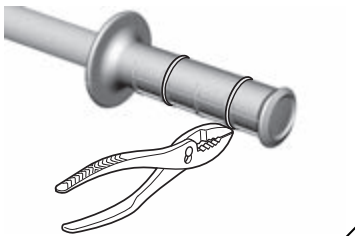
Engine Oil and Filter
Drain and replace engine oil often to ensure the greatest service life of the piston, cylinder, crankshaft, transmission and clutch.
Also replace engine oil filter often to ensure the greatest service life. Frequent changes will also assure consistent performance of power, response, both shifting and clutch action (page 70).

Handgrips
Always use Honda Bond A, Pro Honda Handgrip Cement (U.S.A. only) when replacing handgrips.
Refer to an official Honda Service Manual (page 194) for installation instructions.

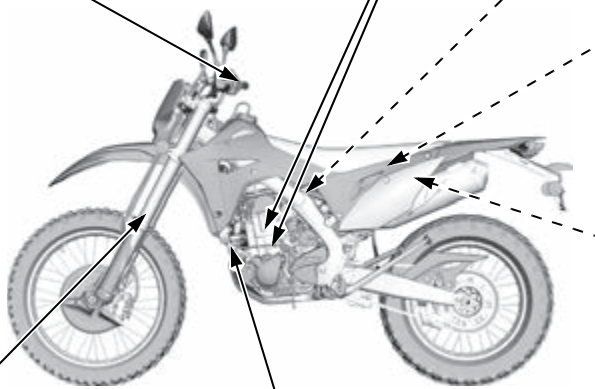
Throttle Grip/Handlebar Grip
Right throttle grip: Align the index mark on the throttle grip with the index mark of the throttle pipe.
Left handlebar grip: Align the index mark on the left handlebar grip with the paint mark on the handlebar.



For added security, you may choose to bind the handgrips to the handlebar and throttle pipe with safety wires to prevent the possibility of them loosening. Position the twisted wire ends away from your palms and be sure to bend the wire ends well into the handgrip rubber so they will not snag your glove.



Fork Oil/Performance
Disassemble, clean and inspect the fork and replace the oil regularly. Contamination due to the tiny metal particles produced from the normal action of the fork, as well as normal oil breakdown, will deteriorate the performance of the suspension. Refer to an official Honda Service Manual (page 194). Use only Pro Honda HP Fork Oil, SS-19 or an equivalent which contains special additives to assure maximum performance of your motorcycle's front suspension.



Cylinder head/Cylinder
Put a little grease on the dowel pins of the cylinder head and cylinder to prevent corrosion from dissimilar metals. The tolerances are quite tight, so it's important to keep these dowels absolutely clean (pages 96, 98).

Gaskets
Always use new gaskets when reassembling components.

Fuel Line
Refer to *Fuel Line Inspection* on page 61.
Check the fuel line for deterioration, damage, or leakage. Replace the fuel line every year.

Battery
The start button uses current from the battery.
Limited operation also allows the battery to discharge. If you do not ride frequently, we recommend that you charge the battery frequently (see *Battery Charging* on page 139). If you do not expect to ride your motorcycle for at least 2 weeks, we recommend you remove the battery – or at least disconnect the battery cables (negative cable first).

Fuse
Check the fuse before looking elsewhere for the cause of an electrical problem.

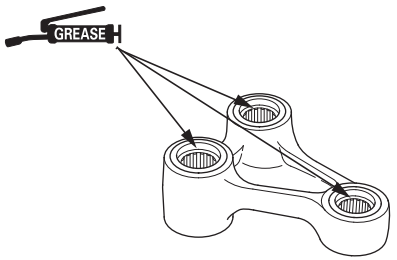
Electrical Connectors
Clean electrical connectors and wrap them with electrical tape to reduce the possibility of unwanted disconnections, water shorts or corrosion.

Frame
Because your motorcycle is a high-performance machine, the frame should not be overlooked as part of your overall off-road use maintenance program. Periodically inspect the frame closely for possible cracking or other damage. It makes good racing sense.

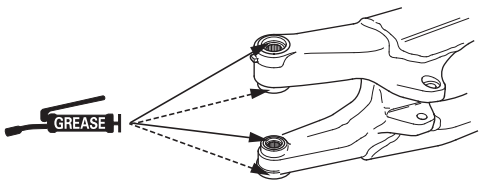
Engine Mounting Bolts and Nuts
Make sure the engine mounting bolts and nuts are tightened to the proper torque specification.

General Competition Maintenance (Off-Road Use Only)

Suspension Linkage Lubrication
Disassemble, clean, inspect and lubricate all suspension linkage pivot bearings with molybdenum disulfide grease (containing more than 3% molybdenum disulfide additive Moly Paste 77) after each 15.0 hours of running time in order to maintain proper suspension performance and minimize component wear.

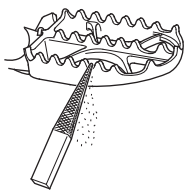


Swingarm Pivot Lubrication
Clean, inspect and lubricate the swingarm and suspension linkage pivots with molybdenum disulfide grease (containing more than 3% molybdenum disulfide additive Moly Paste 77). Be sure all of the dust seals are in good condition.

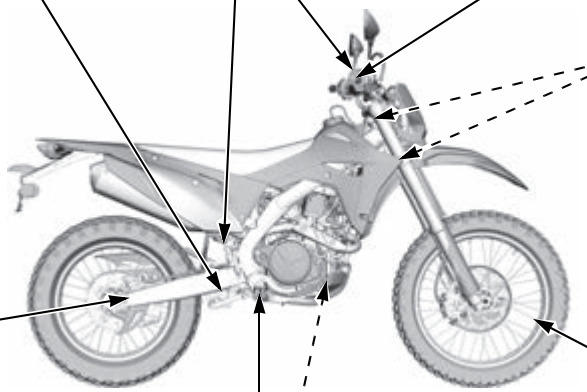


Swingarm
Do not attempt to weld or otherwise repair a damaged swingarm. Welding will weaken the swingarm.

Footpegs
Worn footpeg teeth can be repaired by filing the grooves between the teeth with a triangular shaped file.
Be aware that filing them too sharp will reduce boot sole lifespan. Sharpen only the points of the teeth. Filing the grooves deeper will weaken the footpegs. Be sure the pegs are free to pivot freely and that the pivot pin retaining cotter pins are in good condition.



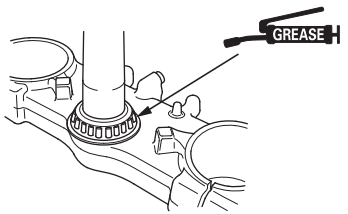
Brake Fluid Replacement
Refer to *Brake Pad Wear* on page 125.
Brake Caliper Inspection: Be sure both the front and rear calipers are able to move freely on the caliper pin and caliper bracket pins. Check pad thickness periodically and replace the pads when minimum thickness is reached. If the brakes fade when they are hot, inspect the pads for glazing or damage, and replace if necessary.
Brake Fluid Replacement: Refer to an official Honda Service Manual (page 194) for brake fluid replacement instructions. Replace the brake fluid in the brake system every 2 years. Replace the fluid more frequently if you subject your brakes to severe use. Heavy braking heats the brake fluid and it may deteriorate sooner than expected. Any type of riding, that requires frequent use of the brakes, such as in tight woods, can shorten the service life of brake fluid.



Bleed Hole
After every races, check the bleed hole below the water pump cover for leakage. Clean away any clogged dirt or sand, if necessary. Check for signs of seal leakage. If water leaks through the bleed hole, replace the mechanical seal. If oil leaks through the bleed hole, replace the oil seal. Make sure that there is no continuous coolant leakage from the bleed hole while operating the engine. A small amount of coolant weeping from the bleed hole is normal. See an official Honda Service Manual or consult your dealer for replacing the mechanical seal or oil seal. Both seals should be replaced at the same time.

Throttle Control
Remove the throttle control every few rides, clean the inside of the throttle pipe and handlebar thoroughly. Inspect the cable carefully for kinks or other damage that may restrict throttle control in anyway. Move the handlebar from lock to lock to be sure there is no cable interference. Make certain the throttle operation is perfect after servicing and inspecting.

Steering Head Bearings
Periodically clean, inspect and regrease the steering head bearings — especially if wet, muddy or extremely dusty courses are encountered often.
Use urea based multi-purpose grease designed for high temperature, high pressure performance (example: EXCELITE EP2 manufactured by KYODO YUSHI, Japan or equivalent).



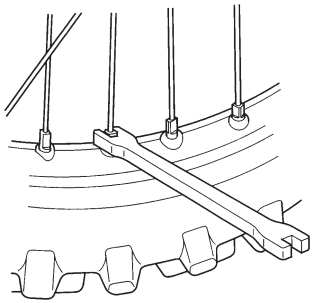
Spokes
Check spoke tension frequently between the first few rides. As the spokes, spoke nuts and rim contact points seat-in, the spokes may need to be retightened. Once past this initial seating-in period, the spokes should hold their tension. Still, be sure your race maintenance program includes checking spoke tension and overall wheel condition on a regular basis (page 126).

Nuts, Bolts, Etc.
Application of a thread locking agent to essential fasteners offers added assurance and security. Remove the nuts, clean the threads of both the nuts and bolts, apply Pro Honda Hondalock or an equivalent and tighten to the specified torque.

Between Races & Practice Maintenance

After practice or between races you have a chance to make additional checks and adjustments.

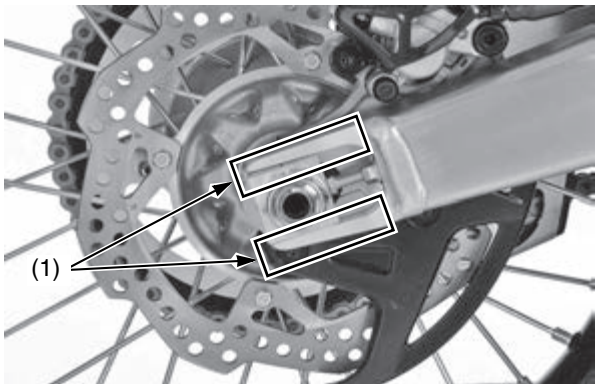
- Clean accumulated dirt from under the fenders and off the wheels, suspension components, handgrips, controls, and footpegs. A stiff, nylon parts cleaning brush works well.
- Check tire air pressure.
- Check spoke tension.



- Check to make sure the sprocket bolts and nuts are secure.
- Clean the sides of the drive chain with a stiff, nylon parts-cleaning brush. Lubricate and adjust the chain as necessary.

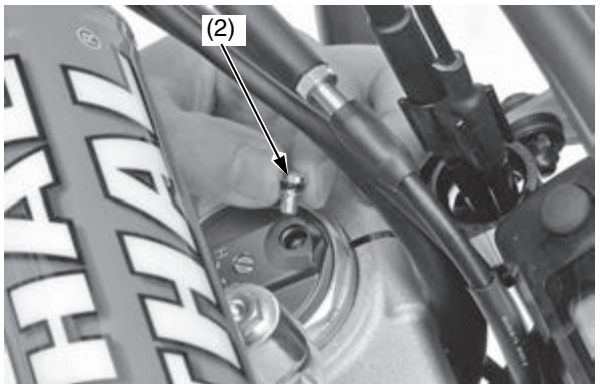
Do not perform maintenance while engine is running. Injury to your fingers or hands may result.

- After adjustment, check that the chain adjuster index marks (1) are in the same position on each side. This will ensure that the rear wheel is in proper alignment and allow maximum performance from the rear disc brake. Maintaining proper wheel alignment will also extend brake pad wear.



(1) chain adjuster index marks

- Suspend the front wheel above the ground and use the pressure release screws (2) to release the built-up pressure in the forks. This pressure is caused by normal fork action while riding.



(2) pressure release screw

Before & After Competition Maintenance (Off-Road Use Only)

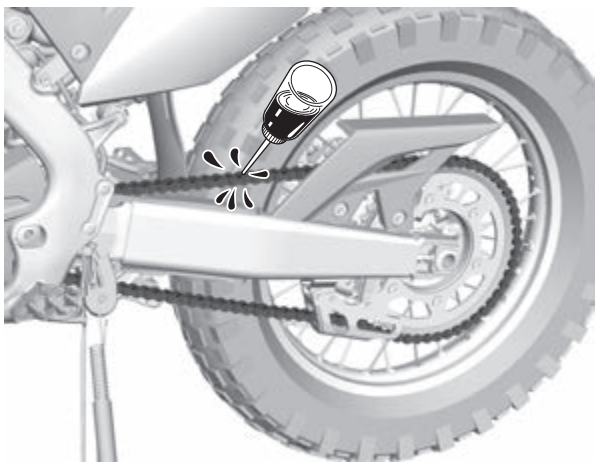
After Competition Maintenance

It is important to the long term performance of your motorcycle to practice a consistent maintenance program. Right after the event is a good time to begin your next maintenance cycle.

After Race Lubrication
Apply a light coating of rust-inhibiting oil to the drive sprocket and any steel portions of the chassis or engine where the paint has worn away. This will prevent rusting of the exposed metal. Apply rust-inhibiting oil more heavily if the event was particularly wet or muddy. Take care to avoid spraying any oil near the brake pads or the brake discs.

Take care to prevent catching your fingers between the chain and sprocket.

Remove the drive chain, clean and lubricate it (pages 131, 132). Be sure the chain is wiped clean and is dry before lubricating the chain.



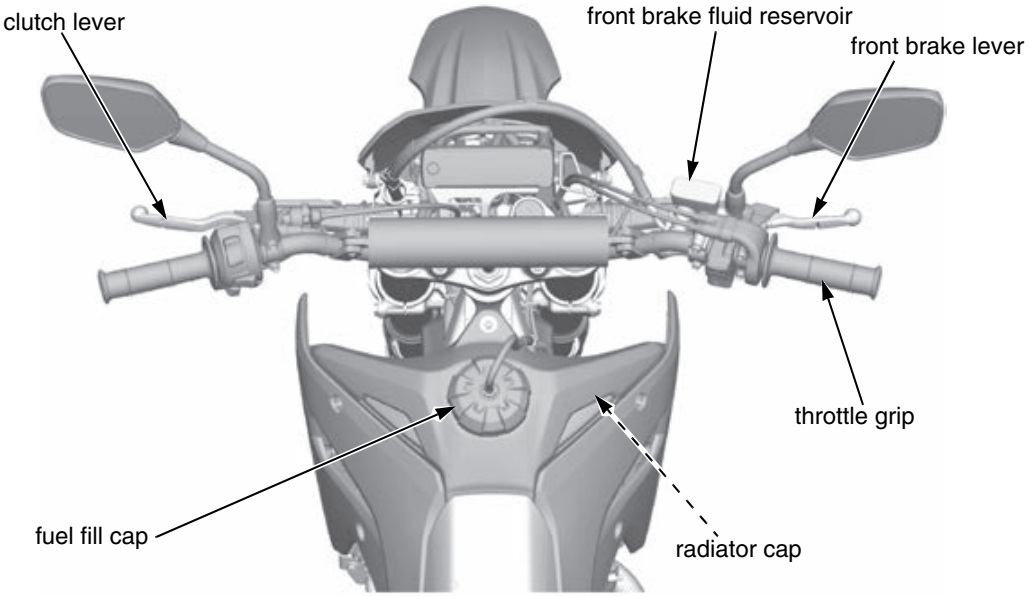
Routine Cleaning
If your motorcycle is only slightly dirty, it is best to clean it by hand with the aid of a stiff bristled nylon brush and some clean rags.

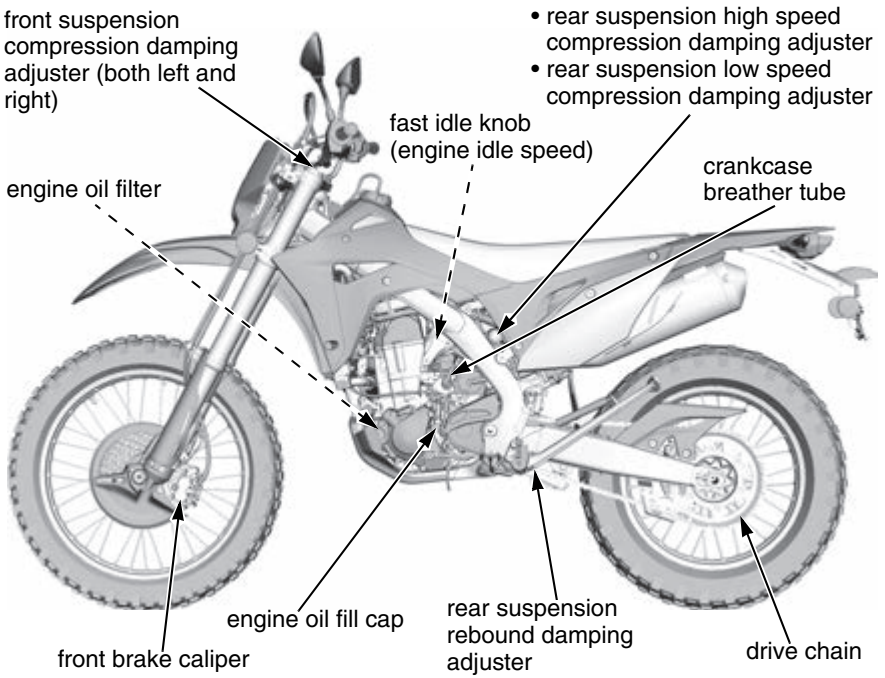
Take care to prevent catching your fingers between the chain and sprocket.

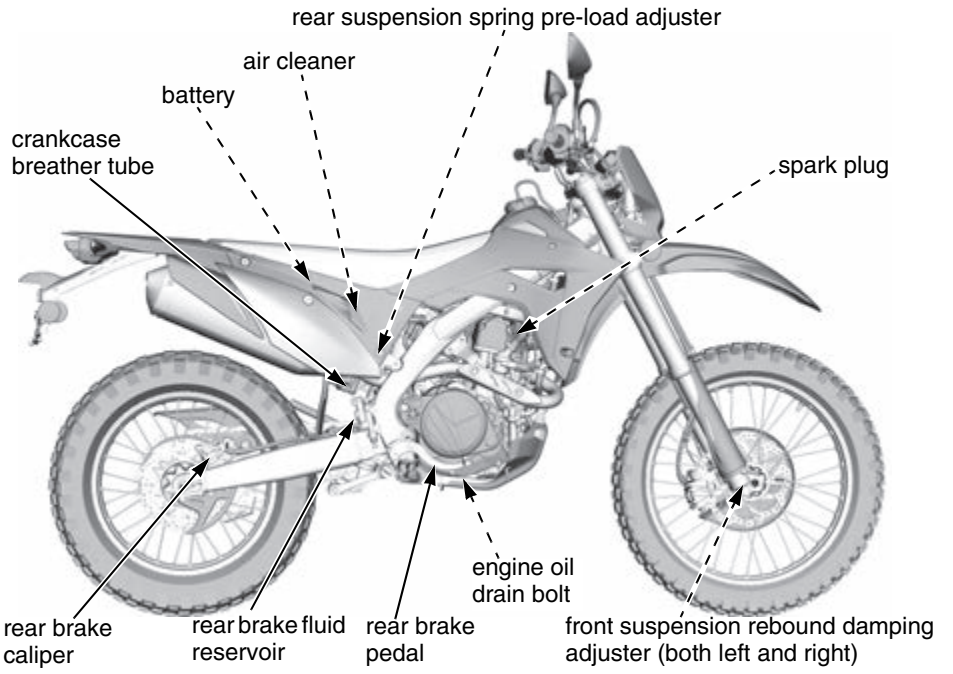
A variety of reasonably priced cleaning brushes are available from variety, drug, food, and hardware stores. Some of these brushes are extremely useful in removing dirt from the many tight contours of the metal pieces of your motorcycle. Avoid using stiff, abrasive brushes on the plastic or rubber parts.

If your motorcycle was exposed to sea air or salt water, rinse it as soon as possible after the event, dry it, and apply a spray lubricant to all metal parts.

If you decide to wash your motorcycle or use cleaners, refer to *Appearance Care* (page 141).


clutch lever
front brake fluid reservoir
front brake lever
throttle grip
fuel fill cap
radiator cap


front suspension compression damping adjuster (both left and right)
• rear suspension high speed compression damping adjuster
• rear suspension low speed compression damping adjuster
fast idle knob (engine idle speed)
engine oil filter
crankcase breather tube
front brake caliper
engine oil fill cap
rear suspension rebound damping adjuster
drive chain

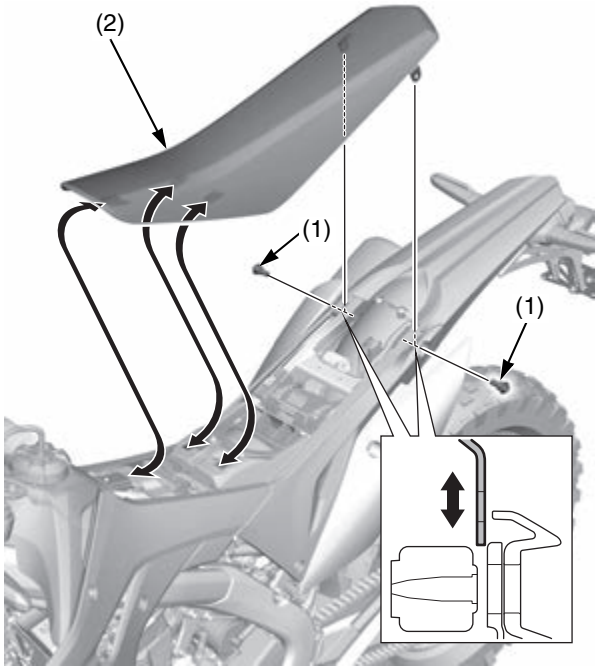

rear suspension spring pre-load adjuster
air cleaner
battery
crankcase breather tube
spark plug
engine oil drain bolt
rear brake caliper
rear brake fluid reservoir
rear brake pedal
front suspension rebound damping adjuster (both left and right)

Seat

Refer to *Important Safety Precautions* on page 33.

Removal

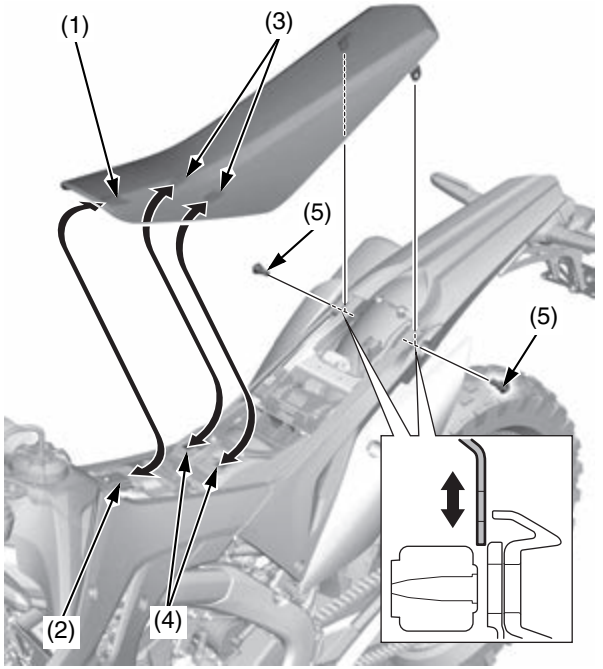
1. Remove the seat mounting bolts (1).
2. Remove the seat (2) by pulling it backward.



(1) seat mounting bolts (2) seat

Installation

1. Install the seat while aligning the seat front prong (1) with the slot (2) of the fuel tank and seat center prongs (3) with the seat support base slots (4).
2. Install and tighten the seat mounting bolts (5) to the specified torque:
   19 lbf·ft (26 N·m, 2.7 kgf·m)



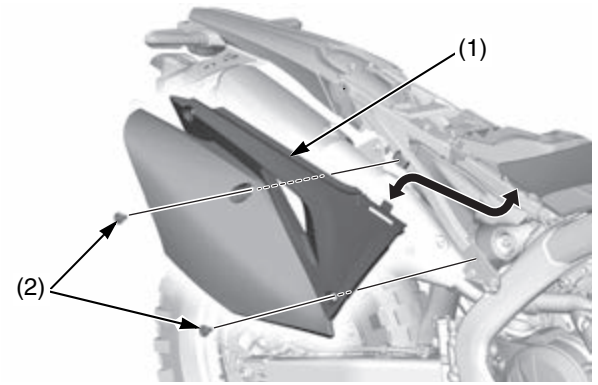
(1) seat front prong
(2) slot
(3) seat center prongs
(4) seat support base slots
(5) seat mounting bolts

Refer to *Important Safety Precautions* on page 33.

Removal

1. Remove the seat (page 46).
2. Remove the side cover (1) by removing the bolts (2).

The right and left side covers can be removed in the same manner.

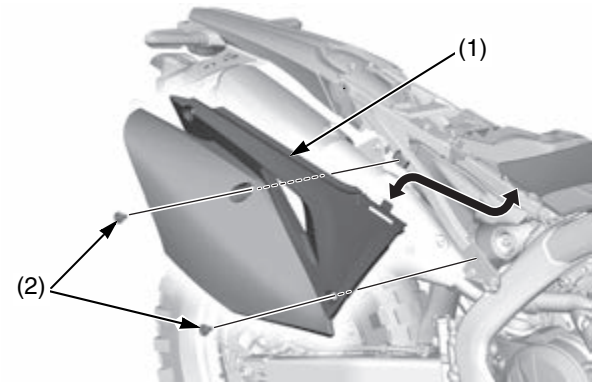


(1) side cover
(2) bolts

Installation

1. Install the side cover (1), and then tighten the bolts (2) to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)

The right and left side covers can be installed in the same manner.



(1) side cover
(2) bolts

2. Install the seat (page 46).

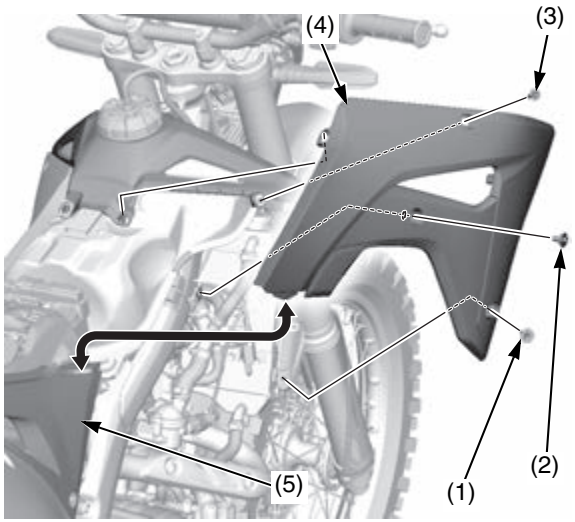
Fuel Tank

Refer to *Important Safety Precautions* on page 33.

Removal

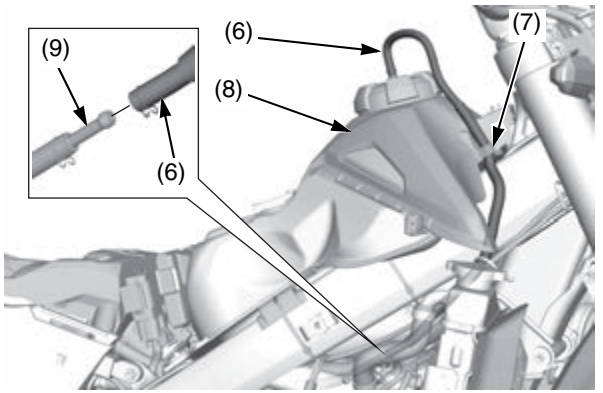
1. Remove the seat (page 46).
2. Remove the shroud A bolt (1), shroud B bolt (2) and shroud C bolt (3).
3. Slide the shroud (4) toward the up to separate them from the side cover (5), and then remove the shroud.

The right and left shrouds can be removed in the same manner.



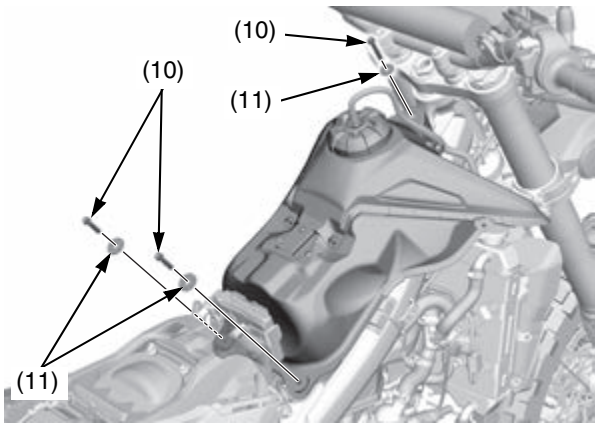
(1) shroud A bolt
(2) shroud B bolt
(3) shroud C bolt
(4) shroud
(5) side cover

4. Release the breather tube (6) from the tube guide (7) on the top shelter (8).
5. Disconnect the breather tube (6) at the tube joint (9).



(6) breather tube
(7) tube guide
(8) top shelter
(9) tube joint

6. Remove the fuel tank bolts (10) and washers (11).



(10) fuel tank bolts
(11) washers

7. Lift the fuel tank (12) out of the frame to the left of the frame.

Do not support the fuel tank by the fuel feed hose (13).

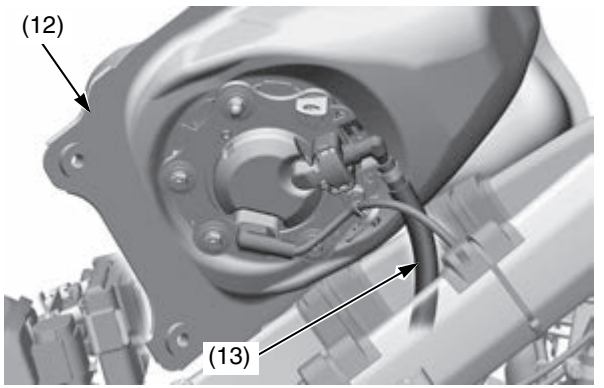
NOTICE

The fuel tank is made of titanium material. Since the fuel tank has not been painted, it might be discolored with mud and dust.
To remove mud or dust, use a sponge or soft cloth and a stainless steel kitchen detergent, then rinse well clean water.
After washing, rinse with plenty of water and dry with a clean cloth.

⚠ WARNING

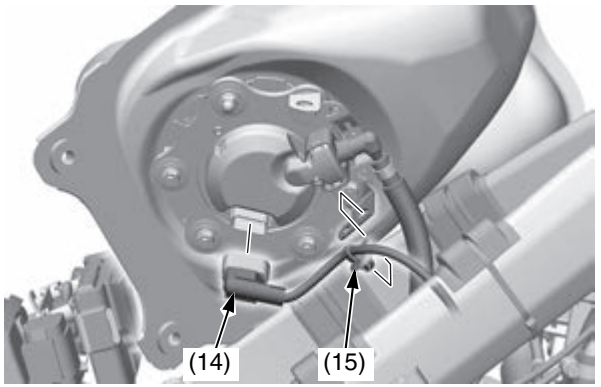
Gasoline is highly flammable and explosive.
You can be burned or seriously injured when handling fuel.

- Stop the engine and keep heat, sparks and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.



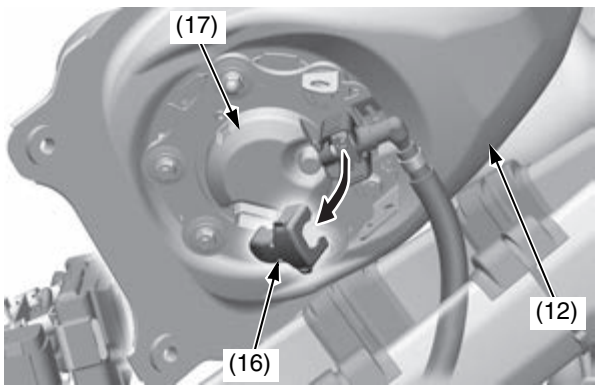
(12) fuel tank
(13) fuel feed hose

8. Disconnect the fuel pump connector (14) and remove the harness band clip (15).
9. Reposition the fuel tank and start the engine and let it idle until the engine stalls.



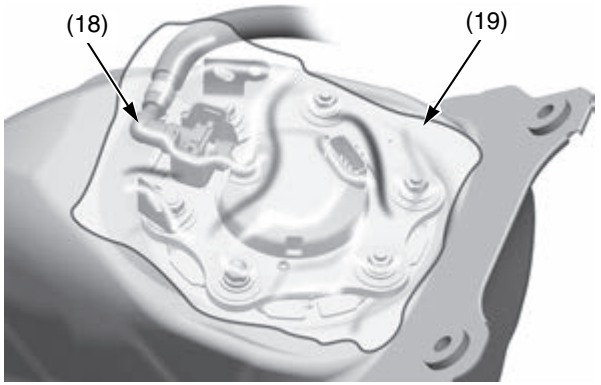
(14) fuel pump connector (15) harness band clip

10. Lift the fuel tank (12) out of the frame. Remove the fuel quick connect fitting cover (16) from the fuel pump (17).



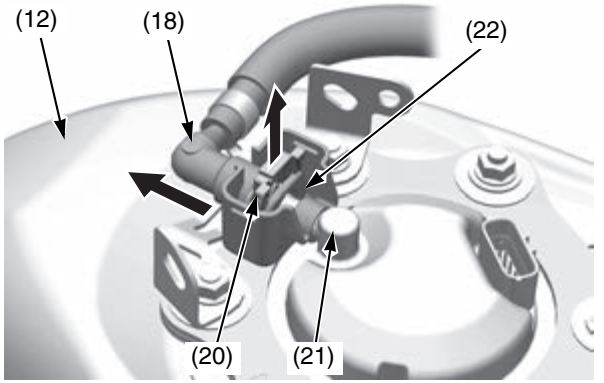
(12) fuel tank
(16) fuel quick connect fitting cover
(17) fuel pump

11. Check the fuel quick connect fitting (18) for dirt, and clean if necessary.
12. Place a shop towel (19) over the fuel quick connect fitting.



(18) fuel quick connect fitting (19) shop towel

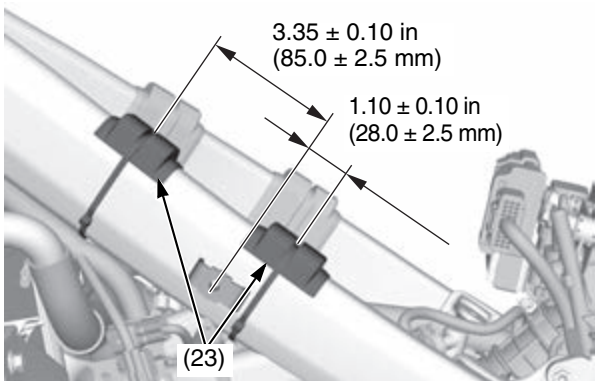
13. Unlock the slide retainer (20) of the quick connect fitting by completely pulling it up. Release the fuel quick connect fitting (18) from the fuel joint (21) while holding the connector housing (22), then remove the fuel tank (12).
    Use a shop towel to absorb the remaining fuel in the fuel feed hose.
    - Be careful not to damage the hose or other parts.
    - Do not use tools.
    - Dirt intruding into the connector housing may cause slide retainer sticking.



(12) fuel tank
(18) fuel quick connect fitting
(20) slide retainer
(21) fuel joint
(22) connector housing

(cont'd)

14. Check for interference between the frame and tank, and adjust the cushion rubbers (23) on the both sides of the frame if necessary.



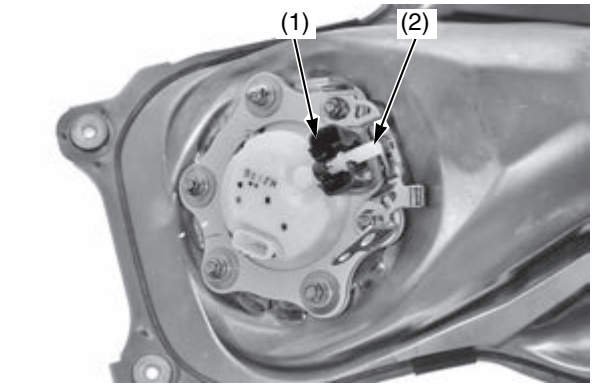
(23) cushion rubbers

NOTICE

Do not ride your motorcycle in state which the cushion rubbers have been removed.
It may cause the fuel tank cracking.

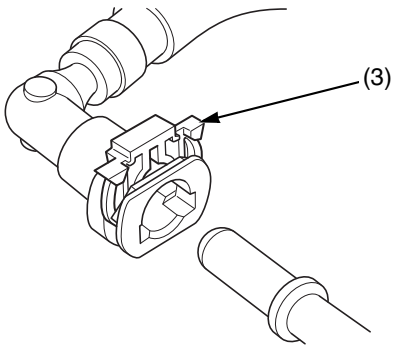
Installation

1. Make sure the rubber cover (1) is onto the fuel joint (2) of the fuel pump as shown.



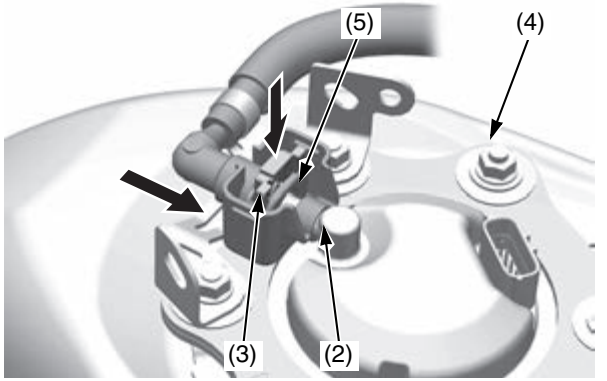
(1) rubber cover
(2) fuel joint

2. Be sure that the slide retainer (3) is completely pulled up before connecting the quick connect fitting.
   - Do not bend or twist the fuel feed hose.
   - Do not reuse the kinked or damaged fuel hose.
   - Do not use gloves or a shop towel while installing the quick connect fitting.



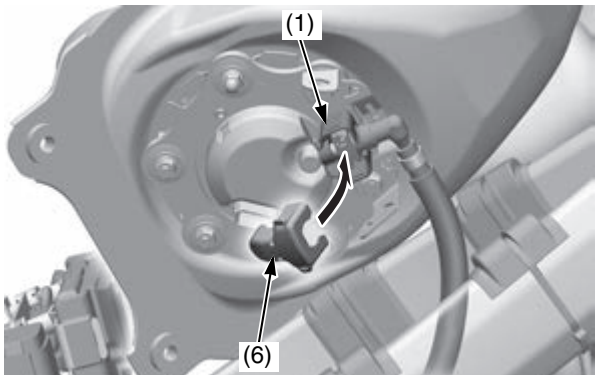
(3) slide retainer

3. Place the fuel tank (4) onto the frame.
4. Connect the quick connect fitting to the fuel joint (2) until you hear the “click” while holding the connector housing (5).
   If it is hard to connect, put a small amount of engine oil on the pipe end of the fuel joint.



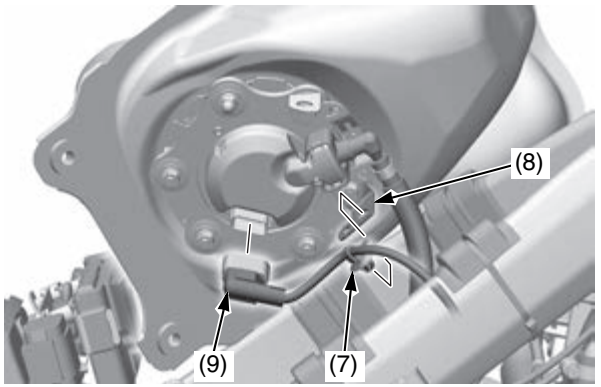
(2) fuel joint
(3) slide retainer
(4) fuel tank
(5) connector housing

5. Make sure the connection is secure and that the slide retainer is firmly locked into place; check visually and by pulling the connector housing.
6. Install the fuel quick connect fitting cover (6). Be sure the rubber cover (1) is properly installed between the fuel quick connect fitting cover and fuel pump.



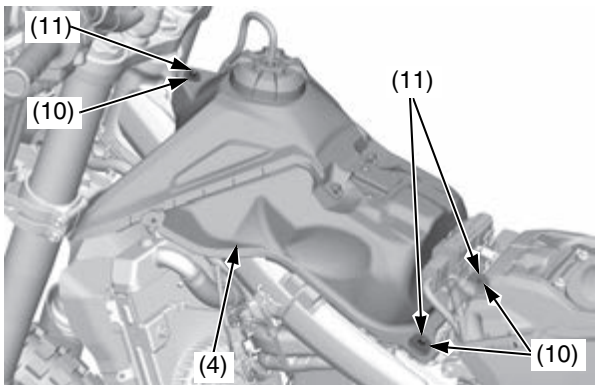
(1) rubber cover
(6) fuel quick connect fitting cover

7. Install the harness band clip (7) to the stopper cable guide (8).
   Connect the fuel pump connector (9).



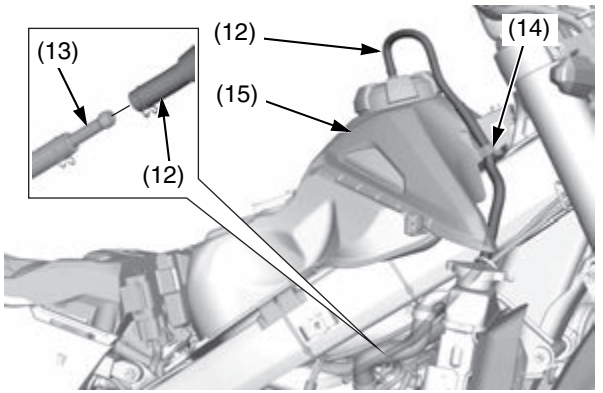
(7) harness band clip
(8) stopper cable guide
(9) fuel pump connector

8. Install the fuel tank (4) into the frame. Install the washers (10) and fuel tank bolts (11), then tighten the bolts to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)



(4) fuel tank
(10) washers
(11) fuel tank bolts

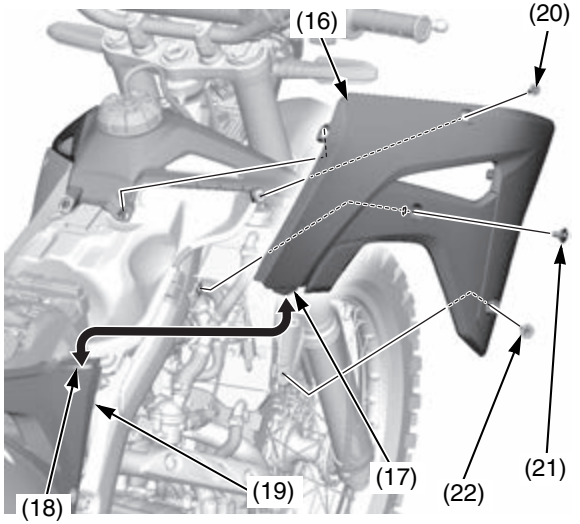
9. Connect the breather tube (12) to the tube joint (13). Install the breather tube to the tube guide (14) onto the top shelter (15).



(12) breather tube
(13) tube joint
(14) tube guide
(15) top shelter

10. Slide the shroud (16) toward the down so that the shroud tab (17) and the slot (18) on the side cover (19) is aligned.
11. Install the shroud C bolt (20), B bolt (21) and shroud A bolt (22).
    Tighten the shroud A and B bolts to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)
    Tighten the shroud C bolt to the specified torque:
    3.8 lbf·ft (5.2 N·m, 0.5 kgf·m)

    The right and left shrounds can be installed in the same manner.



(16) shroud
(17) tab
(18) slot
(19) side cover
(20) shroud C bolt
(21) shroud B bolt
(22) shroud A bolt

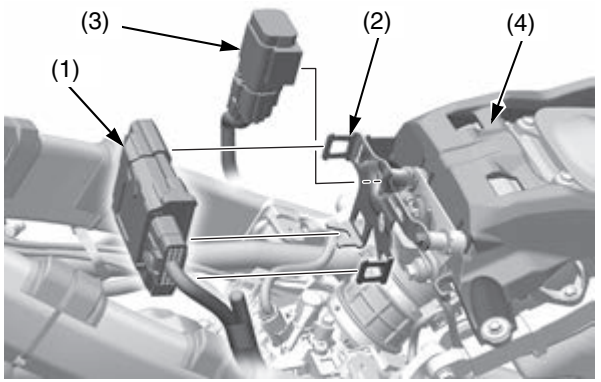
12. Install the seat (page 46).

Subframe

Refer to *Important Safety Precautions* on page 33.

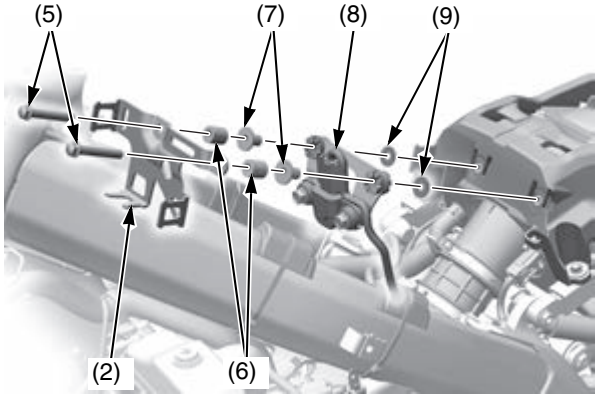
Removal

1. Remove the battery (page 138).
2. Remove the fuel tank (page 48).
3. Remove the muffler (page 133).
4. Remove the left side cover (page 47).
5. Remove the ECM (1) from the ECM stay (2).
6. Remove the starter relay (3) from the seat support base (4).



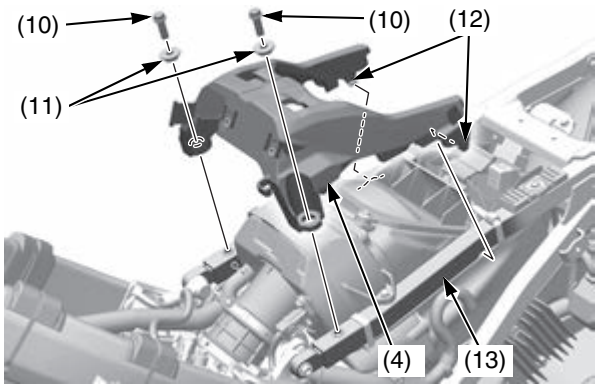
(1) ECM
(2) ECM stay
(3) starter relay
(4) seat support base

7. Remove the stay mounting bolts (5), ECM stay (2), collars A (6), collars B (7), bank angle sensor assembly (8) and washers (9).



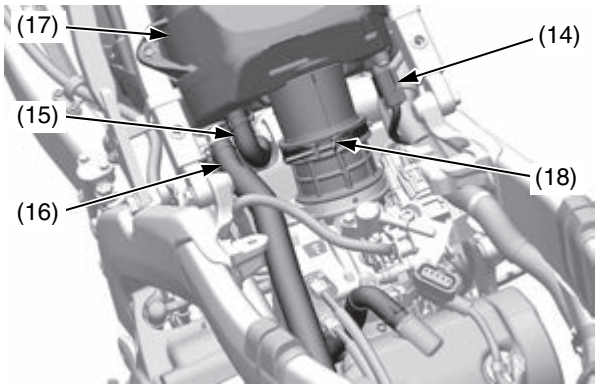
(2) ECM stay
(5) stay mounting bolts
(6) collars A
(7) collars B
(8) bank angle sensor assembly
(9) washers

8. Remove the seat support base mounting bolts (10) and collars (11). Release the hooks (12) from the seat rail, then remove the seat support base (4) from the subframe (13).



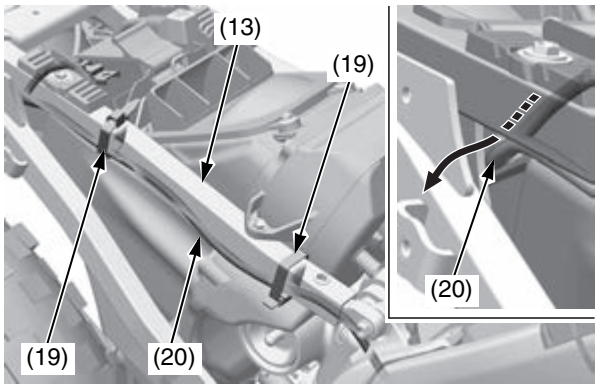
(4) seat support base
(10) bolts
(11) collars
(12) hooks
(13) subframe

9. Disconnect the IAT sensor connector (14). Disconnect the crankcase breather tube (15) and air injection air tube (16) from the air cleaner housing (17).
   Loosen the connecting tube band screw (18).



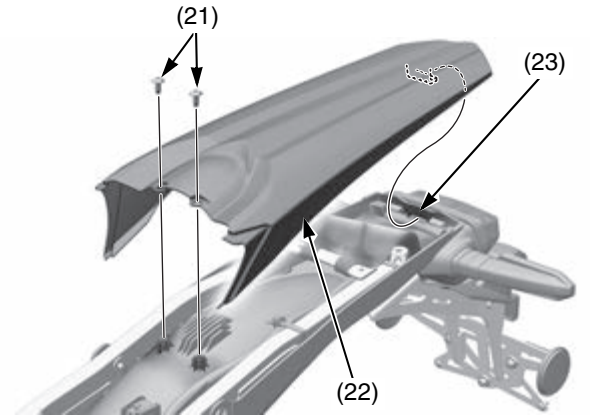
(14) IAT sensor connector
(15) crankcase breather tube
(16) air injection air tube
(17) air cleaner housing
(18) connecting tube band screw

10. Remove the negative (-) battery cable bands (19), then remove the negative (-) battery cable (20) from the subframe (13).



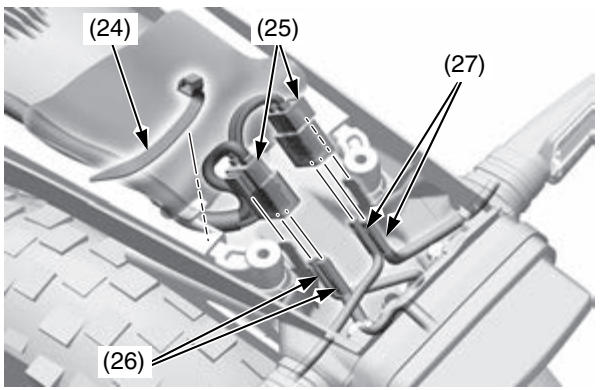
(13) subframe
(19) cable bands
(20) negative (-) battery cable

11. Remove the rear fender mounting screws (21). Remove the rear fender (22) while releasing the hooks from the rear fender B (23).



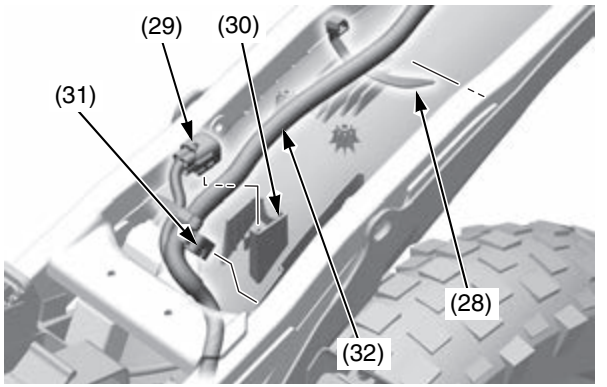
(21) screws
(22) rear fender
(23) rear fender B

12. Remove the wire harness band (24). Remove the connector covers (25) from the rear fender stay. Disconnect the license light/taillight/brake light connectors (26). Disconnect the turn signal light connectors (27).



(24) wire harness band
(25) connector covers
(26) license light/taillight/brake light connectors
(27) turn signal connectors

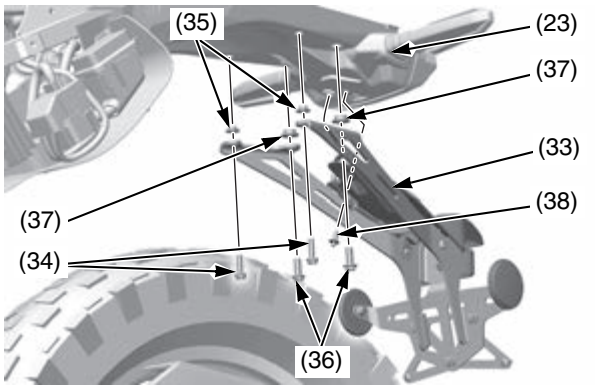
13. Remove the wire harness band (28). Release the DLC connector (29) from the rear fender groove (30).
Remove the wire harness clip (31) from the rear fender rib, then release the wire harness (32).



(28) wire harness band
(29) DLC connector
(30) groove
(31) wire harness clip
(32) wire harness

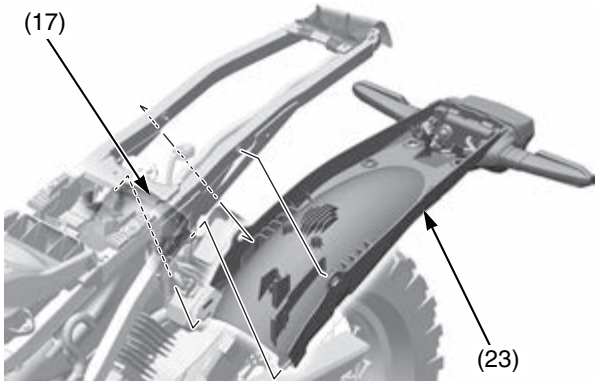
(cont'd)

14. While holding the license light stay assembly (33), remove the mounting A bolts (34), collars A (35), mounting B bolts (36), collars B (37) and clip (38). Remove the license light stay assembly from the rear fender B (23) while releasing the license light wire from the rear fender B.



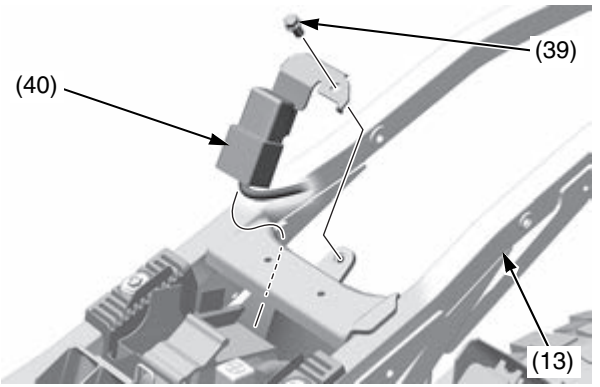
(23) rear fender B
(33) license light stay assembly
(34) mounting A bolts
(35) collars A
(36) mounting B bolts
(37) collars B
(38) clip

15. Remove the rear fender B (23) while releasing the front bosses from the air cleaner housing (17).



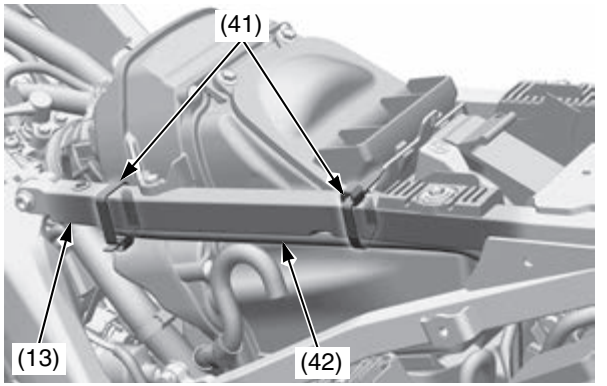
(17) air cleaner housing
(23) rear fender B

16. Remove the bolt (39) and turn signal relay/bracket (40) from the subframe (13).



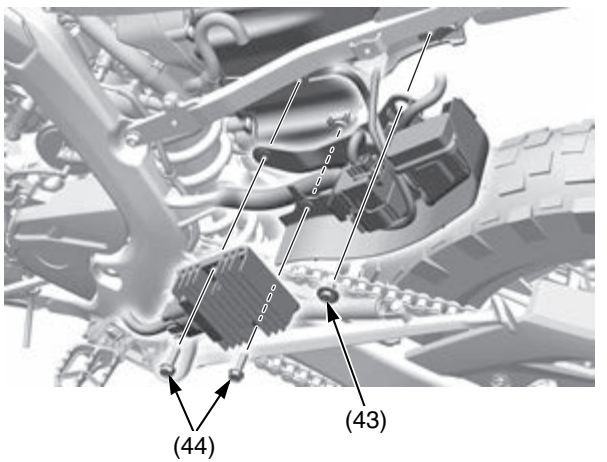
(13) subframe
(39) bolt
(40) turn signal relay/bracket

17. Remove the positive (+) battery cable bands (41), then release the positive (+) battery cable (42) from the subframe (13).



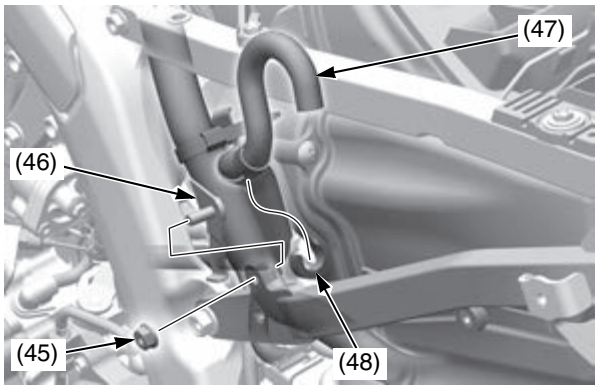
(13) sub frame
(41) cable bands
(42) positive (+) battery cable

18. Remove the fuse box assembly mounting bolt/washer (43).
Remove the regulator/rectifier mounting bolts (44).



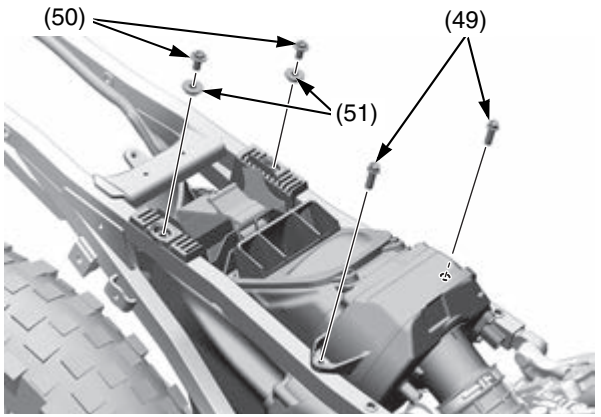
(43) fuse box assembly mounting bolt/washer
(44) regulator/rectifier mounting bolts

19. Remove the flange nut (45) and release the wire harness guide (46) from the subframe. Release the canister air tube (47) from the air cleaner housing boss (48).



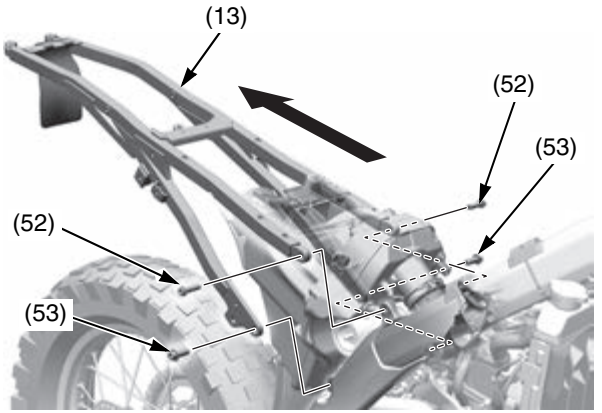
(45) flange nut
(46) harness guide
(47) canister air tube
(48) boss

20. Remove the air cleaner housing mounting A bolts (49), air cleaner housing mounting B bolts (50) and collars (51).



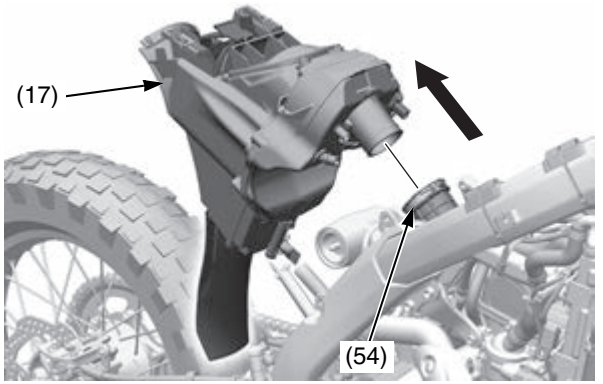
(49) air cleaner housing mounting A bolts
(50) air cleaner housing mounting B bolts
(51) collars

21. Remove the subframe upper mounting bolts (52) and lower mounting bolts (53). Remove the subframe (13) to the rearward being careful not to damage the wire harness.



(13) sub frame
(52) upper mounting bolts
(53) lower mounting bolts

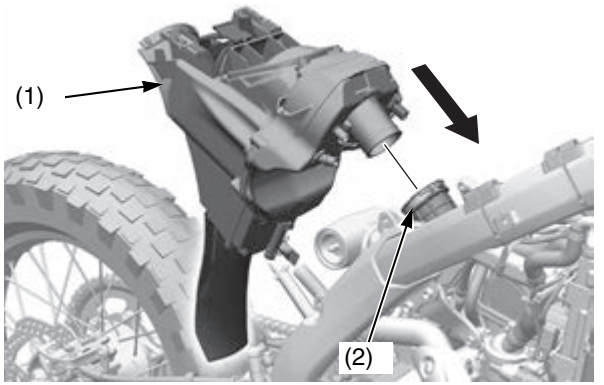
22. Remove the air cleaner housing (17) from the connecting tube (54).



(17) air cleaner housing
(54) connecting tube

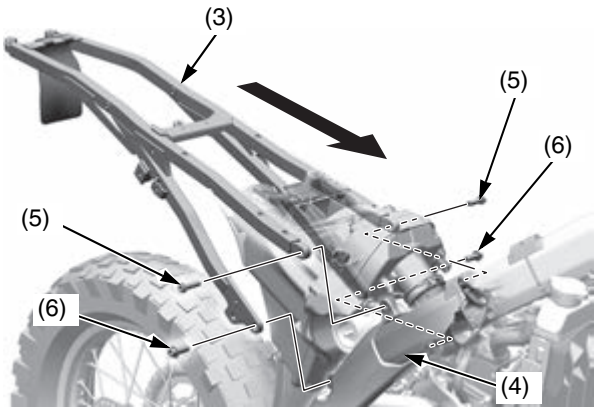
Installation

1. Install the air cleaner housing (1) to the connecting tube (2).



(1) air cleaner housing
(2) connecting tube

2. Loosely attach the upper and lower ends of the subframe (3) to the main frame (4), while installing the wire harness into place and loosely install subframe upper mounting bolts (5) and lower mounting bolts (6).

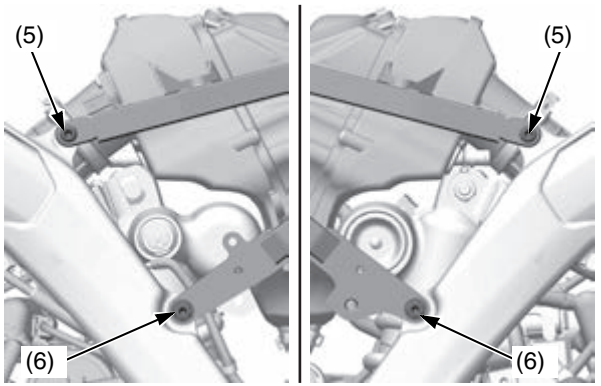


(3) subframe
(4) main frame
(5) upper mounting bolts
(6) lower mounting bolts

(cont'd)

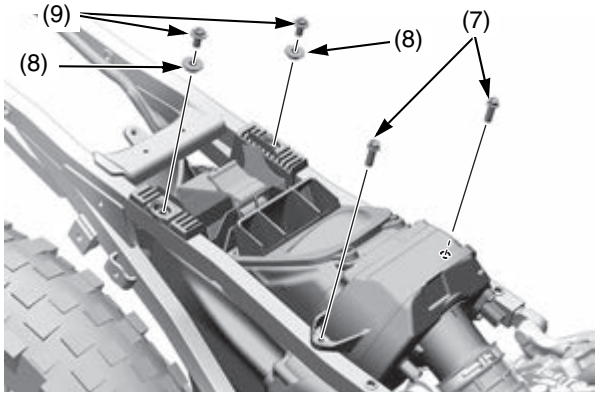
3. Tighten the subframe upper mounting bolts (5) first and then tighten the lower mounting bolts (6) to the specified torque.
   subframe upper mounting bolts:
   24 lbf·ft (32 N·m, 3.3 kgf·m)
   subframe lower mounting bolts:
   36 lbf·ft (49 N·m, 5.0 kgf·m)

Left side: Right side:



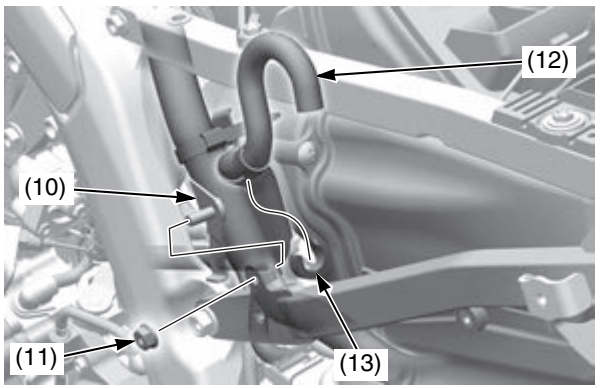
(5) upper mounting bolts
(6) lower mounting bolts

4. Install and tighten the air cleaner housing mounting bolts A (7), collars (8) and air cleaner housing mounting bolts B (9).



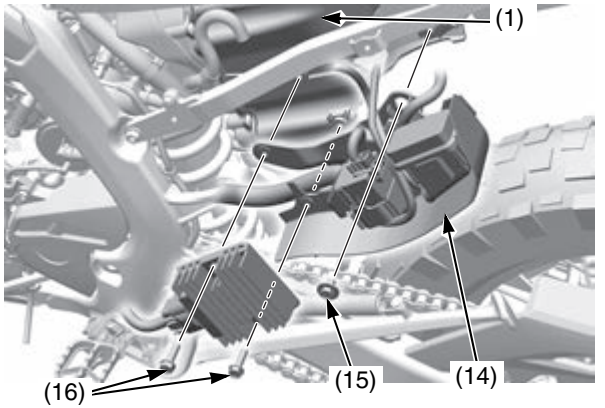
(7) air cleaner housing mounting A bolts
(8) collars
(9) air cleaner housing mounting B bolts

5. Install the wire harness guide (10) to the subframe, then install and tighten the flange nut (11). Route the canister air tube (12) properly, then install it to the air cleaner housing boss (13).



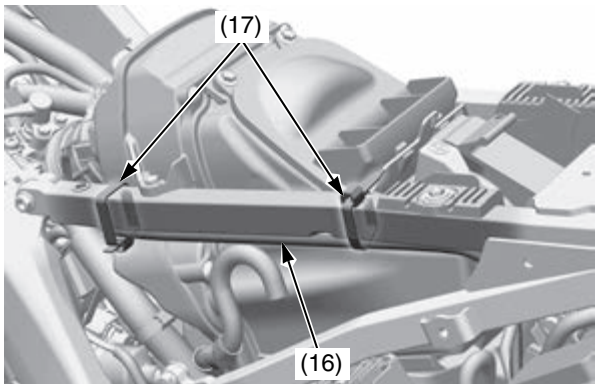
(10) wire harness guide
(11) flange nut
(12) canister air tube
(13) boss

6. Install the fuse box assembly (14) to the air cleaner housing (1). Install the fuse box assembly mounting bolt/washer (15). Install the regulator/rectifier mounting bolts (16). Tighten the regulator/rectifier mounting bolts and fuse box assembly mounting bolt/washer securely.



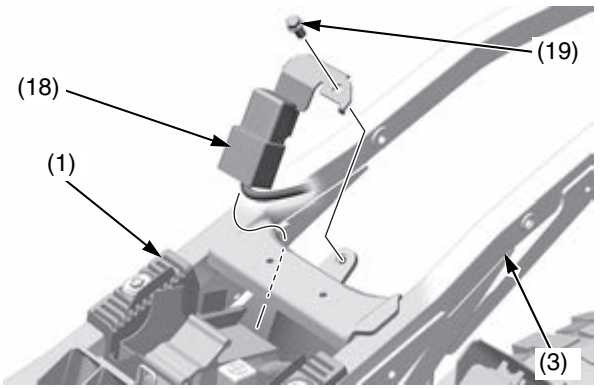
(1) air cleaner housing
(14) fuse box assembly
(15) fuse box assembly mounting bolt/washer
(16) regulator/rectifier mounting bolts

7. Route the positive (+) battery cable (16) properly, secure it with the positive (+) battery cable bands (17).



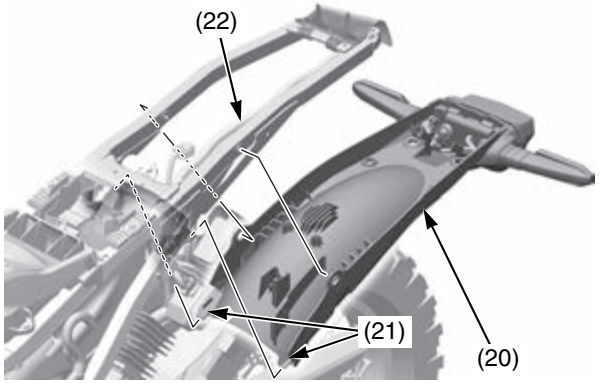
(16) positive (+) battery cable
(17) cable bands

8. Install the turn signal relay/bracket (18) between the subframe (3) and air cleaner housing (1).
Install and tighten the bracket mounting bolt (19).



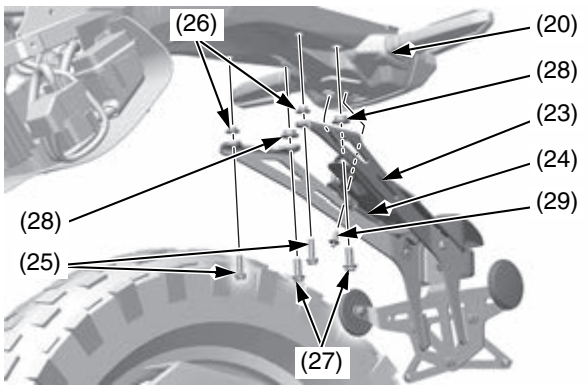
(1) air cleaner housing
(3) subframe
(18) turn signal relay/bracket
(19) bolt

9. Install the rear fender B (20) while installing the front bosses (21) to the air cleaner housing groove.
Route the wire harness (22) properly.



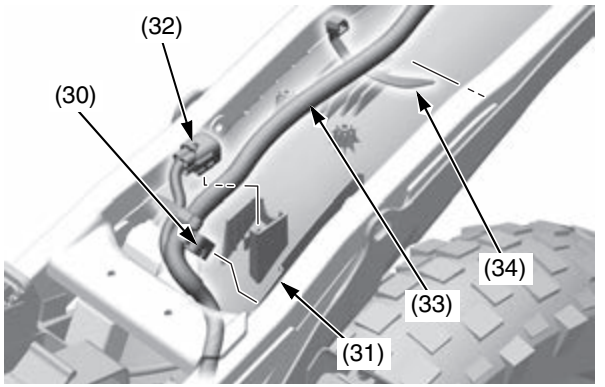
(20) rear fender B
(21) bosses
(22) wire harness

10. Attach the license light stay assembly (23) to the rear fender B (20) while installing the license light wire (24). Install the license light stay assembly mounting A bolts (25), collars A (26), mounting B bolts (27), collars B (28) and clip (29).



(20) rear fender B
(23) license light stay assembly
(24) license light wire
(25) mounting A bolts
(26) collars A
(27) mounting B bolts
(28) collars B
(29) clip

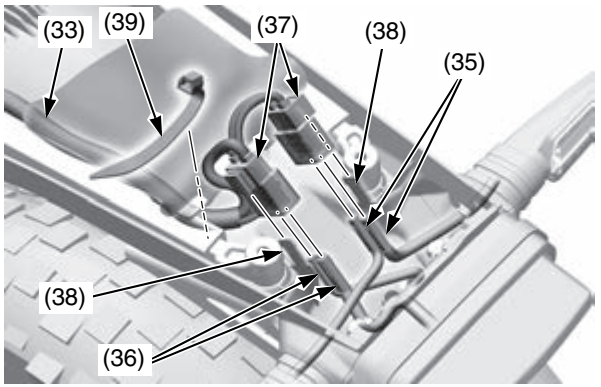
11. Set the wire harness clip (30) to the rear fender boss (31). Install the DLC connector (32) into the rear fender groove. Secure the wire harness (33) with the wire band (34).



(30) wire harness clip
(31) rear fender boss
(32) DLC connector
(33) wire harness
(34) wire harness band

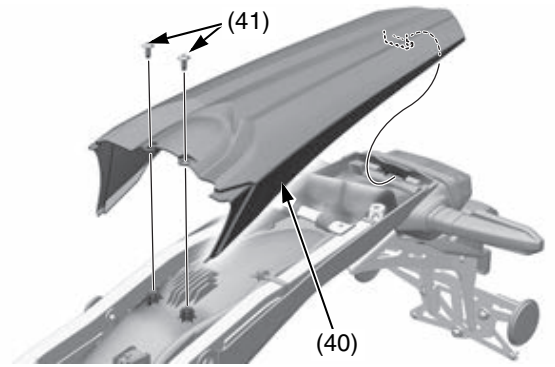
(cont'd)

12. Connect the turn signal light connectors (35). Connect the license light/taillight/brake light connectors (36). Set the connector covers (37) to the rear fender stays (38).
    Secure the wire harness (33) with the wire harness band (39).



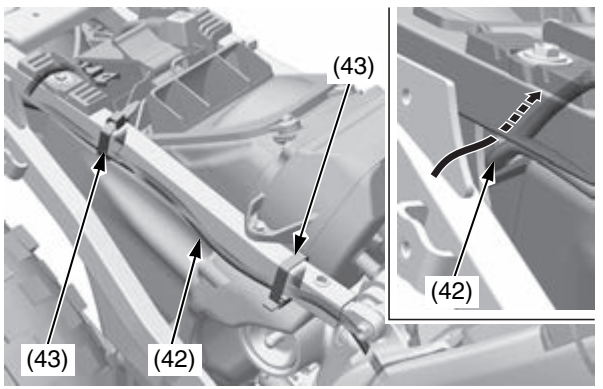
(33) wire harness
(35) turn signal connectors
(36) license light/taillight/brake light connectors
(37) connector covers
(38) rear fender stays
(39) wire harness band

13. Install the rear fender (40), then tighten the rear fender mounting screws (41) to the specified torque:
    1.1 lbf·ft (1.5 N·m, 0.2 kgf·m)



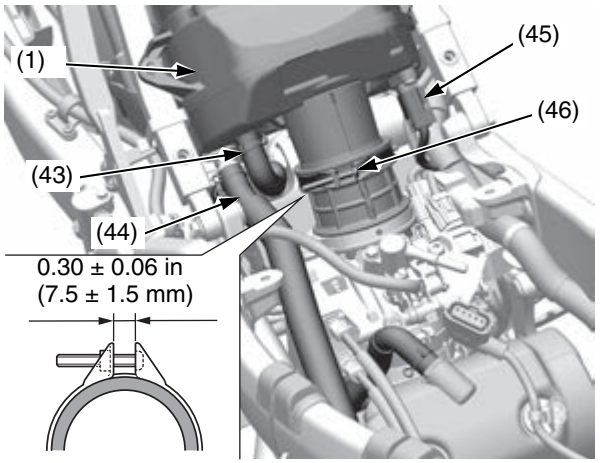
(40) rear fender (41) screws

14. Route the negative (-) battery cable (42) properly, secure it with negative (-) battery cable bands (43).



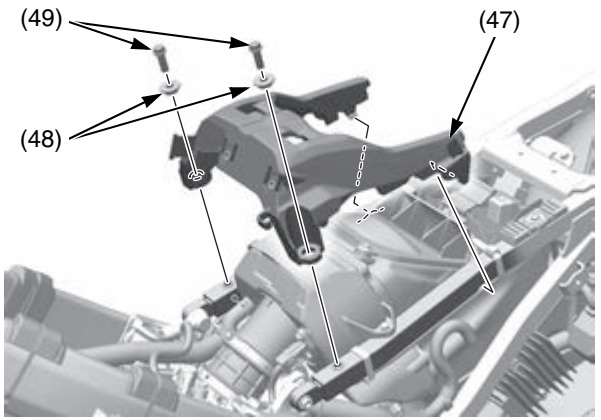
(42) negative (-) battery cable (43) cable bands

15. Connect the crankcase breather tube (43) and air injection air tube (44) to the air cleaner housing (1). Connect the IAT sensor connector (45).
    Tighten the air cleaner connecting tube clamp screw (46) so the clamp ends is 0.30 ±0.06 in(7.5 ± 1.5 mm).



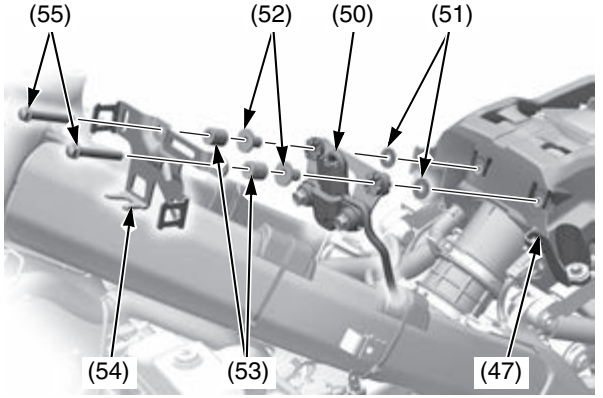
(1) air cleaner housing
(43) crankcase breather tube
(44) air injection air tube
(45) IAT sensor connector
(46) connecting tube band screw

16. Install the seat support base (47) to the subframe. Install the collars (48) and mounting bolts (49), then tighten the mounting bolts to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)



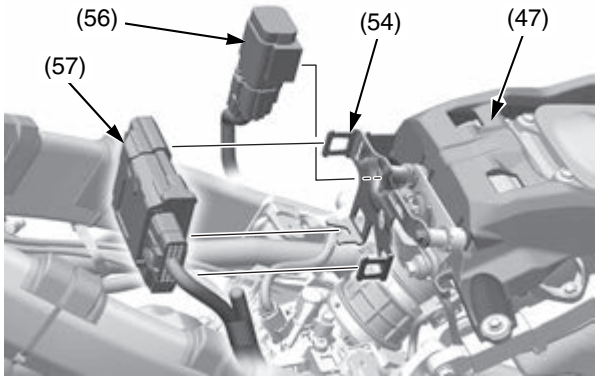
(47) seat support base
(48) collars
(49) bolts

17. Install the bank angle sensor assembly (50) to the seat support base (47) using the washers (51), collars B (52), collars A (53), ECM stay (54) and stay mounting bolts (55), then tighten the bolts securely.



(47) seat support base
(50) bank angle sensor assembly
(51) washers
(52) collars B
(53) collars A
(54) ECM stay
(55) bolts

18. Install the starter relay (56) to the seat support base (47). Install the ECM (57) to the ECM stay (54).



(47) seat support base
(54) ECM stay
(56) starter relay
(57) ECM

19. Install the left side cover (page 47).
20. Install the muffler (page 133).
21. Install the fuel tank (page 50).
22. Install the battery (page 139).

Fuel System

Refer to *Important Safety Precautions* on page 33.

Fuel

Type	Unleaded
Pump Octane Number	91 (or higher)

Use only unleaded fuel in your motorcycle. The use of leaded fuel will damage the catalytic converter (s). If you ride your motorcycle in a country where leaded fuel might be available, take precautions to use only unleaded fuel.

Your engine is designed to use any unleaded gasoline that has a pump octane number of 91 or higher. Gasoline pumps at service stations normally display the pump octane number. For information on the use of oxygenated fuels, see page 187.

Use of lower octane gasoline can cause persistent "pinging" or "spark knock" (a louder rapping noise) which, if severe, can lead to engine damage. (Light pinging experienced while operating under a heavy load, such as climbing a hill, is no cause for concern.)

If pinging or spark knock occurs at a steady engine speed under normal load, change brands of gasoline. If pinging or spark knock persists, consult your dealer.

Never use stale or contaminated gasoline. Avoid getting dirt, dust or water in the fuel tank.

Refueling Procedure

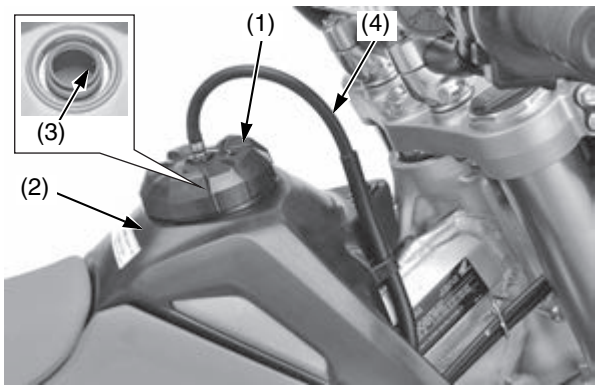
If mud is on the fuel fill cap (1) and fuel tank top shelter (2) at time of refueling, remove the mud before refueling.

1. To open the fuel fill cap turn the fuel fill cap counterclockwise and remove it.

NOTICE

Equivalent or modified parts must comply with applicable Air Resource Board (ARB) evaporative emission control regulations. Non-compliance may result in civil litigation or criminal prosecution.

The fuel cap may not be disassembled. When replacing, consult with a dealer and replace with a Honda genuine fuel cap or one that complies with Air Resource Board (ARB) evaporative emission control regulations.



(1) fuel fill cap
(2) top shelter
(3) filler neck bottom
(4) breather tube

2. Add fuel until the level reaches the bottom of the filler neck (3).
   Fuel Tank Capacity: 2.01 US gal (7.6 ℓ)

- Be careful not to damage the fuel pump while filling the fuel tank.
- Avoid overfilling the tank. There should be no fuel in the filler neck.

⚠ WARNING

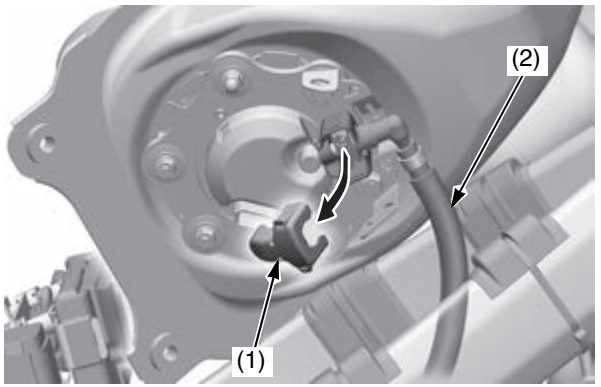
Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Stop the engine and keep heat, sparks and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

3. After refueling, turn the fuel fill cap clockwise until it clicks.
   - If the breather tube (4) is twisted, turn the rotary joint to correct.
   - If you replace the fuel cap, use a Honda Genuine replacement part or equivalent.

Fuel Line Inspection

1. Hang the fuel tank to the left side of the frame (page 48).
2. Remove the fuel quick connect fitting cover (1).
3. Check the fuel line (2) for cracks, deterioration, damage or leakage. Replace the fuel line, if necessary.



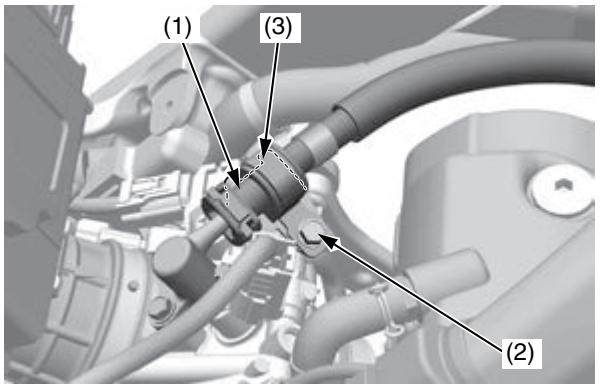
(1) fuel quick connect fitting cover
(2) fuel line

4. Install the fuel quick connect fitting cover.
5. Install the fuel tank (page 50).

Fuel Line Replacement

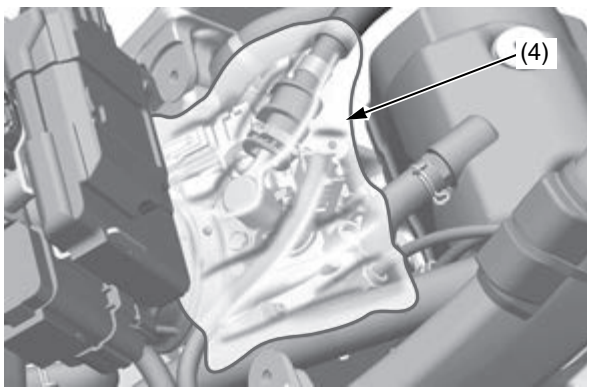
Disconnection

1. Remove the fuel tank (page 48).
2. Check the fuel quick connect fitting (1) for dirt, and clean if necessary.
3. Remove the bolt (2), clamp and setting rubber (3).



(1) fuel quick connect fitting
(2) bolt
(3) clamp and setting rubber

4. Place a shop towel (4) over the fuel quick connect fitting.



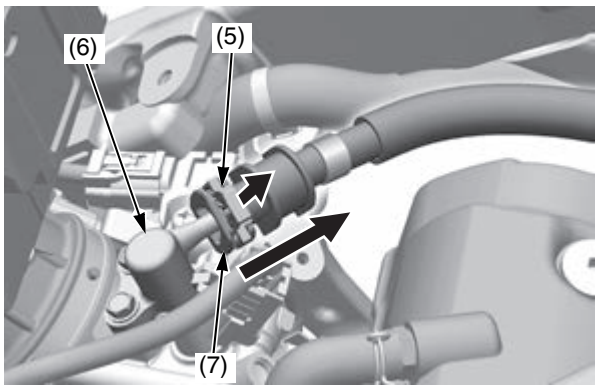
(4) shop towel

5. Unlock the slide retainer (5) of the quick connect fitting by completely pulling it up. Release the fuel quick connect fitting from the fuel joint (6) while holding the connector housing (7).
   - Use a shop towel to absorb the remaining fuel in the fuel feed hose.
   - Be careful not to damage the hose or other parts.
   - Do not use tools.
   - Dirt intruding into the connector housing may cause slide retainer sticking.

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

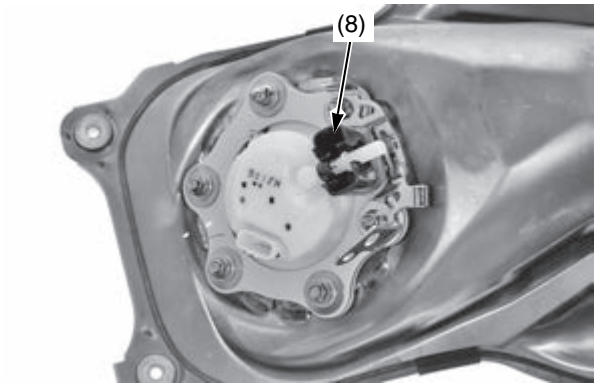
- Stop the engine and keep heat, sparks and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.



(5) slide retainer
(6) fuel joint
(7) connector housing

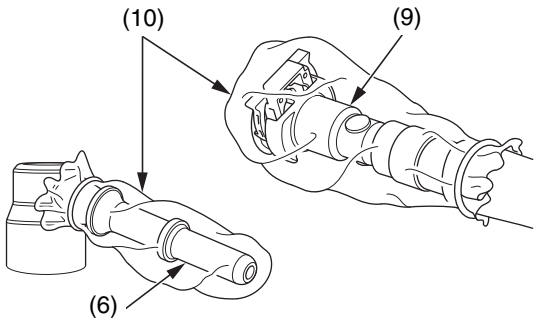
(cont'd)

6. Remove the rubber cover (8) from the fuel joint of the fuel pump.



(8) rubber cover

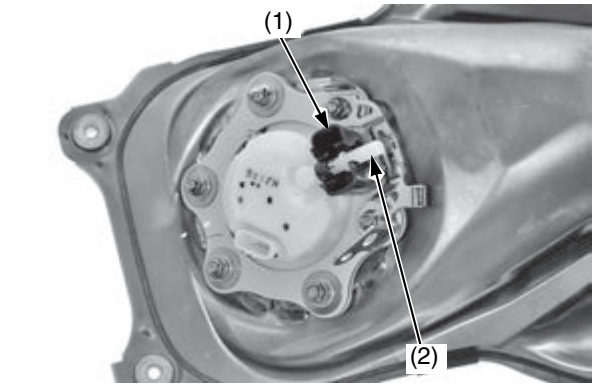
7. To prevent damage and keep foreign matter out, cover the disconnected connector (9) and fuel joint (6) with plastic bags (10).



(6) fuel joint
(9) disconnected connector
(10) plastic bags

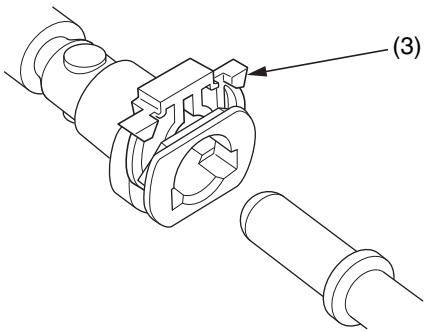
Connection

1. Install the rubber cover (1) onto the fuel joint (2) of the fuel pump as shown.



(1) rubber cover
(2) fuel joint

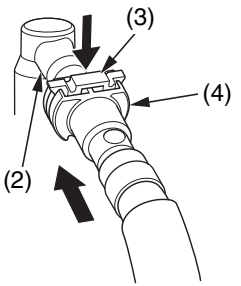
2. Be sure that the slide retainer (3) is completely pulled up before connecting the quick connect fitting.
   - Do not bend or twist the fuel feed hose.
   - Do not reuse the kinked or damaged fuel hose.
   - Do not use gloves or a shop towel while installing the quick connect fitting.



(3) slide retainer

3. Connect the quick connect fitting to the fuel joint (2) until you hear the “click” while holding the connector housing (4). Lock the slide retainer (3) by pushing it until you hear the “click”.

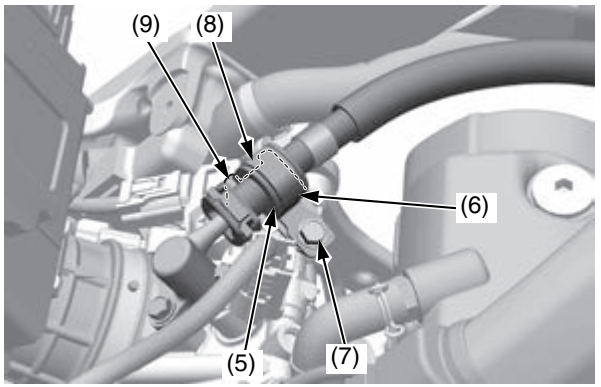
If it is hard to connect, put a small amount of engine oil on the pipe end of the fuel joint.



(2) fuel joint
(3) slide retainer
(4) connector housing

4. Make sure the connection is secure and that the slide retainer is firmly locked into place; check visually and by pulling the connector housing.

5. Install the setting rubber (5), clamp (6) and bolt (7) by aligning the clamp tab (8) with the groove (9) of the stay.
   Tighten the bolt securely.



(5) setting rubber
(6) clamp
(7) bolt
(8) clamp tab
(9) groove

6. Install the fuel tank (page 50).
7. Increase the fuel pressure (page 68).

Fuel Pump Filter Replacement

Empty the fuel tank into an approved gasoline container using a commercially available hand siphon or an equivalent method.
Be careful not to damage the fuel pump while draining the fuel in the fuel tank.

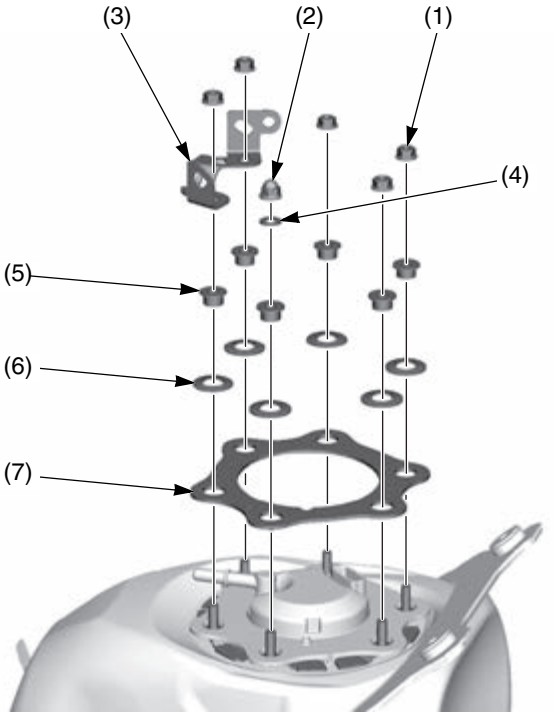
⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Stop the engine and keep heat, sparks and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

Removal

1. Remove the fuel tank (page 48).
2. Remove the fuel pump mounting nuts (1), fuel pump mounting cap nut (2), stopper cable guide (3), washer (4), collars (5), conical spring washers (6) and fuel pump plate (7) while holding the fuel tank.

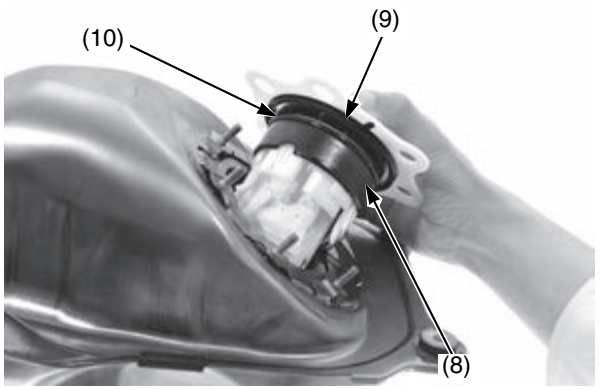


(1) fuel pump mounting nuts
(2) fuel pump mounting cap nut
(3) stopper cable guide
(4) washer
(5) collars
(6) conical spring washers
(7) fuel pump plate

(cont'd)

3. Remove the fuel pump unit (8), dust seal (9) and O-ring (10).

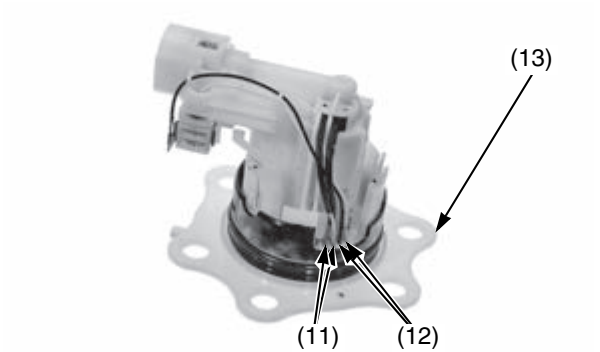
Be careful not to damage the fuel pump unit and reserve sensor.



(8) fuel pump unit
(9) dust seal
(10) O-ring

4. Disconnect the fuel pump wire terminals (11) and fuel reserve sensor wire terminals (12) from the fuel pump base (13).

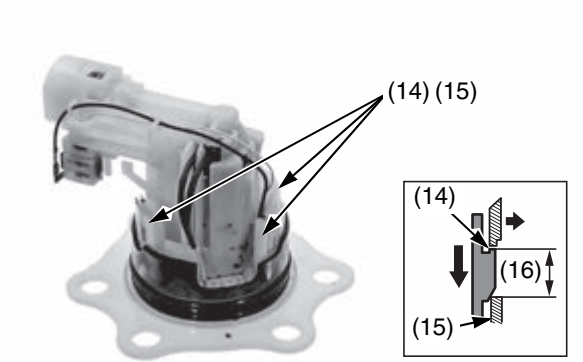
Be careful not to damage the wires when disconnecting the fuel reserve sensor wire terminals and fuel pump wire terminals.



(11) fuel pump wire terminals
(12) reserve sensor wire terminals
(13) fuel pump base

5. Check the hooks (14) of the fuel pump unit holder and tabs (15) on the fuel pump base for damage or discoloration.
   If the hooks and tabs are damaged or discolored, replace the fuel pump unit as an assembly.
6. Release the hooks of the fuel pump unit holder from the grooves (16) in the fuel pump base tabs while pushing the holder against the base and slightly spreading the base tabs.

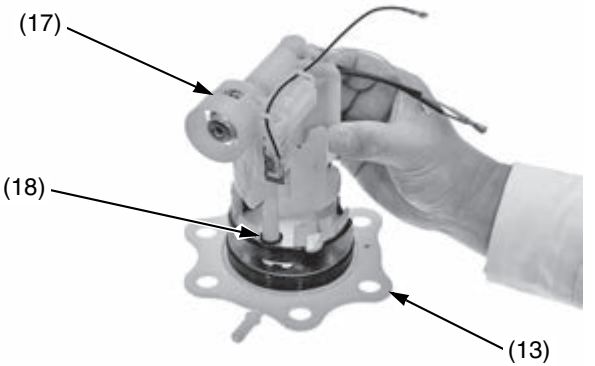
Be careful not to damage the hooks and tabs.



(14) hooks
(15) tabs
(16) grooves

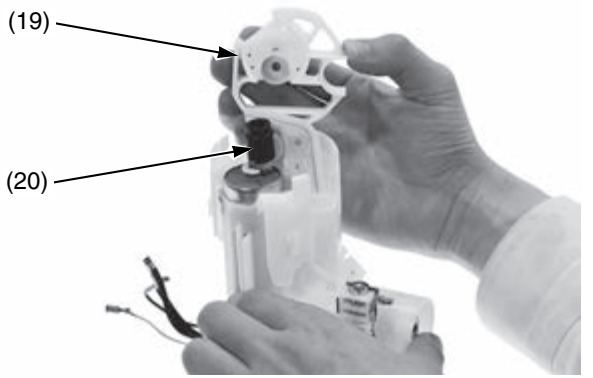
7. Remove the fuel pump unit holder assembly (17) from the fuel pump base (13) and remove the O-ring (18).

Wipe the spilled out fuel immediately.



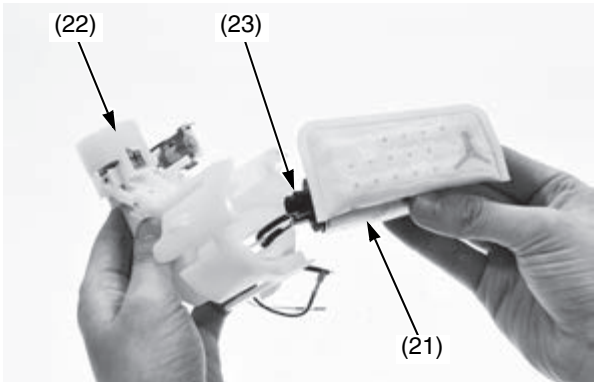
(13) fuel pump base
(17) fuel pump unit holder assembly
(18) O-ring

8. Remove the fuel pump stopper (19) and damper rubber (20).



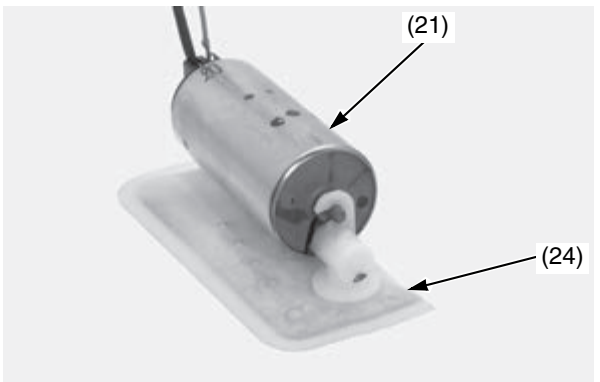
(19) fuel pump stopper
(20) damper rubber

9. Remove the fuel pump assembly (21) from the fuel pump unit holder (22).
10. Remove the O-ring (23) from the fuel pump assembly (21).



(21) fuel pump assembly
(22) fuel pump unit holder
(23) O-ring

11. Remove the fuel pump filter (24) from the fuel pump assembly (21).
12. Check the fuel pump filter for clog, damage or deterioration and replace it if necessary.

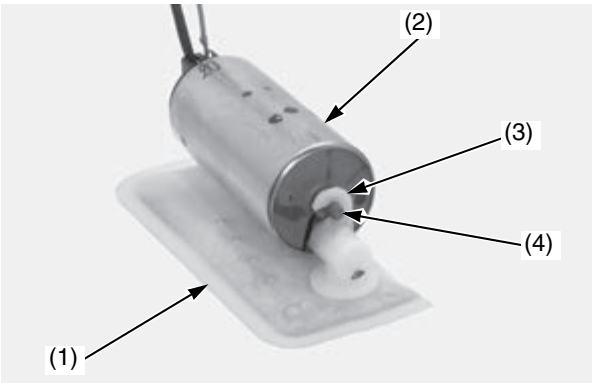


(21) fuel pump assembly
(24) fuel pump filter

Installation

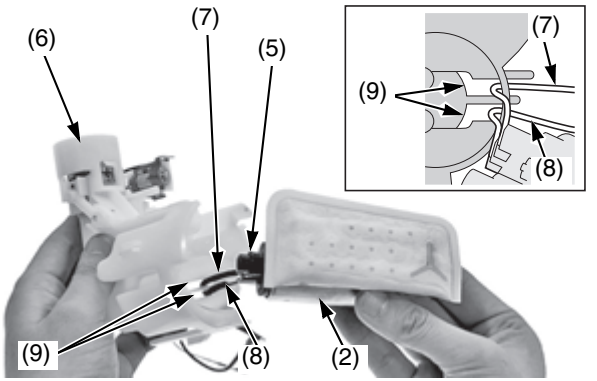
1. Install the fuel pump filter (1) onto the fuel pump assembly (2) aligning its hook (3) with the joint boss (4) completely.

Be careful not to damage the hook.



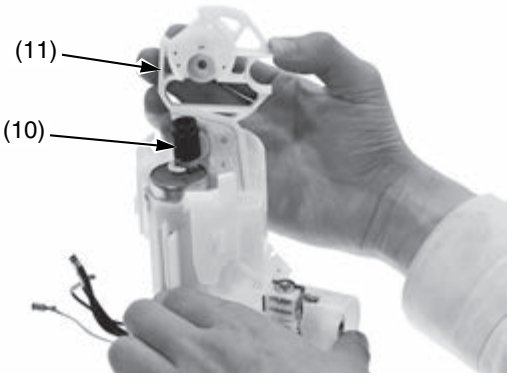
(1) fuel pump filter
(2) fuel pump assembly
(3) hook
(4) joint boss

2. Apply small amount of engine oil to a new O-ring (5).
   Install a new O-ring to the fuel pump assembly (2).
3. Install the fuel pump assembly with fuel pump filter into the fuel pump unit holder (6) while routing the fuel pump yellow (7) and green (8) wires through the holder grooves (9) as shown.



(2) fuel pump assembly
(5) O-ring (new)
(6) fuel pump unit holder
(7) yellow wire
(8) green wire
(9) grooves

4. Install a new damper rubber (10) to the fuel pump filter as shown.
   Install fuel pump stopper (11).

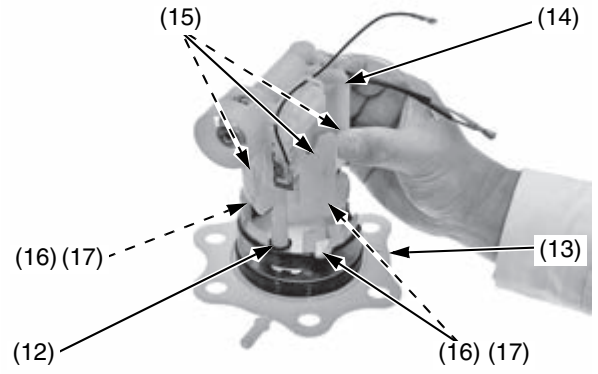


(10) damper rubber (new)
(11) fuel pump stopper

(cont'd)

5. Apply small amount of engine oil to a new O-ring (12).
   Install a new O-ring to the fuel pump base (13).
6. Install the fuel pump unit holder assembly (14) into the fuel pump base while aligning its hooks (15) with the grooves (16) in the fuel pump base tabs (17).
   If the gap between the hooks and tabs is more than 0.04 in (1.0 mm), replace the fuel pump unit.

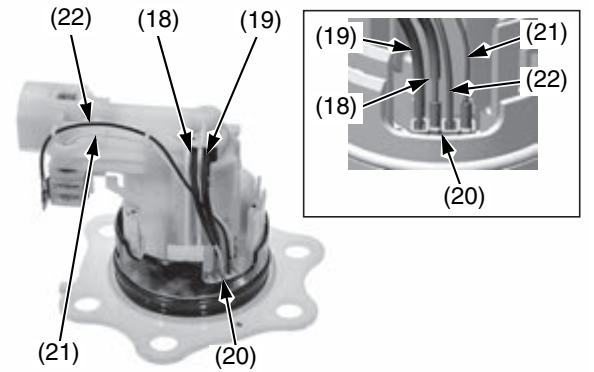
Be sure that the hooks are completely seated.



(12) O-ring (new)
(13) fuel pump base
(14) fuel pump unit holder assembly
(15) hooks
(16) grooves
(17) tabs

7. Connect the fuel pump yellow (18) and green (19) wire terminals to the fuel pump base terminals (20). Route the fuel reserve level sensor wires properly, connect the white (21) and black (22) wire terminals to the fuel pump base terminals. Push the wire terminals until they stop as shown.

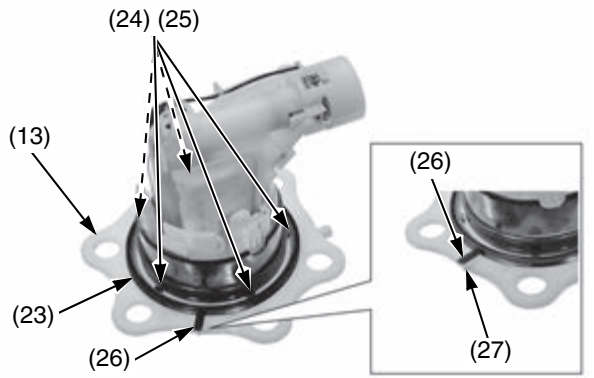
Be careful not to damage the wires.



(18) yellow wire terminal
(19) green wire terminal
(20) fuel pump base terminals
(21) white terminal
(22) black terminal

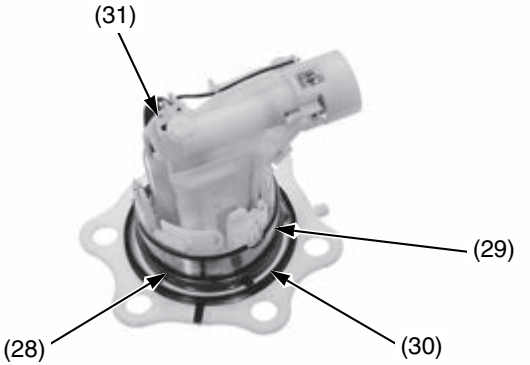
8. Install a new dust seal (23) by aligning its tabs (24) with the fuel pump unit grooves (25).

Check the dust seal lug (26) which is located the index mark (27) of the fuel pump base (13).



(13) fuel pump base
(23) dust seal (new)
(24) tabs
(25) grooves
(26) dust seal lug
(27) index mark

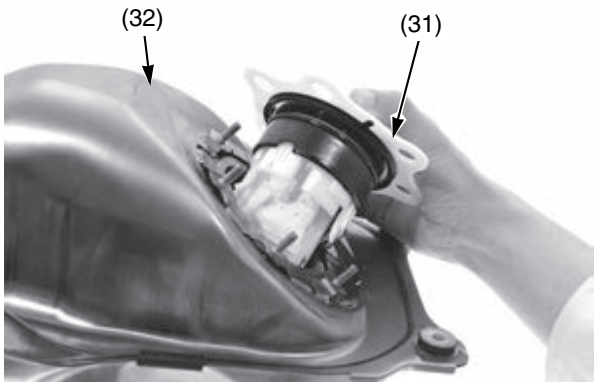
9. Apply small amount of engine oil to a new O-ring (28).
   Install a new O-ring into the between the dust seal (29) and collar (30) of the fuel pump unit (31).



(28) O-ring (new)
(29) dust seal
(30) collar
(31) fuel pump unit

10. Install the fuel pump unit (31) into the fuel tank (32) with its hose joint facing forward.

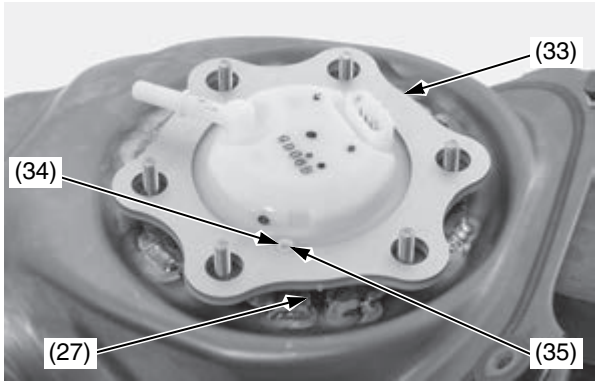
Be careful not to damage the fuel pump unit and reserve sensor.



(31) fuel pump unit
(32) fuel tank

11. Install the fuel pump plate (33) by aligning with its groove (34) with fuel pump unit lug (35).

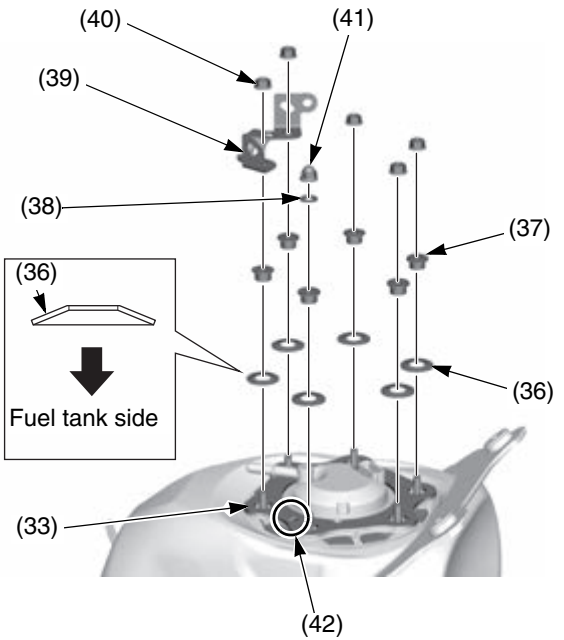
Check the dust seal lug (26) is in position as shown.



(26) dust seal lug
(33) fuel pump plate
(34) fuel pump plate groove
(35) fuel pump unit lug

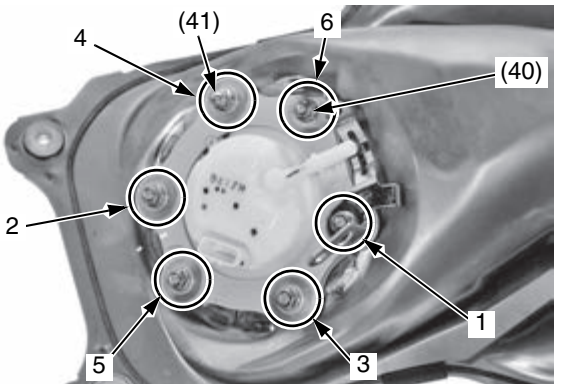
12. Install the conical spring washers (36), collars (37), washer (38), stopper cable guide (39), fuel pump mounting nuts (40) and fuel pump mounting cap nut (41).

Make sure that the convex surfaces of the conical spring washers are upside.
Make sure that the cap nut is in position of the identification mark (42) on the fuel pump plate (33).



(33) fuel pump plate
(36) conical spring washers
(37) collars
(38) washer
(39) stopper cable guide
(40) fuel pump mounting nuts
(41) fuel pump mounting cap nut
(42) identification mark

13. Tighten the fuel pump mounting nuts (40) and cap nut (41) to the specified torque in the specified sequence as shown:
8 lbf·ft (11 N·m, 1.1 kgf·m)



(40) fuel pump mounting nuts
(41) fuel pump mounting cap nut

14. Install the fuel tank (page 50).
15. Increase the fuel pressure (page 68).

Fuel Pressure Increasing

Make sure the fuel remains enough (0.3 US gal (1.0 ℓ) minimum) in the fuel tank and add fuel if necessary before increasing fuel pressure.

With the throttle closed.
Pull the clutch lever all the way in, and depress the start button.

The engine will start up by increasing the fuel pressure.

If the engine does not start, check all connector connections and/or refer to an official Honda Service Manual (page 194) for troubleshooting of the PGM-FI symptom.

Refer to *Important Safety Precautions* on page 33.

Using the proper oil and oil filter, and regularly checking, adding, and changing oil will help extend the service life of the engine. Even the best oil wears out. Changing oil helps get rid of dirt and deposits. Operating the engine with old or dirty oil can damage your engine. Running the engine with insufficient oil can cause serious damage to the engine.

Change the engine oil as specified in the maintenance schedule on pages 36, 37.

When running in very dusty conditions, oil changes should be performed more frequently than specified in the maintenance schedule.

When riding at high or continuous speed on the highway, check the oil level frequently.

Oil Recommendation

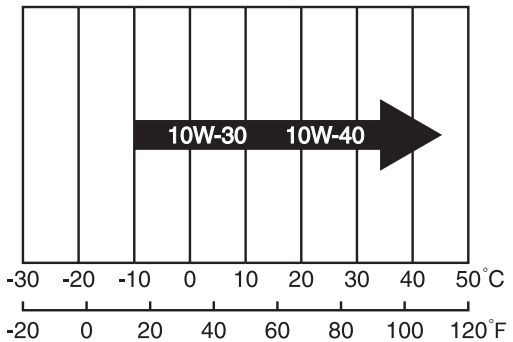
API classification	SG or higher except oils labeled as energy conserving or resource conserving on the circular API service label
viscosity (weight)	SAE 10W-30
JASO T 903 standard	MA
suggested oil*	Pro Honda GN4 4-stroke Oil (USA & Canada), or Honda 4-stroke oil, or an equivalent motorcycle oil

* Suggested 4-stroke engine oils are equal performance to SJ oils that are not labeled as energy conserving or resource conserving on the circular API service label.

- Your motorcycle does not need oil additives. Use the recommended oil.
- Do not use API SH or higher 4-stroke engine oils displaying a circular API “energy conserving” or “resource conserving” service label on the container. They may affect lubrication.

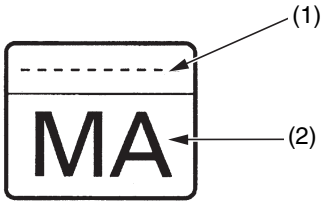
NOT RECOMMENDED RECOMMENDED

Other viscosities shown in the following chart may be used when the average temperature in your riding area is within the indicated range.



JASO T 903 standard

The JASO T 903 standard is an index for engine oils for 4-stroke motorcycle engines.
There are two classes: MA and MB.
Oil conforming to the standard is labeled on the oil container. For example, the following label shows the MA classification.



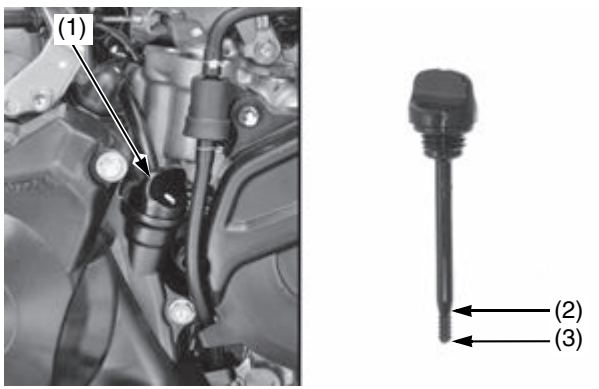
(1) oil code
(2) oil classification

Engine Oil

Checking & Adding Oil

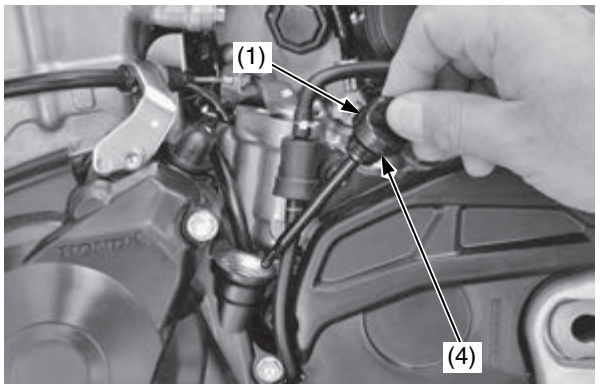
1. Run the engine at idle for 3 minutes, then shut it off.
2. Wait 3 minutes after shutting off the engine to allow the oil to properly distribute itself in the engine.
3. Support the motorcycle in an upright position on a level surface.
4. Remove the engine oil fill cap/dipstick (1) from the left crankcase cover, wipe it clean, and insert it without screwing it in. Remove the oil fill cap/dipstick.
5. Check that the oil level is between the upper (2) and lower (3) level marks on the engine oil fill cap/dipstick.
   - If the oil is at or near the upper level mark, you do not have to add oil.
   - If the oil is below or near the lower level mark, add the recommended oil until it reaches the upper level mark. (Do not overfill.)

   Reinstall the engine oil fill cap/dipstick. Repeat steps 1 – 5.



(1) engine oil fill cap/dipstick
(2) upper level mark
(3) lower level mark

6. Check that the O-ring (4) is in good condition and replace it if necessary.
7. Reinstall the engine oil fill cap/dipstick (1).

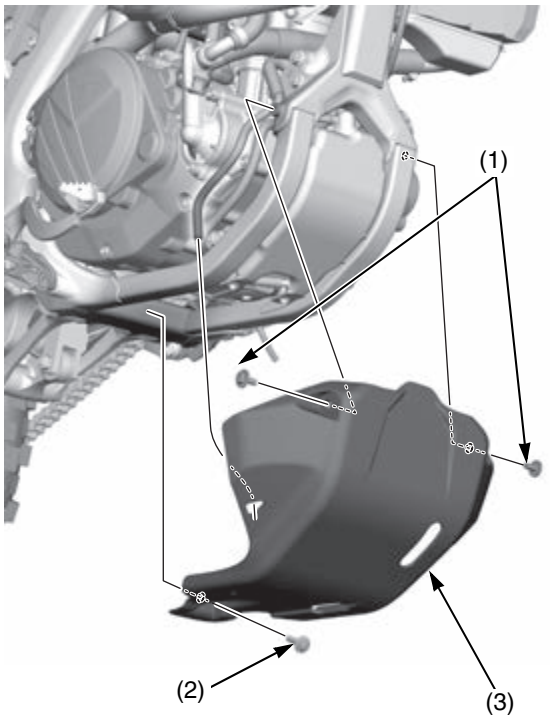


(1) engine oil fill cap/dipstick
(4) O-ring

8. Check for oil leaks.

Changing Engine Oil & Filter

1. Remove the engine guard A bolts/washers (1), B bolt/washer (2) and engine guard (3).



(1) engine guard A bolts/washers
(2) engine guard B bolt/washer
(3) engine guard

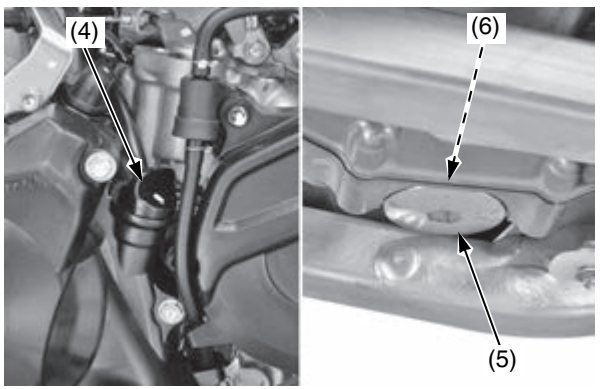
2. Run the engine at idle for 3 minutes, then shut it off.
3. Support the motorcycle in an upright position on a level surface.
4. Remove the engine oil fill cap/dipstick (4) from the left crankcase cover.

5. Place an oil drain pan under the engine to catch the oil. Then remove the engine oil drain bolt (5) and O-ring (6).
6. After the oil has drained, apply engine oil to the drain bolt threads, seating surface and a new O-ring, then install the O-ring on the drain bolt and tighten the drain bolt to the specified torque:
   13 lbf·ft (18 N·m, 1.8 kgf·m)

Pour the drained oil into a suitable container and dispose of it in an approved manner (page 160).

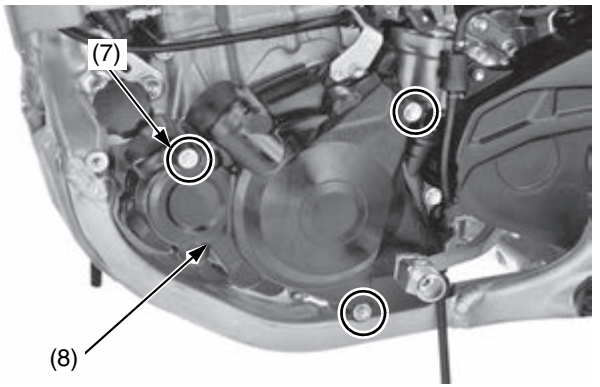
NOTICE

Improper disposal of drained fluids is harmful to the environment.



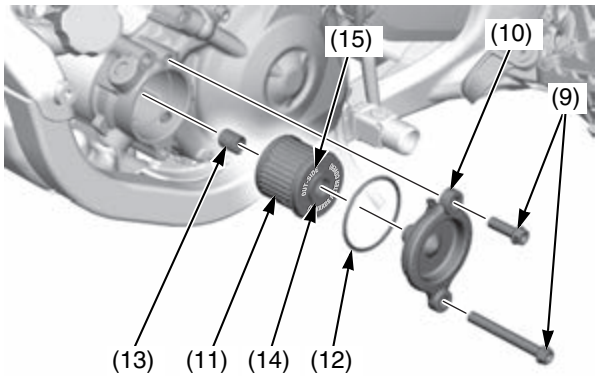
(4) engine oil fill cap/dipstick
(5) engine oil drain bolt
(6) O-ring (new)

7. (Off-Road Use)
   It is recommended to replace the oil and filter every 8 races or about every 30.0 hours. However, if you replace only the oil before the recommended interval, see page 36.
8. Remove the left crankcase over cover bolts (7) and over cover (8).



(7) bolts (8) over cover

9. Remove the oil filter cover bolts (9) and oil filter cover (10).
10. Remove the oil filter (11), O-ring (12) and spring (13).



(9) oil filter cover bolts
(10) oil filter cover
(11) oil filter
(12) O-ring
(13) spring
(14) rubber seal
(15) "OUT-SIDE" mark

NOTICE

Using the wrong oil filter may result in leaks or engine damage.

11. Apply grease to the filter side of the spring end, then install the spring into a new oil filter.
12. Position the spring against the engine crankcase and install a new oil filter with the rubber seal (14) facing out, away from the engine. You should see the "OUT-SIDE" mark (15) on the filter body, near the seal.
    Use a new Honda Genuine oil filter or a filter of equal quality specified for your model.

NOTICE

If the oil filter is not installed properly, it will cause serious engine damage.

13. Apply engine oil to a new O-ring and install it to the oil filter cover.
14. Install the oil filter cover being careful not to damage the O-ring, then tighten the oil filter cover bolts to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)
15. Install the left crankcase over cover, then tighten the over cover bolts to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)
16. Install the engine guard, then tighten the engine guard A bolts/washers and B bolt/washer to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)
17. Fill the crankcase with the recommended oil.
    Capacity: 1.22 US qt (1.15 ℓ) after draining and filter change
    1.16 US qt (1.10 ℓ) after draining
18. Install the engine oil fill cap/dipstick.
19. Check the engine oil level by following the steps in *Checking & Adding Oil* (page 70).

Pour the drained oil into a suitable container and dispose of it in an approved manner (page 160).

NOTICE

Improper disposal of drained fluids is harmful to the environment.

Coolant

Refer to *Important Safety Precautions* on page 33.

Your motorcycle's liquid cooling system dissipates engine heat through the coolant jacket that surrounds the cylinder and cylinder head.

Maintaining the coolant will allow the cooling system to work properly and prevent freezing, overheating, and corrosion.

Coolant Recommendation

Use Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines. Check the antifreeze container label.

Use only distilled water as a part of the coolant solution. Water that is high in mineral content or salt may be harmful to the aluminum engine.

NOTICE

Using coolant with silicate inhibitors may cause premature wear of the mechanical seal or blockage of the radiator passages. Using tap water may cause engine damage.

The factory provides a 50/50 solution of antifreeze and water in this motorcycle. This coolant solution is recommended for most operating temperatures and provides good corrosion protection.

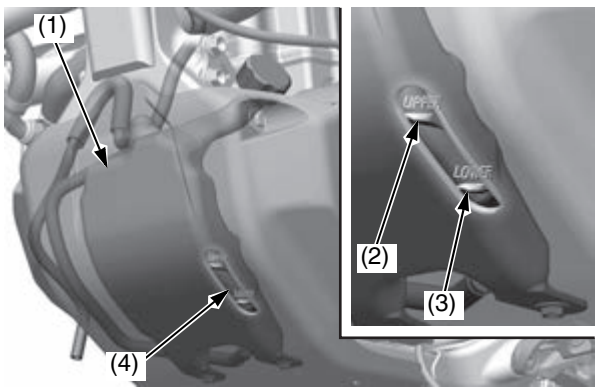
Decreasing the concentration of antifreeze to less than 40% will not provide proper corrosion protection.

Increasing the concentration of antifreeze is not recommended because it decreases cooling system performance. Higher concentrations of antifreeze (up to 60%) should only be used to provide additional protection against freezing.
Check the cooling system frequently during freezing weather.

Checking & Adding Coolant

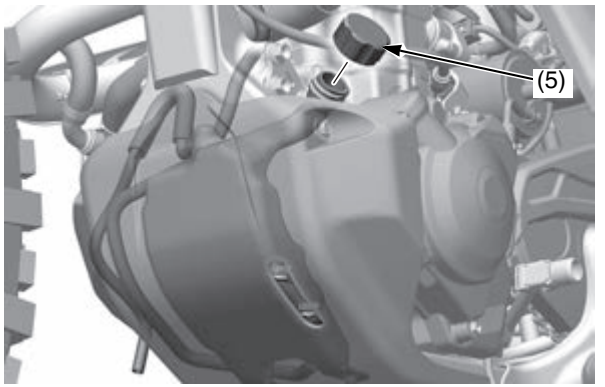
Refer to *Important Safety Precautions* on page 33.

1. With the engine at normal operating temperature, check the coolant level in the reserve tank (1). It should be between the UPPER level (2) and LOWER level (3) marks. If the reserve tank is empty, or if coolant loss is excessive, check for leaks and see your dealer for repair.



(1) reserve tank
(2) UPPER level
(3) LOWER level
(4) inspection window

2. Remove the reserve tank cap (5). Always add coolant to the reserve tank. Do not attempt to add coolant by removing the radiator cap.

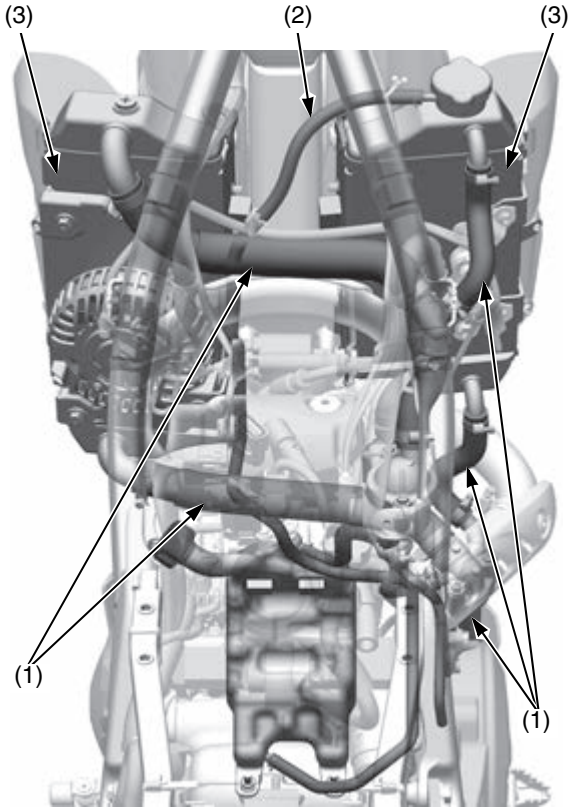


(5) reserve tank cap

3. Add coolant to the reserve tank as require to bring the coolant level to the UPPER level mark.
4. Install the reserve tank cap.

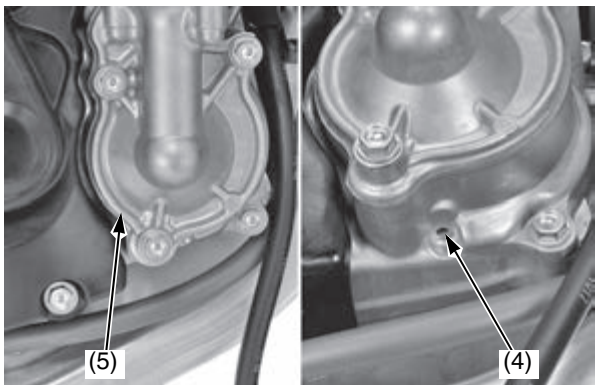
Cooling System Inspection

1. Check the cooling system for leaks (see an official Honda Service Manual for troubleshooting of leaks).
2. Check the radiator hoses (1) for cracks, deterioration, and radiator hose clamps for looseness.
3. Check the radiator mount for looseness.
4. Make sure the siphon hose (2) is connected and not clogged.
5. Check the radiator fins (3) for clogging.



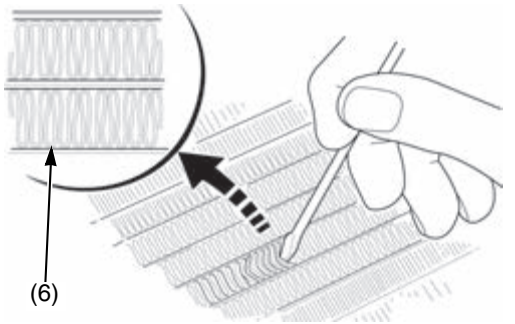
(1) radiator hoses
(2) siphon hose
(3) radiator fins

6. Check the bleed hole (4) below the water pump cover (5) for leakage. Clean away any clogged dirt or sand, if necessary. Check the bleed hole of the water pump for signs of seal leakage. If water leaks through the bleed hole, replace the mechanical seal. If oil leaks through the bleed hole, replace the oil seal. Make sure that there is no continuous coolant leakage from the bleed hole while operating the engine.
   A small amount of coolant weeping from the bleed hole is normal. See an official Honda Service Manual or consult your dealer for replacing the mechanical seal or oil seal. Both seals should be replaced at the same time.



(4) bleed hole
(5) water pump cover

7. Check the radiator air passages for clogging or damage.
   Straighten bent fins (6), and remove insects, mud or other obstructions with compressed air or low water pressure.
   Replace the radiator if the air flow is restricted over more than 20% of the radiating surface.



(6) fins

Radiator should be replaced by your dealer, unless you have the proper tools and service data and are mechanically qualified. Refer to an official Honda Service Manual (page 194).

Coolant Replacement

Refer to *Important Safety Precautions* on page 33.

Coolant should be replaced by your dealer, unless you have the proper tools and service data and are mechanically qualified. Refer to an official Honda Service Manual (page 194).

⚠ WARNING

Removing the radiator cap while the engine is hot can cause the coolant to spray out, seriously scalding you.

Always let the engine and radiator cool down before removing the radiator cap.

To properly dispose of drained coolant, refer to *You & the Environment* on page 160.

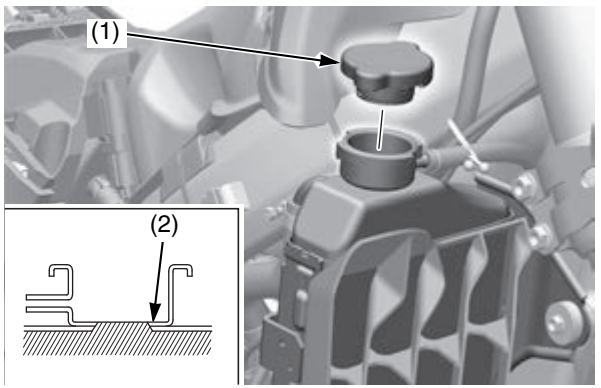
NOTICE

Improper disposal of drained fluids is harmful to the environment.

Cooling System Bleed Air

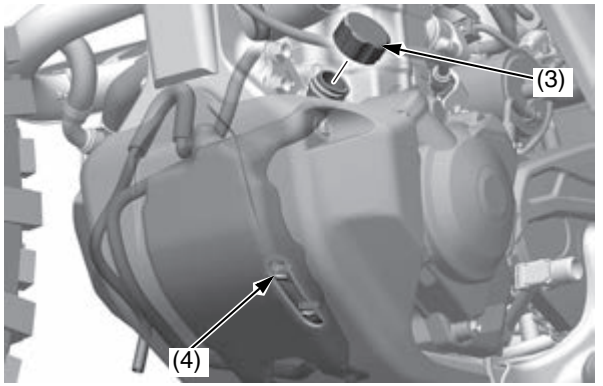
1. Remove the radiator cap (1).
2. Fill the system with the recommended coolant through the filler opening up to filler neck (2). Use a fresh recommended coolant mixture (page 72).

   Capacity: 1.31 US qt (1.24 ℓ) after disassembly
   1.20 US qt (1.14 ℓ) after draining



(1) radiator cap (2) filler neck

3. Remove the reserve tank cap (3) and fill the reserve tank up to the UPPER level line (4).



(3) reserve tank cap (4) UPPER level line

4. Bleed air from the system as follows:
   - Shift the transmission into neutral. Start the engine and let it idle 2 -3 minutes.
   - Snap the throttle three - four times to bleed air from the system.
   - Stop the engine and, if necessary, add coolant up to the proper level. Reinstall the radiator cap.
   - Check the level of coolant in the reserve tank and fill to the UPPER level if it is low.

NOTICE

If the radiator cap is not installed properly, it will cause excessive coolant loss and may result in overheating and engine damage.

5. Install the reserve tank cap.

Refer to *Important Safety Precautions* on page 33.

The air cleaner uses polyurethane inner and outer pieces which can't be separated.
A dirty air cleaner will reduce engine power.

Proper air cleaner maintenance is very important for all motorcycle. A dirty, water-soaked, worn-out, or defective air cleaner will allow dirt, dust, mud, and other impurities to pass into the engine.

Service the air cleaner more frequently if you ride in unusually wet or dusty areas. Your dealer can help you determine the correct service interval for your riding conditions.

Your motorcycle' s air cleaner has very specific performance requirements. Use a new Honda Genuine air cleaner specified for your model or an air cleaner of equal quality.

NOTICE

Using the wrong air cleaner may result in premature engine wear.

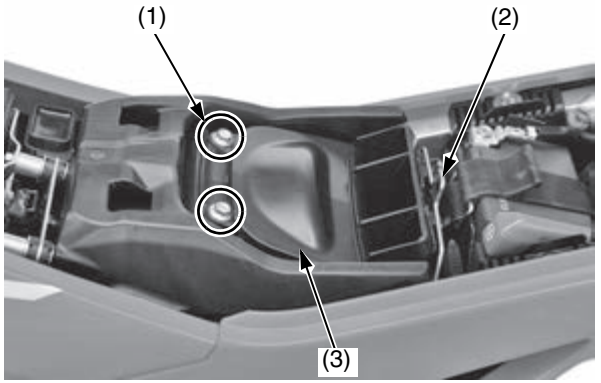
Proper air cleaner maintenance can prevent premature engine wear or damage, expensive repairs, low engine power, poor gas mileage, and spark plug fouling.

NOTICE

Improper or lack of proper air cleaner maintenance can cause poor performance and premature engine wear.

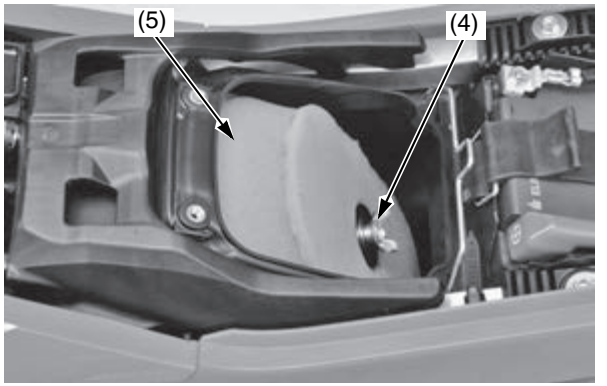
Cleaning

1. Remove the seat (page 46).
2. Remove the air cleaner lid bolts(1). Unhook the retainer (2) and remove the air cleaner lid (3).



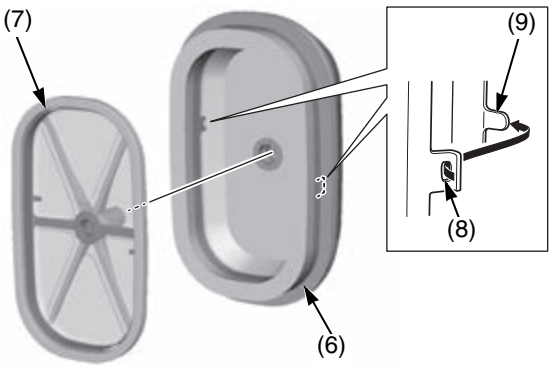
(1) bolts
(2) retainer
(3) air cleaner lid

3. Remove the air cleaner retaining bolt (4) and air cleaner assembly(5).



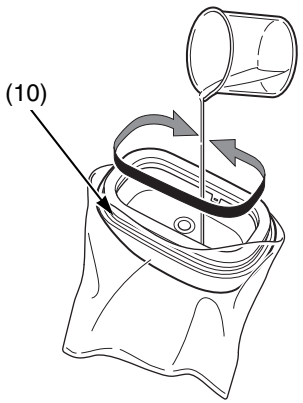
(4) air cleaner retaining bolt
(5) air cleaner assembly

4. Remove the air cleaner element (6) from the air cleaner holder (7) by releasing the hole (8) of the air cleaner element from the holder tab (9).



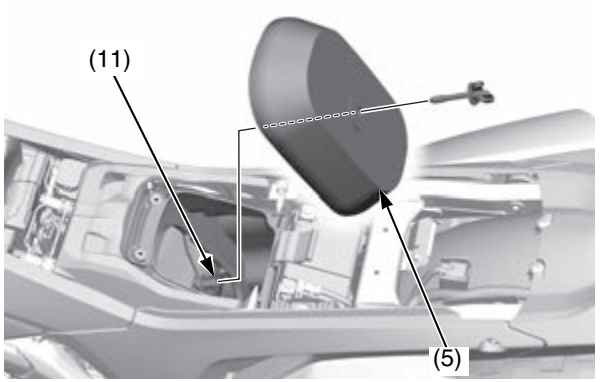
(6) air cleaner element
(7) air cleaner holder
(8) hole
(9) holder tab

5. Wash the air cleaner in clean non-flammable cleaning solvent such as Pro Honda foam air filter cleaner. Then wash in hot, soapy water, rinse well, and allow to dry thoroughly. The air cleaner element is made in two pieces: inner and outer, which cannot be separated.
6. Clean the inside of the air cleaner housing.
7. Allow the air cleaner to dry thoroughly. After drying, apply 1.9 US oz (55 cm^3) of clean Pro Honda Foam Air Filter Oil or an equivalent air cleaner oil from the inside of the element. Place the element into a plastic bag (10) and spread the oil evenly by hand.



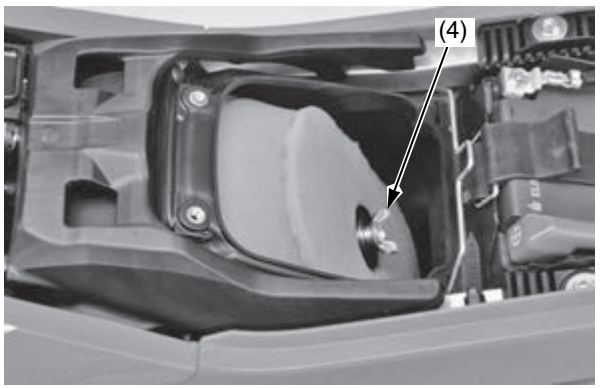
(10) plastic bag

8. Assemble the air cleaner element and holder. Install the holder tab in the hole of the air cleaner element.
9. Apply 0.05 – 0.19 oz (1.5 – 5.5 g) of Pro Honda Foam Air Filter Sealer or equivalent to the air cleaner element contact area of the air cleaner housing.
10. Install the air cleaner assembly (5) into the air cleaner housing stay (11).
11. Carefully position the sealing flange of the element to prevent dirt intrusion.



(5) air cleaner assembly
(11) air cleaner housing stay

12. Install and tighten the air cleaner retaining bolt (4) to the specified torque:
    1.8 lbf·ft (2.4 N·m, 0.2 kgf·m)

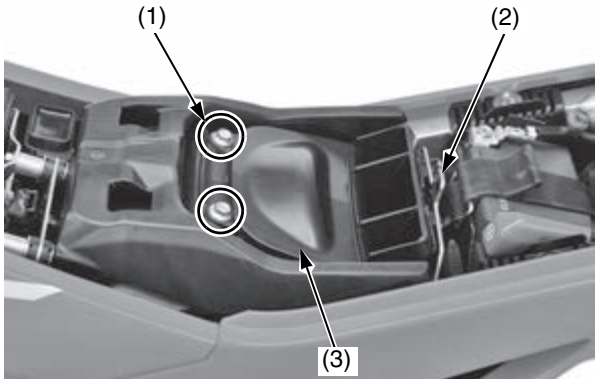


(4) air cleaner retaining bolt

NOTICE

Improper installation of the air cleaner assembly may allow dirt and dust to enter the engine and cause rapid wear of the piston rings and cylinder.

13. Install the air cleaner lid (3) onto the air cleaner housing. Install and tighten the air cleaner lid bolts (1). Secure the air cleaner lid with the retainer (2) as shown.



(1) bolts
(2) retainer
(3) air cleaner lid

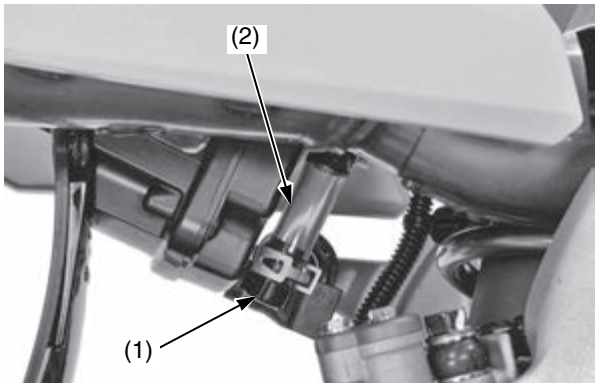
14. Install the seat (page 46).

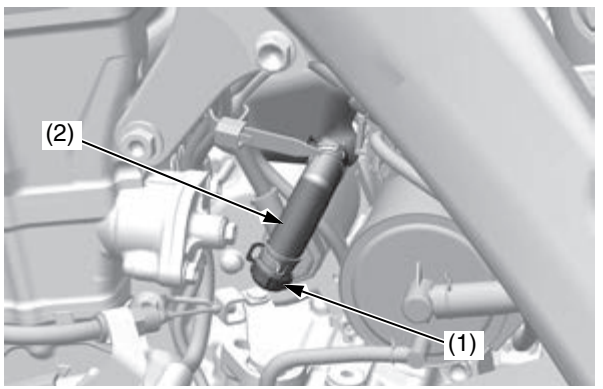
Refer to *Important Safety Precautions* on page 33.

Service more frequently if your motorcycle is ridden in the rain or often at full throttle. Service the breather if you can see deposits in the transparent section of the crankcase breather tube. If the breather tube overflows, the air filter may become contaminated with engine oil causing poor engine performance.

Draining

1. Remove the crankcase breather tube plugs (1) from the crankcase breather tubes (2) and drain deposits into a suitable container.
2. Reinstall the crankcase breather tube plugs.





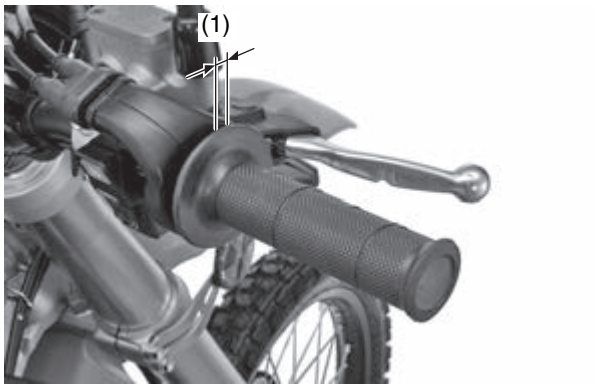
(1) crankcase breather tube plugs
(2) crankcase breather tubes

Throttle

Refer to *Important Safety Precautions* on page 33.

Throttle Freeplay

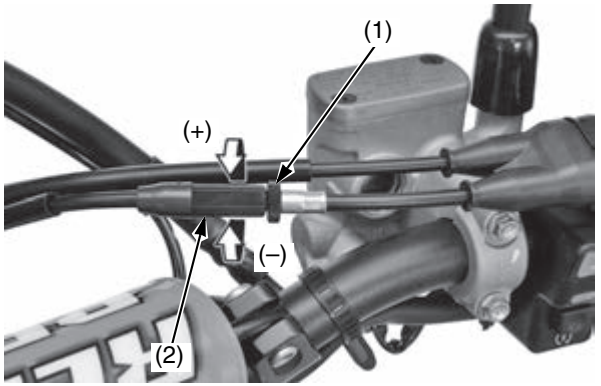
Inspection
Check freeplay (1).
Freeplay: 1/8 – 1/4 in (3 – 6 mm)
If necessary, adjust to the specified range.



(1) freeplay

Upper Adjustment
Minor adjustments are generally made with the upper adjuster.

1. Loosen the lock nut (1).
2. Turn the adjuster (2).
   Turning the adjuster in direction (–) will decrease freeplay and turning it in direction (+) will increase freeplay.

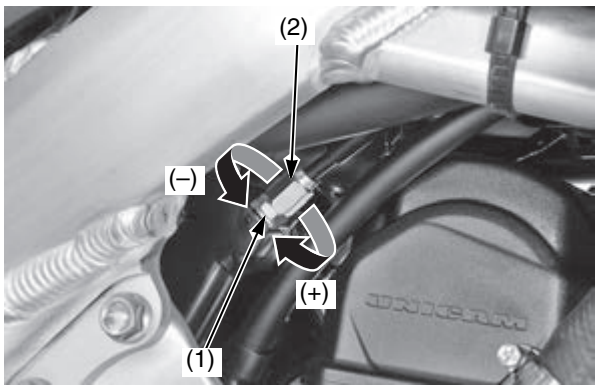


(1) lock nut
(2) adjuster
(+) increase freeplay
(–) decrease freeplay

3. Tighten the lock nut securely.
4. After adjustment, check for smooth rotation of the throttle grip from fully closed to fully open in all steering positions.
   If the adjuster is threaded out near its limit or the correct freeplay cannot be reached, turn the adjuster all the way in and back out one turn. Tighten the lock nut securely.
   Make the adjustment with the lower adjuster.

Lower Adjustment
The lower adjuster is used for major freeplay adjustment, such as after replacing the throttle cables or removing the throttle body. It is also used if you cannot get the proper adjustment with the upper adjuster.

1. Loosen the lock nut (1).
2. Turn the adjuster (2) in direction (–) to decrease freeplay, and in direction (+) to increase freeplay.



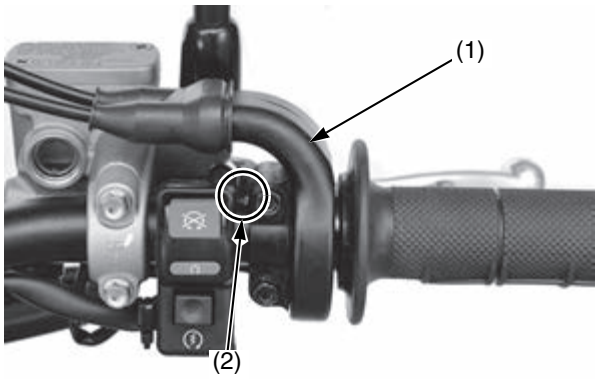
(1) lock nut
(2) adjuster
(+) increase freeplay
(–) decrease freeplay

3. Tighten the lock nut to the specified torque:
   3.0 lbf·ft (4.0 N·m, 0.4 kgf·m)
4. Operate the throttle grip to ensure that it functions smoothly and returns completely.

If you can't get the freeplay within the specified range, contact your dealer.

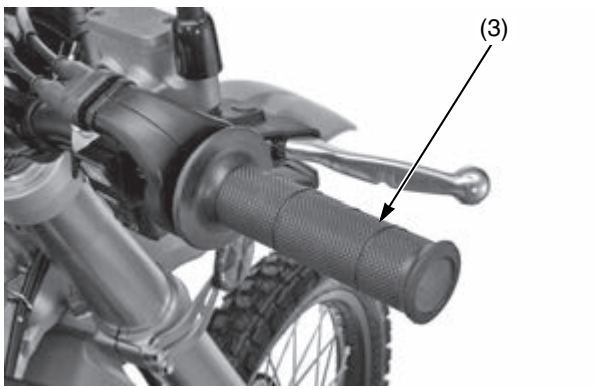
Throttle Inspection

1. Check that the throttle assembly is positioned properly (the end of the throttle housing (1) is aligned with the paint mark (2) on the handlebar) and the securing bolts are tight.



(1) throttle housing
(2) paint mark

2. Check for smooth rotation of the throttle (3) from fully open to fully closed in all steering positions. If there is a problem, see your dealer.



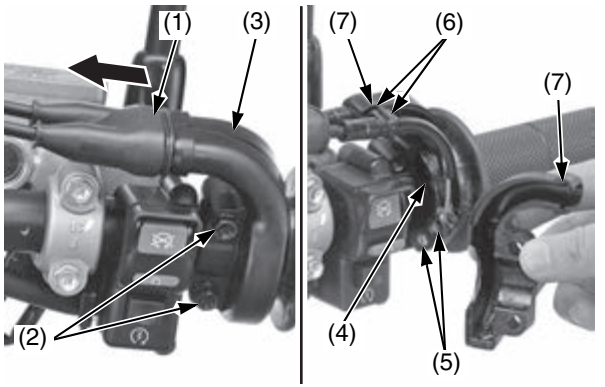
(3) throttle

3. Inspect the condition of the throttle cables from the throttle grip down to the throttle body. If the cable is kinked or chafed, have it replaced.
4. Check the cables for tension or stress in all steering positions.
5. Lubricate the cables with a commercially available cable lubricant.

Throttle Cable Lubrication

Check for smooth rotation of the throttle. If necessary, apply multi-purpose grease to sliding surface of the throttle cable ends.

1. Slide the dust cover (1).
2. Remove the throttle housing bolts (2).
3. Remove the throttle housing (3) from the throttle pipe (4).
4. Thoroughly lubricate the throttle cable ends (5) with multi-purpose grease.



(1) dust cover
(2) housing bolts
(3) throttle housing
(4) throttle pipe
(5) throttle cable ends
(6) lugs
(7) grooves

5. Install the throttle housing, then tighten the throttle housing bolts to the specified torque: 7 lbf·ft (10 N·m, 1.0 kgf·m)

NOTICE

Align the lugs (6) of the wire guide with the grooves (7) of the throttle housing.

6. Install the dust cover in reverse order.

If the throttle operation is not smooth, replace the throttle cable.
Be sure the throttle returns freely from fully open to fully closed automatically, in all steering positions.

Engine Idle Speed

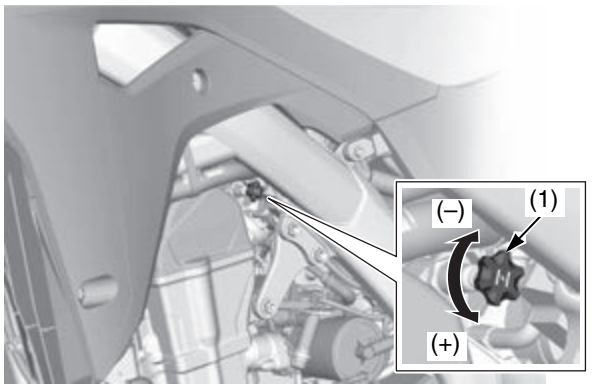
Refer to *Important Safety Precautions* on page 33.

Remember, idle speed adjustment is not a “cure-all” for other problems in your engine’s PGM-FI system. Adjusting the idle speed will not compensate for a fault elsewhere.

The engine must be at normal operating temperature for accurate idle speed adjustment.
When pushed in, the fast idle knob acts as the idle adjustment screw.
Turning it counterclockwise results in a faster/higher idle speed.
Turning it clockwise results in a slower/lower idle speed.

Idle Speed Adjustment

1. If the engine is cold, start it and warm it up 3 minutes. Then shut it off.
2. Connect a tachometer to the engine.
3. Shift the transmission into neutral. Start the engine.
4. Adjust idle speed with the fast idle knob (1).
   Idle speed: 1,800 ± 100 rpm

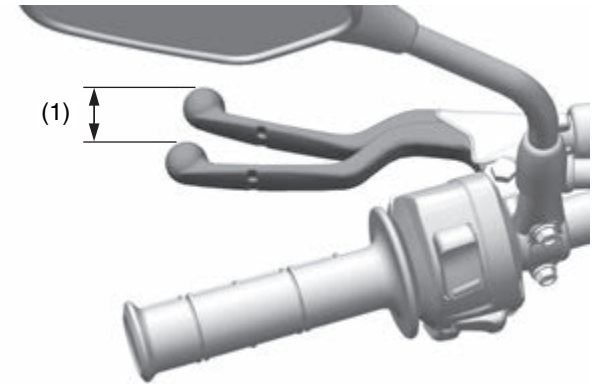


(1) fast idle knob
(+) increase
(–) decrease

Refer to *Important Safety Precautions* on page 33.

Clutch Lever Freeplay

Inspection
Check freeplay (1).
Freeplay: 3/8 – 13/16 in (10 – 20 mm)
If necessary, adjust to the specified range.



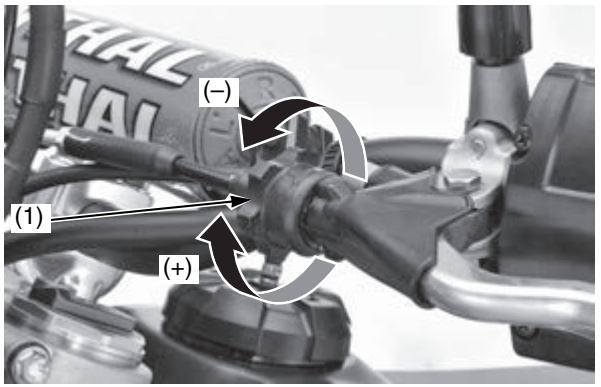
(1) freeplay

Improper freeplay adjustment can cause premature clutch wear.

Make sure to adjust the clutch lever freeplay after the clutch cable is disconnected.

Cable End Adjustment
Minor adjustments are generally made with the clutch cable end adjuster.

Turning the clutch cable end adjuster (1) in direction (+) will increase freeplay and turning it in direction (–) will decrease freeplay.

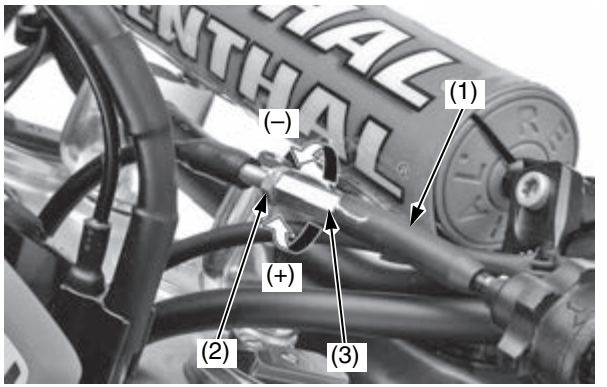


(1) clutch cable end adjuster
(+) increase freeplay
(–) decrease freeplay

If the adjuster is threaded out near its limit or the correct freeplay cannot be reached, turn the adjuster all the way in and back out five turns and make the adjustment with the integral cable adjuster.

Integral Cable Adjustment
The integral cable adjuster is used if the cable end adjuster is threaded out near its limit — or the correct freeplay cannot be obtained.

1. Release the dust cover (1).
2. Turn the cable end adjuster in direction (+) until it seats lightly and then turn it out five turns.
3. Loosen the lock nut (2).
4. Turn the integral cable adjuster (3) to obtain the specified freeplay.
5. Tighten the lock nut. Check the freeplay.



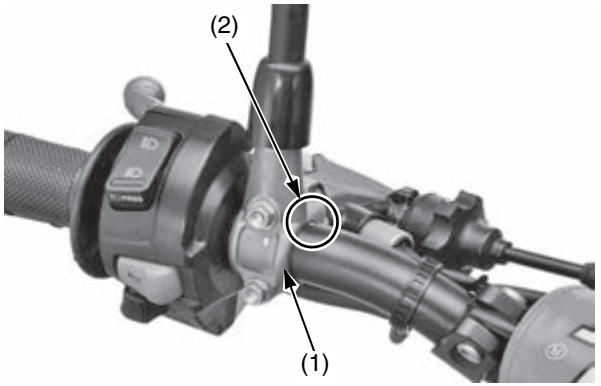
(1) dust cover
(2) lock nut
(3) integral cable adjuster
(+) increase freeplay
(–) decrease freeplay

6. Start the engine, pull the clutch lever in, and shift into gear. Make sure the engine does not stall and the motorcycle does not creep. Gradually release the clutch lever and open the throttle. Your motorcycle should move smoothly and accelerate gradually.

If you can't get proper adjustment, or the clutch does not work properly, the cable may be kinked or worn, or the clutch discs may be worn.
Inspect the clutch discs and plates (page 84).

Other Inspections

- Check that the clutch lever assembly is positioned properly (the end of the holder (1) is aligned with the paint mark (2) on the handlebar) and the securing bolts are tight.



(1) holder
(2) paint mark

- Check the clutch cable for kinks or signs of wear. If necessary, have it replaced.

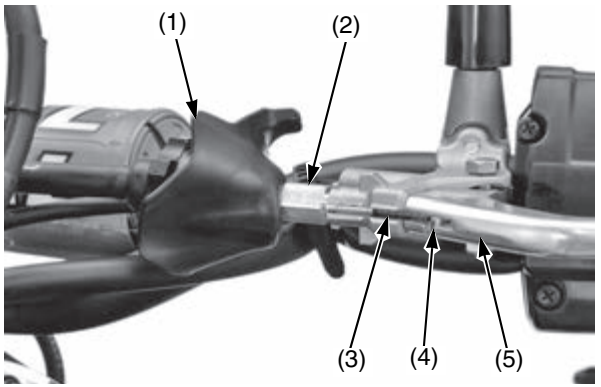
Clutch Operation

1. Check for smooth clutch lever operation. If necessary, lubricate the clutch lever pivot bolt sliding surface with grease and/or clutch cable with commercially available cable lubricant.
2. Check the clutch cable for deterioration, kinks, or damage.

Clutch Cable Lubrication

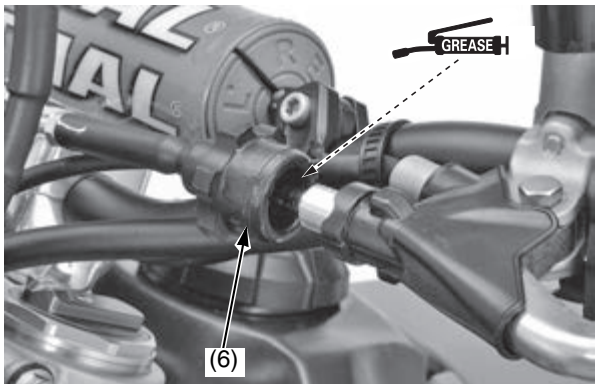
Check for smooth clutch lever operation. If necessary, apply multi-purpose grease to sliding surface of the clutch cable ends.

1. Release the dust cover (1).
2. Turn the adjuster (2) and remove the clutch cable (3).
3. Disconnect the clutch cable end (4) from the clutch lever (5).
4. Thoroughly lubricate the clutch cable end with multi-purpose grease.



(1) dust cover
(2) adjuster
(3) clutch cable
(4) clutch cable end
(5) clutch lever

5. Connect the clutch cable end to the lever.
6. Install the clutch cable and turn the adjuster.
7. Remove the clutch cable end adjuster (6).
8. Apply multi-purpose grease to the clutch cable end adjuster inside surface.



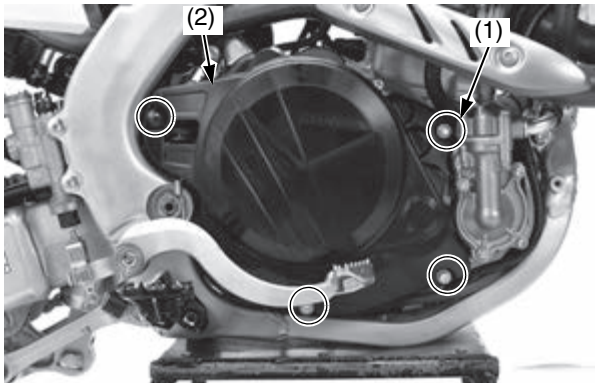
(6) clutch cable end adjuster

9. Recheck clutch lever freeplay and adjust as necessary (page 81).

If the clutch lever operation is not smooth, replace the clutch cable.

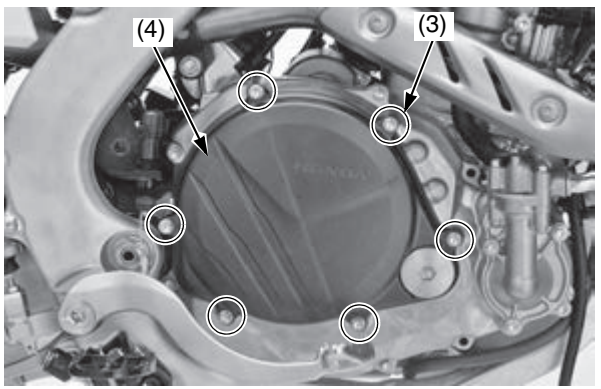
Clutch Disc/Plate Removal

1. Drain the engine oil (page 70).
2. Remove the four right crankcase over cover bolts (1) and over cover (2).



(1) bolts (2) over cover

3. Remove the six clutch cover bolts (3) and clutch cover (4).

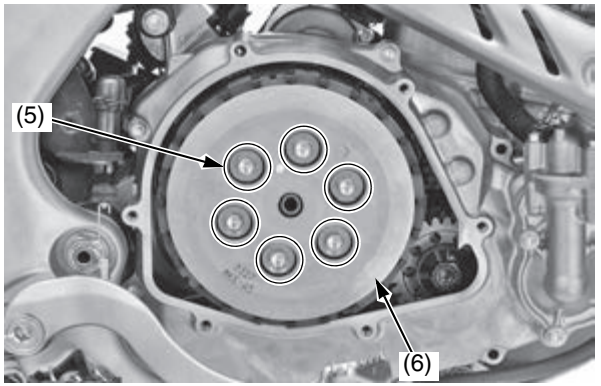


(3) clutch cover bolts (4) clutch cover

4. Remove the six clutch spring bolts and springs (5).

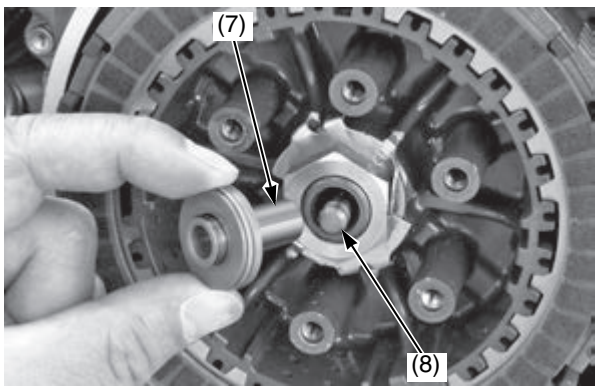
Loosen the bolts in a crisscross pattern in two or three progressive steps.

5. Remove the clutch pressure plate (6).



(5) clutch spring bolts and springs
(6) clutch pressure plate

6. Remove the clutch lifter (7) first, then remove the clutch lifter rod (8).



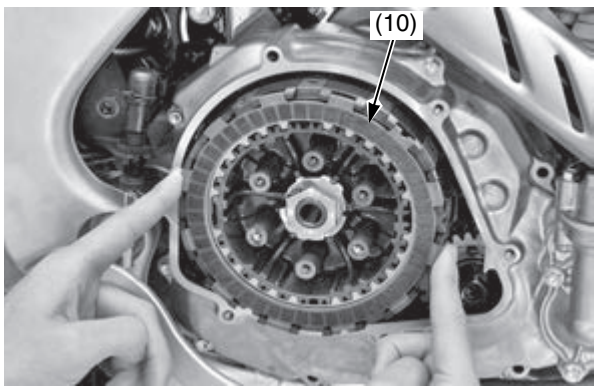
(7) clutch lifter (8) clutch lifter rod

7. Check the operation of the thrust bearing (9) built in clutch lifter with your finger. The bearing should turn smoothly and quietly.

(9) thrust bearing

If the operation is not smooth, refer to an official Honda Service Manual (page 194) for bearing disassembly or see your dealer.

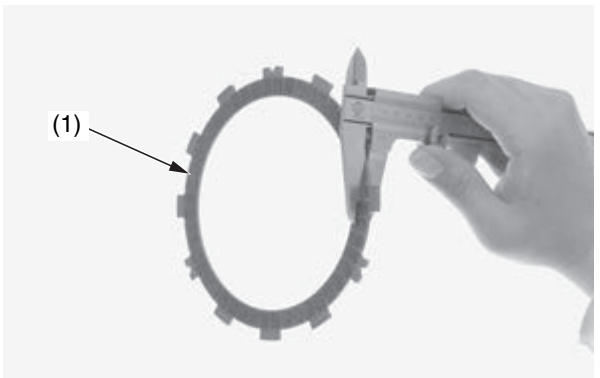
8. Remove the seven clutch discs, six clutch plates, judder spring and spring seat (10).



(10) clutch discs, clutch plates, judder spring and spring seat

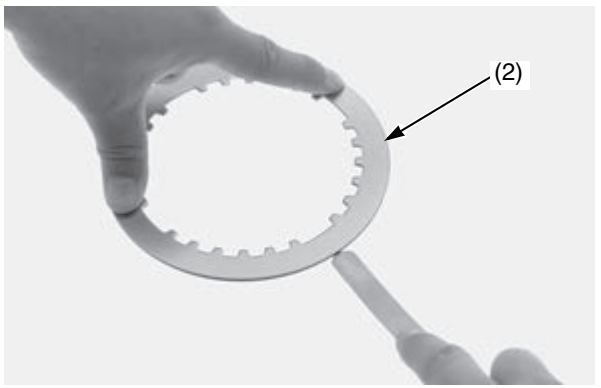
Clutch Disc/Plate/Spring Inspection

- Replace the clutch discs (1) if they show signs of scoring or discoloration.
  Measure the thickness of each clutch disc.
  Service Limit: 0.112 in (2.85 mm)
  Replace the clutch discs and clutch plates as a set.



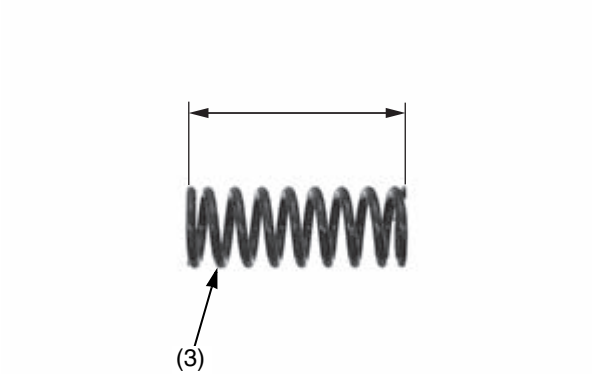
(1) clutch discs

- Check the clutch plates (2) for excessive warpage or discoloration.
  Check the plate warpage on a surface plate using a feeler gauge.
  Service Limit: 0.006 in (0.15 mm)
  Replace the clutch discs and plates as a set.



(2) clutch plates

- Check the clutch springs (3) for wear or damage.
  Measure the thickness of each clutch spring.
  Service Limit: 1.79 in (45.5 mm)
  Replace the clutch spring as a set.

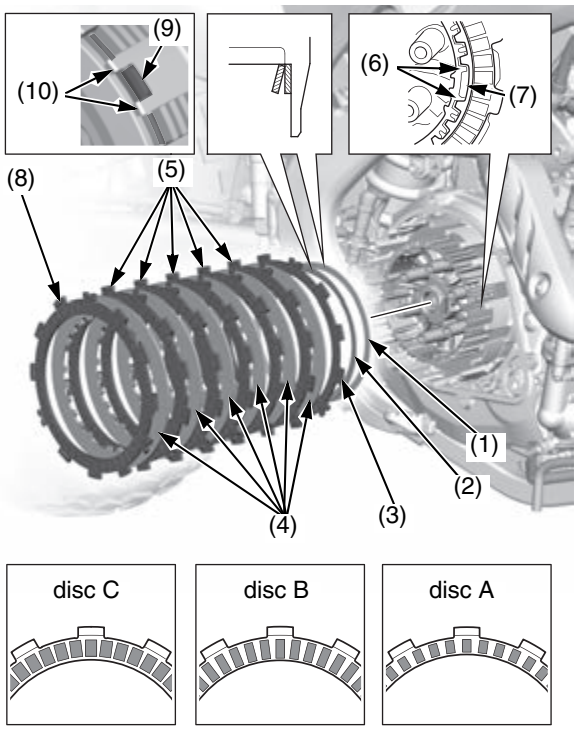


(3) clutch springs

- If you feel the clutch slippage when replacing the clutch discs and plates, replace the clutch springs.

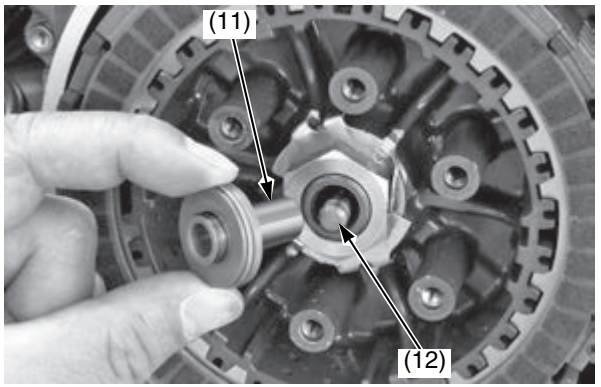
Clutch Disc/Plate Installation

1. Install the spring seat (1) and judder spring (2) onto the clutch center as shown.
   Coat the clutch discs with engine oil.
2. Install the clutch disc A (larger I.D. disc) (3) onto the clutch outer.
   Stack the six clutch plates (4), five clutch discs B (5) alternately while aligning the lugs (6) of the clutch center with the groove (7) of the clutch plates as shown.
   Install the clutch disc C (8) by aligning its tabs (9) with the shallow slots (10) of the clutch outer.



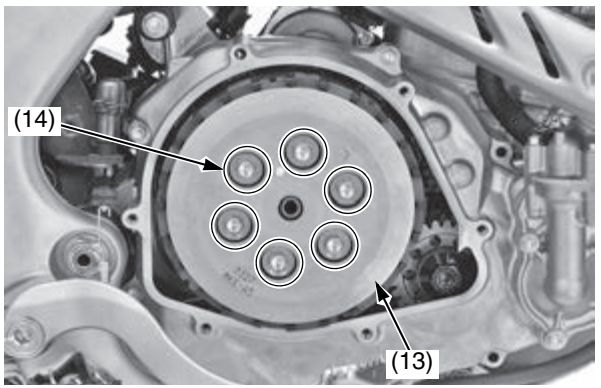
(1) spring seat
(2) judder spring
(3) clutch disc A
(4) clutch plates
(5) clutch discs B
(6) lugs
(7) groove
(8) clutch disc C
(9) tabs
(10) shallow slots

3. Insert the clutch lifter rod (11) into the mainshaft.
4. Install the clutch lifter (12) onto the rod.



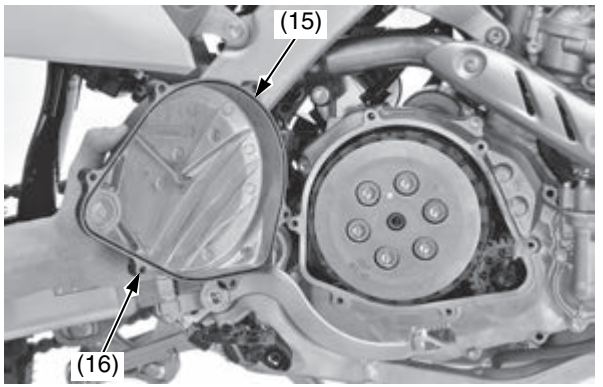
(11) clutch lifter rod (12) clutch lifter

5. Install the clutch pressure plate (13).
6. Install the six clutch springs and bolts (14).
7. Tighten the bolts in a crisscross pattern in two or three steps to the specified torque:
   9 lbf·ft (12 N·m, 1.2 kgf·m)



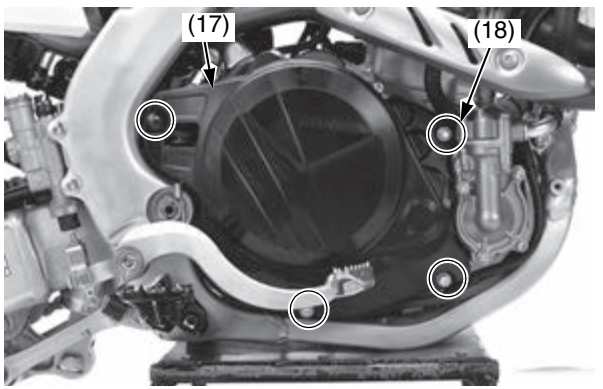
(13) clutch pressure plate
(14) clutch spring bolts and springs

8. Apply engine oil to a new O-ring (15) and install it in the groove of the clutch cover (16).
9. Install the cover by tightening the six cover bolts in a crisscross pattern in two or three steps to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)



(15) O-ring (new)
(16) clutch cover

10. Install the right crankcase over cover (17) and tighten the four right crankcase over cover bolts (18).



(17) over cover (18) bolts

11. Pour recommended engine oil to the specified level (page 70).

Spark Plug

Refer to *Important Safety Precautions* on page 33.

Spark Plug Recommendation

The recommended standard spark plug is satisfactory for most racing conditions.

Standard	SILMAR9A – 9S (NGK)
Optional	SILMAR10A – 9S (NGK)

Use only the recommended type of spark plugs in the recommended heat range.

NOTICE

Using a spark plug with an improper heat range or incorrect reach can cause engine damage. Using a non-resistor spark plug may cause ignition problems.

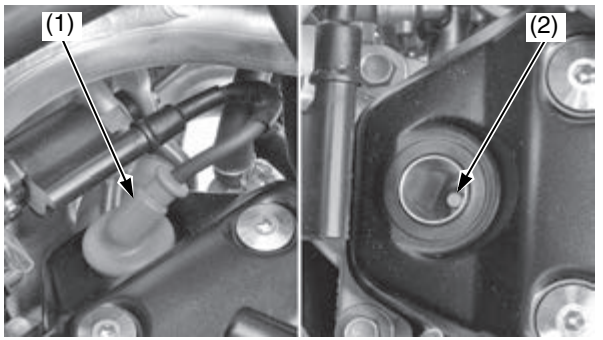
This motorcycle uses a spark plug that has an iridium tip in the center electrode and a platinum tip in the side electrode.

Be sure to observe the following when servicing the spark plug.

- Do not clean the spark plug. If an electrode is contaminated with accumulated objects or dirt, replace the spark plug with a new one.
- To check the spark plug gap, use only a "wire-type feeler gauge." To prevent damaging the iridium tip of the center electrode and platinum tip of the side electrode, never use a "leaf-type feeler gauge."
- Do not adjust the spark plug gap. If the gap is out of specification, replace the spark plug with a new one.

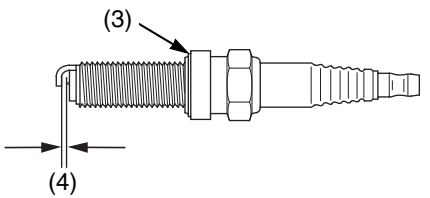
Spark Plug Inspection & Replacement

1. Remove the seat and fuel tank (pages 46, 48).
2. Disconnect the spark plug cap (1).
3. Clean any dirt from around the spark plug base.
4. Remove the spark plug (2).



(1) spark plug cap (2) spark plug

5. Check the electrodes for wear or deposits, the sealing gasket (3) for damage, and the insulator for cracks. Replace if you detect them.
6. Check the spark plug gap (4), using a wire-type feeler gauge. If the gap is out of specifications, replace the plug with a new one.
   The recommended spark plug gap is:
   0.031 – 0.035 in (0.8 – 0.9 mm)



(3) sealing gasket
(4) spark plug gap

7. To obtain accurate spark plug readings, accelerate up to speed on a straightaway. Press and hold the engine stop button and disengage the clutch by pulling the lever in. Coast to a stop, then remove and inspect the spark plug. The porcelain insulator around the center electrode should appear tan or medium gray.

If you're using a new plug, ride for 10 – 15 minutes before taking a plug reading; a brand-new plug will not color initially.

If the electrodes appear burnt, or the insulator is white or light gray (lean) or the electrodes and insulator are black or fouled (rich), there is a problem elsewhere (page 153).
Check the PGM-FI system and ignition timing.

8. With the sealing gasket attached, thread the spark plug in by hand to prevent cross-threading.
9. Tighten the spark plug.
   - If the old plug is good:
     1/12 turn after it seats.
   - If installing a new plug, tighten it twice to prevent loosening:
     a) First, tighten the plug:
        1/4 turn after it seats.
     b) Then loosen the plug.
     c) Next, tighten the plug again:
        1/12 turn after it seats.

   When using a torque wrench, tighten the spark plug to the specified torque:
   16 lbf·ft (22 N·m, 2.2 kgf·m)

NOTICE

An improperly tightened spark plug can damage the engine. If a plug is too loose, the piston may be damaged. If a plug is too tight, the threads may be damaged.

10. Connect the spark plug cap. Take care to avoid pinching any cables or wires.
11. Install the fuel tank and seat (pages 46, 50).

Refer to *Important Safety Precautions* on page 33.

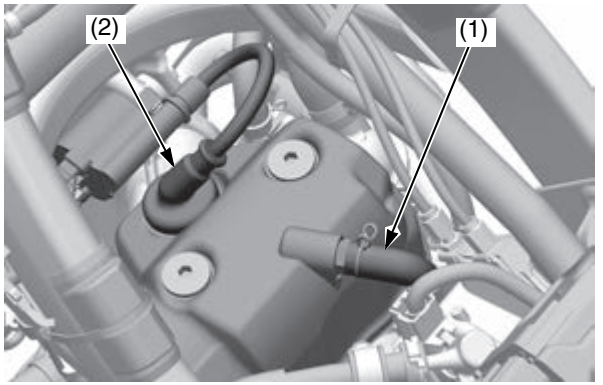
Excessive valve clearance will cause noise and eventual engine damage. Little or no clearance will prevent the valve from closing and cause valve damage and power loss. Check valve clearance when the engine is cold at the intervals specified in the Maintenance Schedule (pages 36, 37).

The checking or adjusting of the valve clearance should be performed while the engine is cold. The valve clearance will change as engine temperature rises.

Cylinder Head Cover Removal

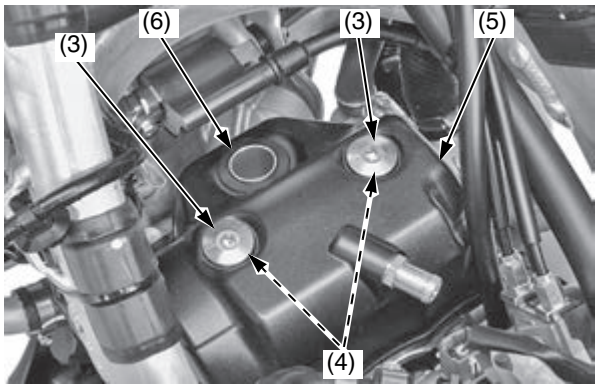
Before inspection, clean the engine thoroughly to keep dirt from entering the engine.

1. Remove the seat and fuel tank (pages 46, 48).
2. Disconnect the breather tube (1) and spark plug cap (2).



(1) breather tube (2) spark plug cap

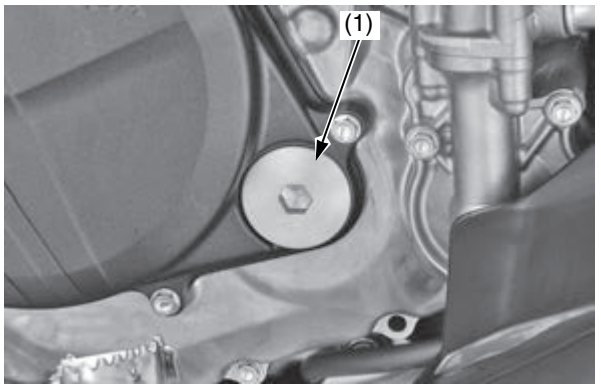
3. Remove the cylinder head cover socket bolts (3), rubber seals (4), cylinder head cover (5) and spark plug hole packing (6).



(3) cylinder head cover socket bolts
(4) cylinder head cover rubber seals
(5) cylinder head cover
(6) spark plug hole packing

Positioning At TDC On The Compression Stroke

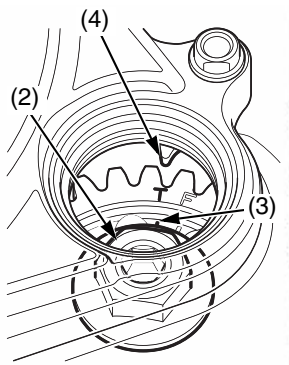
1. Remove the right crankcase over cover (page 83).
2. Remove the crankshaft hole cap (1).



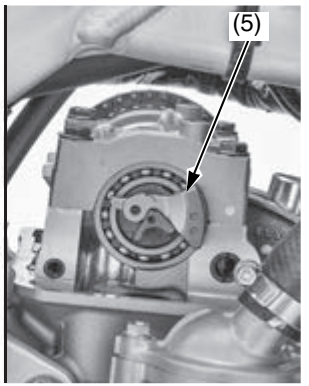
(1) crankshaft hole cap

3. Remove the spark plug (page 86).
4. Remove the cylinder head cover (page 87).
5. Rotate the crankshaft by turning the primary drive gear bolt (2) clockwise until "T" mark (3) on the primary drive gear aligns with the index mark (4) on the clutch cover. In this position, the piston may either be on the compression or exhaust stroke at TDC. If the primary drive gear passed the "T" mark, rotate the primary drive gear bolt clockwise again and align the "T" mark with the index mark.
   Make sure that the decompressor weight (5) is upper position.

crankshaft side:

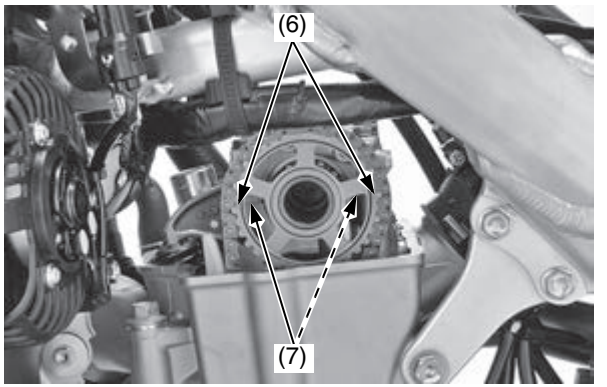


camshaft side:



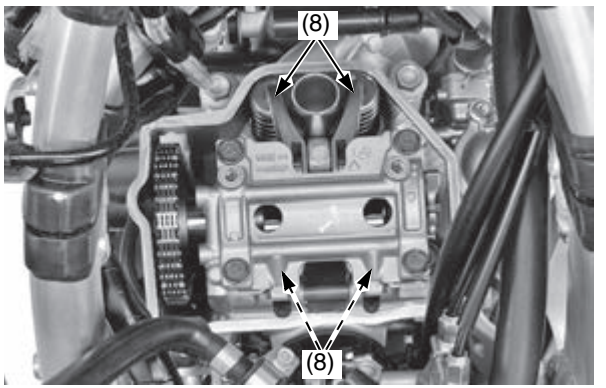
(2) primary drive gear bolt
(3) "T" mark
(4) index mark
(5) decompressor weight

6. Check the timing marks (6) on the cam sprocket aligns with the camshaft holder mating surface (7) of the cylinder head.



(6) timing marks
(7) camshaft holder mating surface

7. The inspection must be made when the piston is at the top of the compression stroke when both the intake and exhaust valves are closed. This condition can be determined by moving the rocker arms (8).



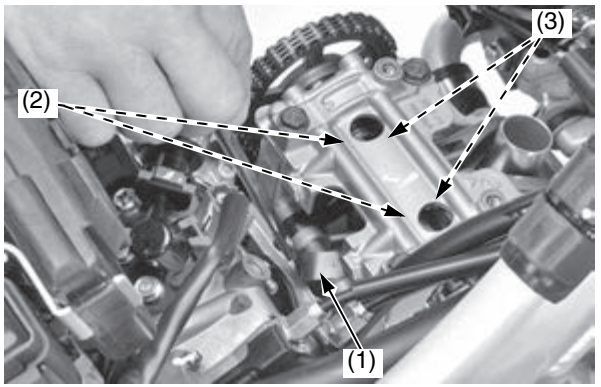
(8) rocker arms

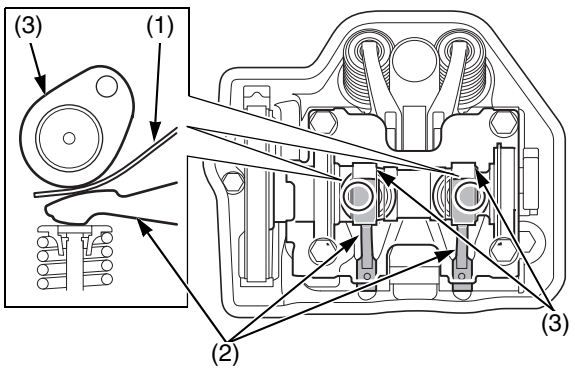
Valve Clearance Inspection

1. Set the piston at TDC on the compression stroke (page 88).
2. Measure the intake valve clearances by inserting a feeler gauge (1) between the intake rocker arms (2) and camshaft cam lobes (3).

NOTICE

Be careful not to damage the intake rocker arms.

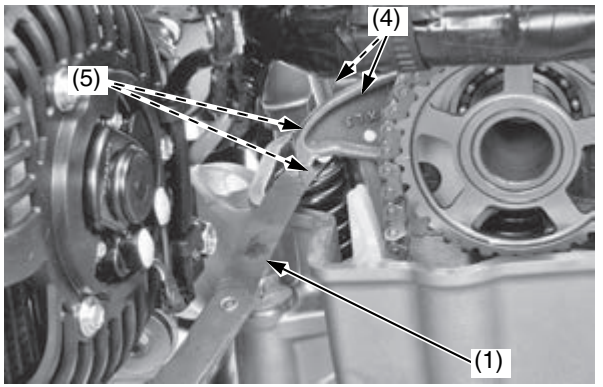


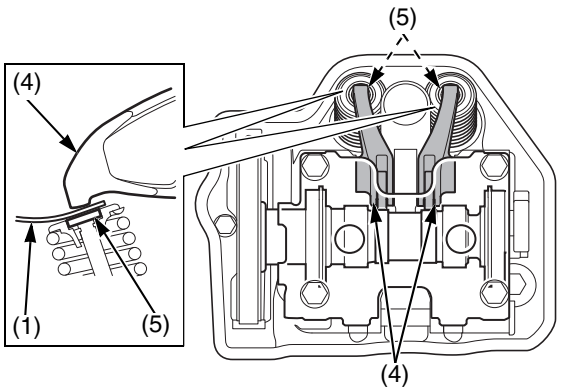


(1) feeler gauge
(2) intake rocker arms
(3) camshaft cam lobes

Valve Clearance:
IN: 0.004 ± 0.001 in (0.11 ± 0.03 mm)

3. Measure the exhaust valve clearances by inserting a feeler gauge (1) between the exhaust rocker arms (4) and shims (5).





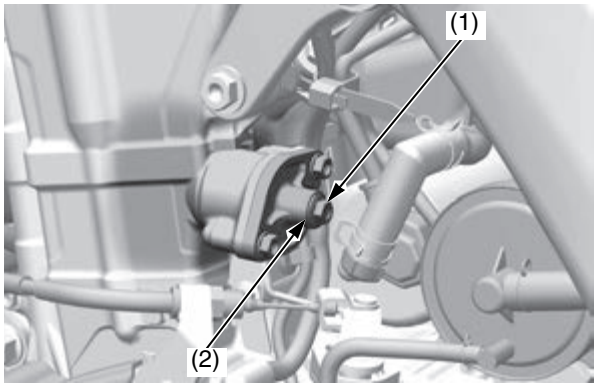
(1) feeler gauge
(4) exhaust rocker arms
(5) valve shims

Valve Clearance:
EX: 0.011 ± 0.001 in (0.28 ± 0.03 mm)

If intake valve clearance and exhaust valve clearance need adjustment, see Camshaft Removal (this page) and select the correct shim for each valve.

Camshaft Removal

1. Record the intake valve and exhaust valve clearances (this page).
   Make sure the piston is at TDC on the compression stroke (page 88).
2. Remove the cam chain tensioner lifter cover bolt (1) and sealing washer (2).

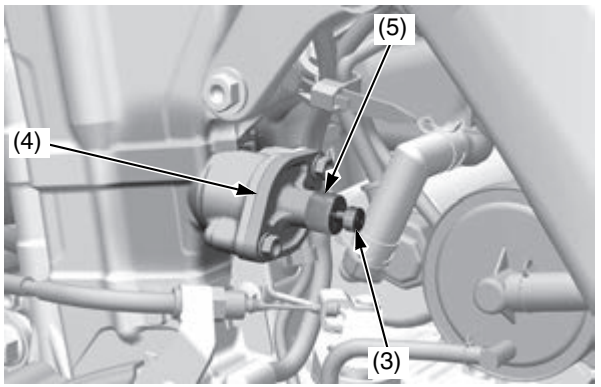


(1) cam chain tensioner lifter cover bolt
(2) sealing washer

(cont'd)

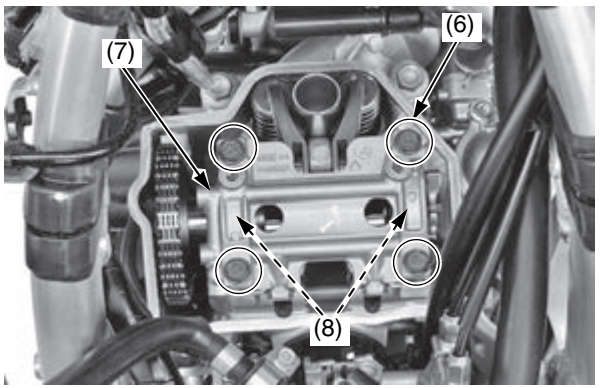
3. Insert the tensioner stopper (3) into the cam chain tensioner lifter (4).
   Turn the tensioner stopper clockwise and lock the cam chain tensioner lifter by pushing the handle (5) to the cam chain tensioner lifter.

• Tensioner stopper 07AMG-001A100



(3) tensioner stopper
(4) cam chain tensioner lifter
(5) handle

4. Check the piston is at TDC on the compression stroke (page 88).
   Loosen the camshaft holder bolts (6) in a crisscross pattern in two or three steps.
   Remove the camshaft holder bolts, camshaft holder (7) and set rings (8).
5. As you remove the camshaft holder, set rings may be sticking in the camshaft holder.



(6) camshaft holder bolts
(7) camshaft holder
(8) set rings

NOTICE

Do not let the set rings fall into the crankcase.

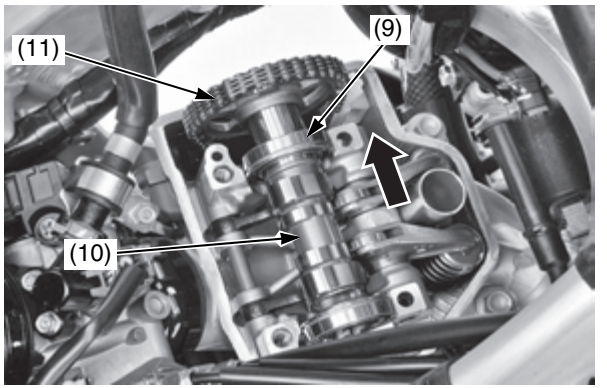
If the set rings are remained on the camshaft holder, remove the set rings carefully.

6. Slide the left camshaft bearing (9) and remove the camshaft (10) by removing the cam chain (11).

Suspend the cam chain with a piece of wire to prevent the chain from falling into the crankcase.

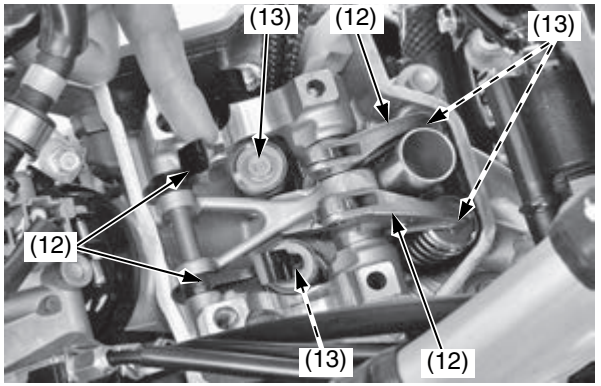
NOTICE

Do not let the cam chain fall into the crankcase.



(9) left camshaft bearing
(10) camshaft
(11) cam chain

7. Lift the rocker arms (12) up and remove the shims (13).



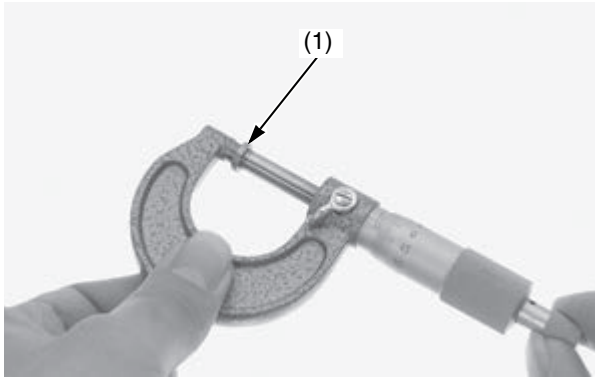
(12) rocker arms
(13) shims

NOTICE

Be careful not to damage the intake rocker arms.
Do not let the shims fall into the crankcase.
Do not clean the intake rocker arms using a commercially available compound cleaner.

Shim Selection

1. Measure the shim thickness with a micrometer and record it.
   Seventy-three different shims (1) are available in 0.025 mm thickness intervals, from 1.200 mm (the thinnest) to 3.000 mm (the thickest).



(1) shim

2. Calculate the new shim thickness using the equation below.

A = (B – C) + D

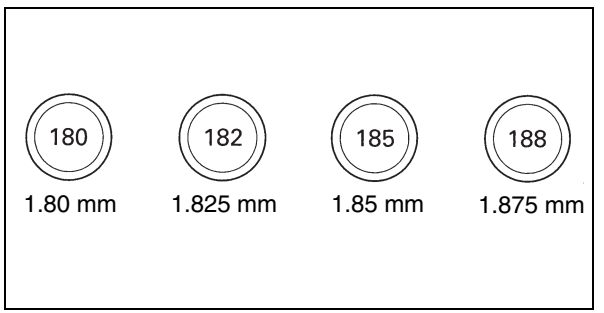
A: New shim thickness
B: Recorded valve clearance
C: Specified valve clearance
D: Old shim thickness

- Make sure of the correct shim thickness by measuring the shim with a micrometer.
- Reface the exhaust valve seat if carbon deposits result in a calculated dimension of over 3.000 mm.

NOTICE

Do not lap the intake valves. They are titanium and have a thin oxide coating. Lapping will damage this coating.

If a calculated dimension is out of specifications, have your motorcycle inspected by your dealer.

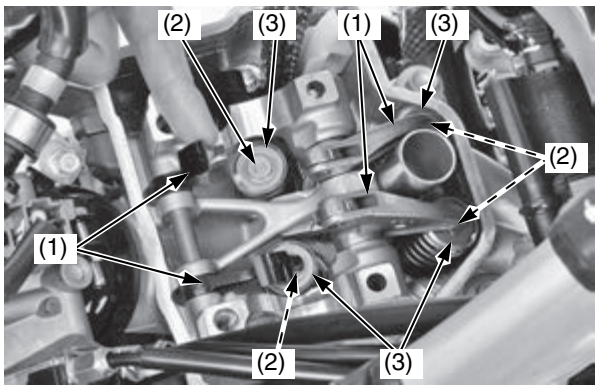


Camshaft Installation

1. Lift the rocker arms (1) up and install the newly selected shims (2) on the valve spring retainers (3).

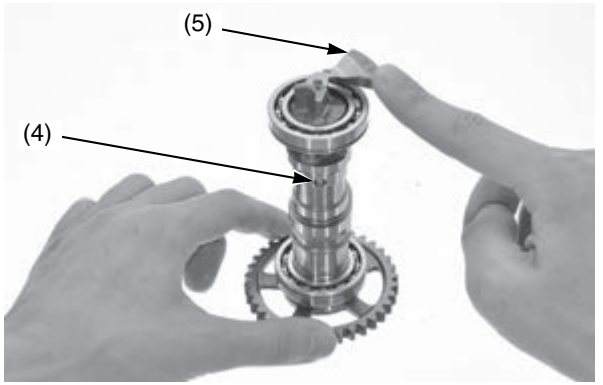
NOTICE

Do not let the shims fall into the crankcase.



(1) rocker arms
(2) shims
(3) valve spring retainers

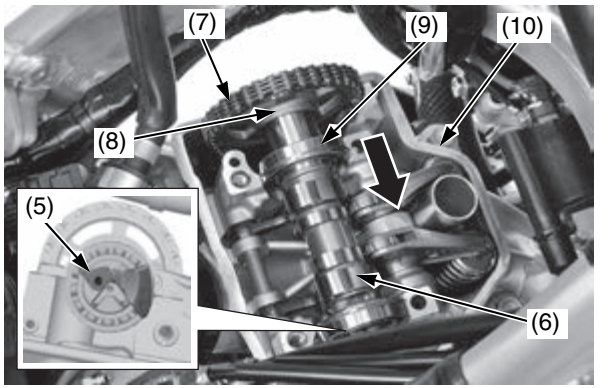
2. Check the operation of the plunger (4) by turning the decompressor weight (5) with your finger. The plunger should be retracted and protruded smoothly.



(4) plunger
(5) decompressor weight

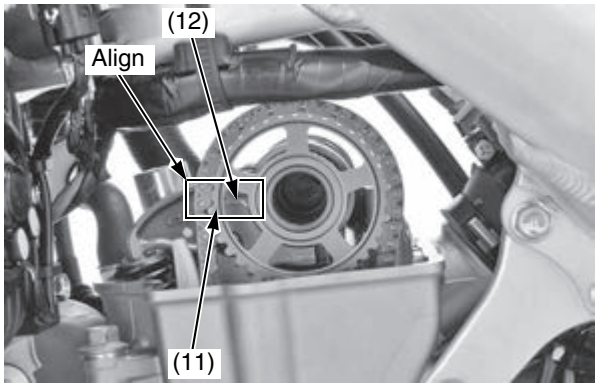
If the operation is not smooth, refer to an official Honda Service Manual (page 194) for decompressor disassembly or see your dealer.

3. Make sure the piston is at TDC on the compression stroke (page 88).
4. Apply molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease containing more than 3% molybdenum disulfide additive Moly Paste 77) to the following parts.
   – camshaft cam lobes
   – plunger whole surface
5. Install the camshaft (6) onto the cylinder head with the decompressor weight (5) facing up as illustrated below.
6. Install the cam chain (7) over the cam sprocket (8).
   While holding the left camshaft bearing (9) to the left fully, install the camshaft (6) onto the cylinder head (10) and slide the left camshaft bearing to the right fully.



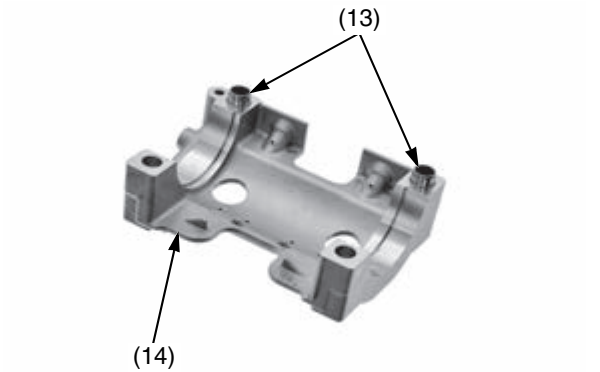
(5) decompressor weight
(6) camshaft
(7) cam chain
(8) cam sprocket
(9) left camshaft bearing
(10) cylinder head

7. Make sure that the timing mark (11) on the cam sprocket aligns with the camshaft holder mating surface (12) of the cylinder head.



(11) timing mark
(12) camshaft holder mating surface

8. Make sure that the dowel pins (13) are installed into the camshaft holder (14).

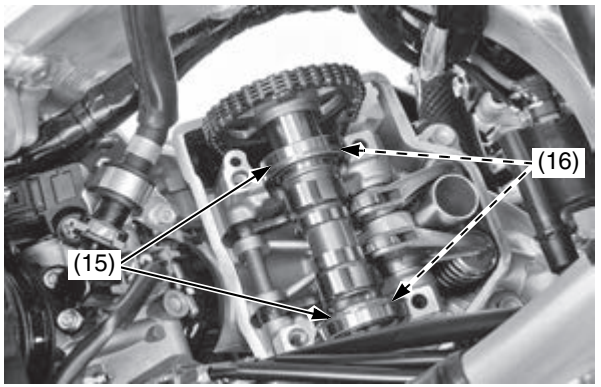


(13) dowel pins (14) camshaft holder

9. Install the set rings (15) on the camshaft bearing grooves (16).

NOTICE

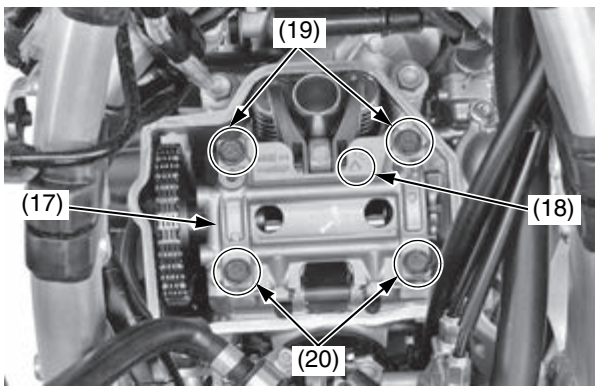
Do not let the set rings fall into the crankcase.



(15) set rings
(16) camshaft bearing grooves

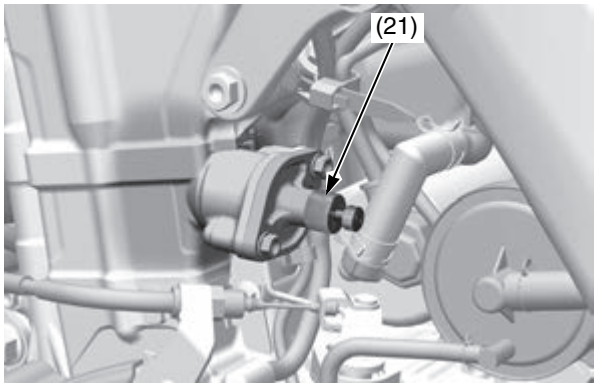
10. Apply engine oil to the camshaft holder bolt threads.
Install the camshaft holder (17) with the " Δ " mark (18) facing forward.
Install the camshaft holder bolts (19) (20) and tighten the camshaft holder bolts to the specified torque:
11 lbf·ft (15 N·m, 1.5 kgf·m)

Tighten the camshaft holder bolts in a crisscross pattern in two or three steps.



(17) camshaft holder (19) camshaft holder bolts (long)
(18) " Δ " mark (20) camshaft holder bolts (short)

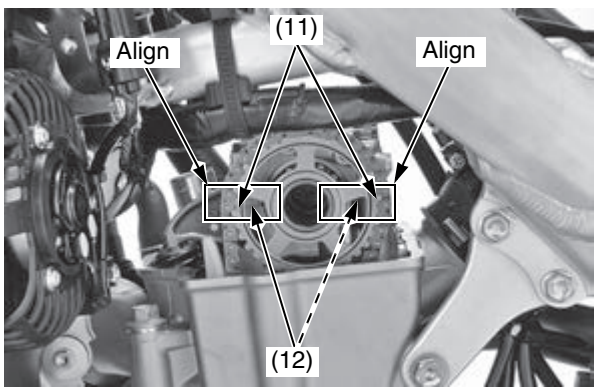
11. Remove the tensioner stopper (21) from the cam chain tensioner lifter.



(21) tensioner stopper

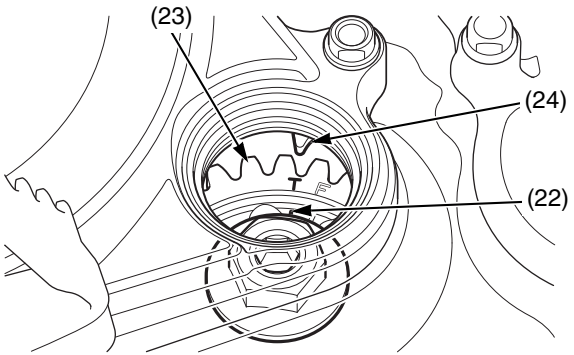
12. Make sure that the piston is at TDC on the compression stroke (page 88).
Check that the timing mark (11) on the cam sprocket aligns with the camshaft holder mating surface (12) of the cylinder head.

If the timing mark doesn't align with the camshaft holder mating surface, insert the tensioner stopper into the cam chain tensioner lifter (page 90) and then remove the cam chain and realign the timing mark.



(11) timing mark
(12) camshaft holder mating surface

13. Check that "T" mark (22) on the primary drive gear (23) aligns with the index mark (24) on the right crankcase cover.

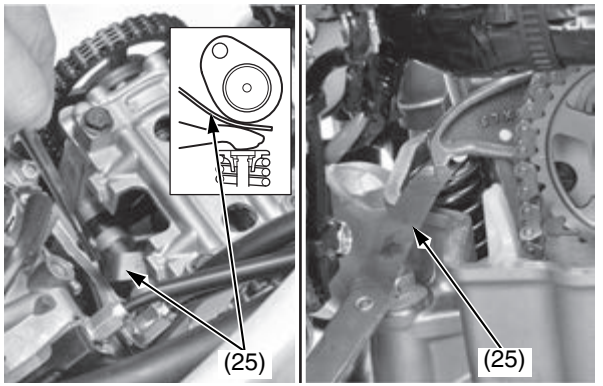


(22) "T" mark
(23) primary drive gear
(24) index mark

14. Rotate the camshaft by rotating the crankshaft clockwise several times.

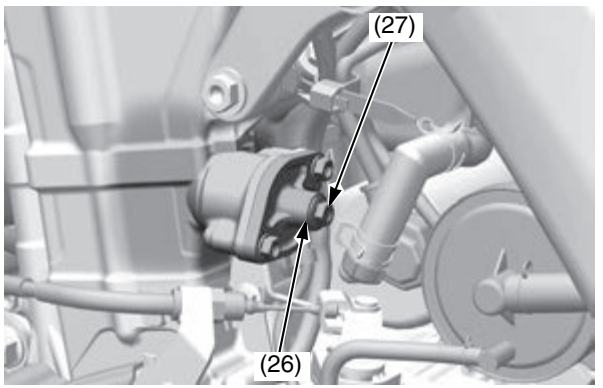
15. Measure the intake and exhaust valve clearances by inserting a feeler gauge (25).
Valve Clearance:
IN: 0.004 ± 0.001 in (0.11 ± 0.03 mm)
EX: 0.011 ± 0.001 in (0.28 ± 0.03 mm)

Intake side: Exhaust side:



(25) feeler gauge

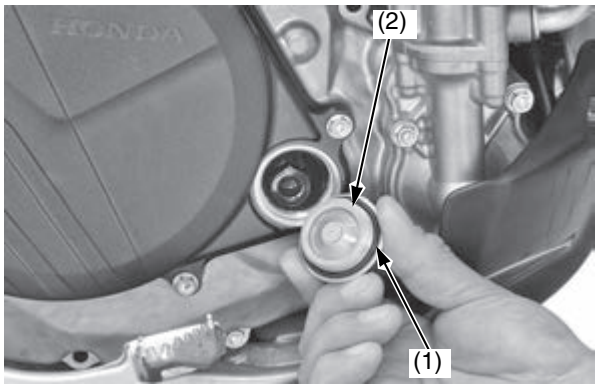
16. Install a new sealing washer (26) and tighten the cam chain tensioner lifter cover bolt (27).



(26) sealing washer (new)
(27) cam chain tensioner lifter cover bolt

Crankshaft Hole Cap Installation

1. Install the spark plug (page 86).
2. Coat a new O-ring (1) with engine oil and install it onto the crankshaft hole cap (2). Apply grease to the crankshaft hole cap threads. Install and tighten the crankshaft hole cap to the specified torque:
11 lbf·ft (15 N·m, 1.5 kgf·m)

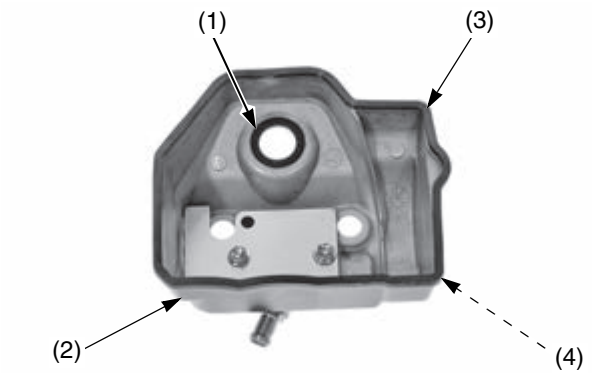


(1) O-ring (new)
(2) crankshaft hole cap

3. Install the right crankcase over cover (page 85).

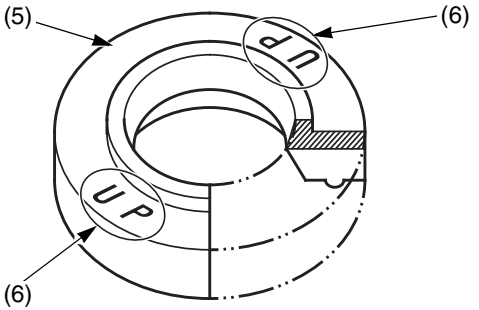
Cylinder Head Cover Installation

1. Check that the spark plug hole packing (1) is in good condition and replace it if necessary. Apply engine oil to the spark plug hole packing and install it to the cylinder head cover (2).
2. Check that the cylinder head cover packing (3) is in good condition and replace it if necessary. Clean and apply liquid sealant (TB1207B or equivalent) to the cylinder head cover groove (4) in the shown and install the cylinder head cover packing into the cylinder head cover groove.



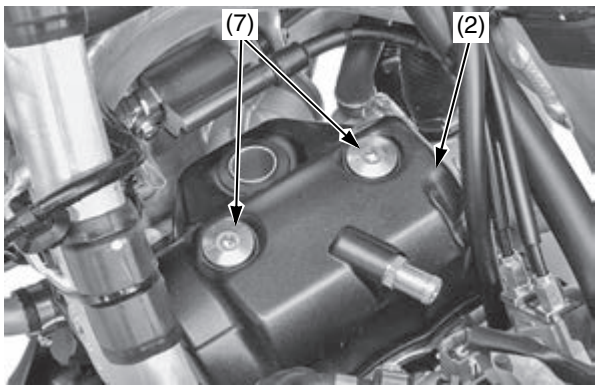
(1) spark plug hole packing
(2) cylinder head cover
(3) cylinder head cover packing
(4) cylinder head cover groove

3. Check that the rubber seals (5) are in good condition, replace them if necessary. Install the rubber seals onto the cylinder head cover with the “UP” marks (6) facing up.



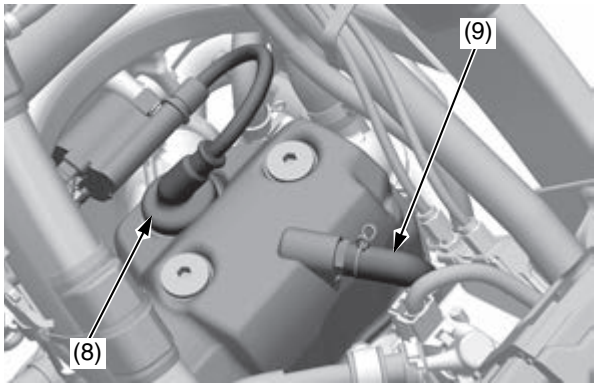
(5) rubber seals
(6) “UP” marks

4. Install the cylinder head cover (2) and tighten the cylinder head cover socket bolts (7) to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)



(2) cylinder head cover
(7) cylinder head cover socket bolts

5. Connect the spark plug cap (8) and breather tube (9).



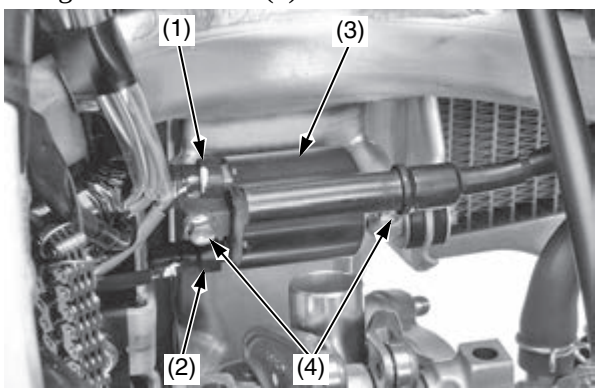
(8) spark plug cap
(9) breather tube

6. Install the fuel tank and seat (pages 46, 50).

Refer to *Important Safety Precautions* on page 33.

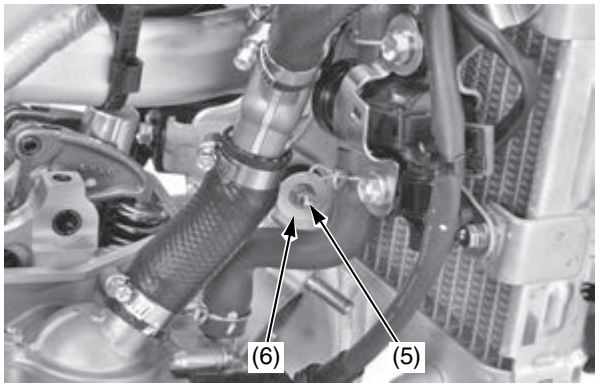
Cylinder Head Removal

1. Clean the area above the engine before disassembly to prevent dirt falling into the engine.
2. Drain the radiator coolant after cooling the motorcycle (page 159).
3. Remove the seat and fuel tank (pages 46, 48).
4. Remove the muffler (page 133).
5. Remove the exhaust pipe (page 134).
6. Remove the subframe (page 52).
7. Remove the spark plug (page 86).
8. Remove the cylinder head cover (page 87).
9. Set the piston at TDC on the compression stroke (page 88).
10. Remove the camshaft holder, camshaft and shims (page 89).
11. Disconnect the ignition coil A connector (1) and B connector (2).
    Remove the ignition coil (3) by removing the ignition coil bolts (4).



(1) ignition coil A connector
(2) ignition coil B connector
(3) ignition coil
(4) ignition coil bolts

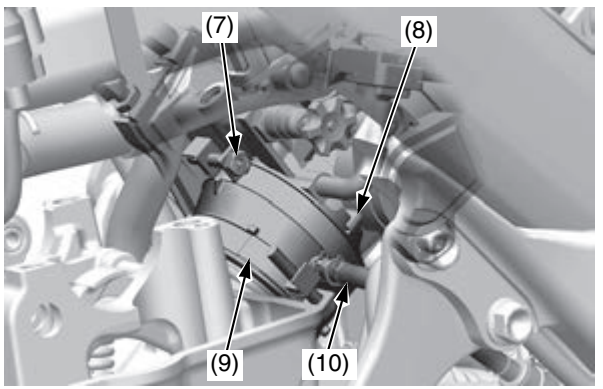
12. Remove the right radiator lower mounting bolt (5) and washer (6).



(5) right radiator lower mounting bolt
(6) washer

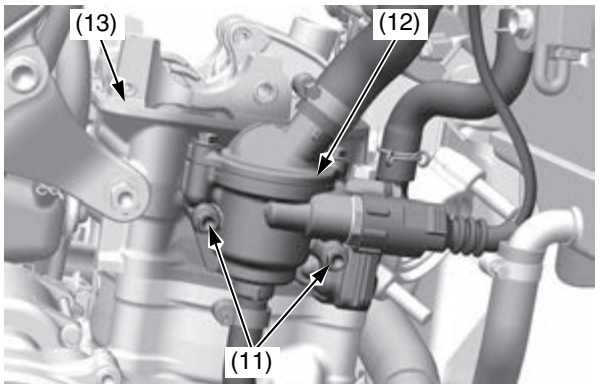
13. Loosen the insulator band screw (7) and pull the throttle body (8) out from the insulator (9). Disconnect the vacuum tube (10) from the insulator.

Do not hang the throttle body and support it with a suitable strap.



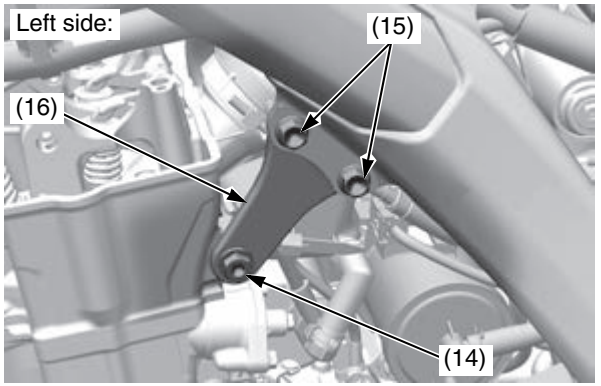
(7) insulator band screw
(8) throttle body
(9) insulator
(10) vacuum tube

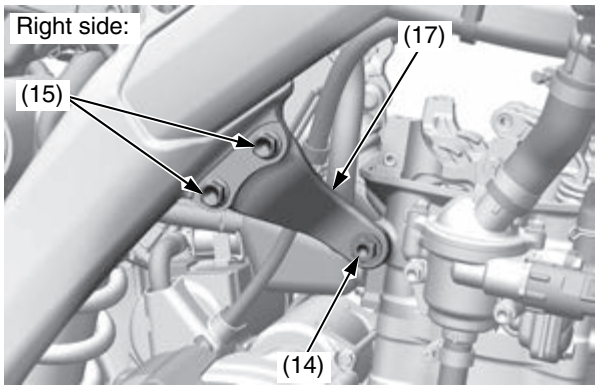
14. Remove the thermostat case mounting bolts (11).
    Remove the thermostat case assembly (12) from the cylinder head (13).



(11) bolts
(12) thermostat case
(13) cylinder head

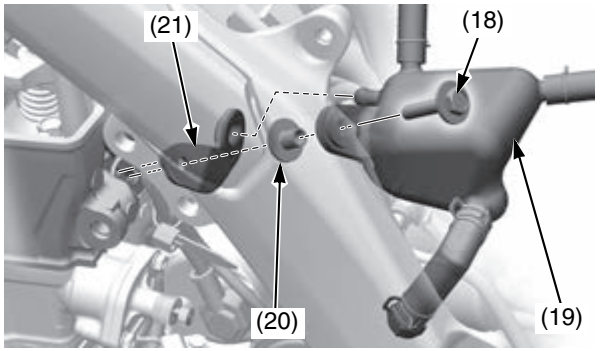
15. Remove the cylinder head hanger bolts (14). Remove the cylinder head hanger plate bolts (15), left cylinder head hanger plate (16) and right cylinder head hanger plate (17).





(14) cylinder head hanger bolts
(15) cylinder head hanger plate bolts
(16) left cylinder head hanger plate
(17) right cylinder head hanger plate

16. Remove the oil catch tank mounting bolt (18), oil catch tank (19), collar (20) and stay (21).



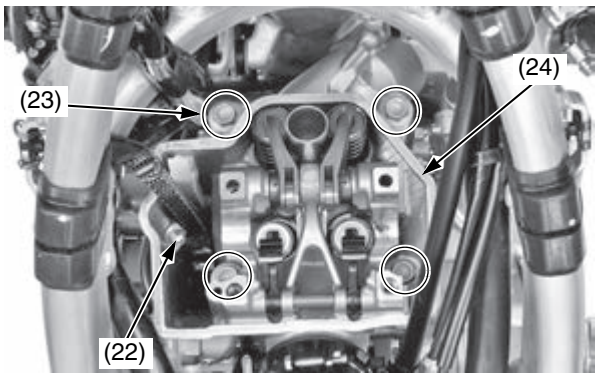
(18) bolt
(19) oil catch tank
(20) collar
(21) oil catch tank stay

17. Remove the cylinder bolt (22).
18. Remove the cylinder head bolts, washers (23) and cylinder head (24).

Loosen the bolts in a crisscross pattern in two or three steps.

NOTICE

Do not let the washers and cam chain fall into the crankcase.

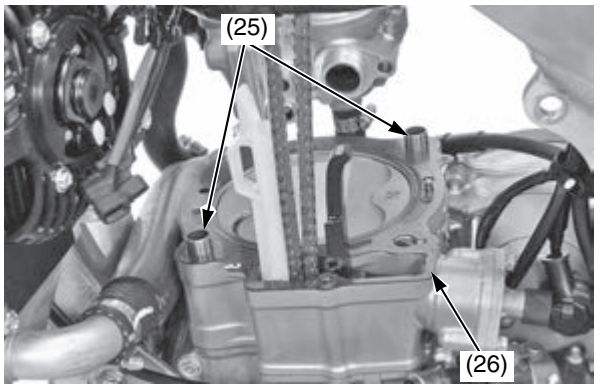


(22) cylinder bolt
(23) cylinder head bolts and washers
(24) cylinder head

19. Remove the dowel pins (25) and cylinder head gasket (26).

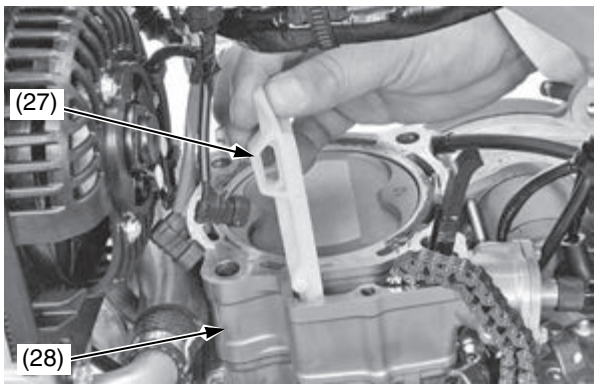
NOTICE

Do not let the dowel pins and cam chain fall into the crankcase.



(25) dowel pins
(26) cylinder head gasket

20. Remove the cam chain guide (27) from the cylinder (28).



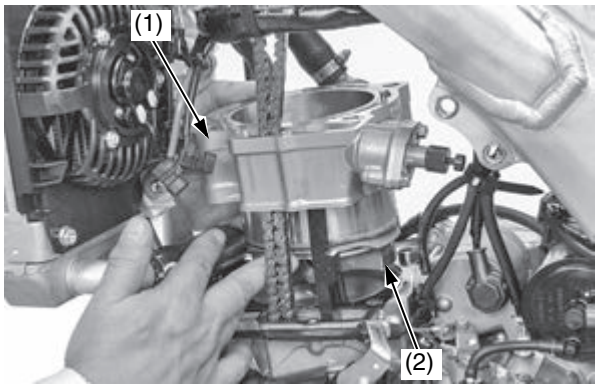
(27) cam chain guide
(28) cylinder

Cylinder Removal

1. Remove the cylinder (1) while holding the piston (2).

NOTICE

Do not let the cam chain fall into the crankcase.
Do not pry on or strike the cylinder.

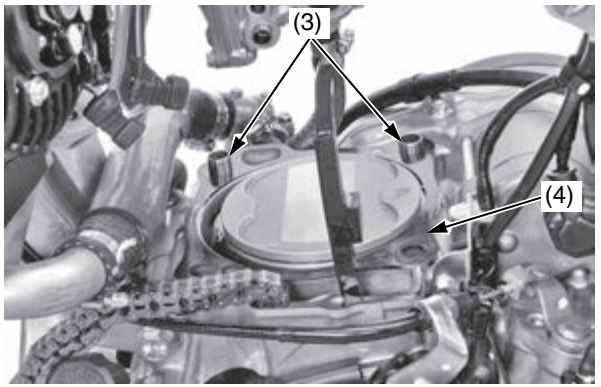


(1) cylinder (2) piston

2. Remove the dowel pins (3) and cylinder gasket (4).

NOTICE

Do not let the cam chain fall into the crankcase.
Do not let the dowel pins fall into the crankcase.



(3) dowel pins (4) cylinder gasket

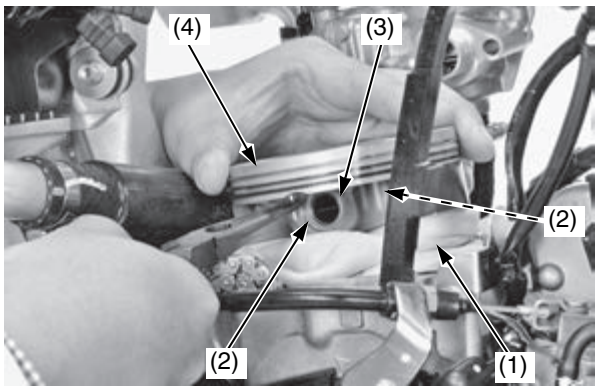
Piston Removal

1. Place clean shop towels (1) in the crankcase to keep the piston pin clips, or other parts, from falling into the crankcase.
2. Remove the piston pin clips (2) using a pair of needle-nose pliers.
3. Press the piston pin (3) out of the piston (4), and remove the piston.

Under racing conditions, the piston, rings and piston pin should be replaced every 8 races or about every 30.0 hours of running.

NOTICE

Be careful not to damage or shock the piston pin.
Do not clean the piston pin using a commercially available compound cleaner.



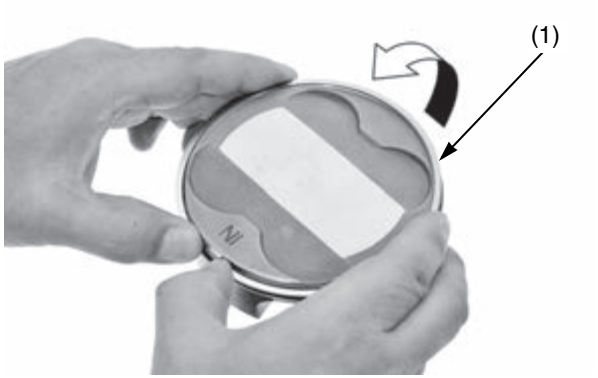
(1) shop towels (3) piston pin
(2) piston pin clips (4) piston

Piston Ring Removal

Spread each piston ring (1) and remove by lifting it up at a point just opposite the gap.

NOTICE

Do not damage the piston ring by spreading the ends too far.



(1) piston ring

Piston/Piston Pin/Piston Ring Inspection

We recommend you consult an official Honda Service Manual or your dealer for correct Service Limit measurements.

Piston Ring Installation

1. Remove the carbon deposits from the piston head and piston ring grooves.

NOTICE

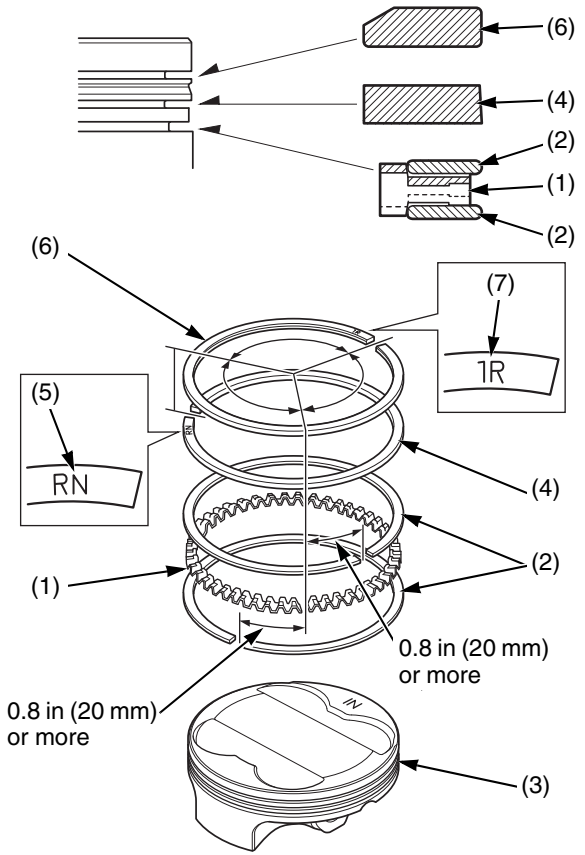
Do not damage the piston when removing the carbon deposit.

2. Apply engine oil to each piston ring whole surface.
3. Install the spacer (1) first, then install the side rails (2) to the piston (3).
4. Install the second ring (4) to the piston with "RN" mark (5) side facing up.
5. Install the top ring (6) to the piston with “1R” mark (7) side facing up.

NOTICE

Do not damage the piston ring by spreading the ends too far.
Do not damage the piston during piston ring installation.

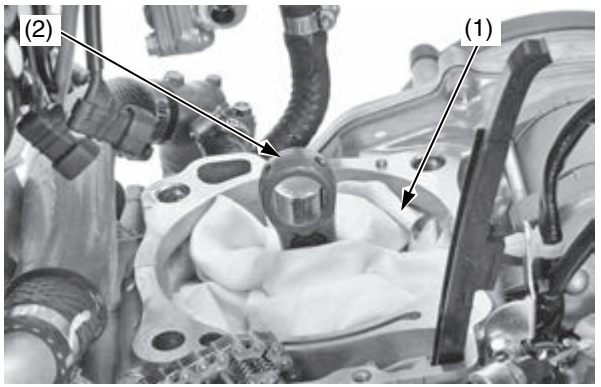
6. After installing the piston rings they should rotate freely, without sticking. Space the ring end gaps 120 degrees apart between top ring, second ring and spacer. Space each ring end gap 0.8 in (20 mm) or more apart between upper side rail, spacer and lower side rail as shown.



(1) spacer
(2) side rails
(3) piston
(4) second ring
(5) “RN” mark
(6) top ring
(7) "1R" mark

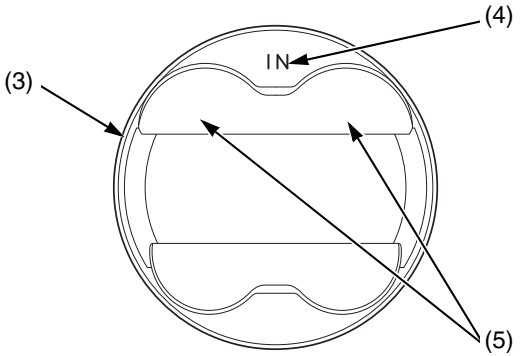
Piston Installation

1. Place clean shop towels (1) over the crankcase opening to keep the piston pin clips from falling into the crankcase.
2. Apply molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease containing more than 3% molybdenum disulfide additive Moly Paste 77) to the connecting rod small end (2) inner surface.



(1) shop towels
(2) connecting rod small end

3. Install the piston (3) with the “IN” mark (4) and/or the large valve recesses (5) facing the intake side of the engine.

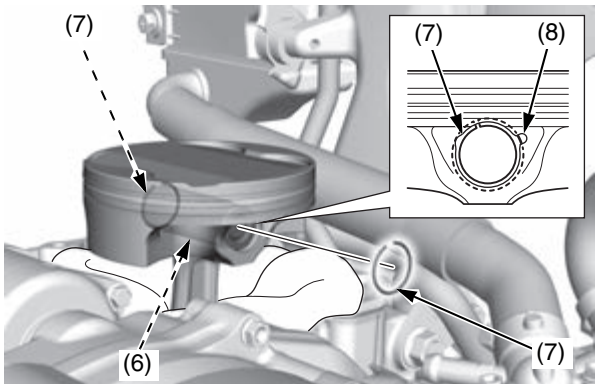


(3) piston
(4) “IN” mark
(5) large valve recesses

Apply molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease containing more than 3% molybdenum disulfide additive Moly Paste 77) to the piston pin (6) outer surface. Apply engine oil to the piston outer surface and piston pin hole inner surface. Install the piston pin and new piston pin clips (7).

NOTICE

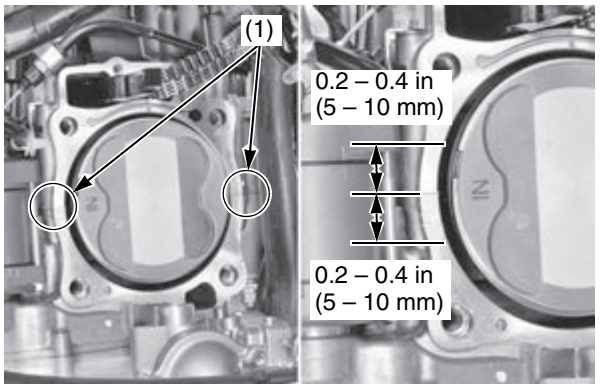
Be careful not to damage or shock the piston pin.
Use new pin clips. Never reuse old clips.
Do not let the clips fall into the crankcase.
Do not align the piston pin clip end gap with the piston cutout (8).



(6) piston pin
(7) piston pin clips (new)
(8) piston cutout

Cylinder Installation

1. Clean the cylinder mating surfaces (1) of the crankcase, being careful not to let any material fall into the crankcase.
2. Remove the shop towels.
3. Apply liquid sealant (TB1141G manufactured by ThreeBond or equivalent) to the cylinder mating surface of the crankcase side as shown.

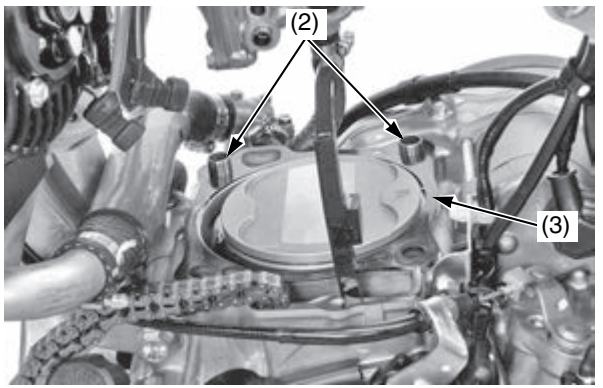


(1) cylinder mating surface

4. Install the dowel pins (2) and a new cylinder gasket (3).

NOTICE

Do not let the dowel pins fall into the crankcase.

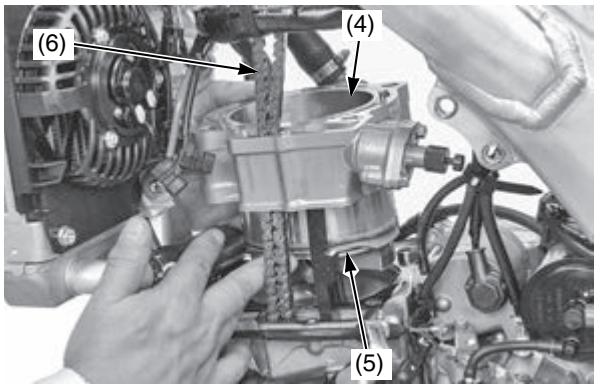


(2) dowel pins (3) cylinder gasket (new)

5. Apply engine oil to the cylinder bore (4), piston outer surface and piston rings (5). Route the cam chain (6) through the cylinder. Install the cylinder over the piston rings by hand while compressing the piston rings.

NOTICE

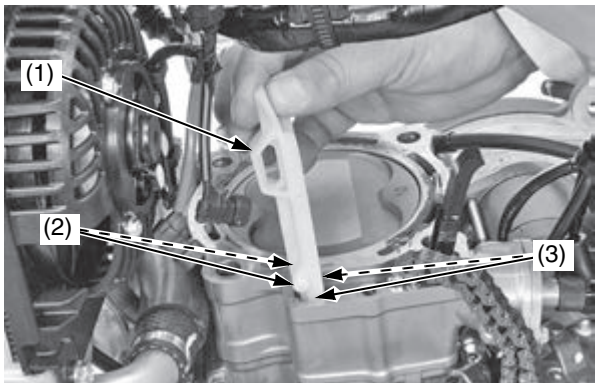
Do not damage the piston rings and cylinder bore.
Do not let the cam chain fall into the crankcase.



(4) cylinder bore (6) cam chain
(5) piston rings

Cylinder Head Installation

1. Clean any gasket material off cylinder head.
2. Install the cam chain guide (1) and fit the cam chain guide tabs (2) in the cylinder cutouts (3). Push the guide until it bottoms in the crankcase guide groove.

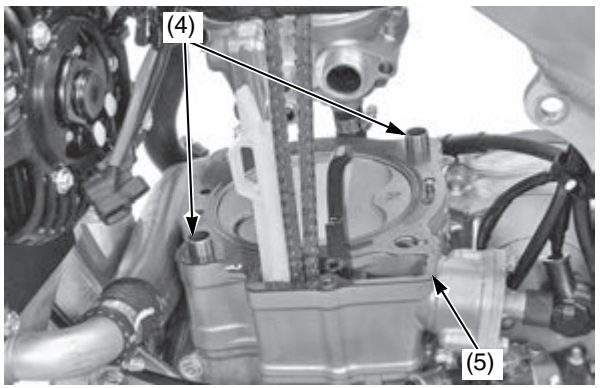


(1) cam chain guide
(2) cam chain guide tabs
(3) cylinder cutouts

3. Install the dowel pins (4) and a new cylinder head gasket (5).

NOTICE

Do not let the dowel pins fall into the crankcase.



(4) dowel pins
(5) cylinder head gasket (new)

4. Route the cam chain through the cylinder head and install the cylinder head (6).

NOTICE

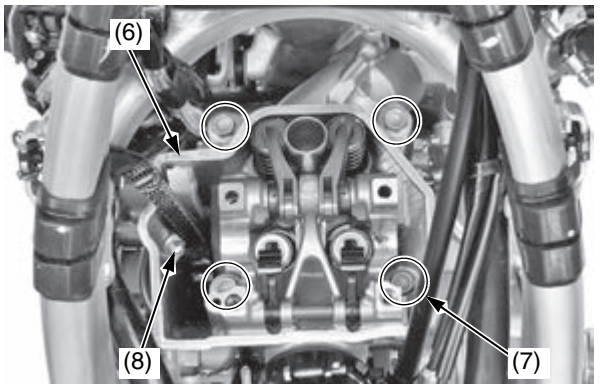
Do not damage mating surfaces when installing the cylinder head.

5. Apply engine oil to all cylinder head bolt threads and seating surface.
   Install the washers and cylinder head bolts (7) and tighten them to the specified torque in a crisscross pattern in two or three steps:
   37 lbf·ft (50 N·m, 5.1 kgf·m)

NOTICE

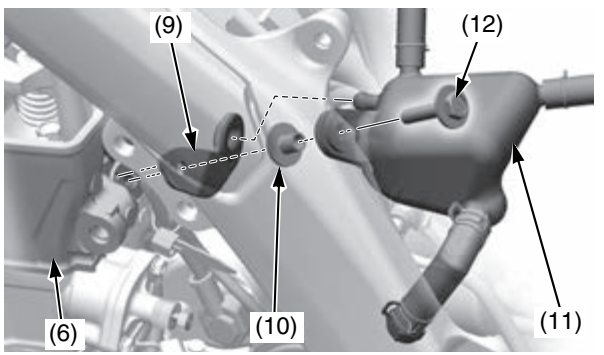
Do not let the washers fall into the crankcase.

6. Install the cylinder bolt (8) and tighten it to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)



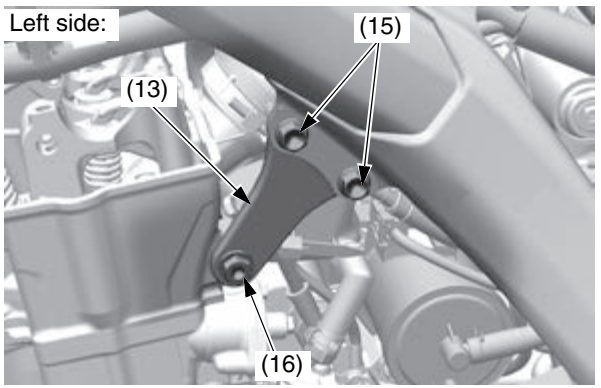
(6) cylinder head
(7) washers and cylinder head bolts
(8) cylinder bolt

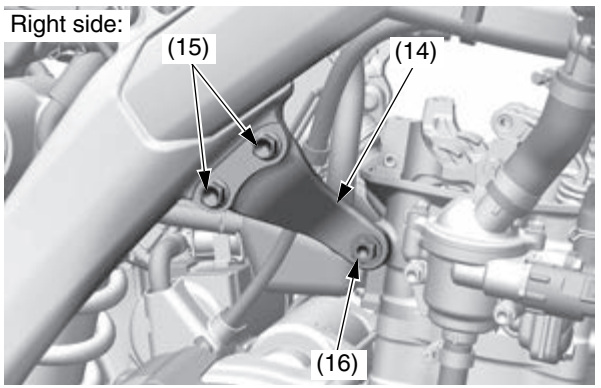
7. Install the oil catch tank stay (9), collar (10), oil catch tank (11) to the cylinder head (6), and then tighten the mounting bolt (12).



(6) cylinder head
(9) oil catch tank stay
(10) collar
(11) oil catch tank
(12) mounting bolt

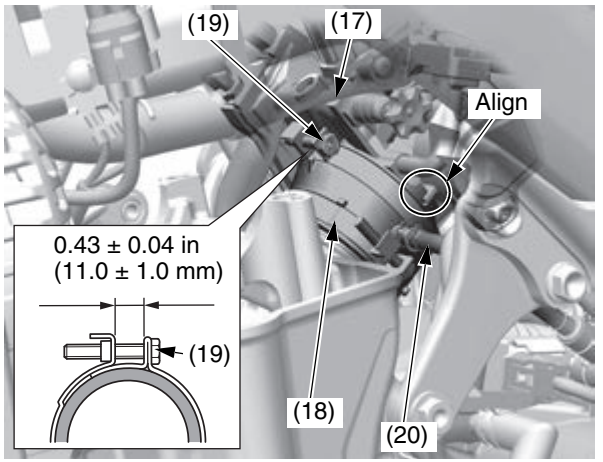
8. Install the left cylinder head hanger plate (13) and right cylinder head hanger plate (14), then loosely install the cylinder head hanger plate bolts (15) and cylinder head hanger bolts (16). Tighten the cylinder head hanger bolts and cylinder head hanger plate bolts to the specified torque.
   cylinder head hanger bolts:
   40 lbf·ft (54 N·m, 5.5 kgf·m)
   cylinder head hanger plate bolts:
   24 lbf·ft (32 N·m, 3.3 kgf·m)





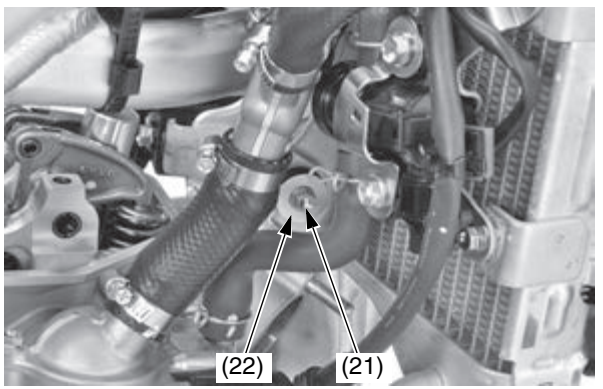
(13) left cylinder head hanger plate
(14) right cylinder head hanger plate
(15) cylinder head hanger plate bolts
(16) cylinder head hanger bolts

9. Install the throttle body (17) to the insulator (18) by aligning the tab of the throttle body with the groove of the insulator and tighten the insulator band screw (19) so the distance between the band ends is 0.43 ± 0.04 in (11.0 ± 1.0 mm).
10. Connect the vacuum tube (20) to the insulator.



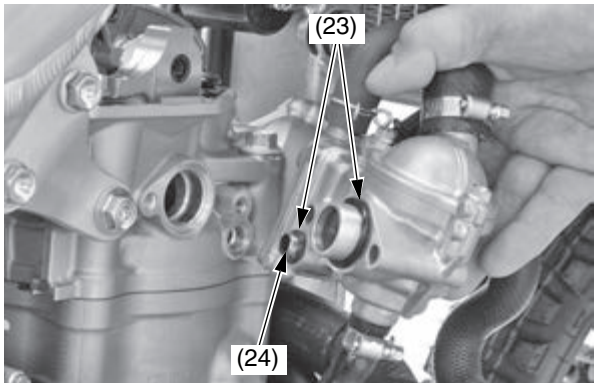
(17) throttle body
(18) insulator
(19) insulator band screw
(20) vacuum tube

11. Install and tighten the right radiator lower mounting bolt (21) and washer (22) securely.



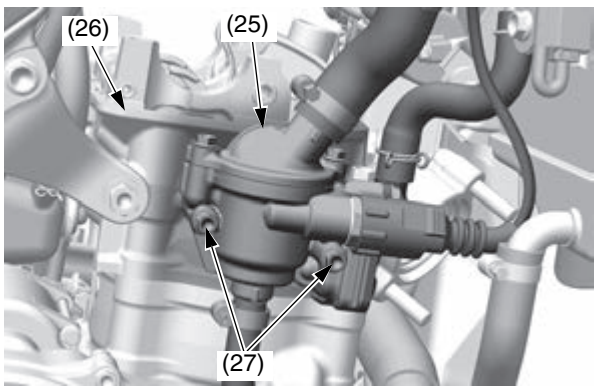
(21) right radiator lower mounting bolt
(22) washer

12. Install the new O-rings (23) onto the thermostat case dowel pin (24).



(23) O-rings (new)
(24) dowel pin

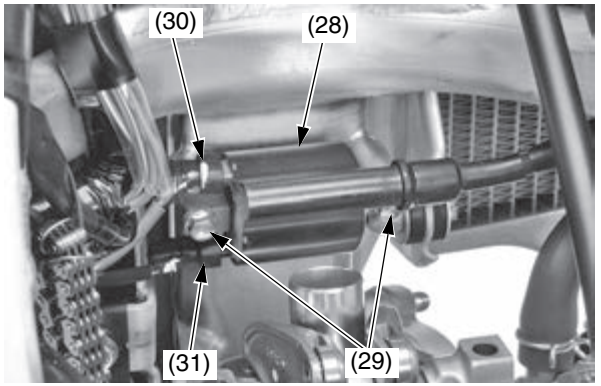
13. Install the thermostat case assembly (25) to the cylinder head (26), then install and tighten the mounting bolts (27) to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)



(25) thermostat case assembly
(26) cylinder head
(27) bolts

(cont'd)

14. Install the ignition coil (28) and tighten the ignition coil bolts (29) to the specified torque:
    7 lbf·ft (10 N·m, 1.0 kgf·m)
    Connect the ignition coil A connector (30) and B connector (31).



(28) ignition coil
(29) ignition coil bolts
(30) ignition coil A connector
(31) ignition coil B connector

15. Install the shims, camshaft and camshaft holder (page 92).
16. Install the crankshaft hole cap (page 94).
17. Install the cylinder head cover (page 95).
18. Install the spark plug (page 86).
19. Install the exhaust pipe (page 134).
20. Install the subframe (page 55) and muffler (page 133).
21. Install the fuel tank and seat (pages 46, 50).
22. Fill and bleed the cooling system (page 159).
    Check for the following:
    – compression leaks
    – abnormal engine noise
    – secondary air leaks
    – exhaust gas leaks
    – coolant leaks
    – oil leaks

Refer to *Important Safety Precautions* on page 33.

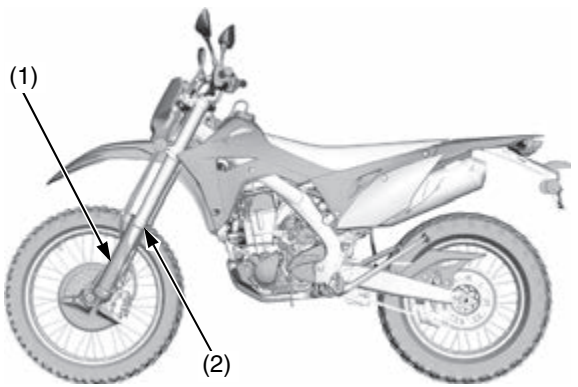
Loose, worn, or damaged suspension components may adversely affect the handling and stability of your motorcycle. If any suspension components appear worn or damaged, see your dealer for further inspection. Your dealer is qualified to determine whether or not replacement parts or repairs are needed.

Front Suspension Inspection

Off-Road use only

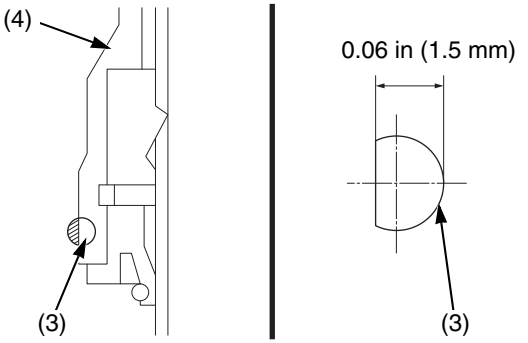
- When your motorcycle is new, break it in for approximately 1 hour to ensure that the suspension has worked in (page 30).
- After break-in, test run your motorcycle with the front suspension at the standard setting before attempting any adjustments.
- For optimum fork performance, we recommend that you disassemble and clean the fork after riding your motorcycle for 3 hours. See page 106 for front suspension removal.
- Replace the fork oil every 8 races or 30.0 hours of running. See page 111 for oil capacity adjustment after changing the fork oil.
- Replace the damper oil every 8 races or 30.0 hours of running. See page 115 for damper fork oil replacement.
- Use Pro Honda HP Fork Oil, SS-19 or an equivalent which contains special additives to assure maximum performance of your motorcycle's front suspension.
  Periodically check and clean all front suspension parts to assure top performance. Check the dust seals for dust, dirt, and foreign materials. Check the oil for any contamination.
- Refer to *Suspension Adjustment Guidelines* (page 150). Make all rebound and compression damping adjustments in one-click increments. (Adjusting two or more clicks at a time may cause you to pass over the best adjustment.) Test ride after each adjustment.
- If you become confused about adjustment settings, return to the standard position and start over.
- If the fork is still too stiff/soft after adjusting compression damping, determine which portion of the travel is still too stiff/soft. This is an important step that will help you solve suspension problems.

1. Make sure that the fork protectors (1) and dust seals (2) are clean and not packed with mud and dirt.
2. Check for signs of oil leakage. Damaged or leaking fork seals should be replaced before your motorcycle is ridden.

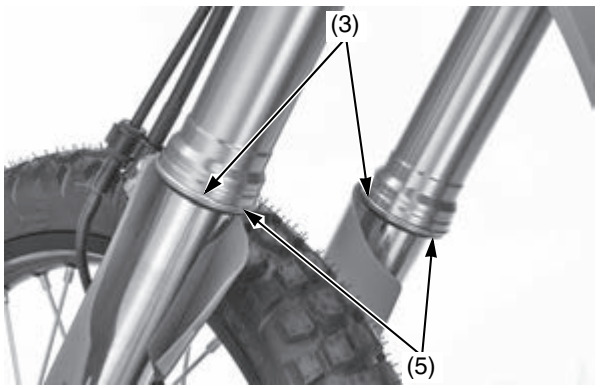


(1) fork protectors (2) dust seals

3. Inspect the wear rings (3) for wear or damage. Replace the wear ring if it is 0.06 in (1.5 mm) or flush with the outer tube (4). Remove the fork leg when replacing the wear ring. Install the wear ring with its end gap (5) facing rearward.



(3) wear rings (4) outer tube



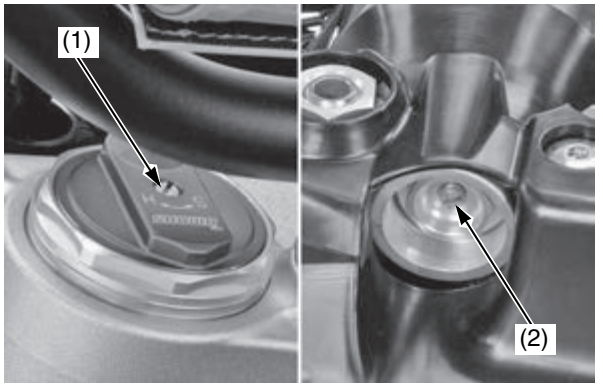
(3) wear rings (5) end gaps

(cont'd)

4. Make a quick check of fork operation by locking the front brake and pushing down on the handlebar several times.

Front Suspension Removal

- When removing the wheel, be careful not to damage the wheel speed sensor and pulser ring.
- When disassembling the fork, turn the compression (1) and rebound (2) damping adjusters counterclockwise to the softest position to prevent damaging the adjustment needle (be sure to record the number of turns from the starting position).

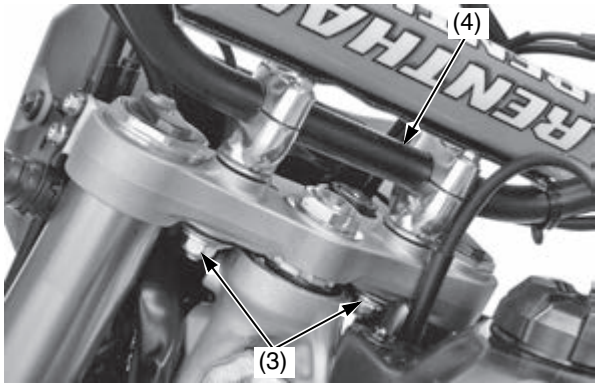


(1) compression damping adjuster
(2) rebound damping adjuster

1. Place your motorcycle on an optional workstand or equivalent support with the front wheel off the ground.
2. Remove the handlebar lower holder nuts, washers, mounting rubbers (3) and handlebar (4).

NOTICE

Keep the master cylinder upright to prevent air from entering system.



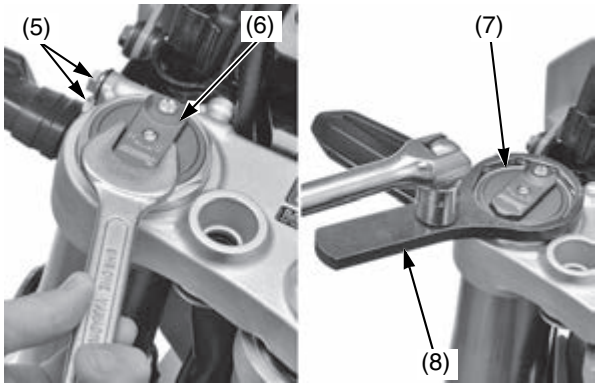
(3) handlebar lower holder nuts, washers and mounting rubbers
(4) handlebar

3. Loosen the fork bridge upper pinch bolts (5).
4. Loosen the fork bolts assembly (6), but do not remove them yet.

5. Loosen the fork damper assembly (7) using the lock nut wrench (8), but do not remove them.
• Lock nut wrench 07WMA-KZ30100

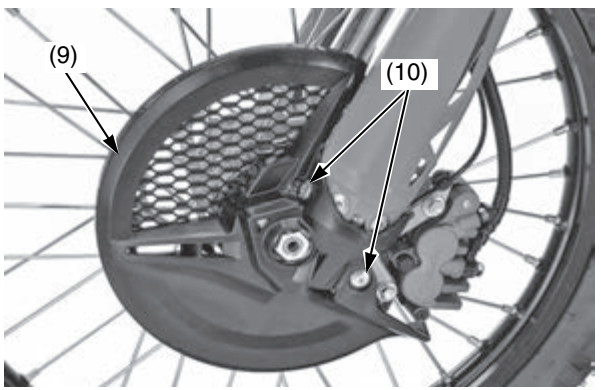
NOTICE

Do not use an adjustable wrench to loosen the fork damper: it may damage them.



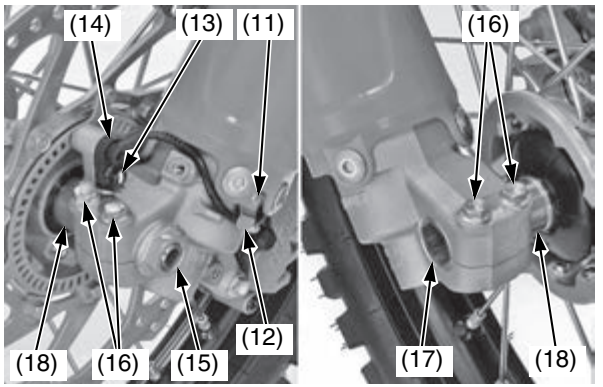
(5) fork bridge upper pinch bolts
(6) fork bolt assembly
(7) fork damper assembly
(8) lock nut wrench

6. Remove the disc cover (9) by removing disc cover socket bolts (10).



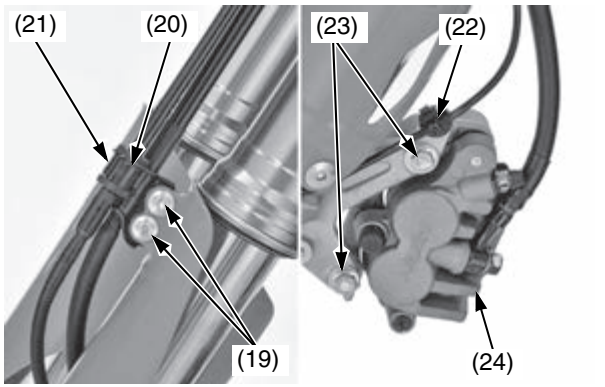
(9) disc cover (10) disc cover socket bolts

7. Remove the speed sensor wire guide plate screw (11) and guide plate (12).
Remove the speed sensor mounting bolt (13) and speed sensor (14).
8. Remove the front axle nut (15) and loosen the axle pinch bolts (16) on both forks.
Pull the front axle shaft (17) out of the wheel hub and remove the front wheel with collars (18).



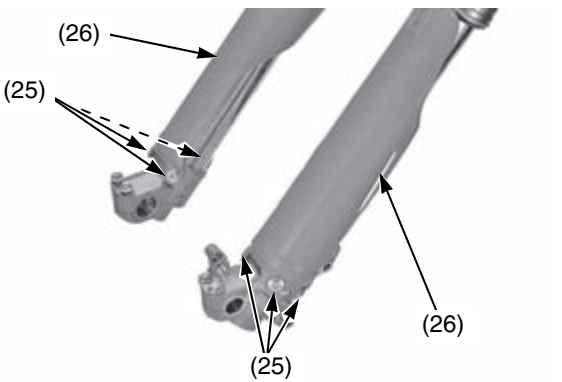
(11) screw
(12) guide plate
(13) bolt
(14) speed sensor
(15) front axle nut
(16) axle pinch bolts
(17) front axle shaft
(18) collars

9. Remove the brake hose/speed sensor wire clamp bolts (19), stay A (20) and stay B (21).
10. Remove the speed sensor wire clip (22) from the caliper bracket.
Remove the front brake caliper mounting bolts (23) and brake caliper (24).
   • Do not support the brake caliper by the brake hose.
   • Do not operate the brake lever after the front wheel is removed. To do so will cause difficulty in fitting the brake disc between the brake pads.



(19) brake hose/speed sensor wire clamp bolts
(20) stay A
(21) stay B
(22) wire clip
(23) front brake caliper mounting bolts
(24) brake caliper

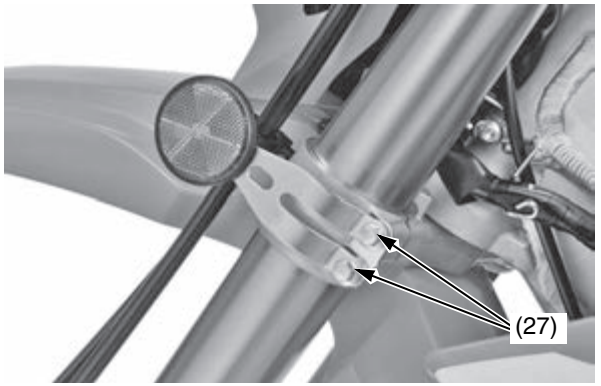
11. Remove the fork protector socket bolts (25) and fork protectors (26).



(25) fork protector socket bolts
(26) fork protectors

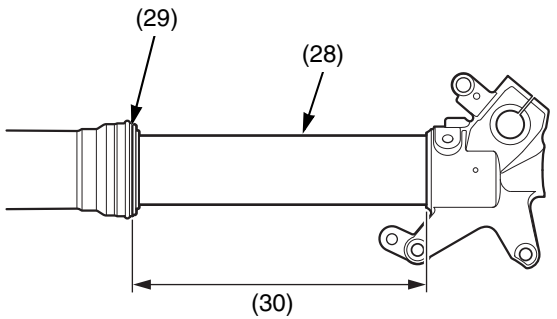
(cont'd)

12. Loosen the fork bridge lower pinch bolts (27), then pull the fork legs down and out.



(27) fork bridge lower pinch bolts

13. Clean the fork assembly, especially the sliding surface (28) of the slider and fork dust seal (29).
14. Measure the length (30) between the axle holder and outer tube and record it before disassembling the fork.



(28) sliding surface
(29) fork dust seal
(30) length

Recommended Fork Oil

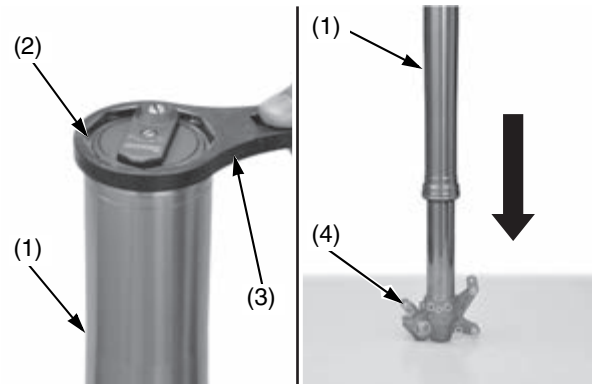
suggested oil	Pro Honda HP Fork Oil, SS-19

Fork Outer Tube Disassembly

Refer to *Front Suspension Removal* on page 106.

1. Clean the fork assembly, especially the sliding surface of the slider and dust seal.
2. Hold the outer tube (1), then remove the fork damper assembly (2) from the outer tube using the lock nut wrench (3). Gently slide the outer tube down onto the lower end (axle holder) (4).

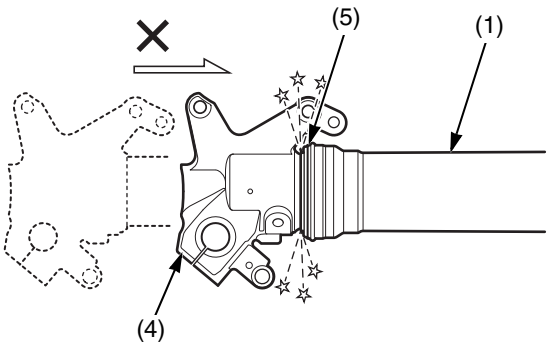
• Lock nut wrench 07WMA-KZ30100



(1) outer tube
(2) fork damper assembly
(3) lock nut wrench
(4) axle holder

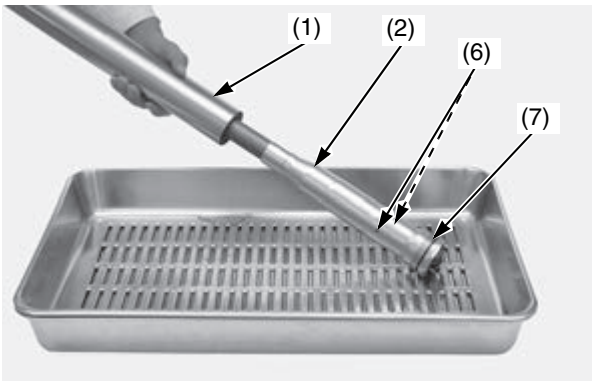
NOTICE

The outer tube (1) can drop on the axle holder (4) and damage the fork dust seal (5). To avoid damage, hold both the outer tube and slider when removing the fork damper.



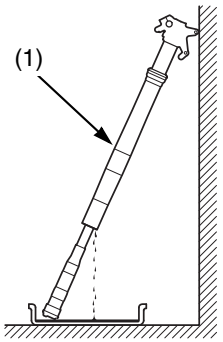
(1) outer tube
(4) axle holder
(5) fork dust seal

3. Drain the fork oil from the outer tube (1) and oil holes (6) of the fork damper assembly (2). Remove the O-ring (7) from the fork damper assembly.



(1) outer tube
(2) fork damper assembly
(6) oil holes
(7) O-ring

4. Drain the fork oil by turning the outer tube (1) upside down. (About 0.46 US oz (13.7 cm³) of fork oil will be left in the outer tube when it is left inverted for about 20 minutes at 68°F/ 20°C.)



(1) outer tube

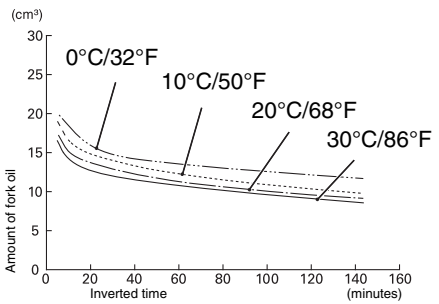
Pour the drained oil into a suitable container and dispose of it in an approved manner (page 160).

NOTICE

Improper disposal of drained oil is harmful to the environment.

Amount of fork oil left in the fork (within damper and spring) unit: cm³

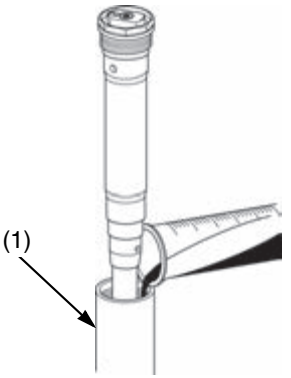
minute / °C/°F	5	10	20	35	55	85	145
30/86	16.5	14.1	12.7	11.8	11	10.1	8.6
20/68	17.4	15	13.7	12.6	11.5	10.5	9.1
10/50	18.9	16.5	14.8	13.7	12.5	11.4	9.8
0/32	20	18.4	15.9	14.5	13.7	13	11.7



Fork Oil Refilling

1. Pour the recommended fork oil into the outer tube (1).

Be sure the oil capacity is the same in both fork legs.



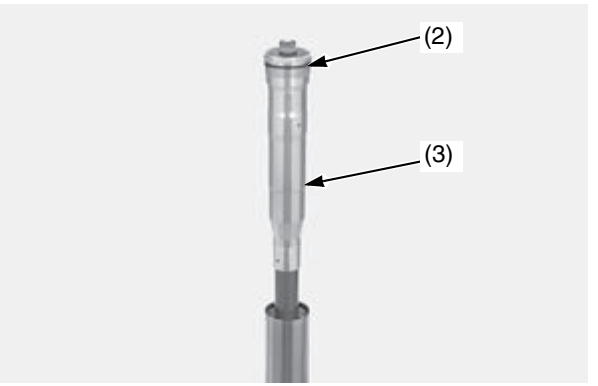
(1) outer tube

Recommended Oil:
Pro Honda HP Fork Oil, SS-19
Recommended Standard Amount:
12.0 US oz (355 cm³)

Fill the fork oil which is obtained by docking off the amount of the remaining oil in the fork from the recommended standard fork oil capacity.

Refer to *Front Suspension Adjustments* on page 144.

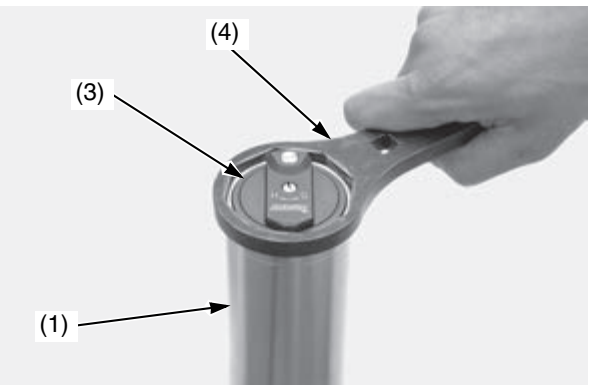
2. Apply the recommended fork oil to a new O-ring (2). Install the O-ring on the fork damper assembly (3).



(2) O-ring (new) (3) fork damper assembly

3. Pull up the fork outer tube (1) slowly and temporarily tighten the fork damper assembly (3) using the lock nut wrench (4).

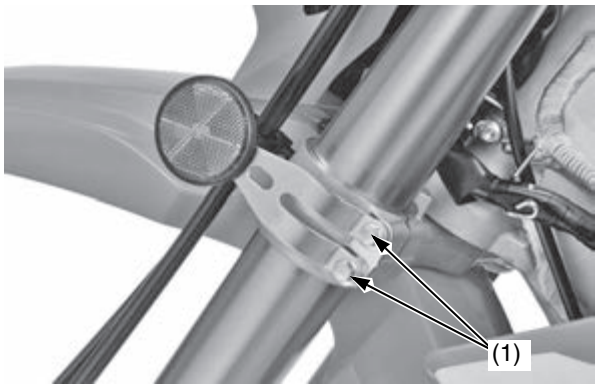
• Lock nut wrench 07WMA-KZ30100



(1) outer tube (4) lock nut wrench
(3) fork damper assembly

Front Suspension Installation

1. Insert both fork legs into the fork clamps. Tighten the fork bridge lower pinch bolts (1) to the specified torque:
   15 lbf·ft (20 N·m, 2.0 kgf·m)



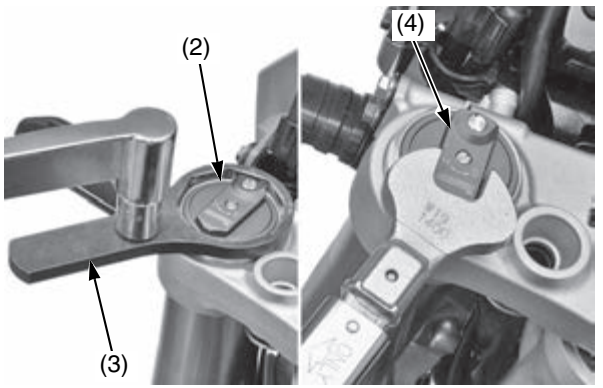
(1) fork bridge lower pinch bolts

2. Tighten the fork damper assembly (2) to the specified torque using the lock nut wrench (3):
   Actual:
   56 lbf·ft (76 N·m, 7.7 kgf·m)
   Torque wrench scale reading:
   51 lbf·ft (69 N·m, 7.0 kgf·m), using a 20 in (500 mm) long deflecting beam type torque wrench.

- Lock nut wrench 07WMA-KZ30100

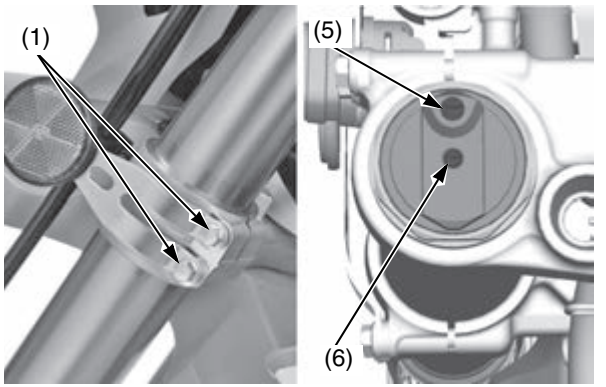
When using the lock nut wrench, use a 20 in (500 mm) long deflecting beam type torque wrench. The lock nut wrench increases the torque wrench's leverage, so the torque wrench reading will be less than the torque actually applied to the fork damper assembly.

3. Tighten the fork bolt assembly (4) to the specified torque:
   22 lbf·ft (30 N·m, 3.1 kgf·m)



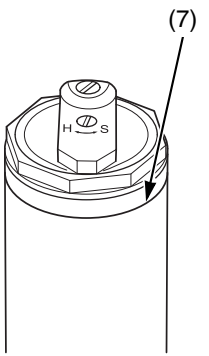
(2) fork damper assembly
(3) lock nut wrench
(4) fork bolt assembly

4. For ease of releasing air pressure after the forks are installed, loosen the fork bridge lower pinch bolts (1) and position the outer tubes so that the fork air pressure release screws (5) are in front of the compression damping adjuster (6).

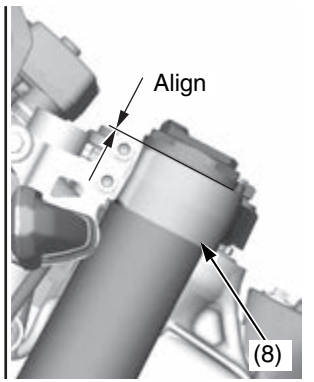


(1) fork bridge lower pinch bolts
(5) pressure release screw
(6) compression damping adjuster

5. Align the groove (7) in the outer tube with the top surface of the upper fork bridge (8).



(7) groove

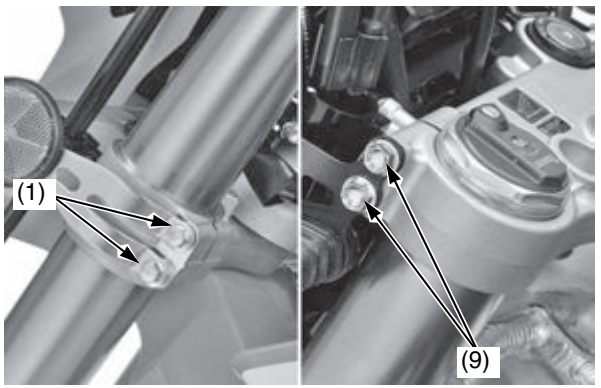


(8) upper fork bridge

6. Tighten the fork bridge lower pinch bolts (1) to the specified torque:
   15 lbf·ft (20 N·m, 2.0 kgf·m)
7. Tighten the fork bridge upper pinch bolts (9) to the specified torque:
   15 lbf·ft (20 N·m, 2.0 kgf·m)

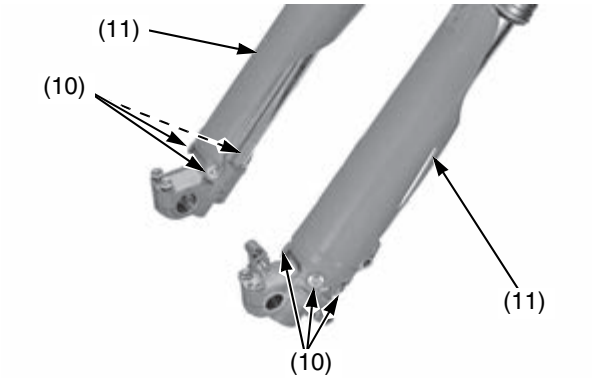
NOTICE

Over-tightening the pinch bolts can deform the outer tubes. Deformed outer tubes must be replaced.



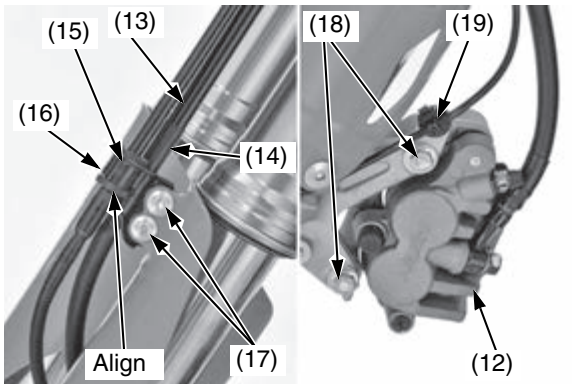
(1) fork bridge lower pinch bolts
(9) fork bridge upper pinch bolts

8. Clean the threads of the fork protector socket bolts (10) and axle holder thoroughly.
   Apply locking agent to the bolt threads.
   Install the fork protectors (11), fork protector socket bolts.
   Tighten the fork protector socket bolts to the specified torque:
   5.2 lbf·ft (7 N·m, 0.7 kgf·m)



(10) fork protector socket bolts
(11) fork protectors

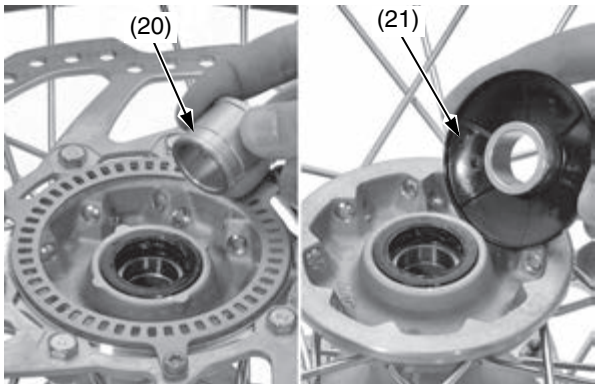
9. Align the brake caliper (12) and brake hose (13) with the left fork leg, making sure that the brake hose is not twisted. An improperly routed brake hose may rupture and cause a loss of braking efficiency.
10. Align the lower surface of the brake hose protector (14) with the lower ends of the stay A (15) and stay B (16), and assemble them. Install and tighten them to the left fork protector using the brake hose/speed sensor wire clamp bolts (17).
11. Clean the threads of the front brake caliper mounting bolts (18) and brake caliper thoroughly.
    Apply locking agent to the bolt threads.
    Install the brake caliper (12) on the slider and tighten the front brake caliper mounting bolts to the specified torque:
    22 lbf·ft (30 N·m, 3.1 kgf·m)
    Install the speed sensor wire clip (19) to the caliper bracket.



(12) brake caliper
(13) brake hose
(14) brake hose protector
(15) stay A
(16) stay B
(17) brake hose/speed sensor wire clamp bolts
(18) front brake caliper mounting bolts
(19) wire clip

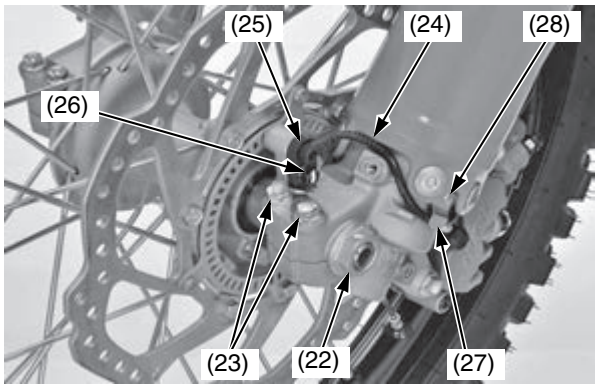
(cont'd)

12. Clean the surfaces where the axle and axle clamps contact each other.
    Apply grease to each dust seal lips of the front wheel.
    Install the left side collar (20) and right side collar (21) into the wheel hub.



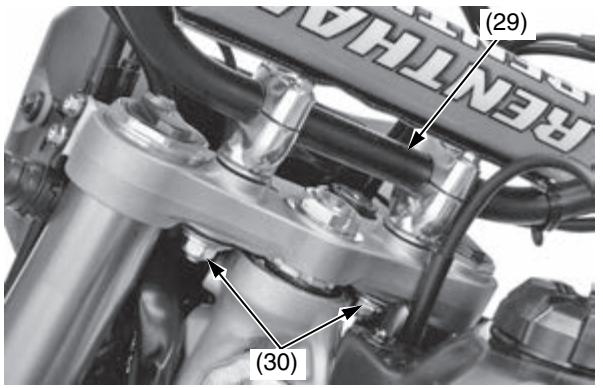
(20) left side collar (21) right side collar

13. Install the front wheel between the fork legs while inserting the disc between the pads, being careful not to damage the pads.
    - When installing the wheel, be careful not to damage the wheel speed sensor and pulser ring.
14. Insert the front axle shaft through the forks and wheel hub from the right side. Make sure that the front axle shaft is seated firmly onto the left fork leg clamp inner surface. Tighten the front axle nut (22) to the specified torque:
    65 lbf·ft (88 N·m, 9.0 kgf·m)
    Tighten the left axle pinch bolts (23) to the specified torque:
    15 lbf·ft (20 N·m, 2.0 kgf·m)
15. Route the speed sensor wire (24) properly and install the speed sensor (25) to the left fork bracket. Install and tighten the speed sensor mounting bolt (26).
    Install the speed sensor wire guide plate (27) and tighten the guide plate screw (28).



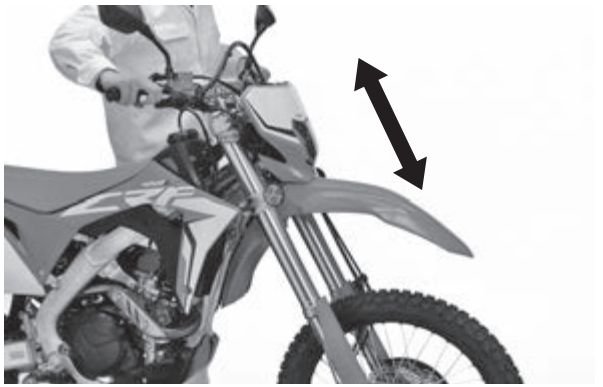
(22) front axle nut
(23) left axle pinch bolts
(24) speed sensor wire
(25) speed sensor
(26) bolt
(27) plate
(28) screw

16. Install the handlebar (29), mounting rubbers, washers and handlebar lower holder nuts (30) and tighten the handlebar holder nuts to the specified torque:
    32 lbf·ft (44 N·m, 4.5 kgf·m)

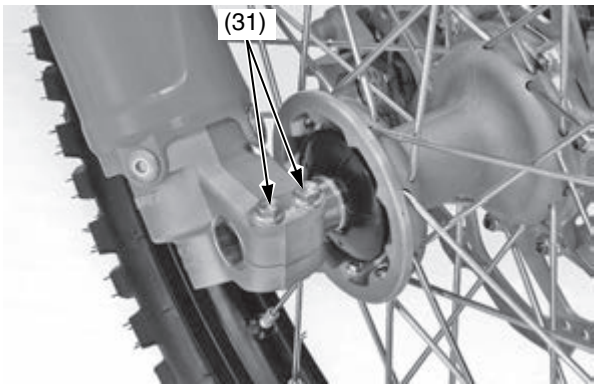


(29) handlebar
(30) mounting rubbers, washers and handlebar lower holder nuts

17. With the front brake applied, pump the fork up and down several times to seat the axle and check front brake operation.



18. While keeping the forks parallel, alternately tighten the right axle pinch bolts (31) to the specified torque:
    15 lbf·ft (20 N·m, 2.0 kgf·m)



(31) right axle pinch bolts

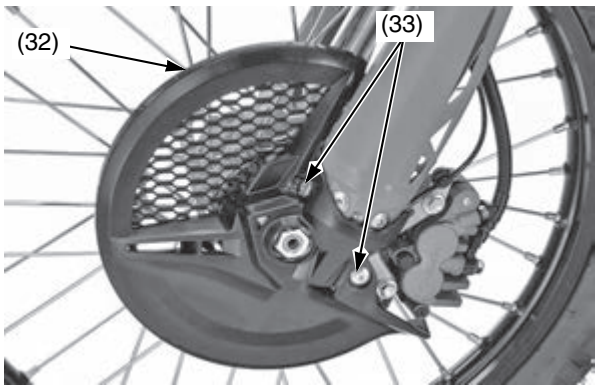
NOTICE

To avoid damage when torquing the axle pinch bolts, be sure the axle is seated firmly onto the left fork leg clamp inner surface.

19. Install the disc cover (32) and tighten the disc cover socket bolts (33) to the specified torque:
    10 lbf·ft (13 N·m, 1.3 kgf·m)

NOTICE

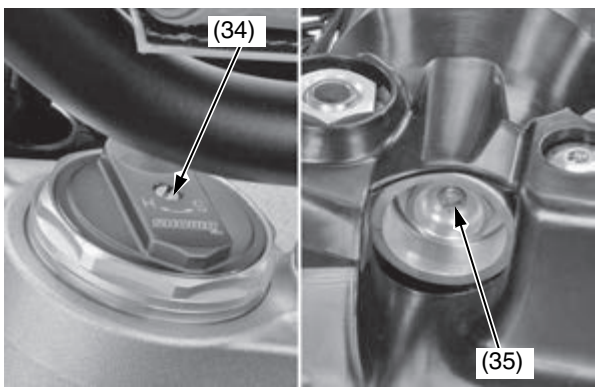
Do not ride with the disc cover removed. Doing so may damage the speed sensor wire.



(32) disc cover (33) disc cover socket bolts

20. Turn the compression damping (34) and rebound damping (35) adjuster screws back to their original settings.

Refer to *Front Suspension Damping* on page 145.



(34) compression damping adjuster
(35) rebound damping adjuster

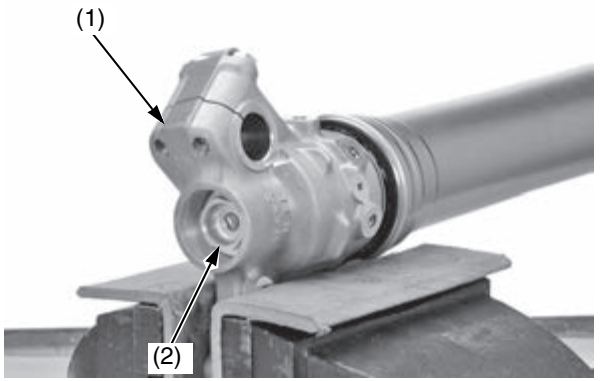
Fork Damper Disassembly

1. Remove the front suspension (page 106).
2. Disassemble the fork outer tube (page 108).
3. Place the lower end (axle holder) (1) of the slider in a vise with a piece of wood or soft jaws to avoid damage.

NOTICE

Over-tightening the vise can damage the axle holder.

4. Loosen the fork center bolt (2).



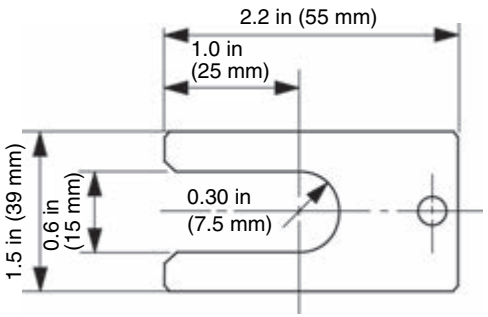
(1) axle holder (2) fork center bolt

5. Pull up the fork outer tube slowly and temporarily tighten the fork damper assembly (page 109). Push the outer tube until the fork center bolt lock nut (3) is fully exposed and install the piston base (4) or mechanic's stopper tool between the axle holder (1) and fork center bolt lock nut.

• Piston base 07958-2500001

(cont'd)

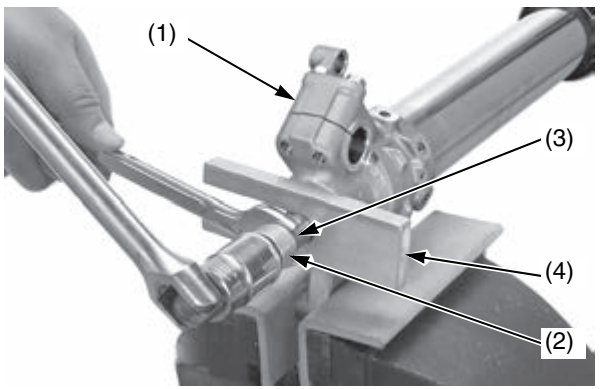
6. Make the mechanic's stopper tool out of a thin piece of steel (0.08 in (2.0 mm) thick) as shown if you do not have a special tool.



7. Hold the fork center bolt lock nut (3) and remove the fork center bolt (2) from the fork damper.

NOTICE

Do not remove the lock nut from the fork damper piston rod. If the lock nut is removed, the piston rod will fall in the fork damper and you may not reassemble the fork damper.

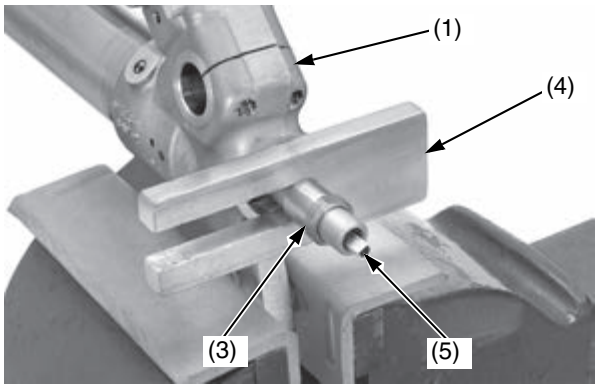


(1) axle holder
(2) fork center bolt
(3) fork center bolt lock nut
(4) piston base

8. Remove the push rod (5) from the fork damper.
9. Remove the piston base (4) or mechanic's stopper tool between the axle holder (1) and fork center bolt lock nut (3) while pushing the fork outer tube.

NOTICE

Be careful not to damage the lock nut and fork center bolt hole.

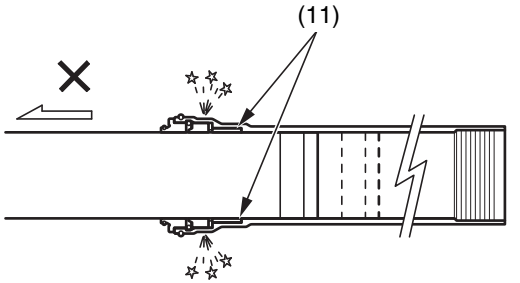


(1) axle holder
(3) fork center bolt lock nut
(4) piston base
(5) push rod

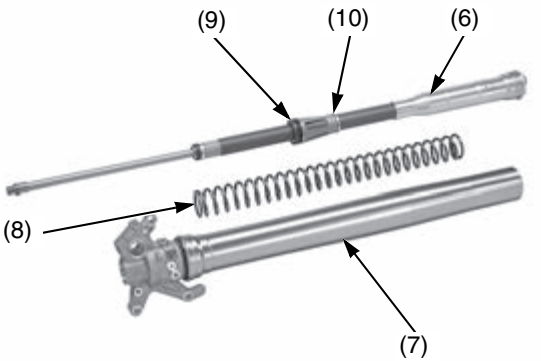
10. Remove the fork damper assembly (6) from the fork assembly (7).
    Remove the fork from the vise.
    Remove the fork spring (8), spring seat collar (9) and back-up ring/seat stopper (10) from the fork assembly.

NOTICE

Do not attempt to separate the fork assembly and drop the axle holder out from the outer tube, which can damage the guide bushings (11).
To avoid damage, hold both the outer tube and slider.



(11) guide bushing



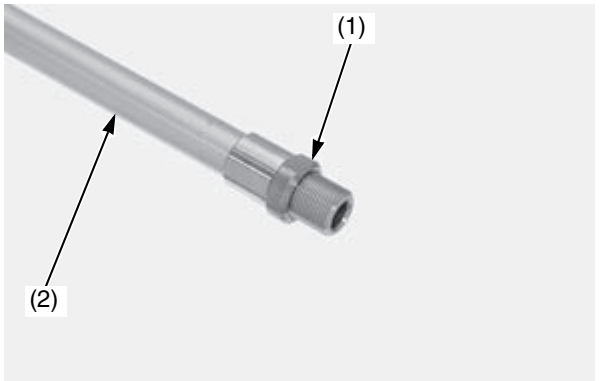
(6) fork damper assembly
(7) fork assembly
(8) fork spring
(9) spring seat collar
(10) back-up ring/seat stopper

Damper Oil Change

1. Check the fork center bolt lock nut (1) is installed on the fork damper piston rod (2) properly.

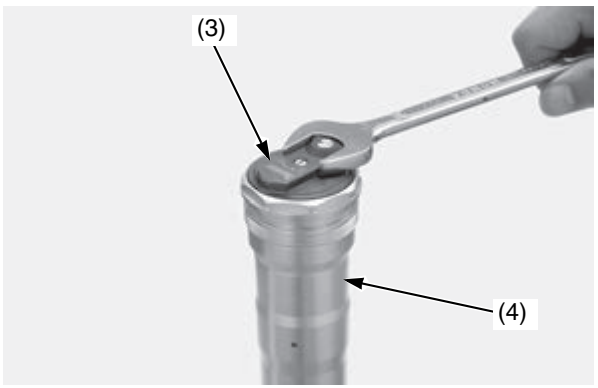
NOTICE

If the lock nut was removed, the piston rod will fall into the fork damper and you will not be able to reassemble the fork damper.



(1) fork center bolt lock nut
(2) fork damper piston rod

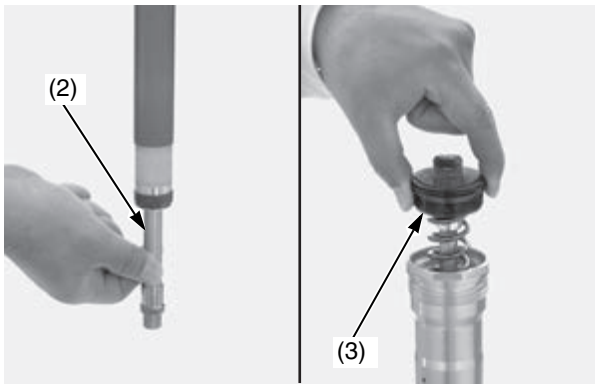
2. Loosen the fork bolt assembly (3) while holding the fork damper assembly (4).



(3) fork bolt assembly (4) fork damper assembly

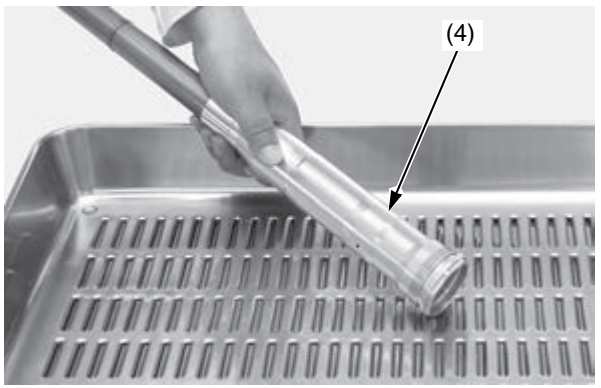
3. Remove the fork bolt assembly (3) from the fork damper threads and then pop it out by pumping the fork damper piston rod (2) slowly.
4. Remove the fork bolt assembly (3).

Be careful not to damage the fork bolt bushings. Do not disassemble the fork bolt assembly. Replace the fork bolt as an assembly if it is damaged.



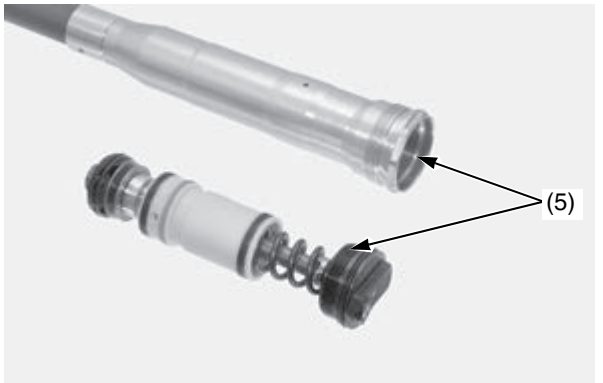
(2) fork damper piston rod (3) fork bolt assembly

5. Empty the fork oil from the fork damper assembly (4) by pumping the damper rod several times.



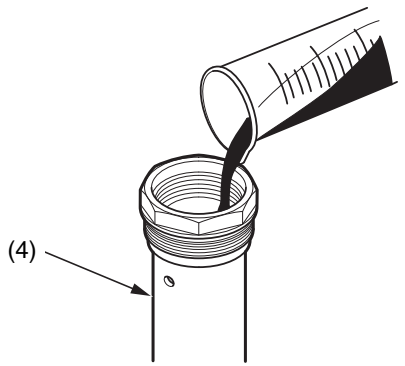
(4) fork damper assembly

6. Clean the fork bolt and fork damper assembly threads (5).



(5) fork bolt and fork damper assembly threads

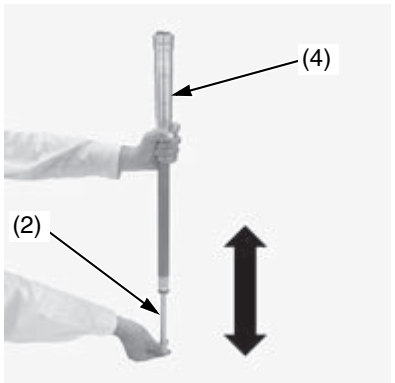
7. Extend the fork damper piston rod to maximum length.
   Pour the recommended fork oil into the fork damper assembly (4).
   Recommended Oil:
   Pro Honda HP Fork Oil, SS-19
   Recommended Amount:
   8.4 US oz (248 cm³)



(4) fork damper assembly

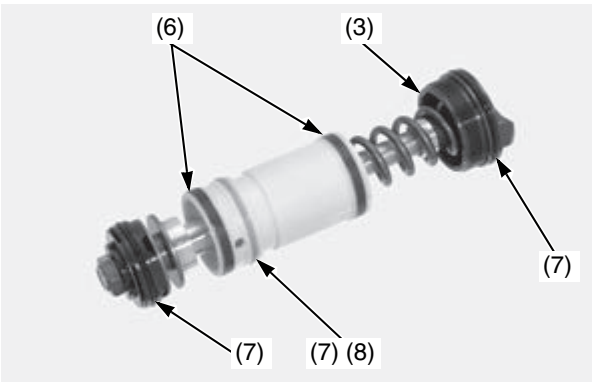
(cont'd)

8. Pump the fork damper piston rod (2) slowly several times to bleed the air from the fork damper assembly (4).



(2) fork damper piston rod
(4) fork damper assembly

9. Apply fork oil to the fork bolt bushings (6), new O-rings (7) and new piston ring (8) on the fork bolt assembly (3).

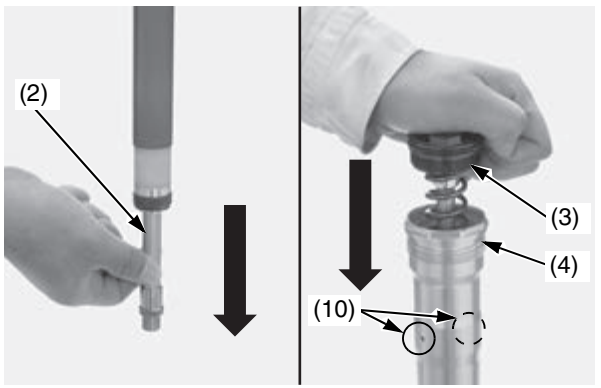


(3) fork bolt assembly
(6) fork bolt bushings
(7) O-rings (new)
(8) piston ring (new)

10. Cover the oil holes (10) of the fork damper assembly with a shop towel and compress the piston rod (2) all the way.
Pull the piston rod out 0.8 in (20 mm) and install the fork bolt assembly (3) into the fork damper assembly (4).
Push the fork bolt assembly in slowly while pulling the piston rod out.

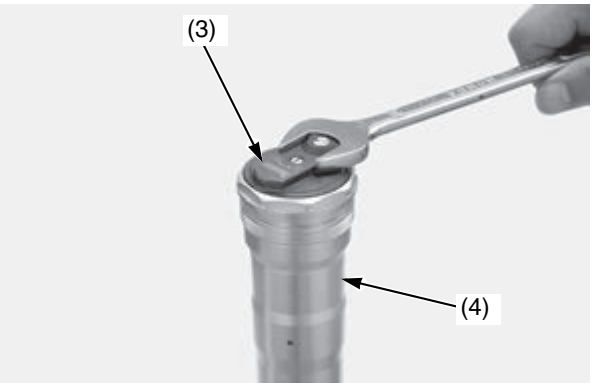
NOTICE

Be careful not to damage the fork bolt piston ring.



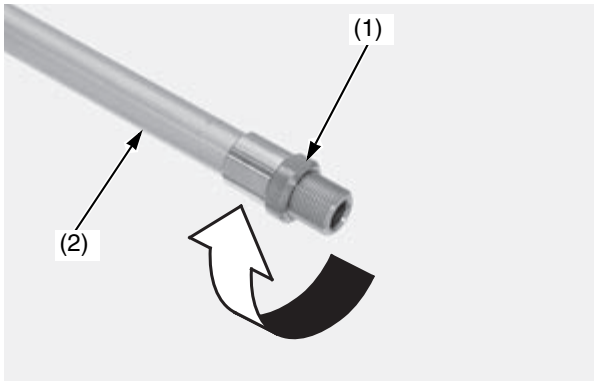
(2) fork damper piston rod
(3) fork bolt assembly
(4) fork damper assembly
(10) oil holes

11. Temporarily tighten the fork bolt assembly (3) to the fork damper assembly (4).



(3) fork bolt assembly
(4) fork damper assembly

12. Completely screw in the fork center bolt lock nut (1) to the fork damper piston rod (2).



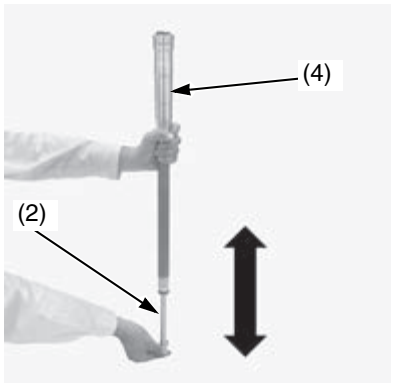
(1) fork center bolt lock nut
(2) fork damper piston rod

13. Check the fork damper piston rod sliding surface and threads for damage.

14. Hold the fork damper assembly (4) in an upright position and pump the fork damper piston rod (2) 3.9 in (100 mm) slowly, several times.

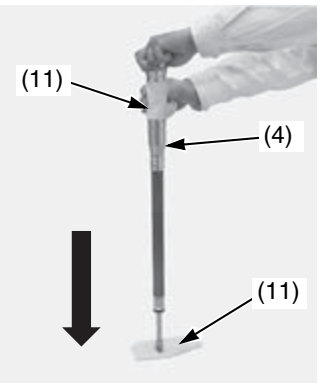
NOTICE

Be careful not to bend or damage the fork damper piston rod when the piston rod is stroked.



(2) fork damper piston rod (4) fork damper assembly

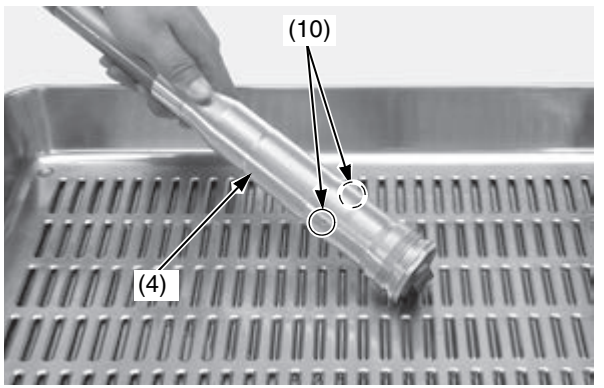
15. Cover the fork damper piston rod end with shop towel (11) to prevent fork damage.
Cover the oil holes with shop towel to prevent blow out of fork oil.
Blow the extra oil off from the fork damper assembly (4) by pumping the fork damper piston rod to full stroke.



(4) fork damper assembly (11) shop towel

16. Drain the extra oil from the oil holes (10) of the fork damper assembly (4).

By doing above procedure, about 0.2 US oz (5 cm^3) of fork oil will be drained from the fork damper through the oil hole and cause 8.2 US oz (243 cm^3) of fork oil to be left in the fork damper assembly.



(4) fork damper assembly (10) oil holes

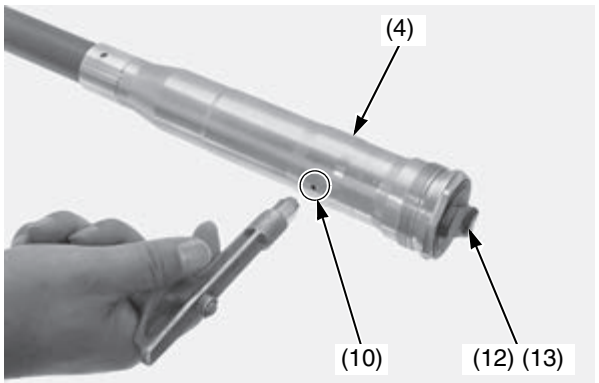
Pour the drained oil into a suitable container and dispose of it in an approved manner (page 160).

NOTICE

Improper disposal of drained fluids is harmful to the environment.

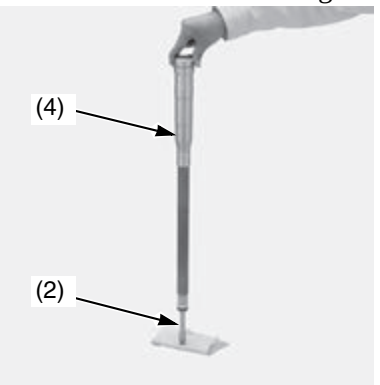
(cont'd)

17. Blow out any oil from the oil hole (10) of the fork damper assembly (4) using compressed air.
    Wipe off the oil completely from the fork damper.
18. If your cannot use compressed air, remove the fork air pressure release screws (12) from the fork bolt assembly.
    Hold the fork damper upside down for 20 minutes and drain the fork oil.
    Apply recommended fork oil to a new O-ring (13), and then install a new O-rings on the air pressure release screws (12).
    Tighten the air pressure release screws to the specified torque:
    1.0 lbf·ft (1.3 N·m, 0.1 kgf·m)



(4) fork damper assembly
(10) oil hole
(12) air pressure release screws
(13) O-rings (new)

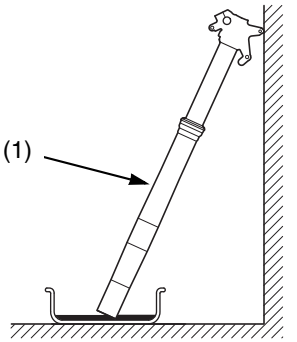
19. Fully stroke the piston rod (2) by pushing down the fork damper assembly (4).
    Check the piston rod for smooth operation.
    If the piston rod operation is not smooth, check the piston rod for bends or damage.



(2) fork damper piston rod
(4) fork damper assembly

Fork Damper Installation

1. Drain the fork oil from the fork assembly (1) by placing it upside down.
   (About (0.2 US oz (5.4 cm³) of fork oil will be left in the fork assembly when it is left inverted for about 20 minutes at 20 °C/68 °F)



(1) fork assembly

To properly dispose of drained fluids, refer to *You & the Environment* on page 160.

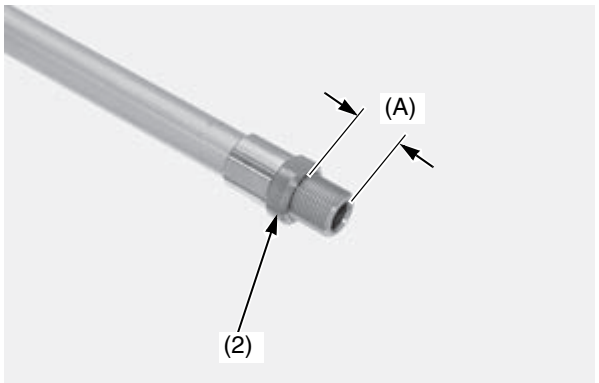
NOTICE

Improper disposal of drained fluids is harmful to the environment.

Amount of fork oil left in the fork
(without damper and spring) unit: cm³

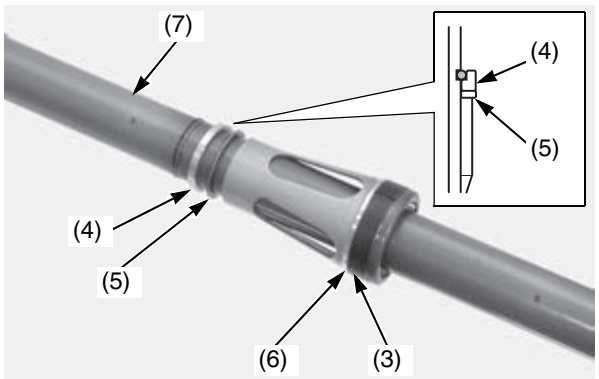
minute / °C/°F	5	10	20	35	55	85	145
30/86	6.5	5.7	5.2	4.5	4.1	3.7	3.3
20/68	6.7	6.2	5.4	4.7	4.4	3.8	3.5
10/50	7.3	6.4	5.6	5	4.6	4.2	3.8
0/32	8.6	8.2	7.9	7.6	7.3	6.8	6

2. Tighten the fork center bolt lock nut (2) fully and measure the thread length (A) as shown.
   Standard: 0.35 – 0.43 in (9 – 11 mm)
   Wipe the oil completely off the fork damper.



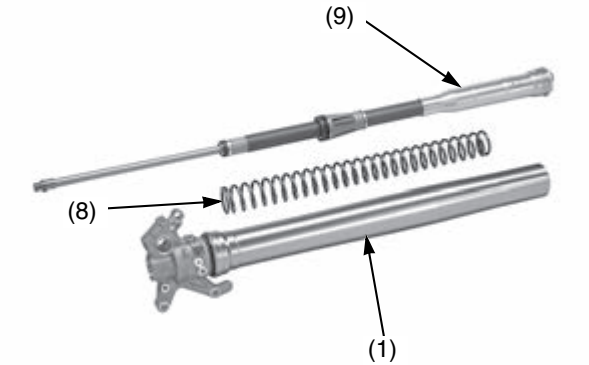
(2) fork center bolt lock nut (A) thread length

3. Apply recommended fork oil to the slider bushing (3).
   Install the seat stopper (4), back-up ring (5) and spring seat collar (6) to the fork damper (7).
   Make sure the black side of the back-up ring is seated on the seat stopper side.



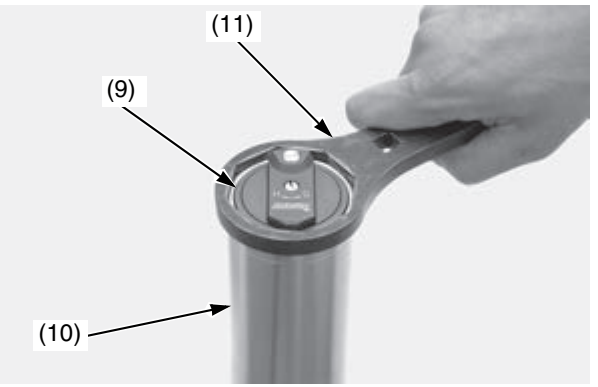
(3) slider bushing
(4) seat stopper
(5) back-up ring
(6) spring seat collar
(7) fork damper

4. Blow out the oil completely off the fork spring (8).
   Put the fork spring on the fork damper assembly (9).
   Install the spring/fork damper assembly into the fork assembly (1).



(1) fork assembly
(8) fork spring
(9) fork damper assembly

5. Temporarily tighten the fork damper assembly (9) to the outer tube (10) using the lock nut wrench (11).
- Lock nut wrench 07WMA-KZ30100



(9) fork damper assembly (11) lock nut wrench
(10) outer tube

6. Place the lower end (axle holder) (12) of the slider in a vise with a piece of wood or soft jaws to avoid to damage.

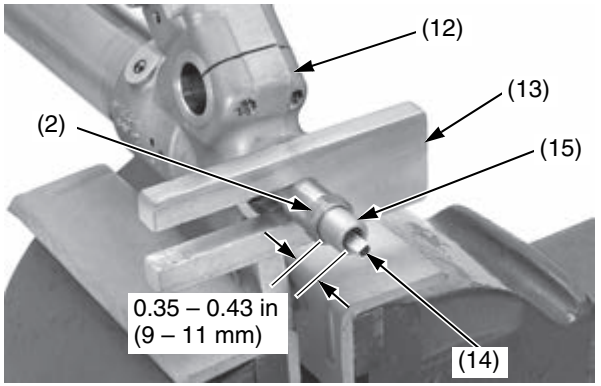
NOTICE

Over-tightening the vise can damage the axle holder.

7. Push the outer tube until the fork center bolt lock nut (2) is fully exposed and install the piston base (13) or mechanic's stopper tool between the axle holder (12) and fork center bolt lock nut.
   Measure the thread length again.
   Standard: 0.35 – 0.43 in (9 – 11 mm)
- Piston base 07958-2500001

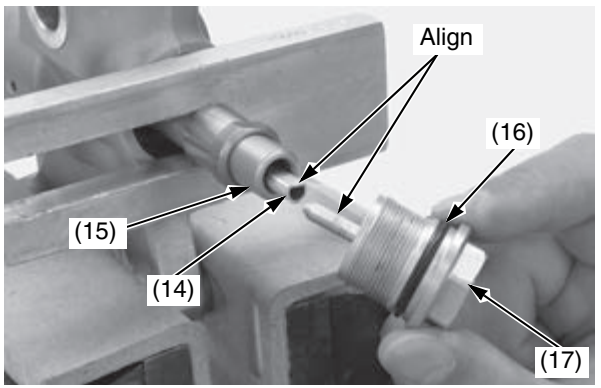
(cont'd)

8. Install the push rod (14) into the piston rod (15) until it stops.



(2) fork center bolt lock nut
(12) axle holder
(13) piston base
(14) push rod
(15) piston rod

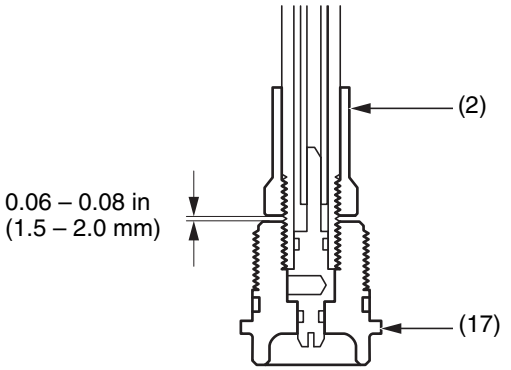
9. Apply fork oil to new O-ring (16) and install it to the fork center bolt (17).
   Install the fork center bolt to the fork damper piston rod (15) by aligning the each flat-side of the fork center bolt adjusting piston rod and push rod (14).
   Tighten the fork center bolt fully by hand.



(14) push rod
(15) piston rod
(16) O-ring (new)
(17) fork center bolt

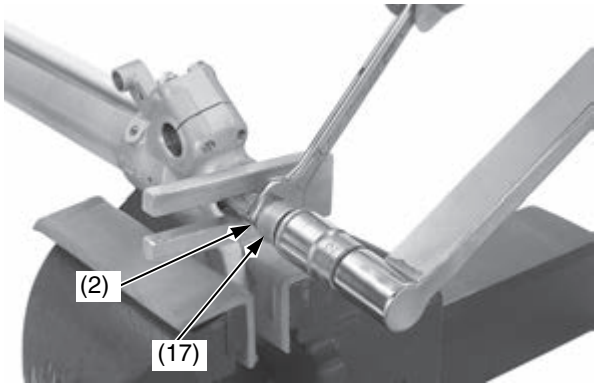
10. Measure the clearance between the fork center bolt lock nut (2) and fork center bolt (17).
    Standard: 0.06 – 0.08 in (1.5 – 2.0 mm)

If the clearance is out of specification, check the fork center bolt lock nut and fork center bolt installation.



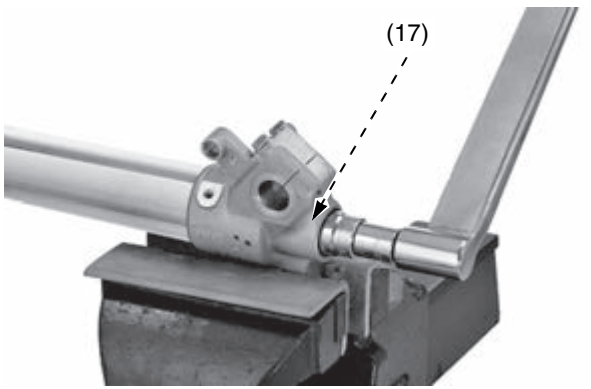
(2) fork center bolt lock nut (17) fork center bolt

11. Tighten the fork center bolt lock nut (2) to the fork center bolt (17) closely by hand. Tighten the fork center bolt lock nut to the specified torque:
    21 lbf·ft (28 N·m, 2.9 kgf·m)



(2) fork center bolt lock nut
(17) fork center bolt

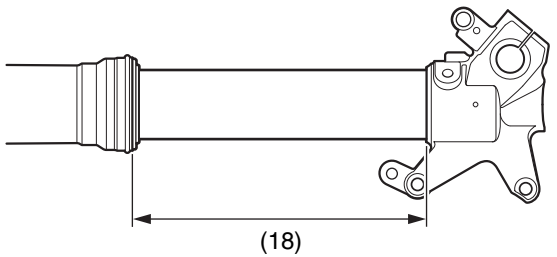
12. Apply locking agent to the fork center bolt threads.
    Remove the piston base or mechanic's stopper tool while pushing the fork damper.
    Install the fork center bolt (17) to the axle holder and tighten it to the specified torque:
    51 lbf·ft (69 N·m, 7.0 kgf·m)



(17) fork center bolt

13. Remove the fork from the vice.
14. Measure the length between the axle holder and outer tube.
    Standard: 12.3 ± 0.1 in (312 ± 2 mm)
15. Compare the length (18) at assembly and at disassembly. They should be the same length.

If the length at assembly is longer than at disassembly, check the fork center bolt and fork center bolt lock nut installation.



(18) length

16. Refilling the fork oil (page 109).
17. Install the front suspension (page 110).

Rear Suspension Inspection

The swingarm is controlled by one hydraulic shock absorber with an aluminum reservoir for oil and nitrogen gas pressure. The gas pressure in the reservoir is contained within a rubber bladder.

The rear suspension's spring pre-load (Off-Road use only) and compression damping and rebound damping adjustments should be adjusted for the rider's weight and track conditions (pages 148, 152).

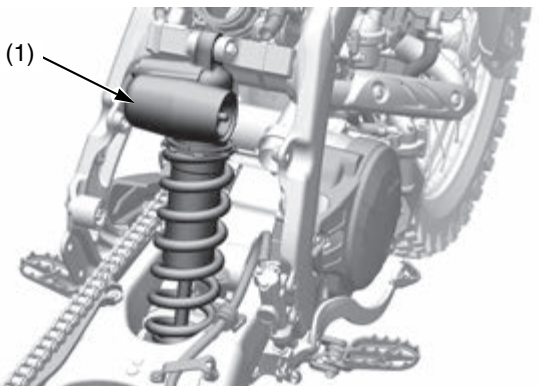
Do not attempt to disassemble, service, or dispose of the damper; see your dealer.
The instructions found in this owner's manual are limited to adjustments of the shock assembly only.

Off-Road use only

- When your motorcycle is new, break it in for approximately 1 hour with the standard suspension settings before attempting to adjust the rear suspension.
- Refer to *Suspension Adjustment Guidelines* (page 152) for making all rebound and compression damping adjustments in one click or 1/12 turn increments. (Adjusting two or more clicks or turns at a time may cause you to pass over the best adjustment.)
  Test ride after each adjustment.
- If the rear suspension is too stiff/soft, adjust it by turning all the compression and rebound adjusters according to the procedures described in page 152. After adjusting the adjusters simultaneously, suspension may be fine-tuned by turning one of the compression and rebound damping adjusters in one click or in 1/12 turn increments.
- If you have a problem finding an acceptable adjustment, return to the standard position and begin again.

1. Bounce the rear of the motorcycle up and down and check for smooth suspension action.

2. Remove the muffler (page 133), and subframe (page 52).
3. Check for a broken or collapsed spring.
4. Check the rear shock absorber (1) for a bent rod or oil leaks.



(1) rear shock absorber

5. Push the rear wheel sideways to check for worn or loose swingarm bearings. There should be no movement. If there is, have the bearings replaced by your dealer.

Refer to *Important Safety Precautions* on page 33.

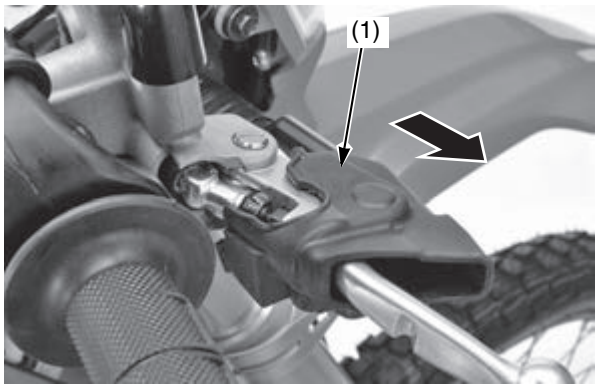
Both the front and rear brakes are the hydraulic disc type. As the brake pads wear, the brake fluid level will drop. A leak in the system will also cause the level to drop.

Frequently inspect the system to ensure there are no fluid leaks. Periodically inspect the brake fluid level and the brake pads for wear.

If the braking response of the front brake lever or rear pedal feels unusual, check the brake pads. If the brake pads are not worn beyond the recommended limit (page 125), there is probably air in the brake system.
Refer to an official Honda Service Manual or see your dealer to have the air bled from the system.

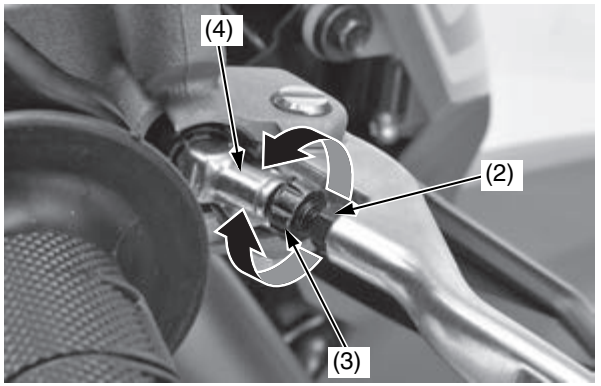
Front Brake Lever Adjustment

1. Slide the front brake lever cover (1).



(1) brake lever cover

2. Loosen the lock nut (2).
3. To position the front brake lever farther away from the handgrip, turn the adjuster (3) clockwise.
   To position the front brake lever closer to the handgrip, turn the adjuster counterclockwise.
4. While holding the adjuster, tighten the lock nut to the specified torque:
   3.6 lbf·ft (4.9 N·m, 0.5 kgf·m)
5. Apply silicone grease to the contacting areas of the adjuster and knocker arm (4).



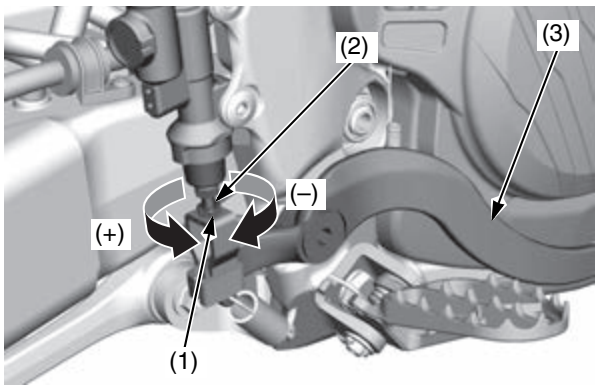
(2) lock nut
(3) adjuster
(4) knocker arm

6. Install the front brake lever cover in reverse order.

Rear Brake Pedal Height

The rear brake pedal height should be approximately level with the right footpeg.

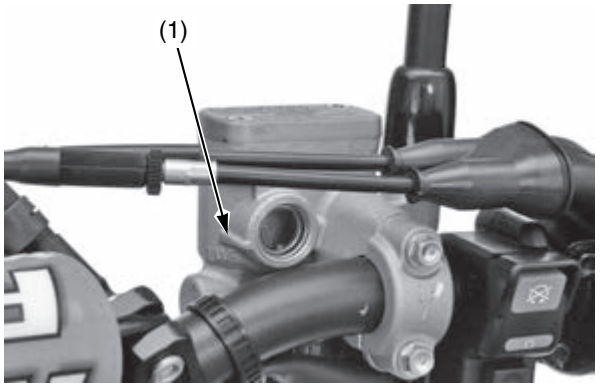
1. Loosen the lock nut (1) and turn the push rod (2) in direction (+) to raise the rear brake pedal (3) or in direction (–) to lower it.
2. Tighten the push rod lock nut to the specified torque at the desired pedal height.
   4.4 lbf·ft (5.9 N·m, 0.6 kgf·m)



(1) lock nut
(2) push rod
(3) rear brake pedal
(+) raise the pedal height
(–) lower the pedal height

Fluid Level Inspection

Front Brake Fluid Level Check



(1) LWR mark

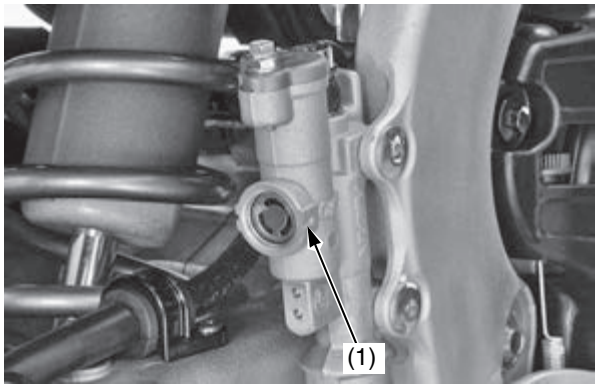
With the motorcycle in an upright position, check the fluid level.
It should be above the LWR mark (1). If the level is at or below the LWR mark, check the brake pads for wear (page 125).
Worn brake pads should be replaced. If the pads are not worn, have your brake system inspected for leaks.

If the pulling distance for the front brake lever feels excessive, there is probably air in the brake system and it must be bled. Refer to an official Honda Service Manual or see your dealer for brake bleeding.

Honda recommends using Honda DOT 4 Brake Fluid from a sealed container, or an equivalent.

Other Checks:
Make sure there are no fluid leaks. Check for deterioration or cracks in the hoses and fittings.

Rear Brake Fluid Level Check



(1) LOWER mark

With the motorcycle in an upright position, check the fluid level.
It should be above the LOWER mark (1). If the level is at or below the LOWER mark, check the brake pads for wear (page 125).
Worn brake pads should be replaced. If the pads are not worn, have your brake system inspected for leaks.

If the travel for the rear brake pedal feels excessive, there is probably air in the brake system and it must be bled. Refer to an official Honda Service Manual or see your dealer for brake bleeding.

Honda recommends using Honda DOT 4 Brake Fluid from a sealed container, or an equivalent.

Other Checks:
Make sure there are no fluid leaks. Check for deterioration or cracks in the hoses and fittings.

Adding Front Brake Fluid

NOTICE

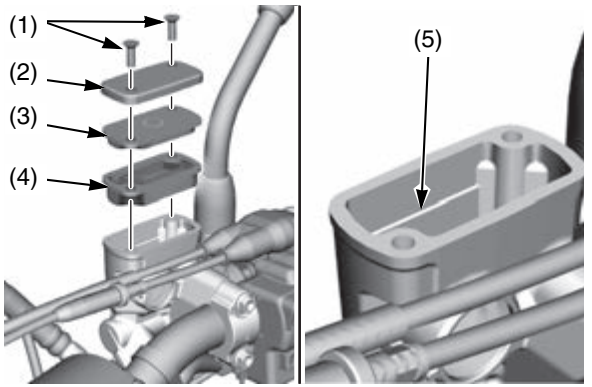
Spilled brake fluid will severely damage painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; make sure the reservoir is horizontal first.

- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid, they may not be compatible.
- The recommended brake fluid is Honda DOT 4 Brake Fluid or an equivalent.

⚠ WARNING

Clean filler cap before removing. Use only DOT 4 fluid from a sealed container.

1. Remove the front brake reservoir cap screws (1), reservoir cap (2), set plate (3) and diaphragm (4).
2. Fill the reservoir with DOT 4 brake fluid to the upper level mark (5). Do not overfill.
3. Install the diaphragm and reservoir cap.
4. Tighten the front brake reservoir cap screws to the specified torque:
   0.7 lbf·ft (1.0 N·m, 0.1 kgf·m)



(1) front brake reservoir cap screws
(2) reservoir cap
(3) set plate
(4) diaphragm
(5) upper level mark

Adding Rear Brake Fluid

NOTICE

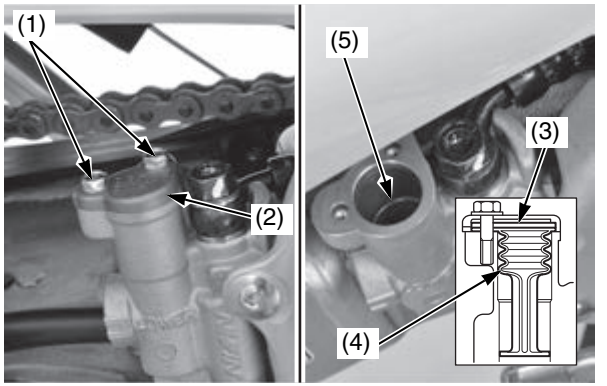
Spilled brake fluid will severely damage painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; make sure the reservoir is horizontal first.

- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid, they may not be compatible.
- The recommended brake fluid is Honda DOT 4 Brake Fluid or an equivalent.

⚠ WARNING

Clean filler cap before removing. Use only DOT 4 fluid from a sealed container.

1. Remove the rear brake reservoir cap bolts (1), reservoir cap (2), set plate (3) and diaphragm (4).
2. Fill the reservoir with DOT 4 brake fluid to the upper level mark (5). Do not overfill.



(1) rear brake reservoir cap bolts
(2) reservoir cap
(3) set plate
(4) diaphragm
(5) upper level mark

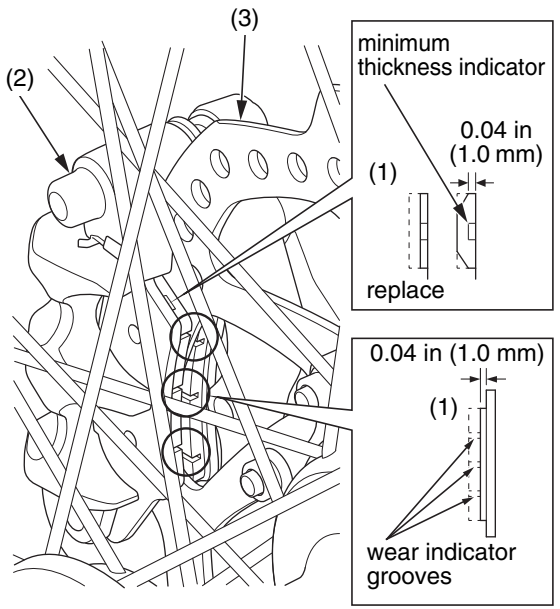
3. Install the diaphragm, set plate and reservoir cap.
4. Tighten the rear brake reservoir cap bolts to the specified torque:
   0.7 lbf·ft (1.0 N·m, 0.1 kgf·m)

Brake Pad Wear

Brake pad wear depends on the severity of usage and track conditions. (Generally, the pads will wear faster with wet and dirty track conditions.) Inspect the brake pads at each regular maintenance interval (pages 36, 37).

Front Brake Pads

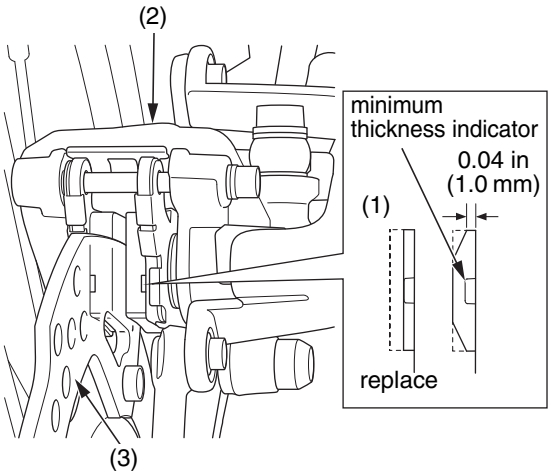
Inspect the brake pads (1) through the front wheel to determine the brake pad wear. If either brake pad is worn anywhere to a thickness of 0.04 in (1.0 mm), both brake pads must be replaced.



(1) brake pads
(2) front brake caliper
(3) brake disc

Rear Brake Pads

Inspect the brake pads (1) from the rear side of the caliper to determine the brake pad wear. If either brake pad is worn anywhere to a thickness of 0.04 in (1.0 mm), both brake pads must be replaced.



(1) brake pads
(2) rear brake caliper
(3) brake disc

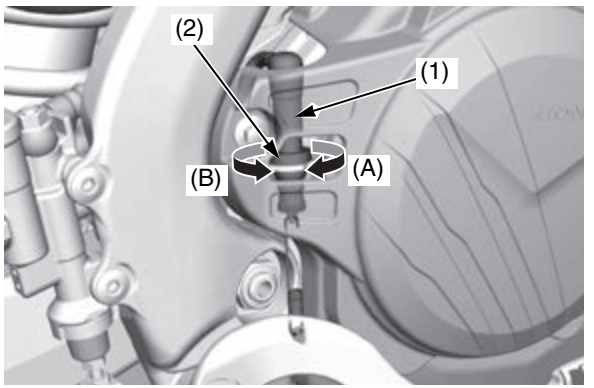
Other Inspections

Check that the front brake lever and rear brake pedal assemblies are positioned properly (page 122) and the securing bolts are tight.

Make sure there are no fluid leaks. Check for deterioration or cracks in the hoses and fittings.

Brake Light Adjustment

Check the operation of the brake light switch (1). Hold the brake light switch and turn the adjusting nut (2) in the direction A if the switch operates too late, or turn the nut in the direction B if the switch operates too soon.



(1) brake light switch
(2) adjusting nut

Wheels

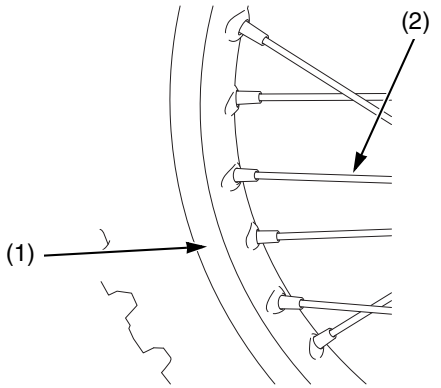
Refer to *Important Safety Precautions* on page 33.

Keeping the wheels true (round) and maintaining correct spoke tension are critical to safe motorcycle operation. During the first few rides, spokes will loosen more rapidly due to the initial seating of the parts. Excessively loose spokes may result in instability at high speeds and the possible loss of control.

It is not necessary to remove the wheels to perform the recommended service in the Maintenance Schedule (pages 36, 37).
However, information for wheel removal is provided for emergency situations (page 167).

Wheel Rims & Spokes

1. Inspect the wheel rims (1) and spokes (2) for damage.
2. Tighten, any loose spokes to the specified torque:
   Spokes: 2.7 lbf·ft (3.7 N·m, 0.4 kgf·m)
3. Check wheel rim runout. If runout is noticeable, see an official Honda Service Manual for inspection instructions.



(1) wheel rim (2) spokes

Also inspect the valve stems for their positions. A tilted valve stem indicates the tube is slipping inside the tire or the tire is slipping on the rim. See your dealer.

Axles & Wheel Bearings

See an official Honda Service Manual for inspection information:

1. Check the axle shaft for runout.
2. Check the condition of the wheel bearings.

Refer to *Important Safety Precautions* on page 33.

To safely operate your motorcycle, your tires must be the proper type and size, in good condition with adequate tread, and correctly inflated for the load you are carrying.

⚠ WARNING

Using tires that are excessively worn or improperly inflated can cause a crash in which you can be seriously hurt or killed.

Follow all instructions in this owner's manual regarding tire inflation and maintenance.

The following pages give detailed information on how and when to check your air pressure, how to inspect your tires for wear and damage, and our recommendations on tire repair and replacement.

Air Pressure

Properly inflated tires provide the best combination of handling, tread life, and riding comfort. Generally, underinflated tires wear unevenly, adversely affect handling, and are more likely to fail from being overheated. Underinflated tires can also cause wheel damage on hard terrain. Overinflated tires make your motorcycle ride harshly, are more prone to damage from surface hazards, and wear unevenly.

Make sure the valve stem caps are secure. If necessary, install new caps.

Use an accurate gauge to measure the air pressure in your tires before each off-road ride and whenever you return to pavement after riding off-road. If you only ride on pavement, check the pressure at least once a month and at any other time you think the tires might be low.

Always check air pressure when your tires are "cold." If you check air pressure when your tires are "warm" — even if your motorcycle has only been ridden for a few miles — the readings will be higher. If you let air out of warm tires to match the recommended cold pressures, the tires will be underinflated.
The correct "cold" tire pressures are:

Front	22 psi (150 kPa, 1.50 kgf/cm²)
Rear	22 psi (150 kPa, 1.50 kgf/cm²)

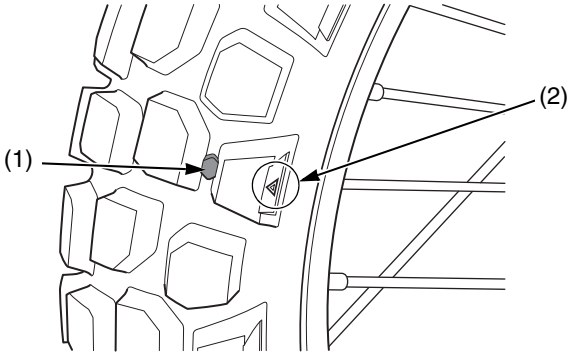
If you decide to adjust tire pressures for a particular riding condition, make changes a little at a time.

Inspection

Take time to inspect your tires and wheels before you ride.

- Inspect carefully for bumps or bulges in the side of the tire or the tread. Replace any tire that has a bump or bulge.
- Look closely for cuts, slits, or cracks in the tires. Replace a tire if you can see fabric or cord.
- Check for rocks or other objects embedded in the tire or tread. Remove any objects.
- Check the position of both valve stems. A tilted valve stem indicates the tube is slipping inside the tire or the tire is slipping on the rim.

Tread Wear



(1) wear indicator
(2) wear indicator location mark

Also, if you hit a pothole or hard object while riding, pull to the side of the road as soon as you safely can and carefully inspect the tires for damage.

For the best performance, you should replace a tire before the tread depth at the center reaches the following limits:

Front	0.12 in (3.0 mm)
Rear	0.12 in (3.0 mm)

If the wear indicators are visible, replace the tire immediately as it is no longer safe.

Tube Replacement

If a tube is punctured or damaged, you should replace it as soon as possible. A repaired tube may not have the same reliability as a new one, and it may fail while you are riding.

Use a replacement tube equivalent to the original.

Tire Replacement

The tires that came on your motorcycle were designed to match the performance capabilities of your motorcycle and provide the best combination of handling, braking, durability, and comfort.

When replacing, use the original equipment tires or equivalent tires of the same size, construction, speed rating, and load range as the originals.

⚠ WARNING

Installing improper tires on your motorcycle can affect handling and stability. This can cause a crash in which you can be seriously hurt or killed.

Always use the size and type of tires recommended in this owner's manual.

The recommended tires for your motorcycle are:

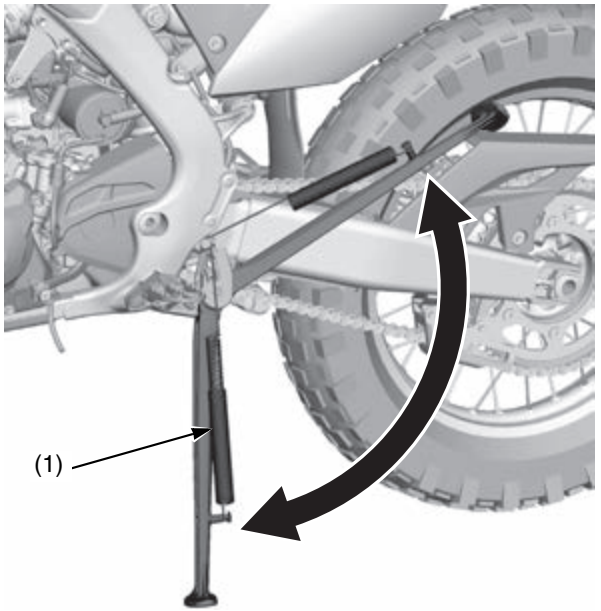
Front	80/100-21 M/C 51P	
	IRC	GP-21F
Rear	120/80-18 M/C 62P	
	IRC	GP-22R
Type	bias-ply, tube	

Whenever you replace a tire, remember:

- Have the wheel balanced after the tire is installed.
- Have the tire replaced by your dealer if possible.
- Have a new tube installed whenever a tire is replaced. The old tube will probably be stretched. If installed in a new tire, it could fail.

If you have a tire professionally replaced at a non-Honda facility, we recommend that you have the work checked by your Honda dealer.

Refer to *Important Safety Precautions* on page 33.



(1) side stand spring

- Check that the side stand assembly is working properly. If the side stand is stiff or squeaky, clean the pivot area and lubricate the pivot bolt with molybdenum grease.
- Check the spring for damage or loss of tension.
- Check the side stand ignition cut-off system:

1. Sit on the motorcycle and put the transmission in neutral.
2. Raise the side stand.
3. Start the engine.
4. Pull the clutch lever in.
5. Shift the transmission into gear.
6. Lower the side stand all the way.

The engine should stop as you lower the side stand. If the engine doesn't stop, see your dealer for service.

Drive Chain

Refer to *Important Safety Precautions* on page 33.

An endless (riveted master link) chain connects the countershaft and rear wheel sprockets. The O-ring chain uses rubber rings between the side plates of the pin and roller links to seal in the manufacturer-installed lubricating grease and keep out moisture and dirt.

The service life of the chain depends on proper lubrication and adjustment. Poor maintenance can cause premature wear or damage to the drive chain or sprockets.

When the motorcycle is ridden on unusually dusty or muddy tracks, more frequent maintenance will be necessary.

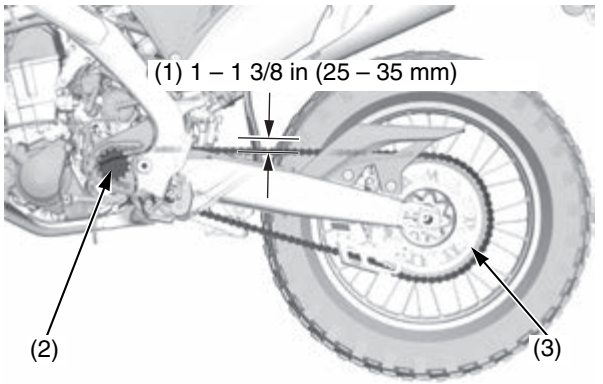
The drive chain should be checked, adjusted, and lubricated as part of the pre-ride inspection (page 19).

Under severe usage, or when the motorcycle is ridden in unusually dusty or muddy areas, more frequent maintenance will be necessary.

Before servicing your drive chain, turn the engine OFF, lower the side stand, and check that your transmission is in neutral.

Inspection

1. Turn the engine off, raise the rear wheel off the ground by placing an optional workstand or equivalent support under the engine and shift the transmission into neutral.
2. Check the drive chain slack (1) in the upper drive chain run midway between the drive sprocket (2) and driven sprocket (3). Drive chain slack should allow the following vertical movement by hand:
   1 – 1 3/8 in (25 – 35 mm)



(1) drive chain slack
(2) drive sprocket
(3) driven sprocket

3. Check drive chain slack at several points along the chain. The slack should remain constant. If it isn't, some links may be kinked and binding. Lubricating the chain will often eliminate binding and kinking.

NOTICE

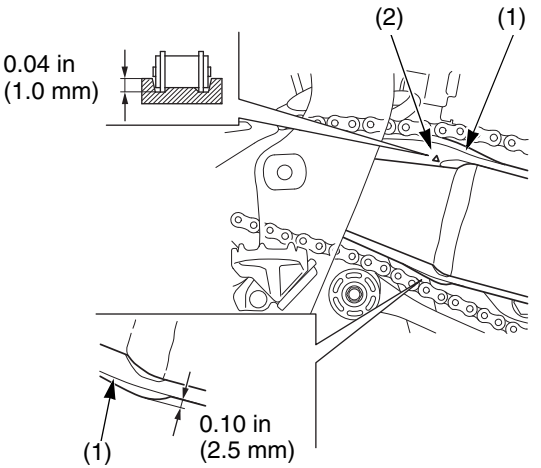
Excessive chain slack may allow the drive chain to damage the engine cases.

4. Inspect the drive chain for:
   - damaged rollers
   - loose pins
   - dry or rusted links
   - kinked or binding links
   - excessive wear
   - improper adjustment
   - damaged or missing O-rings

Replace the drive chain (page 132) if it has damaged rollers, loose pins, or kinks that cannot be free. Lubricate the drive chain (page 131) if it appears dry or shows signs of rust. Lubricate any kinked or binding links and work them free. Adjust chain slack if needed (page 131).

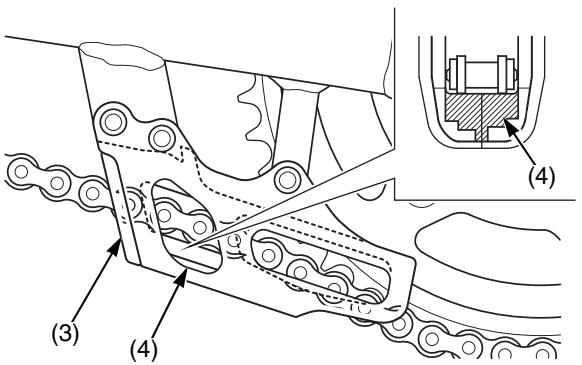
Drive Chain Sliders

1. Check the chain slider (1) for wear. Replace it if below the service limit.
   SERVICE LIMIT:
   upper side: 0.04 in (1.0 mm)
   lower side: 0.10 in (2.5 mm)



(1) chain slider
(2) wear indicator

2. Check the chain guide slider (3) for wear. Replace the guide slider if it is worn to the bottom of the wear limit (4).

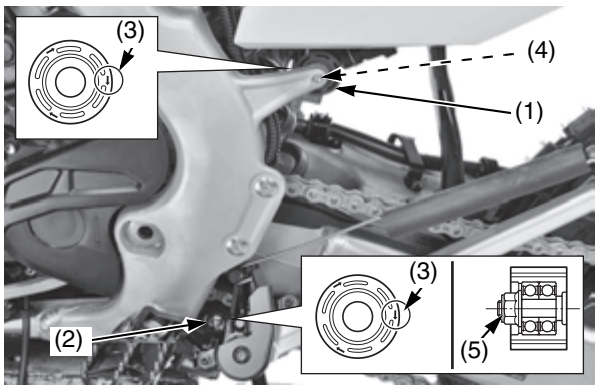


(3) chain guide slider
(4) wear limit

Drive Chain Rollers

Check the upper drive chain roller (1) and lower drive chain roller (2) for wear or damage.
Measure the diameter of the drive chain rollers and replace them if below the service limit.
Service Limit:
Upper roller: 1.2 in (31 mm)
Lower roller: 1.2 in (31 mm)

Replace the roller if necessary as follows.
Install the upper drive chain roller (Green) with the "→" mark (3) facing toward the bracket and lower drive chain roller (Black) with the "→" mark facing toward outside.
Install new a drive chain roller bolt (4) and nut (5).



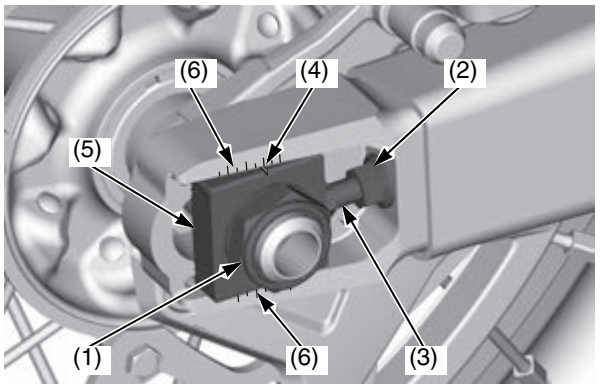
(1) upper drive chain roller (Green)
(2) lower drive chain roller (Black)
(3) "→" mark
(4) drive chain roller bolt (new)
(5) drive chain roller nut

Clean the threads of the drive chain roller bolt and apply locking agent to the threads.

Tighten the drive chain roller bolt and nut to the specified torque:
9 lbf·ft (12 N·m, 1.2 kgf·m)

Adjustment

1. Loosen the rear axle nut (1).
2. Loosen the chain adjuster lock nuts (2) and turn the adjusting bolts (3) counterclockwise to decrease slack or clockwise to increase slack. Align the index marks (4) of the axle plates (5) with the same reference marks (6) on both sides of the swingarm.



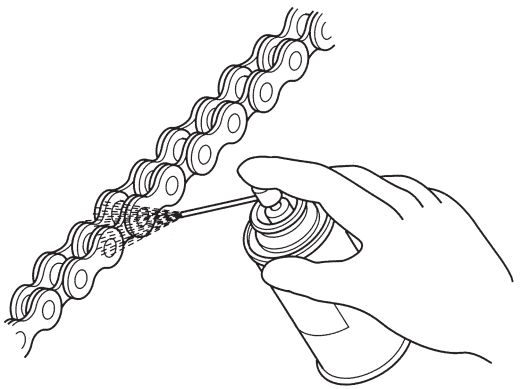
(1) rear axle nut
(2) chain adjuster lock nuts
(3) adjusting bolts
(4) index marks
(5) axle plates
(6) reference marks

3. Tighten the rear axle nut to the specified torque:
   94 lbf·ft (128 N·m, 13.1 kgf·m)
4. Recheck chain slack and adjust as necessary.
5. Turn the adjusting bolt counterclockwise until it touches the axle plates lightly. Then tighten the chain adjuster lock nuts to the specified torque while holding the adjusting bolts with a wrench:
   20 lbf·ft (27 N·m, 2.8 kgf·m)

Lubrication

Lubricate the drive chain with Pro Honda HP Chain Lube or an equivalent chain lubricant or drive chain lubricant designed specifically for use with O-ring chains. Wipe off the excess chain lubricant.

Commercial chain lubricants not designed for motorcycle drive chains may contain solvents which could damage the O-rings.



Drive Chain

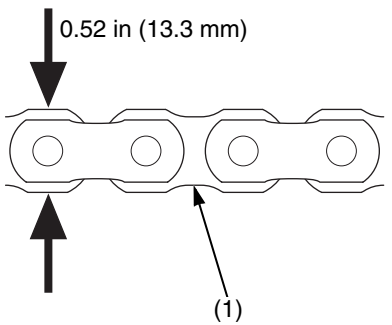
Removal, Cleaning & Replacement

For maximum service life, the drive chain should be cleaned, lubricated, and adjusted before each outing. Your motorcycle has an endless (riveted master link) type chain. It should only be removed or replaced by your dealer.

The O-rings can be damaged by steam cleaning, high pressure washers, and certain solvents.

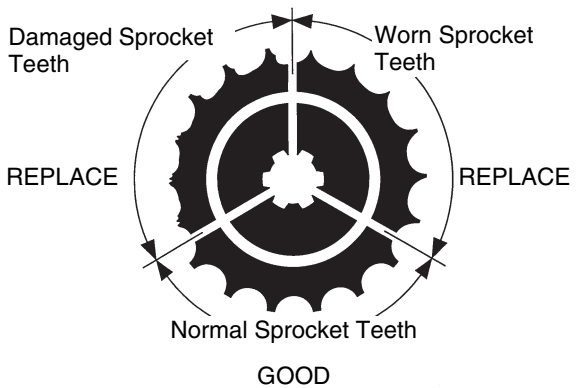
1. Clean the side surfaces of the chain with a dry cloth. Use a high flash point solvent such as kerosene or Pro Honda chain cleaner – not gasoline. Do not brush the rubber O-rings. Brushing will damage them. Use of a solvent may also damage the O-rings.
2. Replace the drive chain if it has damaged rollers, loose fitting links, damaged O-rings, or otherwise appears unserviceable.
3. Measure the drive chain plate (1). If the drive chain plate is worn anywhere to a thickness of 0.52 in (13.3 mm), the drive chain must be replaced.

   Chain:
   Size/link: RK520EXU/116LE



(1) drive chain plate (inner)

4. Inspect the sprocket teeth for wear or damage. We recommend replacing the sprocket whenever a new chain is installed.
   Both chain and sprockets must be in good condition, or the new replacement chain or sprocket(s) will wear rapidly.
   Excessively worn sprocket teeth have a hooked, worn appearance. Replace any sprocket which is damaged or excessively worn.



NOTICE

Use of a new chain with worn sprockets will cause rapid chain wear.

5. Lubricate the drive chain (page 131).
6. Recheck chain slack and adjust if necessary.

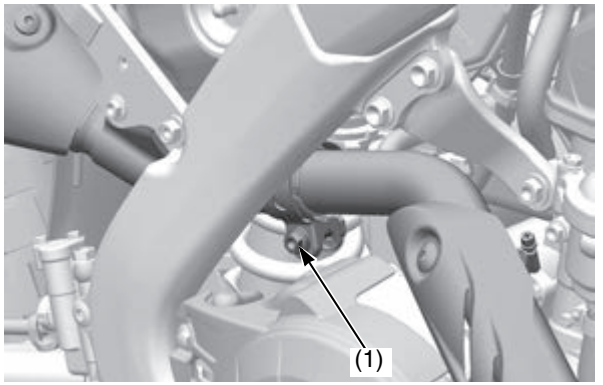
Refer to *Important Safety Precautions* on page 33.

Exhaust Pipe/Muffler Inspection

Check the mounting bolts and exhaust pipe joint nuts for tightness.
Check the exhaust pipe and muffler for cracks or deformation.
A damaged exhaust pipe and muffler may reduce engine performance.

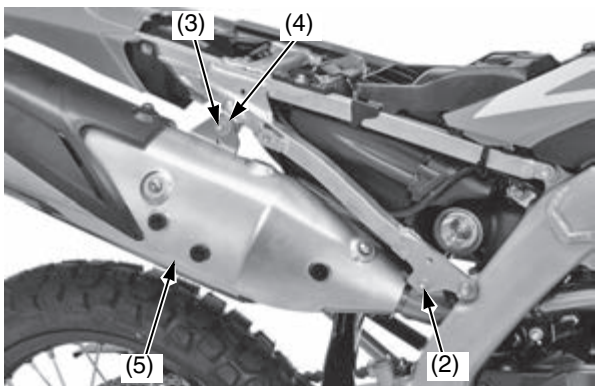
Muffler Removal

1. Remove the seat (page 46).
2. Remove the right side cover (page 47).
3. Loosen the muffler clamp bolt (1).



(1) muffler clamp bolt

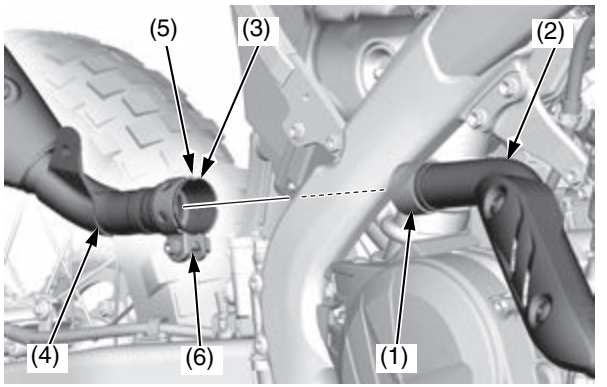
4. Remove the muffler mounting A bolt (2), B bolt (3), washer (4), and muffler (5).



(2) muffler mounting A bolt
(3) muffler mounting B bolt
(4) washer
(5) muffler

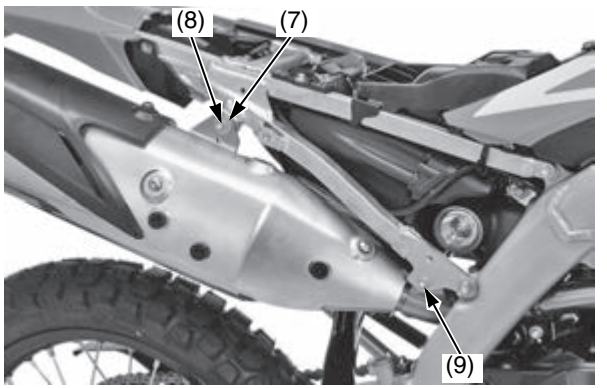
Muffler Installation

1. Remove the gasket (1).
2. Install a new gasket onto the exhaust pipe (2).
3. Align the cutout (3) of the muffler (4) with the tab (5) of the muffler clamp (6).
4. Install the muffler.



(1) gasket
(2) exhaust pipe
(3) cutout
(4) muffler
(5) tab
(6) muffler clamp

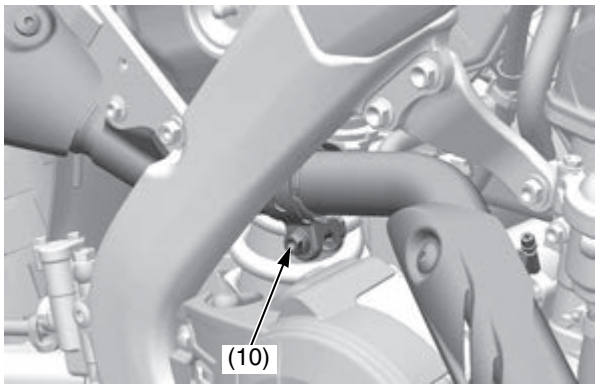
5. Install the washer (7), muffler mounting B bolt (8) and A bolt (9).



(7) washer
(8) muffler mounting B bolt
(9) muffler mounting A bolt

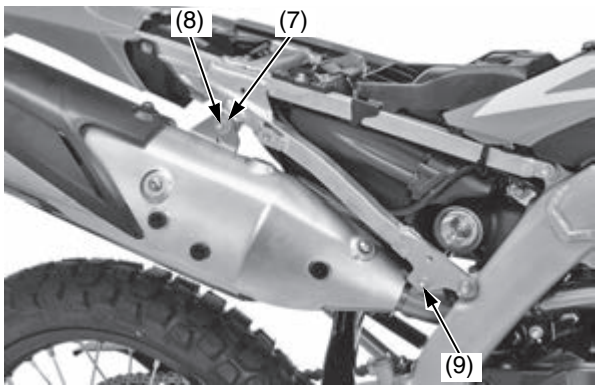
(cont'd)

6. Tighten the muffler clamp bolt (10) to the specified torque:
   15 lbf·ft (20 N·m, 2.0 kgf·m)



(10) muffler clamp bolt

7. Tighten the muffler mounting B bolt (8) and A bolt (9) to the specified torque:
   19 lbf·ft (26 N·m, 2.7 kgf·m)

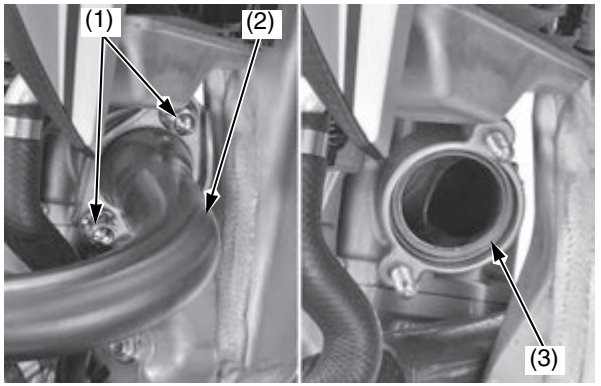


(7) washer
(8) muffler mounting B bolt
(9) muffler mounting A bolt

8. Install the right side cover (page 47).
9. Install the seat (page 46).

Exhaust Pipe Removal

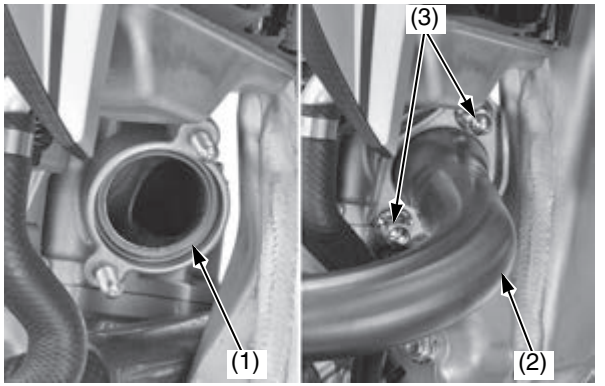
1. Remove the muffler (page 133).
2. Remove the exhaust pipe joint nuts (1), exhaust pipe (2) and gasket (3).



(1) exhaust pipe joint nuts
(2) exhaust pipe
(3) gasket

Exhaust Pipe Installation

1. Install a new exhaust pipe gasket (1).
2. Install the exhaust pipe (2) and exhaust pipe joint nuts (3) but do not tighten the nuts yet.



(1) exhaust pipe gasket (new)
(2) exhaust pipe
(3) exhaust pipe joint nuts

3. Install the muffler (page 133) but do not tighten the bolts yet.
4. Tighten the exhaust pipe joint nuts to the specified torque:
   16 lbf·ft (22 N·m, 2.2 kgf·m)
5. Tighten the muffler clamp bolt, muffler mounting A bolt and B bolt (page 133).

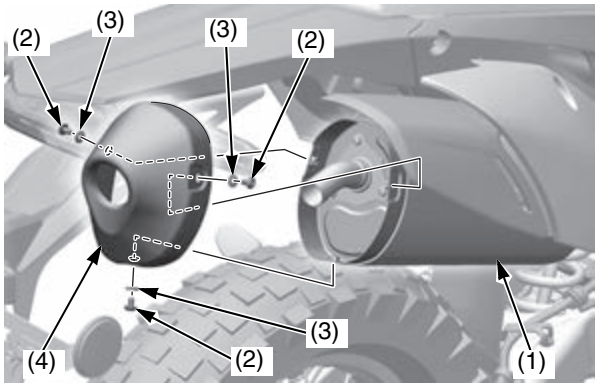
Spark Arrester Inspection

The spark arrester must be serviced every 1,000 mi (1,600 km) of running or 100 operating hours to maintain its efficiency.

Regular servicing prevents carbon buildup (which can diminish engine performance) and also complies with USDA regulations for regular maintenance to assure proper function.

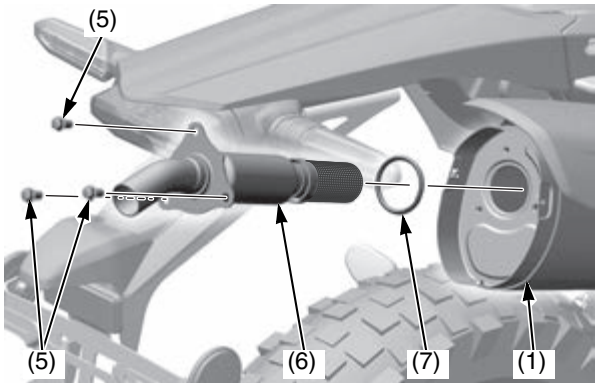
The spark arrester prevents random sparks from the combustion process in your engine from reaching the environment.

1. Allow the engine and muffler (1) to cool.
2. Remove the tail cap cover bolts (2), washers (3) and tail cap cover (4) from the muffler.



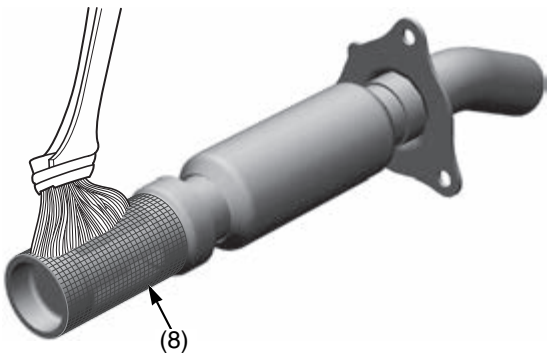
(1) muffler
(2) tail cap cover bolts
(3) washers
(4) tail cap cover

3. Remove the spark arrester mounting bolts (5), spark arrester (6) and gasket (7) from the muffler (1).



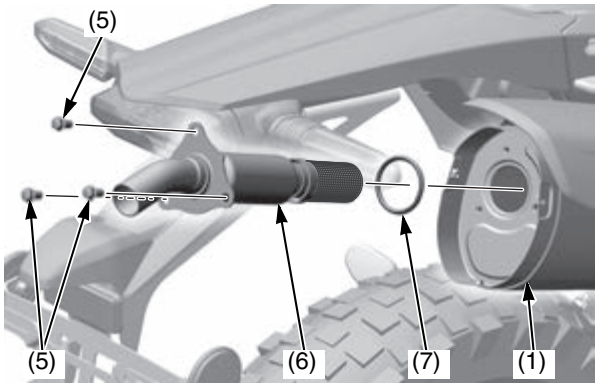
(1) muffler
(5) spark arrester mounting bolts
(6) spark arrester
(7) gasket

4. Use a brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the spark arrester screen (8). The spark arrester must be free of breaks and holes. Replace, if necessary.
   Check the gasket. Replace, if necessary.



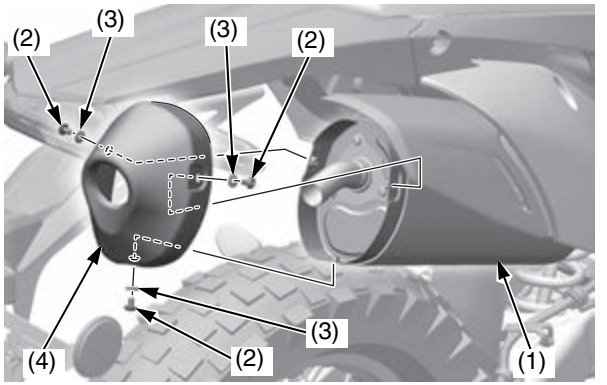
(8) spark arrester screen

5. Install a new gasket (7) and the spark arrester (6) in the muffler (1) and tighten the spark arrester mounting bolts (5) to the specified torque:
   6.6 lbf·ft (9.0 N·m, 0.9 kgf·m)



(1) muffler
(5) spark arrester mounting bolts
(6) spark arrester
(7) gasket

6. Install the tail cap cover (4), washers (3) and tighten the tail cap cover bolts (2) to the specified torque:
   3.9 lbf·ft (5.25 N·m, 0.5 kgf·m)



(1) muffler
(2) tail cap cover bolts
(3) washers
(4) tail cap cover

Refer to *Important Safety Precautions* on page 33.

Steering Head Bearing Inspection

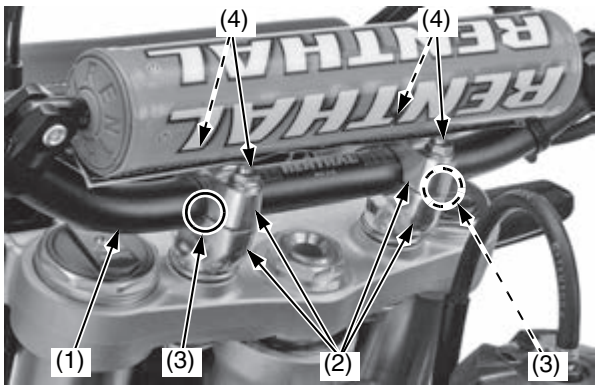
1. With your motorcycle on an optional workstand or equivalent support (front wheel elevated), turn the handlebar to the right and left to check for roughness in the steering head bearings.

2. Stand in front of your motorcycle, grab the fork (at the axle), look at the steering head, and push the fork in and out (toward the engine) to check for play in the steering head bearings.

If any roughness or play is felt, but you do not see any movement in the steering head, the fork bushings may be worn.
Refer to an official Honda Service Manual for replacement or adjustment procedures, or see your dealer.

Handlebar Inspection

1. Check the handlebar (1) for bends or cracks.
2. Check that the handlebar has not moved from its original position where the end of the handlebar holders (2) is aligned with the paint marks (3).
3. Check the torque of the handlebar upper holder bolts (4):
   16 lbf·ft (22 N·m, 2.2 kgf·m)
   Tighten the front bolts first.



(1) handlebar
(2) handlebar holders
(3) paint marks
(4) handlebar upper holder bolts

Control Cables

Periodically, disconnect the clutch cables at their upper ends. Thoroughly lubricate the cable pivot points with a commercially available cable lubricant. If the clutch lever and throttle operation is not smooth, replace the cable.
Be sure the throttle returns freely from fully open to fully closed automatically, in all steering positions.

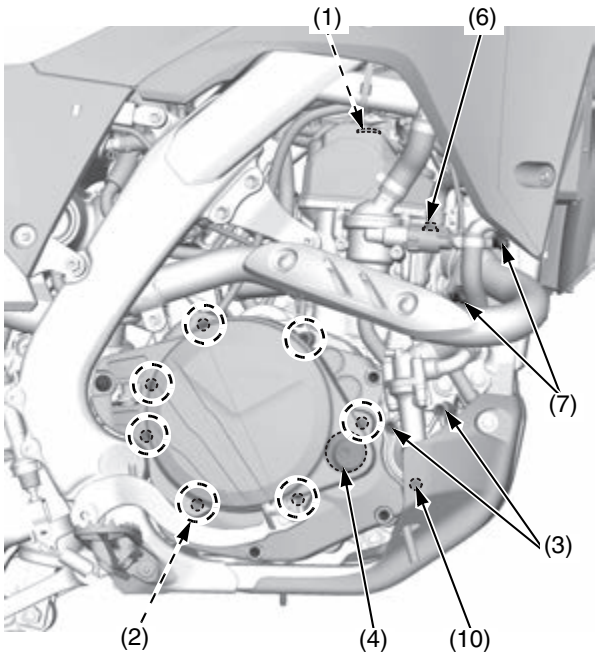
Nuts, Bolts, Fasteners

Check and tighten nuts, bolts, and fasteners before every outing.

ENGINE

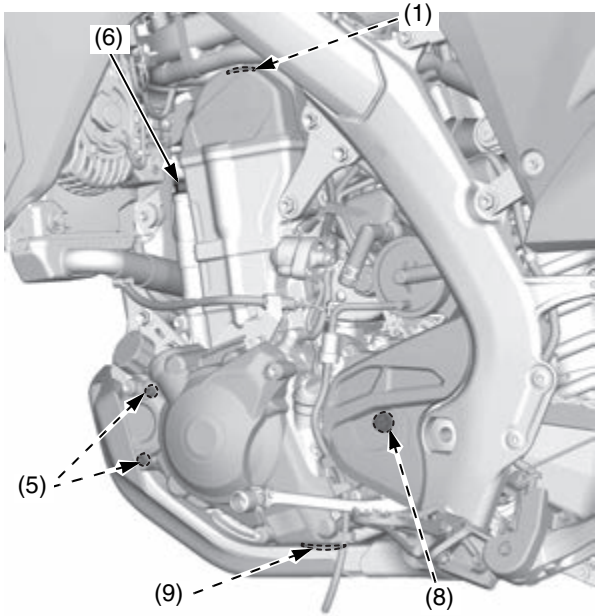
	Item	Torque		
		lbf·ft	N·m	kgf·m
1	Cylinder head cover socket bolts	7	10	1.0
2	Clutch cover bolts	7	10	1.0
3	Water pump cover bolts	7	10	1.0
4	Crankshaft hole cap	11	15	1.5
5	Oil filter cover bolts	7	10	1.0
6	Cylinder head bolts	37	50	5.1
7	Exhaust pipe joint nuts	16	22	2.2
8	Drive sprocket bolt	23	31	3.2
9	Engine oil drain bolt	13	18	1.8
10	Coolant drain bolt	7	10	1.0

RIGHT SIDE



(1) cylinder head cover socket bolts
(2) clutch cover bolts
(3) water pump cover bolts
(4) crankshaft hole cap
(6) cylinder head bolts
(7) exhaust pipe joint nuts
(10) coolant drain bolt

LEFT SIDE



(1) cylinder head cover socket bolts
(5) oil filter cover bolts
(6) cylinder head bolts
(8) drive sprocket bolt
(9) engine oil drain bolt

Battery

Refer to *Important Safety Precautions* on page 33.

Your motorcycle has a lithium-ion (li-ion) battery. Clean the battery terminals if they become dirty or corroded.

NOTICE

An improperly disposed of battery can be harmful to the environment and human health.
Always confirm local regulations for proper battery disposal instruction.

The electrical accessories use current from the battery, even when the ignition is turned to the OFF position.
Limited operation also allows the battery to discharge. If you have electrical accessories on your motorcycle or do not ride frequently, we recommend that you charge the battery frequently (see *Battery Charging* on page 139).

If you plan to store your motorcycle, see Battery Storage (this page).

If your battery seems weak and/or is leaking electrolyte (cause slow starting), see your dealer.
If you smell an unusual odor coming from the lithium-ion (li-ion) battery, park your motorcycle in a safe place outside and away from flammable objects, then turn the ignition to the OFF position.

The battery has a limited life span.
Consult your dealer about when you should replace the battery. Always replace the battery with another lithium-ion (li-ion) battery of the same type.

The lithium-ion (li-ion) battery contains a fuse inside.
If the fuse blows, the battery needs replacement.

The voltage may read above 12V even with a blown battery fuse when the battery is unmounted (page 175).

Battery Storage

Before you remove the battery, be sure to read all the information that follows, as well as the information on the battery label.

⚠ WARNING

The battery contains flammable organic solvent as electrolyte.

You can be burned or seriously injured if the battery is handled improperly.

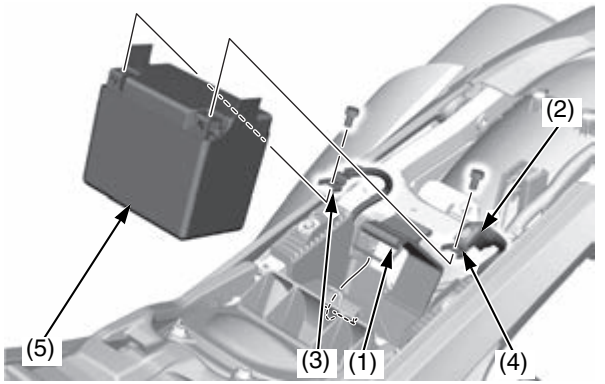
- Keep the battery away from heat, sparks, and flame.
- Keep the battery out of the reach of children.
- Do not disassemble or modify the battery or battery terminals.
- Do not short-circuit the battery with metal tools or other metal objects.
- Do not subject the battery to impacts.

If you do not remove the battery, we recommend disconnecting the battery cables (negative cable first).

The battery is located under the seat.

Removal

1. Remove the seat (page 46).
2. Remove the battery band (1).
3. Remove the positive terminal cover (2).
4. Disconnect the negative (–) terminal (3) first, then the positive (+) terminal (4) and remove the battery (5).

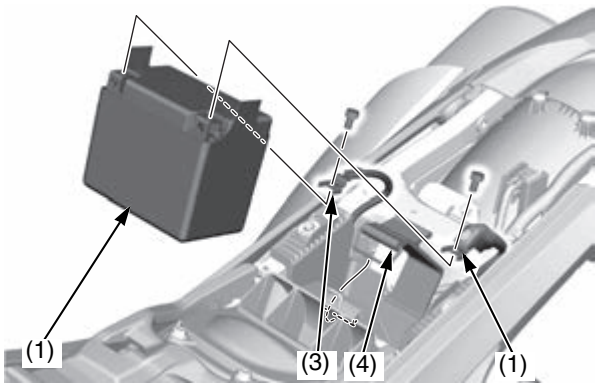


(1) battery band
(2) positive terminal cover
(3) negative (–) terminal
(4) positive (+) terminal
(5) battery

5. Unless you have been riding regularly, charge the battery (page 139).
6. Store your battery in an easy-to-reach location off the floor, in an area protected from freezing temperatures and direct sunlight.
7. Clean the battery box after removing the battery for storage. Dry the battery box.
8. Slow charge the battery (page 139) once every 30 days.

Installation

1. Reinstall the battery (1) in the reverse order of removal. Check that the battery rubber in place. Be sure to connect the positive (+) terminal first, then the negative (–) terminal.
2. Tighten the positive (+) terminal bolt (2) and negative (–) terminal bolt (3) to the specified torque:
   1.5 lbf·ft (2.0 N·m, 0.2 kgf·m)
3. Install the battery band (4).



(1) battery
(2) positive (+) terminal bolt
(3) negative (–) terminal bolt
(4) battery band

Battery Charging

Be sure to read the information that came with your battery charger and follow the instructions on the battery. Improper charging may damage the battery.

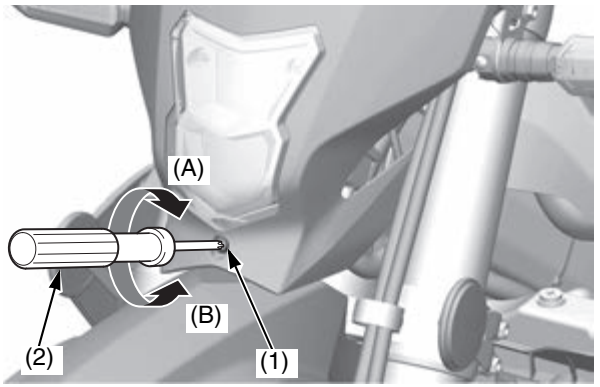
We recommend using a charger recommended by your lithium-ion (li-ion) battery manufacturer which can be purchased from your dealer. These units can be left connected for long periods without risking damage to the battery. However, the lithium-ion (li-ion) battery may degrade if stored with a charger connected. Do not intentionally leave the charger connected longer than the time period recommended in the charger's instructions.

Using a battery charger that is not recommended can cause permanent damage to your battery.

Headlight Aim

Headlight Aim Vertical Adjustment

You can adjust vertical aim of the headlight for proper alignment. Turn the screw (1) in or out as necessary using a Phillips screwdriver (2). Obey local laws and regulations.



(1) screw
(2) Phillips screwdriver
(A) Up
(B) Down

Refer to *Important Safety Precautions* on page 33.

Frequent cleaning and polishing will keep your motorcycle looking newer longer. Frequent cleaning also identifies you as an owner who values his motorcycle. A clean motorcycle is also easier to inspect and service.

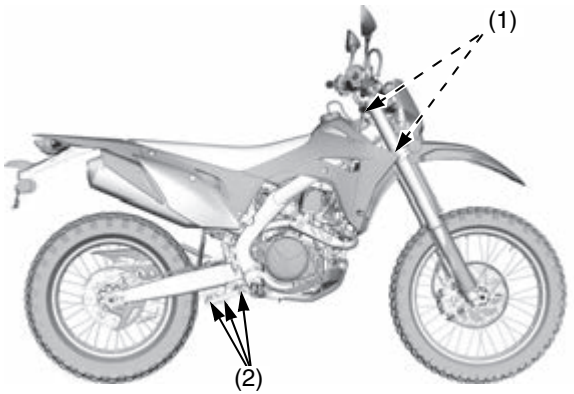
While you're cleaning, be sure to look for damage, wear, and gasoline or oil leaks.

General Recommendations

- To clean your motorcycle you may use:
  - water
  - Hondabrite
  - a mild, neutral detergent and water
  - a mild spray and wipe cleaner/polisher
  - a mild spray and rinse cleaner/degreaser and water
- Avoid products that contain harsh detergents or chemical solvents that could damage the metal, paint, and plastic on your motorcycle or discolor the seat and decals.
- If your motorcycle is still warm from recent operation, give the engine and exhaust system time to cool off.
- Park in a shady area. Washing your motorcycle in bright sunlight may cause the finish to fade because water droplets intensify the sun's brightness. Spotting is also more likely because surface water can dry before you have time to wipe it off.
- Clean your motorcycle regularly to protect surface finishes.
- We recommend the use of a low pressure garden hose to wash your motorcycle. High pressure washers (like those at coin-operated car washes) can damage certain parts of your motorcycle. The force of water under extreme pressure can penetrate the dust seals of the suspension pivot points and steering head bearings-driving dirt inside and needed lubrication out.

If you use a high pressure washer, avoid spraying the following areas:

brake master cylinders
drive chain
electrical circuit
engine stop button
muffler outlet
steering head bearings
suspension pivot points
throttle body
under fuel tank
under seat



(1) steering head bearings
(2) suspension pivot points

NOTICE

High pressure water (or air) can damage certain parts of your motorcycle.

You may use Pro Honda Hondabrite, a multi-surface cleaner/degreaser, to remove both dirt and petroleum-based grime from paint, alloy, plastic, and rubber surfaces. Wet any heavy deposits with water first. Then spray on Pro Honda Hondabrite and rinse with a low pressure garden hose at full pressure. Stubborn deposits may require a quick wipe with a sponge.

Washing Your Motorcycle with a Mild Detergent

Allow the engine, muffler, brakes, and other high-temperature parts to cool before washing.

1. Rinse your motorcycle thoroughly using a low pressure garden hose to remove loose dirt.
2. Fill a bucket with cool water. Mix in a mild, neutral detergent, such as dish washing liquid or a product made especially for washing motorcycles or automobiles.
3. Wash your motorcycle with a sponge or a soft towel.
   As you wash, check for heavy grime. If necessary, use a mild cleaner/degreaser to remove the grime.
   The headlight's inside lens may fog temporarily after washing or while riding in the rain. This does not impact the headlight function.
   However, if you see a large amount of water or ice accumulated inside the lens, have your vehicle inspected by your dealer.

NOTICE

Do not use steel wool to clean the frame as it could damage or discolor the frame surface.
Muffler stain remover (Scotch Brite Hand Pad #7447-maroon) is for removing stains on the non-coated aluminum frame only.

4. After washing, rinse your motorcycle thoroughly with plenty of clean water to remove any residue.
   Detergent residue can corrode alloy parts.

(cont'd)

5. Dry your motorcycle with a chamois or a soft towel.
   Leaving water on the surface to air dry can cause dulling and water spots. As you dry, inspect for chips and scratches.
6. Lubricate the drive chain to prevent rusting.
7. Start the engine and let it idle for several minutes. The engine heat will help dry moist areas.
8. As a precaution, ride at a slow speed and apply the brakes several times. This will help dry the brakes and restore normal braking performance.

After Cleaning Lubrication

There are some things you should do just after washing your motorcycle to help prevent rust and corrosion.

Once your motorcycle is clean and dry, you should protect any bare steel from rusting by applying a light coating of a rust-inhibitor. Lubricate the drive chain and drive sprocket after removing and thoroughly cleaning in solvent. Be sure the chain is wiped clean and is dry before applying the chain lube.

Follow the suggestions given in the pages of this manual for lubricating items such as the brake and clutch lever pivot points and footpeg pivot pins.

Panels

Follow these guidelines to prevent scratches and blemishes:

- Wash gently using a soft sponge and plenty of water.
- To remove stubborn stains, use diluted detergent and rinse thoroughly with plenty of water.
- Avoid getting gasoline, brake fluid, or detergents on the instruments, panels, or headlight.

Aluminum Frame Maintenance

Aluminum corrodes when it comes in contact with dust, mud and road salt.

To remove stains, use Scotch Brite Hand Pad #7447 (maroon) or an equivalent.
Wet the pad and polish the surface using strokes parallel to the length of the frame.

Clean the frame using a wet sponge and a mild detergent, then rinse well with clean water. Dry the frame with a soft clean cloth, using strokes parallel to the length of the frame.

NOTICE

Do not use steel wool to clean the frame as it could damage or discolor the frame surface.
Scotch Brite Hand Pad #7447-maroon is for removing stains on the non-coated aluminum frame only.

Titanium Fuel Tank Maintenance

The fuel tank is made of titanium material.
To remove mud or dust, use a sponge or soft cloth and a stainless steel kitchen detergent, then rinse well with clean water.
After washing, rinse with plenty of water and dry with a clean cloth.

Exhaust Pipe and Muffler Maintenance

The exhaust pipe and muffler are stainless steel but may became stained by mud or dust.

To remove mud or dust, use a wet sponge and a liquid kitchen abrasive, then rinse well with clean water. Dry with chamois or a soft towel.

If necessary, remove heat stains by using a commercially available fine texture compound. Then rinse by the same manner as removing mud or dust.

This section tells you how to fine tune your motorcycle for maximum performance.

Off-Road Use only
Initial suspension adjustments should be performed after a minimum of 2 hours of easy break-in time.

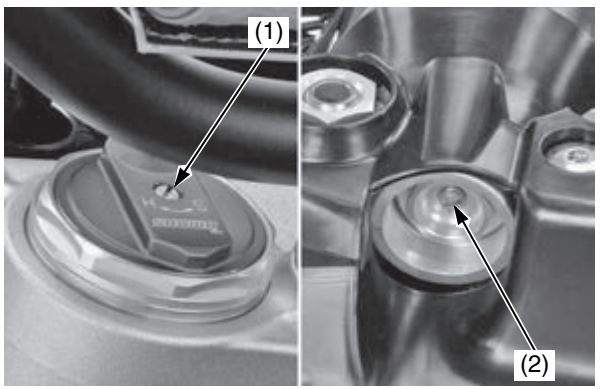
Follow the instructions given in the rear suspension sag setting section of *Rear Suspension Adjustments* to determine if your combined rider and sprung machine weight (rider fully dressed for competition and machine coolant, oil and fuel levels ready for competition).

Front Suspension Adjustments

The front suspension can be adjusted for the rider's weight and riding conditions by using one or more of the following methods:

- **Compression damping** — Turning the compression damping adjuster (1) adjusts how quickly the fork compresses.
- **Rebound damping** — Turning the rebound damping adjuster (2) adjusts how quickly the fork extends.

The inverted fork on your motorcycle features sealed damper cartridges with dual (separate air and oil) chambers to prevent aeration. The design also isolates the oil in each fork/damper, which may contain air bubbles and/or metal particles, from the sealed cartridge to provide more consistent damping.



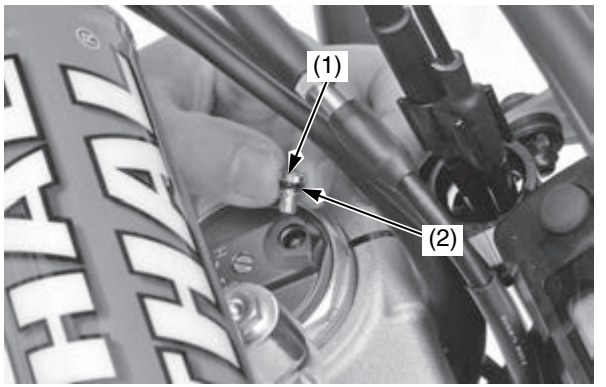
(1) compression damping adjuster
(2) rebound damping adjuster

Front Suspension Air Pressure

Air is an unstable gas which builds up pressure as it is worked (such as in a fork). Air pressure acts as a progressive spring and affects the entire range of fork travel. This means the fork action on your motorcycle will get stiffer during a race. For this reason, release built-up air pressure in the fork legs between race. Be sure the fork is fully extended with the front tire off the ground when you release the pressure.

The standard air pressure is 0 psi (0 kPa, 0 kgf/cm^2). You may relieve accumulated air pressure in the fork legs by using the pressure release screws. The front wheel should be off the ground before you release the pressure. The air pressure should be adjusted according to the altitude and outside temperature.

1. Place an optional workstand under the engine, so that the front wheel is off the ground.
   Do not adjust air pressure with the front wheel on the ground as this will give false pressure readings.
2. Remove the pressure release screw (1).
3. Apply recommended fork oil to a new O-ring (2), and then install a new O-rings.
4. Install and tighten the pressure release screw to the specified torque:
   1.0 lbf·ft (1.3 N·m, 0.1 kgf·m)



(1) pressure release screw (2) O-ring (new)

Front Suspension Damping

Compression Damping Adjustment
This adjustment affects how quickly the fork compresses. The fork compression damping adjuster has 16 clicks or more. Turning the compression damping adjuster screw (1) one full turn changes the adjuster 4 clicks. To adjust the adjuster to the standard position, proceed as follows:
Turn the adjuster clockwise (harder) until it will no longer turn (lightly seats). Turn the adjuster counterclockwise (softer) until it clicks. This click is position 1.

The standard position is 7 clicks.

Make sure that both fork legs are adjusted to the same position.

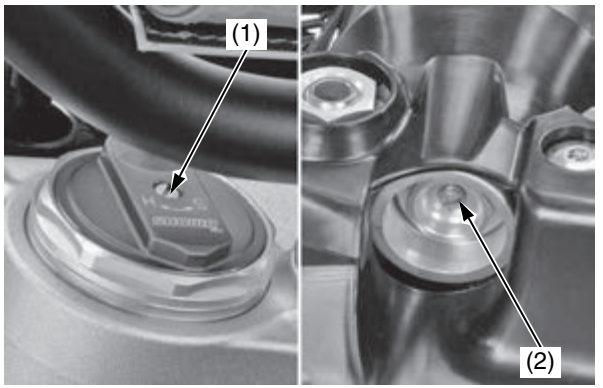
Rebound Damping Adjustment
The fork rebound damping adjuster has 16 clicks or more. Turning the rebound damping adjuster screw (2) one full turn clockwise advances the adjuster 4 clicks. To adjust the rebound damping to the standard setting, proceed as follows:
Turn the adjuster clockwise (harder) until it will no longer turn (lightly seats). Turn the adjuster counterclockwise (softer) until it clicks. This click is position 1.

The standard position is 12 clicks.

Make sure that both fork legs are adjusted to the same position.

NOTICE

Always start with full hard when adjusting damping.
Do not turn the adjuster screw more than the given positions or the adjuster may be damaged.
Be sure that the compression and rebound adjusters are firmly located in a detent, and not between positions.
Both compression and rebound damping can be increased by turning the adjuster clockwise.



(1) compression damping adjuster screw
(2) rebound damping adjuster screw

Rear Suspension Adjustments

On-Road Use only
The rear suspension can be adjusted for the rider's weight and riding conditions by changing the rebound and compression damping.

Off-Road Use only
The rear suspension can be adjusted for the rider's weight and riding conditions by changing the spring pre-load and the rebound and compression damping.

The rear suspension assembly includes a damper unit that contains high pressure nitrogen gas. Do not attempt to disassemble, service, or dispose of the damper; see your dealer. The instructions found in this owner's manual are limited to adjustments of the shock assembly only.

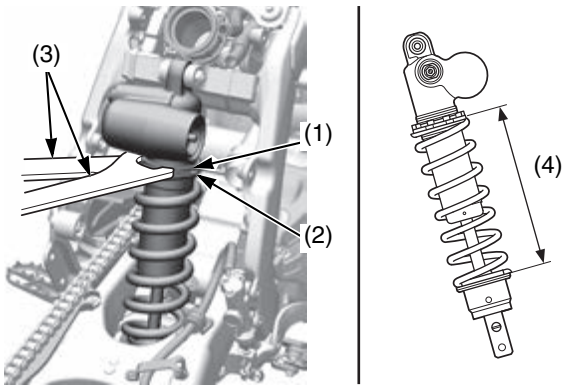
Puncture or exposure to flame may also result in an explosion, causing serious injury.
Service or disposal should only be done by your dealer or a qualified mechanic, equipped with the proper tools, safety equipment and an official Honda Service Manual.

Off-Road Use only
If your motorcycle is new, put enough part-throttle break-in time (about 1 hour) on it to ensure that the suspension has worked in.

Rear Suspension Spring Pre-Load (Off-Road Use Only)

Pre-load should be adjusted when the engine is cold because it is necessary to remove the muffler. An optional pin spanner is available for turning the shock spring lock nut and adjusting nut to adjust spring pre-load.

1. Place your motorcycle on an optional workstand or equivalent support with the rear wheel off the ground.
2. Remove the subframe (page 52).
3. Check that the spring pre-load is adjusted to the standard length. Adjust as necessary by loosening the shock spring lock nut (1) and turning the adjusting nut (2).
   Each complete turn of the adjusting nut changes the spring length by 0.06 in (1.5 mm).
   After adjustment, hold the adjusting nut and tighten the shock spring lock nut to the specified torque:
   32 lbf·ft (44 N·m, 4.5 kgf·m)



(1) shock spring lock nut
(2) adjusting nut
(3) pin spanners
(4) spring length

Refer to the following pages for the installation procedure of the removed parts:
- air cleaner housing and air cleaner connecting tube: page 58 (Cylinder Head Installation)
- subframe: page 55

To increase spring pre-load
Loosen the shock spring lock nut with the optional pin spanners (3) and turn the adjusting nut to shorten the spring length (4). Do not shorten to less than:
8.88 in (225.5 mm)

To decrease spring pre-load
Loosen the shock spring lock nut with the optional pin spanners (3) and turn the adjusting nut to increase the spring length (4). Do not increase to more than:
9.41 in (239.0 mm)

Each turn of the adjusting nut changes spring length and spring pre-load. One turn equals: spring length/spring pre-load:
Standard: 0.06 in (1.5 mm)/18 lbf (78 N)

Pin spanners should be used for turning the shock spring lock nut and adjusting nut. See page 190 for optional pin spanners.

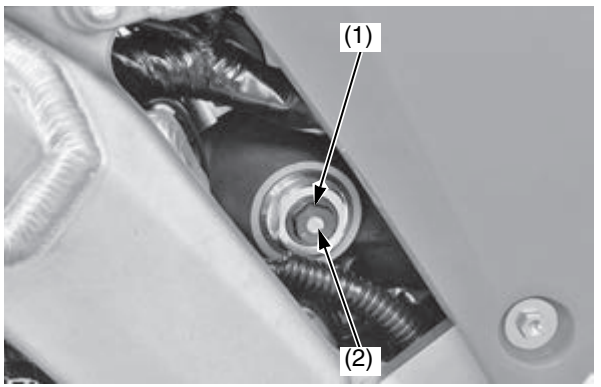
Spring pre-load length
Standard: 9.13 in (232.0 mm)
Max. : 9.41 in (239.0 mm)
Min. : 8.88 in (225.5 mm)

Rear Suspension Damping

Compression Damping
Compression damping may be adjusted in two stages with separate adjusters.

The high speed compression damping adjuster (1) is effective when damping adjustment is desired for high speed operation. The low speed compression damping adjuster (2) should be used when damping adjustment is desired at relatively low speeds.

- When adjusting the compression damping adjusters, make sure to use the proper size tool to avoid damage.
- Both the high and low speed compression damping can be increased by turning the appropriate adjuster clockwise.
- Adjust the high speed compression damping adjuster in 1/4 turn increments.
- Be sure the high speed compression adjuster is firmly located in a detent, and not between positions.

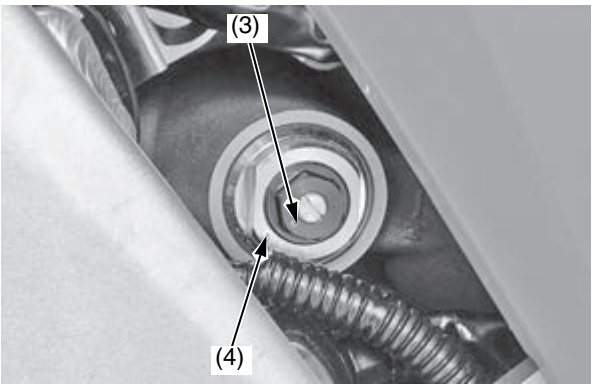


(1) high speed compression damping adjuster
(2) low speed compression damping adjuster

High Speed Damping:
The high speed damping can be adjusted by turning the hexagonal portion of the compression damping adjuster.

The high speed compression damping adjuster has 3 1/2 turns or more.

To adjust to the standard position:
1. Turn the adjuster clockwise (harder) until it will no longer turn (lightly seats).
2. Turn the adjuster counterclockwise (softer) 3 1/4 turns. Further turn it by ± 1/4, align the punch mark (3) on the adjuster and the punch mark (4) on the adjuster body.



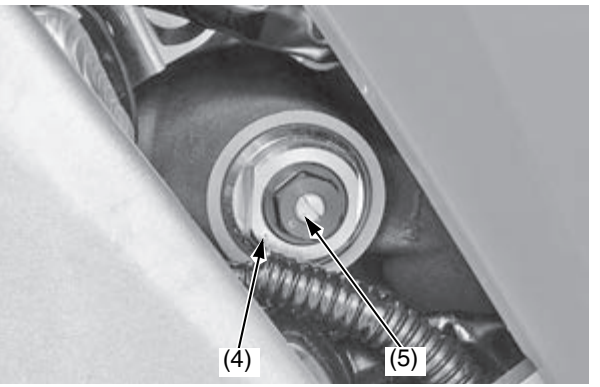
(3) high speed compression damping adjuster punch mark
(4) adjuster body punch mark

Low Speed Damping:
The low speed damping can be adjusted by turning the center screw of the compression damping adjuster.

The low speed compression damping adjuster has 13 clicks or more.

Turning the adjuster one full turn clockwise advances the adjuster 4 clicks.

To adjust to the standard position:
1. Turn the adjuster clockwise (harder) until it will no longer turn (lightly seat). Turn the adjuster counterclockwise (softer) until it clicks. This click is position 1.
2. Set the adjuster 11 clicks and adjust it until the punch mark (5) on the adjuster and the punch mark (4) on the adjuster body are aligned.



(4) adjuster body punch mark
(5) low speed compression damping adjuster punch mark

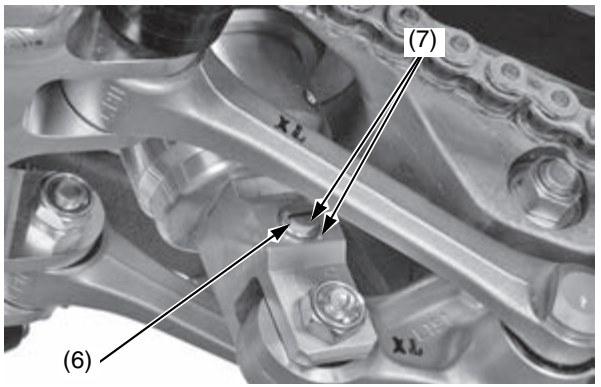
(cont'd)

Rear Suspension Adjustments

Rebound Damping
The rebound damping adjuster (6) is located at the lower end of the rear shock absorber.

It has 17 clicks or more. Turning the adjuster one full turn changes the adjuster 8 clicks.

- When adjusting the rebound damping adjuster, make sure to use the proper size tool to avoid damage.
- Rebound damping can be increased by turning the adjuster clockwise.
- Be sure that the rebound adjuster is firmly located in a detent, and not between positions.



(6) rebound damping adjuster (7) punch marks

To adjust to the standard position:
1. Turn the adjuster clockwise (harder) until it will no longer turn (lightly seat). Turn the adjuster counterclockwise (softer) until it clicks. This click is position 1.
2. Set the adjuster 7 to 10 clicks and adjust it until the punch marks (7) on the adjuster and the rear shock absorber are aligned.

Rear Suspension Race Sag (Off-Road Use Only)

Setting the proper race sag (ride height) is very important for off-road use.

Race sag refers to the amount of rear wheel travel used by your motorcycle at rest, ready to ride, with you on the seat. As a general rule of thumb, the race sag dimension should be about one-third of the maximum travel.

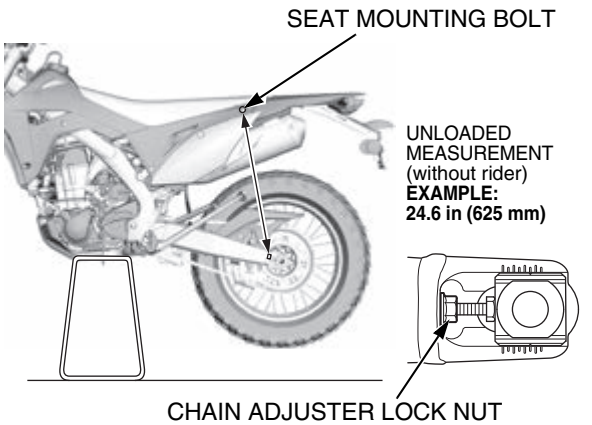
On your motorcycle, ride height is changed by adjusting the rear suspension spring pre-load.

Spring Pre-load & Race Sag Adjustment
The following adjustment procedure establishes the correct starting point for any suspension tuning — the proper rear suspension spring preload adjustment for your specific needs.
Your motorcycle should be at normal racing weight, including fuel, oil and coolant. You should be wearing all your normal protective apparel. You will need two helpers.

To calculate the proper adjustment, it is necessary to measure between two fixed points — from the center of the seat mounting bolt to the center of the chain adjuster lock nut as illustrated here — for two different situations:

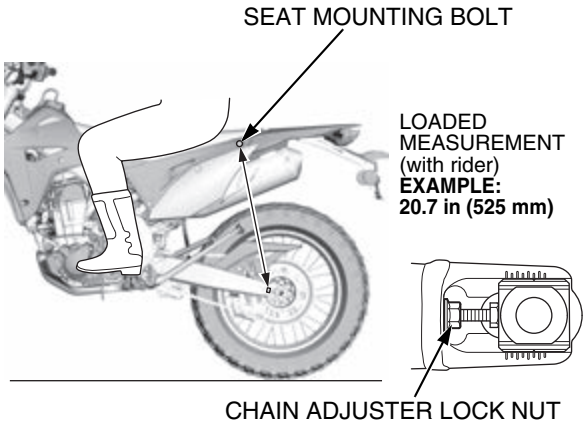
unloaded: motorcycle on an optional workstand with rear suspension fully extended, no rider.
loaded with rider: motorcycle on ground, with rider.

1. Support your motorcycle on an optional workstand with the rear wheel off the ground.
2. Measure the *unloaded* dimension.



3. Measure the *loaded with rider* dimension. Remove the workstand. With two helpers available, sit as far forward as possible on your motorcycle's seat, wearing your riding apparel.
   Ask one helper to steady your motorcycle perfectly upright so you can put both feet on the pegs.
   Bounce your weight on the seat a couple of times to help the suspension overcome any situation and settle to a good reference point.

Ask the other helper to measure the *loaded with rider* dimension.



Example:

Unloaded	= 24.6 in (625 mm)
– Loaded	= 20.7 in (525 mm)
Race Sag	= 3.9 in (100 mm)

4. Calculate the *race sag* dimension.
   To do this, subtract the *loaded with rider* dimension (step 3) from the *unloaded* dimension (step 2).
   Standard Race Sag: 4.1 in (105 mm)

   Adjust spring pre-load as necessary to obtain the desired handling results.
   Decreasing the race sag dimension (example: 3.7 in, 95 mm) improves turning ability for tight terrain at the cost of slightly reduced straight line stability.
   Increasing the race sag dimension (example: 4.5 in, 115 mm) may improve stability on faster terrain with less turns, but will reduce turning performance slightly and may upset the balance between the front and rear suspension, producing a harsher ride. This will happen if the adjustment shifts the effective wheel travel toward the more progressive end of its range.

Suspension Adjustment Guidelines (Off-Road Use Only)

Follow the procedures described below to accurately adjust your motorcycle, using the methods described on pages 144 – 148. Remember to make all adjustments in one-click or 1/12 turn increments. Test ride after each adjustment.

Front Suspension Adjustment
Adjustments for Type of Track

Hard-surfaced track	Begin with the standard setting. If the suspension is too stiff/soft, adjust according to the chart below.
Sand track	Adjust to a stiffer position. Example: – Turn the compression damping adjuster to a stiffer position.
Mud track	Adjust to a stiffer position because mud build-up increases your motorcycle's weight. Example: – Turn the compression damping adjuster to a stiffer setting.

Adjustments for Too Soft/Stiff Damping

	Symptom	Action
Soft suspension	Initial travel too soft: • Steering is too quick. • Front end darts while cornering or riding in a straight line.	– Test stiffer compression damping adjustments in one-click increments. – Test stiffer rebound damping in one-click increments.
	Middle travel too soft: • Front end dives when cornering.	If suspension isn't stiff in initial travel: – Test stiffer compression damping adjustments in one-click increments. If initial travel becomes stiff because of the above adjustment: – Reduce the rebound damping in one-click increments. – Test softer compression damping adjustments in one-click increments.
	Final travel too soft: • Bottoms on landings. • Bottoms on large bumps, especially downhill bumps.	If initial and middle travel aren't stiff: – Test stiffer compression damping adjustments in one-click increments.
	Entire travel too soft: • Front end shakes. • Fork bottoms over any type of terrain.	– Test stiffer compression damping adjustments in one-click increments. – Increase rebound damping in one-click increments.

Suspension Adjustment Guidelines (Off-Road Use Only)

	Symptom	Action
Stiff suspension	Initial travel too stiff: • Stiff on small bumps while riding at full throttle in a straight line. • Stiff on small cornering bumps. • Front end wanders while riding at full throttle in a straight line.	– Test softer compression damping adjustments in one-click increments. – Reduce the rebound damping adjustments in one-click increments. – Check for dirt in the dust seals. Check the fork oil for any contamination. If the front end dives while cornering after the above adjustment: Reduce the rebound damping in one-click increments.
	Middle travel too stiff: • Stiff on bumps when cornering. • Front end wanders when cornering. • Stiff suspension on bumps, especially downhill bumps. • While braking, front end dives during initial travel, then feels stiff.	If initial travel isn't stiff: – Test stiffer compression damping adjustments in one-click increments. (This should produce smooth fork action from initial to middle travel.) If initial and middle travel is stiff: – Test softer compression damping adjustments in one-click increments. – Reduce the rebound damping in one-click increments.
	Final travel too stiff: • Doesn't bottom on landings, but feels stiff. • Stiff on large bumps, especially downhill bumps. • Stiff on large bumps when cornering.	If initial and middle travel aren't stiff: – Test stiffer compression damping adjustments in one-click increments. (This should produce smooth fork action from initial to middle travel.) If final travel is still stiff after the above adjustment, or If initial and middle travel becomes stiff: – Test softer compression damping adjustments in one-click increments. If the entire travel feels stiff after the above adjustment: – Test softer compression damping adjustments in one-click increments until the desired initial travel compression damping is obtained.
	Entire travel too stiff: • Stiff suspension on any type of terrain.	– Test softer compression damping adjustments in one-click increments. – Reduce the rebound damping in one-click increments.

Suspension Adjustment Guidelines (Off-Road Use Only)

Rear Suspension Adjustment
Adjustments for Type of Track

Hard-surfaced track	Begin with the standard settings. If the suspension is too stiff/soft, adjust according to the chart below.
Sand track	Lower the rear end (to improve front wheel stability) by increasing Race Sag (reduce spring pre-load). Example: – Turn the compression damping adjuster and, especially, rebound damping adjuster to a stiffer setting. – Increase standard Race Sag (+0.2 to 0.4 in/5 to 10 mm).
Mud track	Adjust to a stiffer position because mud build-up increases your CRF's weight. Example: – Adjust the compression and rebound damping adjusters to stiffer settings. – Reduce standard Race Sag (–0.2 to –0.4 in/–5 to –10 mm).

Symptoms and Adjustment

- Always begin with the standard settings.
- Turn the low speed compression and rebound adjusters in one-click increments, and the high speed compression adjuster in 1/12 turn increments at a time. Adjusting two or more clicks or turns at a time may cause you to pass over the best adjustment. Test ride after each adjustment.
- If, after setting, the suspension feels unusual, find the corresponding symptom in the table and test stiffer or softer compression and/or rebound damping adjustments until the correct settings are obtained as described.

	Symptom	Action
Stiff suspension	Suspension feels stiff on small bumps	1. Test softer low speed compression adjustment. 2. If it still feels stiff, further test softer low and high speed compression adjustments simultaneously.
	Suspension feels stiff on large bumps	1. Test softer high speed compression adjustment. 2. If it still feels stiff, further test softer low and high speed compression adjustments simultaneously.
	Entire travel too stiff	1. Test softer high and low speed compression adjustments and rebound adjustment simultaneously.
Soft suspension	Entire travel too soft	1. Test stiffer high and low speed compression adjustments simultaneously.
	Rear end sways	1. Test stiffer high and low speed compression adjustments and rebound adjustment to stiffer settings simultaneously.
Suspension bottoms	Suspension bottoms at landing after jumping	1. Test stiffer high speed compression adjustment. 2. If it still bottoms, test stiffer high and low speed compression adjustments.
	Suspension bottoms after landing	1. Test stiffer low speed compression adjustment. 2. If it still bottoms, test stiffer high and low speed compression adjustments.
	Suspension bottoms after end of continuous bumps	1. Test softer rebound damping adjustment. 2. If it still bottoms, test stiffer high and low speed compression adjustments and softer rebound damping adjustment.

Spark Plug Reading (Off-Road Use Only)

Refer to *Spark Plug* on page 86.

The following procedure is recommended.
You may not get an accurate reading if you simply turn off the engine and pull the plug for inspection.

Use a new spark plug. Inspect the plug before installing it.

NOTICE

Using spark plugs with an improper heat range or incorrect reach can cause engine damage.

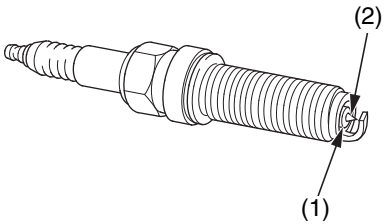
Ride for 10 – 15 minutes before taking a plug reading. A new plug will not color immediately.

Before removing the spark plug, clean the spark plug area thoroughly to prevent dirt from entering the cylinder.

To obtain an accurate reading of a new spark plug:
1. Accelerate at full throttle on a straight.
2. Depress and hold the engine stop button and pull the clutch lever in.
3. Coast to a stop.
4. Remove the spark plug.
5. Use a magnifying glass to inspect the spark plug. The porcelain insulator (1) around the center electrode (2) should appear clean and colorless with a gray ring around the center electrode where it exits the porcelain.
   Light gray or white color streaks the porcelain insulator and center electrode indicate lean air-fuel mixture. Wet or black sooty streaks on the porcelain indicate rich air-fuel mixture.

NOTICE

An improperly tightened spark plug can damage the engine. If a plug is too loose, the piston may be damaged. If a plug is too tight, the threads may be damaged.



(1) porcelain insulator (2) center electrode

Spark Plug Coloring Guidelines

Condition	Spark Plug Appearance	Mixture
Normal	Dark brown to light tan color with dry electrode	correct
Overheating (Lean)	Light gray or white color	lean
Wet (Rich)	Wet or sooty	rich

Remember that in addition to improper air-fuel mixture:
- A lean condition can be caused by air leaks in the inlet tract or exhaust system, the passage of too much air because of the use of the wrong air cleaner, or use of a less-restrictive aftermarket exhaust system.
- A rich condition can be caused by a plugged or dirty air cleaner, use of a more-restrictive aftermarket exhaust system, or excessive oil on the air cleaner.
  Excessive smoking will occur.

Chassis Adjustments

The following suggestions may improve a specific concern. Subtle changes in overall handling may also be noted.

Rear End (Off-Road Use Only)

If you have a problem with rear wheel traction, raise the rear end of your motorcycle by increasing the rear suspension spring pre-load. Instead of running 3.9 in (100 mm) of sag, you can run 3.5 in (90 mm) so the rear of the motorcycle will sit a little higher. This should produce more traction because of the change to the swingarm and location of your motorcycle's center of gravity.

If you have a problem with the steering head shaking when you use the front brake hard or if your motorcycle wants to turn too quickly, lower the rear of the motorcycle by reducing the rear suspension spring pre-load. This will increase fork rake and trail and should improve stability in a straight line. The effective suspension travel will be transferred toward the firmer end of wheel travel.

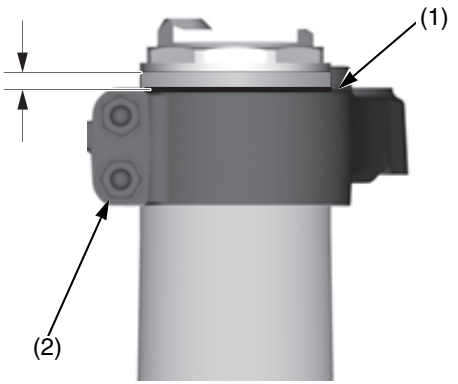
Keep the race sag adjustment (page 148) in the 3.7 – 4.5 in (95 – 115 mm) range.

Fork Height/Angle (Off-Road Use Only)

The position of the fork in the clamp is not adjustable.

Standard Position

The groove (1) in the outer tube is aligned with the top surface of the upper fork bridge (2).



(1) groove
(2) upper fork bridge

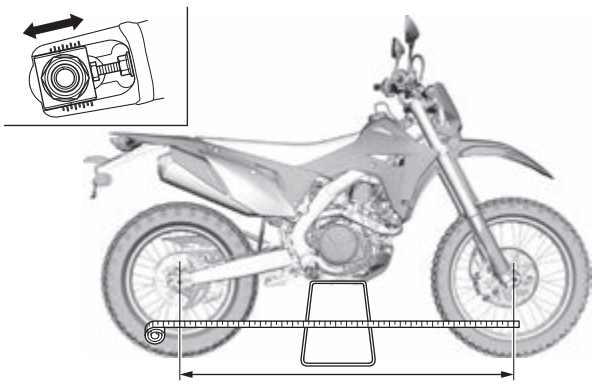
Wheelbase (Off-Road Use Only)

Adjusting your motorcycle's wheelbase can offer subtle changes in overall handling. You may adjust wheelbase by adding or removing links on the drive chain. If you change the wheelbase, be sure to recheck race sag and adjust, if necessary.

In the past, a general rule was lengthen the wheelbase to add straight line stability, shorten the wheelbase to improve turning. However, we suggest you do not lengthen the wheelbase of your motorcycle unless you are racing on a track with more fast sections than normal.

As a general recommendation, keep the wheelbase as short as possible. This positions the wheels closer together, improves turning response, increases weighting (traction) on the rear wheel, and lightens weighting on the front wheel.

With your motorcycle, you will probably find that the standard setting or a shorter wheelbase will offer more overall benefits.



Tire Selection for Track Conditions (Off-Road Use Only)

Choosing the correct tire tread pattern and rubber compound can affect your placing in off-road use. The tires on your motorcycle offer a “happy medium” for the variety of soil conditions the majority of riders are likely to encounter.

Experienced competitors often switch to tires developed for specific terrain conditions. If you do switch, stay with the factory recommended sizes. Other tires may affect handling or acceleration.

Be aware that tire sizes (width and aspect ratio) do vary from manufacturer to manufacturer or even among tires made by the same manufacturer. Variations in tires, especially the sidewall profile, can change the attitude of your motorcycle and its handling. Tire variations that raise or lower the rear of your motorcycle have a more significant effect on handling than variations in front tires which, generally, don’t vary as much.
Often, you can see or feel the change in tire size. Another way to check is to measure the rolling circumference of the old and new tires. A higher profile tire will have a larger rolling circumference.

If you do switch to tires designed for special terrain use, remember they will be less acceptable in other circumstances. For example, an aggressive mud tire will give excellent grip on wet, loamy terrain, but less impressive grip on a hard surface.

If you choose a tire with a sticky compound for added traction, remember that it may transfer additional loads to the transmission because it grips so well, especially when riding in situations that normally place unusual demands on the transmission.

Complete consumer information can be obtained from the various tire manufacturer representatives and dealers.

Some general recommendations for specific terrain follow:

Hard, Slick Soil
Use tires with many relatively short knobs that are close together in order to obtain the largest possible contact patch on the surface. The rubber compound needs to be softer for hard ground in order to hook up, but not so soft that the knobs roll over easily and affect holding a straight line. These tires tend to wear more quickly than standard tires because of the combination of soft rubber and hard terrain.

Muddy Soil
Use a more open tread pattern to avoid clogging. For these conditions, the relatively long knobs will probably be made from a harder rubber compound to reduce any tendency to bend back under acceleration or wear quickly.

Loose, Sandy Soil
Use a tire that is similar in construction to those needed for tacky soil and mud, but with a few more knobs.

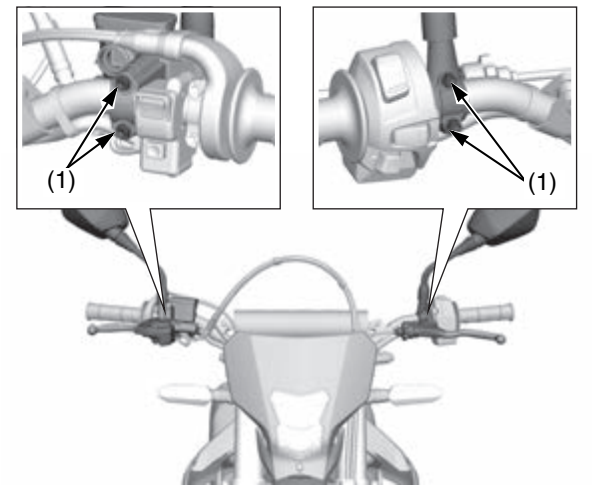
Personal Fit Adjustments

The following suggestions may make your ride both more comfortable and more responsive to your control input.

Control Positioning (Off-Road Use Only)

- Position the control levers so that you can use them comfortably when seated and standing.
- Adjust the mounting bolt (1) torque of the clutch and front brake lever assemblies so that they can rotate on the handlebar in a fall. If an assembly does not rotate, it may bend or break a control lever. Make sure that the bolts are torqued securely enough to prevent slippage during normal operation.

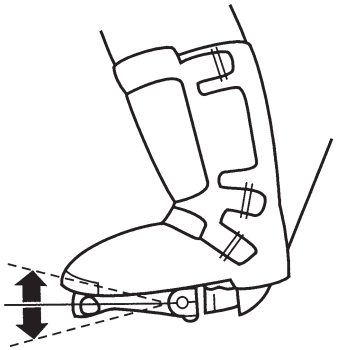
Apply Pro Honda Hondalock or an equivalent to the threads of these bolts prior to adjustment to help ensure the correct torque is retained. Tighten the top bolts first.



(1) control lever mounting bolts

As an alternative, consider wrapping the handlebar area under the control assemblies with Teflon tape. Then tighten the assemblies to their normal torque. Upon impact, the fully-tightened assemblies should rotate on the Teflon tape.

- Position the shift lever and rear brake pedal so they are close to your boot for rapid access, but not so close that either is depressed when sitting or standing comfortably on your motorcycle.



Handlebar Position (Off-Road Use Only)

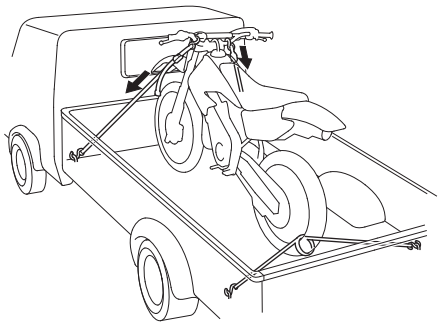
- Position the handlebar so that both gripping the bar and operating the controls are comfortable while both seated and standing, while riding straight ahead and turning.
  Tighten the forward handlebar upper holder bolts first.
- The handlebar position may be moved backward 0.2 in (6 mm) (by rotating the lower holders 180 degrees).
  Refer to an official Honda Service Manual for installation instructions. Be sure to check control cable and wiring harness routing after the adjustment.

Here's helpful advice on how to transport and store your motorcycle, as well as three troubleshooting flow charts.

Transporting Your Motorcycle

If you use a truck or motorcycle trailer to transport your motorcycle, we recommend that you follow these guidelines:

- Use a loading ramp.
- Relieve the fuel pressure (page 48) and drain the fuel from the fuel tank into an approved gasoline container.
- Secure the motorcycle in an upright position, using motorcycle tie-down straps. Avoid using rope, which can loosen and allow the motorcycle to fall over.



To secure your motorcycle, brace the front wheel against the front of the truck bed or trailer rail. Attach the lower ends of two straps to the tie-down hooks on truck bed or trailer rail. Attach the upper ends of the straps to the handlebar (one on the right side, the other on the left), close to the fork.

Check that the tie-down straps do not contact any control cables or electrical wiring.

Tighten both straps until the front suspension is compressed about half-way. Too much pressure is unnecessary and could damage the fork seals.

Use another tie-down strap to keep the rear of the motorcycle from moving.

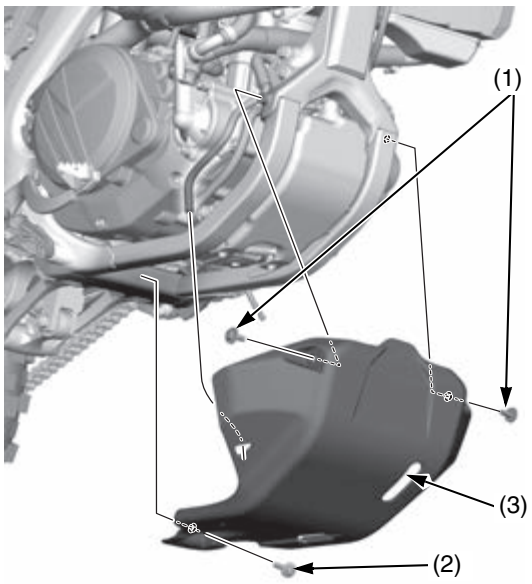
We recommend that you do not transport your motorcycle on its side. This can damage the motorcycle, and leaking gasoline could be a hazard.

If you won't be riding for an extended period, such as during the winter, thoroughly inspect your motorcycle and correct any problem before storing it. That way, needed repairs won't be forgotten and it will be easier to get your motorcycle running again.

To reduce or prevent deterioration that can occur during storage, also follow the following procedures.

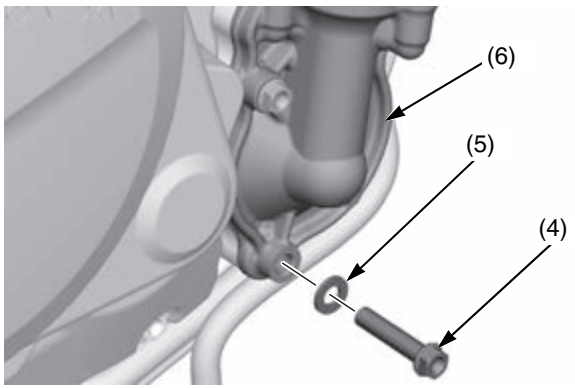
Preparation for Storage

1. Completely clean all parts of your motorcycle. If your motorcycle has been exposed to sea air or salt water, wash it down with fresh water and wipe dry.
2. Change the engine oil and filter (page 70).
3. Remove the engine guard A bolts/washers (1), B bolt/washer (2) and engine guard (3).



(1) engine guard A bolts/washers
(2) engine guard B bolt/washer
(3) engine guard

4. Remove the radiator cap and coolant drain bolt (4) and sealing washer (5) at the water pump cover (6) to drain coolant.
   After the coolant has been completely drained, reinstall the drain bolt with a new sealing washer and radiator cap.
   Tighten the drain bolt to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)



(4) coolant drain bolt
(5) sealing washer (new)
(6) water pump cover

5. Install the engine guard (3), then tighten the engine guard A bolts/washers (1), B bolt/washer (2) to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)
6. Lubricate the drive chain.
7. Relieve the fuel pressure (page 48) and drain the fuel from the fuel tank into an approved gasoline container.
8. Remove the battery.
   Store in an area protected from freezing temperatures and direct sunlight. Slow charge the battery (page 139) once a month.
9. Inflate the tires to their recommended pressures.
10. Place your motorcycle on an optional workstand or equivalent to raise both tires off the ground.
11. Stuff a rag into the muffler outlet. Then tie a plastic bag over the end of the muffler to prevent moisture from entering.
12. Store your motorcycle in an unheated area, free of dampness, away from sunlight, with a minimum of daily temperature variation.
13. Cover your motorcycle with a porous material. Avoid using plastic or similar non-breathing, coated materials that restrict air flow and allow heat and moisture to accumulate.

Removal from Storage

1. Uncover and clean your motorcycle.
   Change the engine oil if more than 4 months have passed since the start of storage.
2. Uncover the end of the muffler and remove the rag from the muffler outlet.
3. Fill the fuel tank with the recommended fuel (page 60).
4. Charge the battery (page 139) as required. Install the battery.
5. Pour a fresh recommended coolant mixture slowly into the radiator filler hole up to the filler neck (page 72).
   Capacity:
   1.31 US qt (1.24 ℓ) after disassembly
   1.20 US qt (1.14 ℓ) after draining

   Remove the radiator reserve tank cap and fill the reserve tank to the upper level line.
   Bleed air from the system (page 73).
6. Increase the fuel pressure (page 68).
7. Perform all maintenance checks (page 19).

You & the Environment

Owning and riding a motorcycle can be enjoyable, but you must do your part to protect nature. When you show respect for the land, wildlife, and other people, you also help preserve the sport of off-road riding.

Following are tips on how you can be an environmentally responsible motorcycle owner.

- **Choose Sensible Cleaners.** Use a biodegradable detergent when you wash your motorcycle. Avoid aerosol spray cleaners that contain chlorofluorocarbons (CFCs) which damage the atmosphere's protective ozone layer. Don't throw cleaning solvents away; see the following guidelines for proper disposal.
- **Recycle Wastes.** It's illegal and thoughtless to put used engine oil in the trash, down a drain, or on the ground. Used oil, gasoline, coolant, and cleaning solvents contain poisons that can hurt refuse workers and contaminate our drinking water, lakes, rivers, and oceans.
  Before changing your oil, make sure you have the proper containers. Put oil and other toxic wastes in separate sealed containers and take them to a recycling center. Call your local or state office of public works or environmental services to find a recycling center in your area and get instructions on how to dispose of non recyclable wastes.

NOTICE

Improper disposal of drained fluids is harmful to the environment.

The items that are serviceable using this Manual are followed by the page number reference in parenthesis. The items that require use of an official Honda Service Manual are followed by an asterisk (*).

ENGINE DOES NOT START OR IS HARD TO START

Operate the start button with the throttle grip in fully closed position (page 25).

CHECK		POSSIBLE CAUSES
1. Check the starter motor*	DOES NOT TURN	• Loose or disconnected battery terminals (P.139) • Blown main fuse (P.172) • Weak battery (P.139, 175) • Faulty starter relay switch or starter motor* • Faulty start button* • Faulty clutch switch • Faulty CKP sensor*
TURN ↓		
2. Check the starter/ ignition relay*	INCORRECT	• Faulty starter/ignition relay
CORRECT ↓		
3. Check the spark plug condition (P.86)	INCORRECT	• Incorrect spark plug heat range • Incorrect spark plug gap • Dirty air cleaner element
CORRECT ↓		
4. Try spark test*	WEAK OR NO SPARK	• Faulty spark plug (P.86) • Fouled spark plug (P.86) • Faulty ECM* • Broken or shorted spark plug wire • Faulty alternator* • Faulty ignition coil* • Faulty engine stop button* • Loose or disconnected ignition system wires • Faulty CKP sensor* • Faulty regulator/rectifier*
GOOD SPARK ↓		
5. Check the PGM-FI system (P.9)	INCORRECT	• Faulty PGM-FI system
CORRECT ↓		
6. Check the fuel pump operation and inspect the fuel flow*	INCORRECT	• Faulty fuel pump* • Clogged fuel pump filter
CORRECT ↓		
7. Check the fuel injector operating sound	INCORRECT	• Faulty PGM-FI system • Faulty fuel injector
CORRECT ↓		
8. Test cylinder compression*	LOW	• Valve clearance too small • Valve stuck open • Worn cylinder and piston ring* • Damaged cylinder head gasket • Improper valve timing* • Seized valve
CORRECT ↓		
9. Start by following normal starting procedure	ENGINE STARTS BUT SOON STOPS	• Insulator leaking • Improper ignition timing (Faulty ECM or CKP sensor)* • Fast idle knob stuck open or damaged • Fuel contaminated

ENGINE LACKS POWER

CHECK		POSSIBLE CAUSES
1. Check the wheel spin smoothness	INCORRECT	• Brake dragging • Worn or damaged wheel bearings • Bent axle shaft • Drive chain too tight
CORRECT ↓		
2. Check the tire pressure (P.127)	INCORRECT	• Faulty valve core • Punctured tire
CORRECT ↓		
3. Check the engine speed change accordingly when clutch is engaged*	NO GOOD	• Clutch slipping • Improperly adjusted clutch lever freeplay (P.81) • Worn clutch discs/plates (P.84) • Warped clutch discs/ plates (P.84) • Weak clutch springs* • Sticking clutch lifter • Additive in engine oil
GOOD ↓		
4. Check the engine speed increase	NO GOOD	• Dirty air cleaner element • Clogged muffler • Fast idle knob stuck open or damaged • Restricted fuel fill cap breather tube • Restricted fuel flow
GOOD ↓		
5. Check the engine knocking when accelerate or run the engine at high speed	YES	• Worn piston and cylinder* • Use of poor quality fuel • Excessive carbon build-up in combustion chamber • Ignition timing too advance (Faulty ECM)* • Lean fuel mixture
NO ↓		
6. Check the ignition timing*	INCORRECT	• Faulty ECM* • Faulty CKP sensor*
CORRECT ↓		
7. Test cylinder compression*	LOW	• Valve clearance too small • Valve stuck open • Worn cylinder and piston ring* • Damaged cylinder head gasket • Improper valve timing* • Faulty decompressor system*
CORRECT ↓		
8. Check the PGM-FI system (P.9)	INCORRECT	• Faulty PGM-FI system
CORRECT ↓		
9. Check the fuel pump operation and inspect the fuel flow*	INCORRECT	• Faulty fuel pump unit* • Clogged fuel pump filter
CORRECT ↓		
10. Check the spark plug condition (P.86)	INCORRECT	• Incorrect spark plug • Incorrect spark plug gap • Dirty air cleaner element
CORRECT ↓		
11. Check the engine oil level and condition (P.70)	INCORRECT	• Engine oil level too high • Engine oil level too low • Contaminated engine oil
CORRECT ↓		
12. Remove the cylinder head cover and inspect lubrication	INCORRECT	• Faulty oil pump* • Faulty pressure relief valve* • Clogged oil passage* • Clogged oil strainer screen*

(cont'd)

POOR PERFORMANCE AT LOW AND IDLE SPEED

CHECK		POSSIBLE CAUSES
1. Check the spark plug condition (P.86)	INCORRECT →	• Incorrect spark plug heat range • Incorrect spark plug gap • Plug not serviced frequently enough
↓ CORRECT		
2. Check the ignition timing*	INCORRECT →	• Faulty ECM* • Faulty CKP sensor*
↓ CORRECT		
3. Check the PGM-FI system (P.9)	INCORRECT →	• Faulty PGM-FI system
↓ CORRECT		
4. Check the fuel pump operation and inspect the fuel flow*	INCORRECT →	• Faulty fuel pump unit* • Clogged fuel pump filter
↓ CORRECT		
5. Check the insulator for leaks	INCORRECT →	• Loose insulator • Damaged insulator
↓ CORRECT		
6. Check the valve clearance (P.87)	INCORRECT →	• Faulty valve clearance • Faulty valve* • Faulty valve seat* • Faulty camshaft*
↓ CORRECT		
7. Try spark test*	WEAK OR INTERMITTENT SPARK →	• Faulty, carbon or wet fouled spark plug (P.86) • Faulty ECM* • Faulty alternator* • Faulty ignition coil* • Broken or shorted spark plug wire. • Faulty CKP sensor* • Loose or disconnected ignition system wires • Faulty engine stop button* • Faulty regulator/rectifier*

POOR PERFORMANCE AT HIGH SPEED

CHECK		POSSIBLE CAUSES
1. Check the ignition timing*	INCORRECT →	• Faulty ECM* • Faulty CKP sensor*
↓ CORRECT		
2. Check the air cleaner (P.75)	DIRTY →	• Not cleaned frequently enough
↓ AIR CLEANER NOT DIRTY		
3. Check the PGM-FI system (P.9)	INCORRECT →	• Faulty PGM-FI system
↓ CORRECT		
4. Check the fuel pump operation and inspect the fuel flow*	INCORRECT →	• Faulty fuel pump unit* • Clogged fuel pump filter
↓ CORRECT		
5. Check the valve timing	INCORRECT →	• Camshaft not installed properly (P.92)
↓ CORRECT		
6. Check the valve clearance (P.87)	INCORRECT →	• Faulty valve clearance • Faulty valve* • Faulty valve seat* • Faulty camshaft*
↓ CORRECT		
7. Check the valve springs*	WEAR →	• Faulty valve springs*
↓ GOOD		
8. Try spark test*	WEAK OR INTERMITTENT SPARK →	• Faulty, carbon or wet fouled spark plug (P.86) • Faulty ECM* • Faulty alternator* • Faulty ignition coil* • Broken or shorted spark plug wire. • Faulty CKP sensor* • Loose or disconnected ignition system wires • Faulty engine stop button* • Faulty regulator/rectifier*
↓ GOOD SPARK		
9. Remove and inspect the cam lobe height*	WORN →	• Faulty camshaft*
↓ CORRECT		

POOR HANDLING

Steering is heavy
- Steering stem adjusting nut too tight*
- Damaged steering head bearings

Either wheel is wobbling
- Excessive wheel bearing play
- Bent rim
- Improperly installed wheel hub
- Excessively worn swingarm pivot bearings
- Bent frame

The motorcycle pulls to one side
- Front and rear wheels not aligned
- Bent fork
- Bent swingarm
- Bent axle shaft
- Bent frame

This section discusses the more common problems that can occur with your motorcycle while you're riding. It tells you how to evaluate each problem and what actions you can take to try to resume riding. If the problem cannot be safely solved, this section also gives instructions on the proper way to have your motorcycle transported.

For information about transporting your motorcycle, see page 158.

Taking Care of the Unexpected

General Guidelines

Keeping your motorcycle well-maintained is the best way to reduce the possibility of having a problem on the road.

Remember to take along your owner's manual, the tool kit that came with your motorcycle, and any other items (such as tire repair supplies and additional tools) that might help you solve a problem on your own.

Should you ever have a problem while riding, please follow these guidelines:

- Always put personal safety first.
- Take time to assess the situation and your options before deciding what to do.
- If the problem is relatively minor and you have the tools, supplies, and skills to make a temporary repair, be sure to have permanent repairs made as soon as possible.
- Do not continue riding if you are hurt or your motorcycle is not in safe riding condition.

Additional recommendations for specific problems follow.

Proper operation and maintenance can prevent starting and engine performance problems. In many cases, the cause of the problem may be a simple operational oversight.

If you have a problem starting the engine – or experience poor engine performance – the following information may help you. If you can't correct the problem, see your dealer.

If your motorcycle won't start, listen as you press the start button. If you don't hear the starter motor turning, refer to the Starter motor doesn't operate symptom. If you can hear the starter motor working normally, refer to the Starter motor works, but the engine won't start symptom.

SYMPTOM: **Starter motor doesn't operate.**	
POSSIBLE CAUSE	WHAT TO DO
ignition switch OFF	Turn the ignition switch ON.
engine stop switch OFF	Turn the engine stop switch to ◯ (Run) position.
transmission not in neutral	Shift into neutral.
side stand down (when transmission not in neutral)	Put the transmission in neutral or raise the side stand and pull the clutch lever in.
blown fuse	Replace with a new fuse of the same rating (page 172).
battery lead loose	Tighten the battery lead.
low (or dead) battery	Charge the battery (page 139). If charging doesn't help, see your dealer.
faulty starter motor	If all possible causes are negative, the starter motor may be faulty. See your dealer.

SYMPTOM: **Starter motor works, but the engine won't start.**	
POSSIBLE CAUSE	WHAT TO DO
out of fuel	Fill the fuel tank.
flooded engine	See Flooded Engine (page 26).
loose or unconnected spark plug cap	Install the spark plug cap securely. If the engine still won't start, see your dealer.
loose battery cables	Tighten the battery terminal bolts.
weak battery	Charge the battery (page 139). If charging doesn't help, see your dealer.

SYMPTOM: **Engine starts, but stalls as you shift into gear.**	
POSSIBLE CAUSE	WHAT TO DO
side stand down	Raise the side stand. Start again.

SYMPTOM: **Engine starts, but runs poorly.**	
POSSIBLE CAUSE	WHAT TO DO
idles roughly, too fast, stalls	Check engine idle adjustment (page 80). If the problem persists, see your dealer.
overheating	Check the coolant temperature indicator. Refer to If the High Coolant Temperature Indicator Lights, page 170.
runs erratically, misfires	May damage catalytic converter. See your dealer.
blubbers (rich fuel mixture)	See your dealer.
sooty exhaust (rich fuel mixture)	See your dealer.
detonates or pings under load	If applicable, switch to the recommended octane gasoline (page 60) or change your brand of gasoline. If the problem persists, see your dealer.
afterfires (backfires)	May damage catalytic converter. See your dealer.
pre-ignition (runs on after ignition switched OFF)	May damage catalytic converter. See your dealer.

A flat tire is always unwelcome, especially if you are far from help. If you think you are losing air, or you hit a pothole or hard object, pull safely to the side of the road so you can inspect the tires and assess the situation. (Be sure to park on a firm, level surface and use the side stand for support.) You should examine the tire treads and sidewalls for foreign objects or damage.

If a tire has major damage or the bead has come loose from the rim, there is probably not much you can do except have your motorcycle transported to your dealer or other qualified service facility. Even with a simple puncture, this may be the safest and least troublesome solution. For transporting instructions, see page 158

Honda does not recommend that you make a temporary repair to a tube-type tire. However, if you decide to make a temporary repair so you can get to a service facility, ride cautiously at reduced speed and have the tube and tire replaced before you ride again.

⚠ WARNING

Riding your motorcycle with a temporary tire or tube repair can be risky. If the temporary repair fails, you can crash and be seriously injured or killed.

If you must ride with a temporary tire or tube repair, ride slowly and carefully and do not exceed 30 mph (50 km/h) until the tire or tube is replaced.

Due to the uncertainty of any temporary repair, you should ride slowly (not over 30 mph, 50 km/h) and carefully (preferably without a cargo) until the tire and tube are replaced. Stop frequently and check the air pressure. If the tire is losing pressure, it may be unsafe to continue riding. As the tire gets low, it will affect the handling of your motorcycle (especially with a cargo) and it may overheat and blow out.

Should You Repair or Replace a Tire or Tube?

We strongly recommend that you replace, not repair, any tire or tube that is punctured or damaged, even if the tire has only a minor puncture. For a full discussion of repairs and replacement, see the text beginning on page 127.

Emergency Front Wheel Removal/ Installation

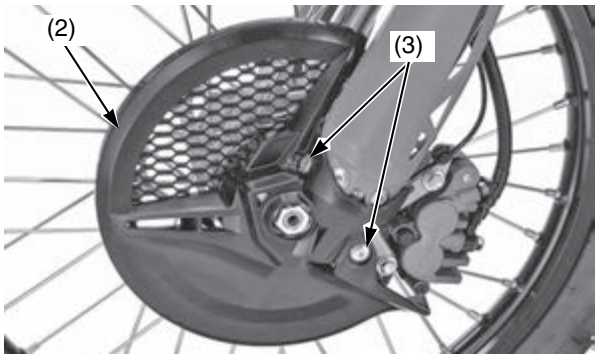
Refer to *Important Safety Precautions* on page 33.

We recommend wheel removal be done only by your dealer or another qualified mechanic. Do not attempt to remove the wheel on your own. Wheel removal requires mechanical skill and professional tools.

When removing and installing the wheel, be careful not to damage the wheel speed sensor and pulser ring (1).

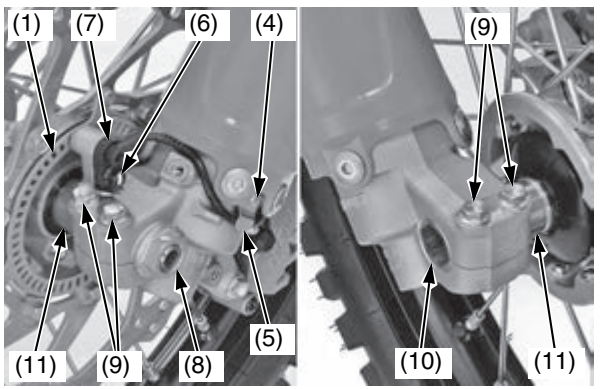
Removal

1. Place your motorcycle on an optional workstand or equivalent support with the front wheel off the ground.
2. Remove the disc cover (2) by removing disc cover socket bolts (3).



(2) disc cover (3) disc cover socket bolts

3. Remove the speed sensor wire guide plate screw (4) and guide plate (5). Remove the speed sensor mounting bolt (6) and speed sensor (7).
4. Remove the front axle nut (8) and loosen the axle pinch bolts (9) on both forks. Pull the front axle shaft (10) out of the wheel hub and remove the front wheel and side collars (11).
   - Avoid getting grease, oil, or dirt on the disc or pad surfaces.
   - Do not pull the brake lever while the wheel is off the motorcycle.

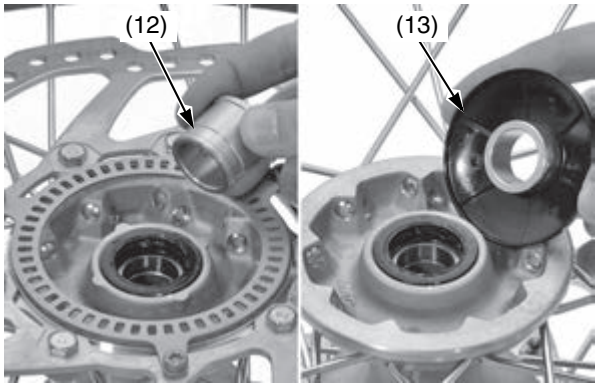


(1) pulser ring
(4) screw
(5) plate
(6) bolt
(7) speed sensor
(8) front axle nut
(9) axle pinch bolts
(10) front axle shaft
(11) side collars

(cont'd)

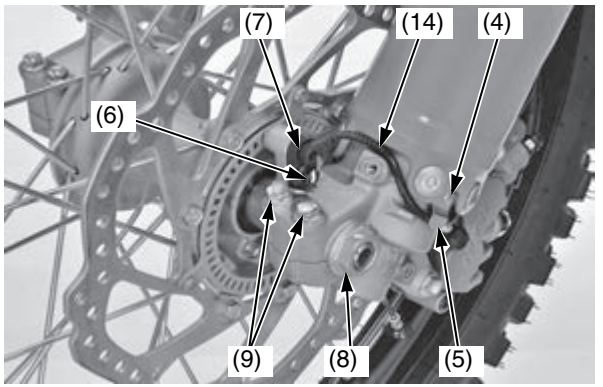
Installation

1. Clean the surfaces where the axle and axle clamps contact each other. Apply grease to each dust seal lips of the front wheel.
   Install the left side collar (12) and right side collar (13) into the wheel hub.



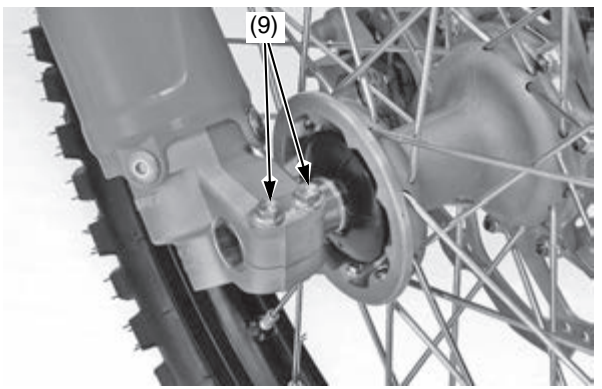
(12) left side collar (13) right side collar

2. Install the front wheel between the fork legs while inserting the disc between the pads, being careful not to damage the pads.
3. Insert the front axle shaft through the forks and wheel hub from the right side. Make sure that the front axle shaft is seated firmly onto the left fork leg clamp inner surface. Tighten the front axle nut (8) to the specified torque:
   65 lbf·ft (88 N·m, 9.0 kgf·m)
   Tighten the left axle pinch bolts (9) to the specified torque:
   15 lbf·ft (20 N·m, 2.0 kgf·m)
4. Route the speed sensor wire (14) properly and install the speed sensor (7) to the left fork bracket. Install and tighten the speed sensor mounting bolt (6).
   Install the speed sensor wire guide plate (5) and tighten the guide plate screw (4).



(4) screw
(5) plate
(6) bolt
(7) speed sensor
(8) front axle nut
(9) axle pinch bolts
(14) speed sensor wire

5. While keeping the forks parallel, alternately tighten the right axle pinch bolts (9) to the specified torque:
   15 lbf·ft (20 N·m, 2.0 kgf·m)



(9) axle pinch bolts

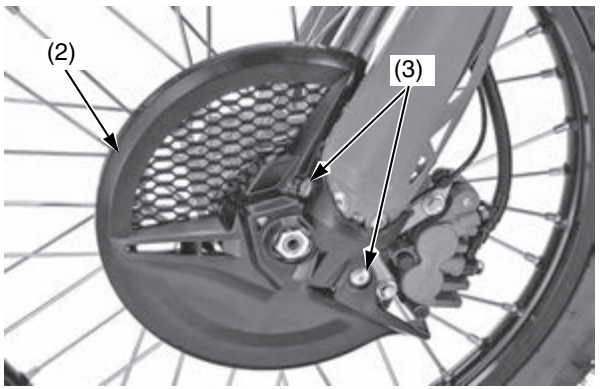
NOTICE

To avoid damage when torquing the axle pinch bolts, be sure the axle is seated firmly onto the left fork leg clamp inner surface.

6. Operate the front brake and pump the fork several times. Check for free wheel rotation after the brake is released. Recheck the wheel if the brake drags or the wheel does not rotate freely.
7. Install the disc cover (2) and tighten the disc cover socket bolts (3) to the specified torque:
   10 lbf·ft (13 N·m, 1.3 kgf·m)

NOTICE

Do not ride with the disc cover removed. Doing so may damage the speed snsor wire.



(2) disc cover (3) disc cover socket bolts

If a torque wrench is not used for installation, see your dealer as soon as possible to verify proper assembly. Improper assembly may lead to loss of braking capability.

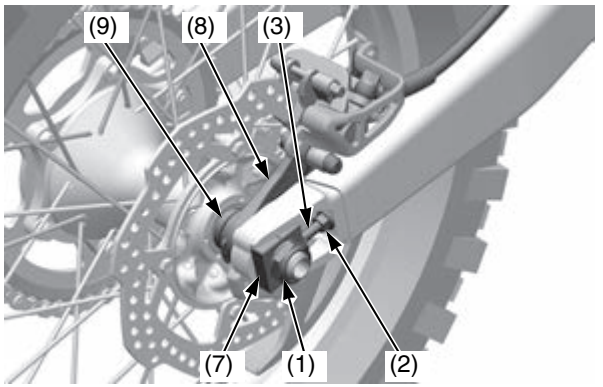
Emergency Rear Wheel Removal/ Installation

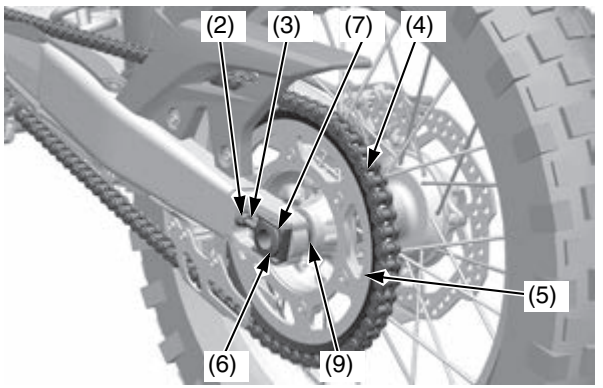
Refer to *Important Safety Precautions* on page 33.

We recommend wheel removal be done only by your dealer or another qualified mechanic. Do not attempt to remove the wheel on your own. Wheel removal requires mechanical skill and professional tools.

Removal

1. Place your motorcycle on an optional workstand or equivalent support with the rear wheel off the ground.
2. Loosen the rear axle nut (1) and lock nuts (2) , and turn the adjusting bolts (3) so the rear wheel can be moved all the way forward for maximum drive chain slack.
3. Remove the rear axle nut.
4. Remove the drive chain (4) from the driven sprocket (5) by pushing the rear wheel forward.
5. Remove the rear axle shaft (6) and adjusting plates (7).
6. Remove the brake caliper bracket (8), rear wheel and side collars (9).
   - Support the brake caliper assembly so that it doesn't hang from the brake hose. Do not twist the brake hose.
   - Avoid getting grease, oil, or dirt on the disc or pad surfaces.
   - Do not push the brake pedal while the wheel is removed.

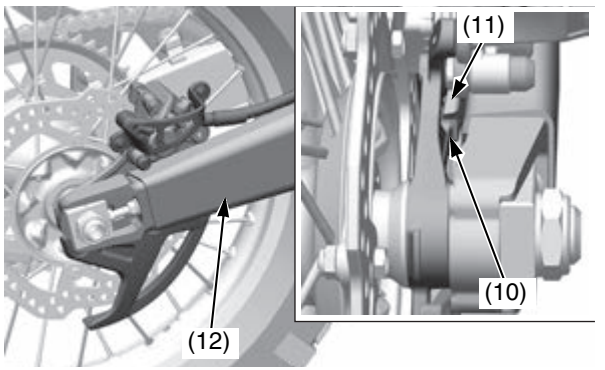




(1) rear axle nut
(2) lock nuts
(3) adjusting bolts
(4) drive chain
(5) driven sprocket
(6) rear axle shaft
(7) adjusting plates
(8) brake caliper bracket
(9) side collars

Installation

1. Install the side collars and position the wheel and rear brake bracket.
   - While installing the wheel, carefully fit the brake disc between the brake pads to avoid damaging the pads.
   - Avoid getting grease, oil, or dirt on the disc or pad surfaces. Any contamination can cause poor brake performance or rapid pad wear after reassembly.
2. Make sure that the lug (10) on the caliper bracket is positioned in the slot (11) on the swingarm (12).
3. Insert the rear axle shaft from the left side, through the left swingarm, wheel hub and caliper bracket.
4. Install the drive chain by pushing the rear wheel forward.
5. Install the rear axle nut and adjust the drive chain slack. Refer to drive chain adjustment (page 131).
6. Tighten the rear axle nut to the specified torque:
   94 lbf·ft (128 N·m, 13.1 kgf·m)
   Failure to provide adequate disc-to-rear brake bracket clearance may damage the brake discs and impair braking efficiency.



(10) lug
(11) slot
(12) swingarm

7. After installing the wheel, apply the brakes several times, then recheck both discs for caliper holder to disc clearance. Do not operate the motorcycle without adequate clearance.

If a torque wrench is not used for installation, see your dealer as soon as possible to verify proper assembly. Improper assembly may lead to loss of braking capability.

If the High Coolant Temperature Indicator Lights

Normally, the temperature of the coolant in the cooling system will rise to a level about midway between cold and boiling. Hot weather may cause the temperature to rise higher than normal. So will temporary stress such as climbing a hill. If you're stuck in stop-and-go traffic, the temperature may climb some, but the radiator fan is designed to prevent overheating. Be aware of these variations.

If the high coolant temperature indicator (page 9) comes on for no apparent reason, pull safely to the side of the road. If possible, park in a shady area.

NOTICE

Continuing to ride with an overheated engine can cause serious engine damage.

- A steaming engine indicates a coolant leak. Shut the engine off and wait until the steaming stops. Look for a leak, but don't touch the engine or radiator system. Let everything cool off first.
- If there's no obvious problem, leave the engine on so the fan and coolant circulating system can continue working. Monitor the high coolant temperature indicator. The indicator may turn off after a brief stop with no load on the engine.
- Check the radiator fan.
  If the fan is not working, turn the engine off. Open the fuse box (page 172) and check the radiator fan fuse. If the fuse is blown, replace it with the proper (same rating) spare fuse. Start the engine. If the high coolant temperature indicator comes on and stays on, turn the engine off.
  If the radiator fan is working, visually check the coolant level in the reserve tank. It isn't necessary to touch the radiator system.
- If the reserve tank is low or empty, don't ride without adding coolant (page 72). After adding coolant, turn the engine on and check the high coolant temperature indicator.
  If the indicator doesn't turn off, do not ride. The engine needs repair. Transport your motorcycle to your dealer (page 158).
  If the temperature drops to normal, check the coolant level. If it has gone down, add more coolant.

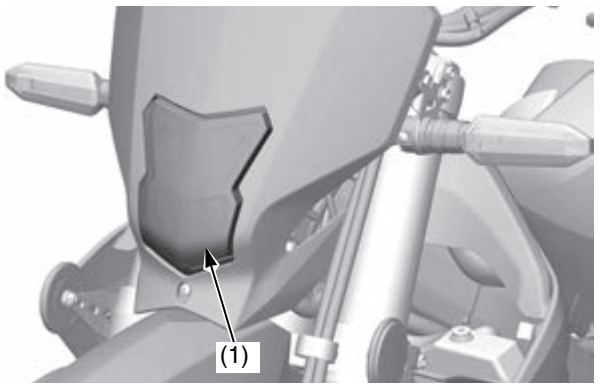
If you are able to resume riding, continue to monitor the high coolant temperature indicator frequently.

If there's a mild coolant leak, you can ride for awhile, carefully watching the high coolant temperature indicator. Be prepared to stop and add more coolant or water. If the leak is bad, transport your motorcycle to your dealer (page 158).

Burned-out Light Bulb

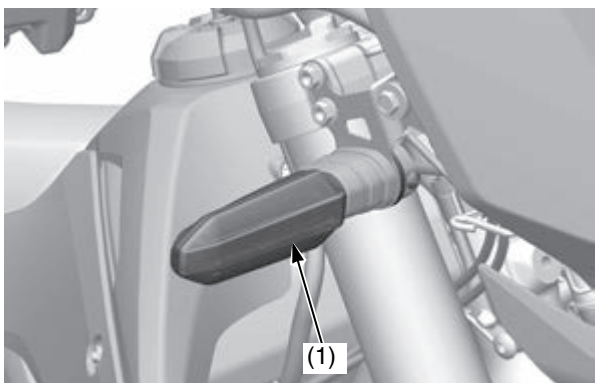
All light bulbs on the motorcycle are LEDs. If there is an LED which is not turned on, see your dealer for servicing.

Headlight
The headlight (1) uses several LEDs.
If there is an LED which is not turned on, see your dealer for servicing.



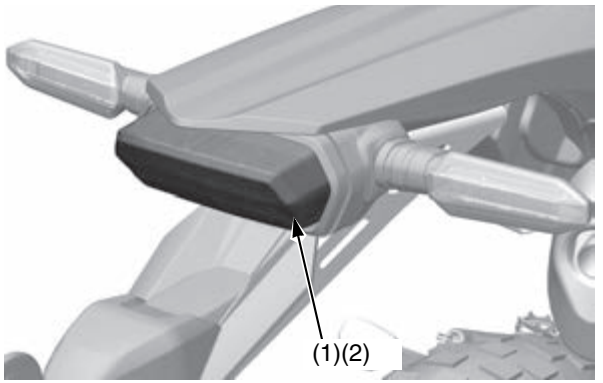
(1) headlight

Position Light
The position lights (1) use several LEDs.
If there is an LED which is not turned on, see your dealer for servicing.



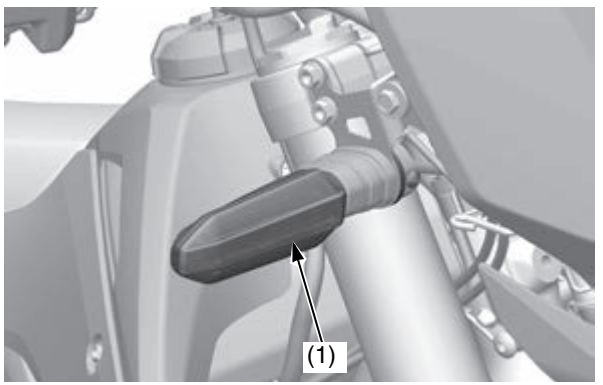
(1) position light

Brake light/Taillight
The brake light (1) and taillight (2) uses several LEDs.
If there is an LED which is not turned on, see your dealer for servicing.



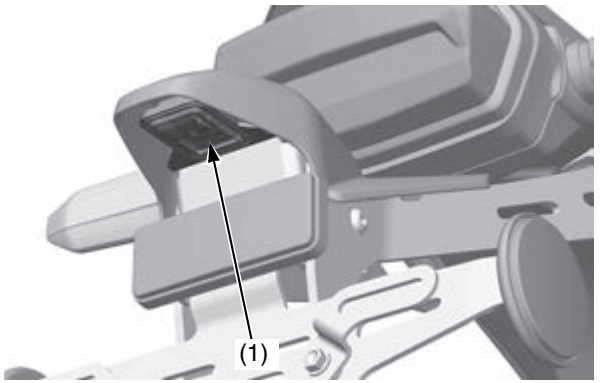
(1) brake light (2) taillight

Front/Rear Turn Signal Light
The front and rear turn signal lights (1) use several LEDs.
If there is an LED which is not turned on, see your dealer for servicing.



(1) turn signal light

License Plate Light
The license plate light (1) uses an LED.
If there is an LED which is not turned on, see your dealer for servicing.

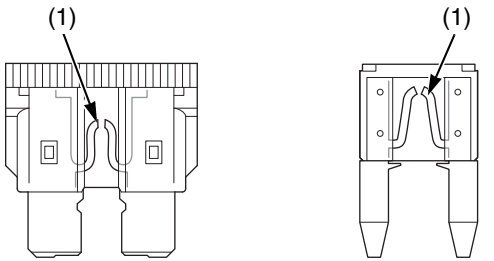


(1) license plate light

If a Fuse Blows

All of the electrical circuits on your motorcycle have a fuse to protect them from damage caused by excess current flow (short circuit or overload).

If something electrical on your motorcycle stops working, the first thing you should check for is a blown fuse (1). Determine from the chart on the circuit fuse box cover which fuse or fuses control that component. Check the fuse before looking elsewhere for another possible cause of the problem. Replace a blown fuse and check component operation.



(1) blown fuse

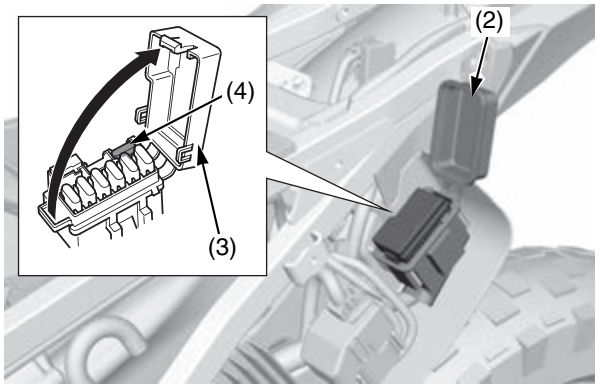
The main fuse and circuit fuses are located on the behind the left side cover.

Recommended Fuses

Main fuse	20 A
Other fuses	10 A

Circuit Fuses Access:

1. To prevent an accidental short circuit, turn the ignition switch OFF before checking or replacing the fuses.
2. Remove the seat (page 46).
3. Remove the left side cover (page 47).
4. Open the rubber fuse box cover (2) and fuse box cover (3).
5. Pull out the fuses one by one to check for a blown fuse. Always replace a blown fuse with a spare of the same rating.



(2) rubber fuse box cover
(3) fuse box cover
(4) spare fuse

6. Close the fuse box cover and rubber fuse box cover.
7. Install the left side cover (page 47).
8. Install the seat (page 46).

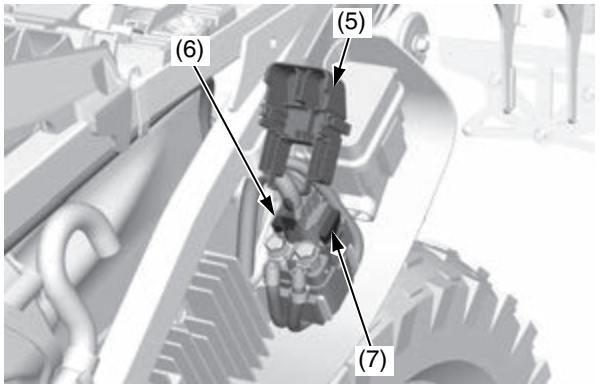
If you do not have a replacement fuse with the proper rating for the circuit, install one with a lower rating.

NOTICE

Replacing a fuse with one that has a higher rating greatly increases the chance of damage to the electrical system.

Main Fuse Access:

1. To prevent an accidental short circuit, turn the ignition switch OFF before checking or replacing the fuse.
2. Remove the seat (page 46).
3. Remove the left side cover (page 47).
4. Remove the start magnetic switch cover (5).
5. Pull out the main fuse (6) to check for a blown fuse. Always replace a blown fuse with a spare of the same rating.



(5) start magnetic switch cover
(6) main fuse
(7) spare main fuse

6. Close the start magnetic switch cover.
7. Install the left side cover (page 47).
8. Install the seat (page 46).

If you do not have a replacement fuse with the proper rating for the circuit, install one with a lower rating.

NOTICE

Replacing a fuse with one that has a higher rating greatly increases the chance of damage to the electrical system.

If you replace a blown fuse with a spare fuse that has a lower rating, replace the fuse with the correct rating as soon as you can. Also remember to replace the spare fuse that was installed.

If the replacement fuse of the same rating burns out in a short time, there is probably a serious electrical problem on your motorcycle.
Leave the blown fuse in that circuit and have your motorcycle checked by your dealer.

Personal safety is your first priority after a crash. If you or anyone else has been injured, take time to assess the severity of the injuries and whether it is safe to continue riding. Call for emergency assistance if needed. Also follow applicable laws and regulations if another person or vehicle is involved in the crash.

If you decide that you are capable of riding safely, first evaluate the condition of your motorcycle. If the engine is still running, turn it off and look it over carefully; inspect it for fluid leaks, check the tightness of critical nuts and bolts, and secure such parts as the handlebar, control levers, brakes, and wheels.

If there is minor damage, or you are unsure about possible damage, ride slowly and cautiously. Sometimes, crash damage is hidden or not immediately apparent, so you should have your motorcycle thoroughly checked at a qualified service facility as soon as possible. Also, be sure to have your dealer check the frame and suspension after any serious crash.

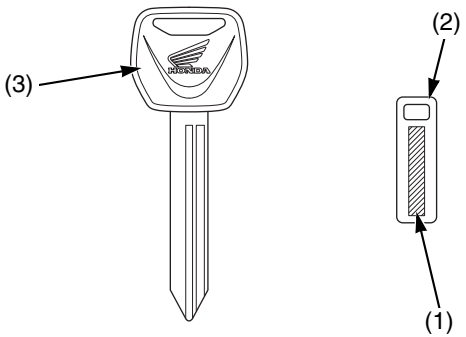
If your motorcycle cannot be ridden, see *Transporting Your Motorcycle*, page 158.

If You Lose Your Key

Be sure to record your key number (1) provided with the key number plate (2). Store the spare key and recorded key number in a safe location. You'll need this number to have a duplicate key made.

A lost key won't be a problem if you take preventative action. Store one duplicate key in a safe place at home and carry a second duplicate in your wallet.

If you lose your key and aren't carrying a duplicate, either get your spare or have one made. If you don't know your key number, call the dealer where you purchased your motorcycle. They may have it listed in their records. If they don't, transport your motorcycle to them or the nearest dealer. The dealer will probably have to remove the ignition switch assembly to find the key number so they can make a key for you.



(1) key number
(2) key number plate
(3) ignition key

If an overvoltage, overcurrent, or short circuit is applied, the battery fuse may blow.

Do not jump-start as this can damage your motorcycle's electrical system and battery.

Bump starting is not recommended.

Check the battery voltage using a digital multi meter with the cable connected.

Below 1V: The battery has failed; replace the battery.

Between 1V and 8V: The battery may have failed; charge the battery and then recheck. If you can’t charge the battery or it appears unable to hold a charge, see your dealer.

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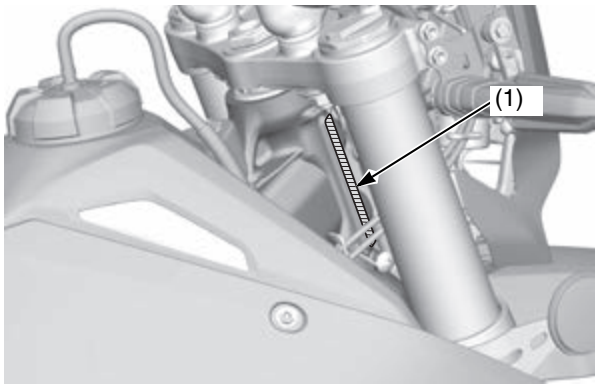
This section contains dimensions, capacities, and other technical data, plus information on government requirements.

Vehicle Identification

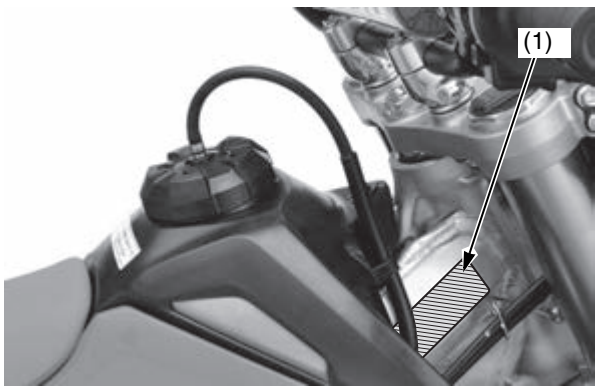
Serial Numbers

The VIN and engine serial number are required when you register your motorcycle. They may also be required when ordering replacement parts. You may record these numbers in the Quick Reference section at the rear of this manual.

The VIN (vehicle identification number) (1) is stamped on the right side of the steering head and also appears on the Safety Certification Label attached to the right side of the frame.

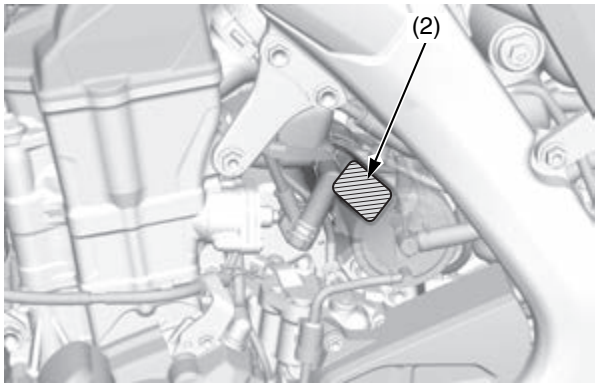


(1) VIN



(1) VIN

The engine number (2) is stamped on the right crankcase.



(2) engine number

Item	English	Metric
Dimension		
Overall length	89.8 in	2,280 mm
Overall width	32.5 in	825 mm
Overall height	49.6 in	1,260 mm
Wheelbase	59.1 in	1,500 mm
Seat height	37.0 in	940 mm
Footpeg height	15.7 in	400 mm
Ground clearance	12.4 in	315 mm
Frame		
Type	Twin tube	
F. suspension	Telescopic fork, travel 10.55 in (268 mm) stroke 12.01 in (305 mm)	
R. suspension	Pro-link, travel 11.81 in (300 mm)	
Tire size, front	80/100-21 M/C 51P	
	IRC	GP-21F
Tire size, rear	120/80-18 M/C 62P	
	IRC	GP-22R
Tire type	bias-ply, tube	
Tire pressure, front (cold)	22 psi (150 kPa, 1.50 kgf/cm^2)	
Tire pressure, rear (cold)	22 psi (150 kPa, 1.50 kgf/cm^2)	
Minimum tread depth, front	0.12 in	3.0 mm
Minimum tread depth, rear	0.12 in	3.0 mm
F. brake, swept area	Single disc brake 56.0 in^2 (361.0 cm^2)	
R. brake, swept area	Single disc brake 60.5 in^2 (390.3 cm^2)	
Fuel	unleaded gasoline, pump octane number of 91 or higher	
Fuel tank capacity	2.01 US gal	7.6 ℓ
Caster angle	28°30’	
Trail length	4.8 in	122 mm

Fork oil capacity (except damper)	12.0 US oz	355 cm^3
Fork oil capacity (damper)	8.2 US oz	243 cm^3
Capacities		
Passenger capacity	Operator only	
Maximum weight capacity	220 lb	100 kg

Item	English	Metric
Engine		
Type	Liquid cooled, 4-stroke	
Cylinder arrangement	Single 10° inclined from vertical	
Bore and stroke	3.78 x 2.44 in	96.0 x 62.1 mm
Displacement	27.4 cu-in	449 cm^3
Compression ratio	12.0 : 1	
Valve clearance (cold)	Intake: 0.004 ± 0.001 in (0.11 ± 0.03 mm) Exhaust:0.011 ± 0.001 in (0.28 ± 0.03 mm)	
Engine oil capacity		
after draining	1.16 US qt	1.10 ℓ
after draining and oil filter change	1.22 US qt	1.15 ℓ
after disassembly	1.53 US qt	1.45 ℓ
Throttle body		
Identification number	GQ2HA	
Idle speed	1,800 ± 100 rpm	
Cooling system		
Cooling capacity		
after draining	1.20 US qt	1.14 ℓ
after disassembly	1.31 US qt	1.24 ℓ

(cont’d)

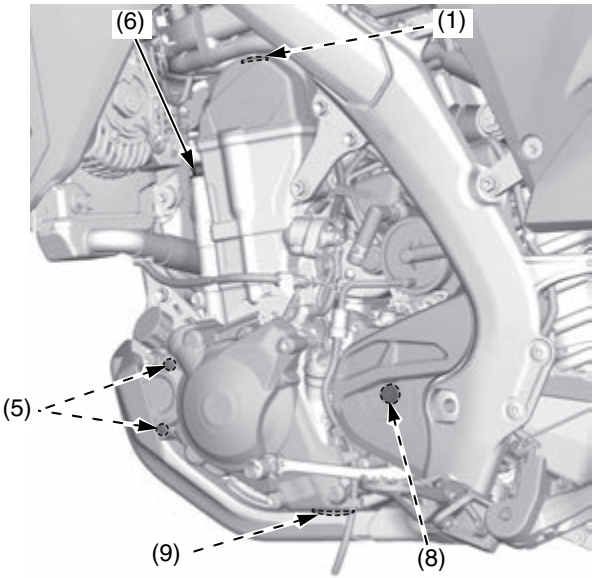
Specifications

Item	English	Metric
Drive train		
Clutch type	Wet, multi-plate type	
Transmission	6-speed, constant mesh	
Primary reduction	2.357	
Gear ratio I	2.357	
Gear ratio II	1.705	
Gear ratio III	1.300	
Gear ratio IV	1.090	
Gear ratio V	0.916	
Gear ratio VI	0.793	
Final reduction	3.923	
Gear shift pattern	Left foot-operated return system 1-N-2-3-4-5-6	
Electrical		
Battery	HY93-C lithium-ion (li-ion) 12 V-4.5 Ah (20HR)	
Ignition	ECM	
Starting system	Electric	
Spark plug	NGK	
Standard	SILMAR9A-9S	
For extended high speed riding	NGK SILMAR10A-9S	
Spark plug gap	0.031 – 0.035 in (0.8 – 0.9 mm)	
Lights		
Headlight	LED	
Brake/taillight	LED	
Turn signal light	LED	
Position light	LED	
Fuse		
Main fuse	20 A	
Other fuse	10 A	

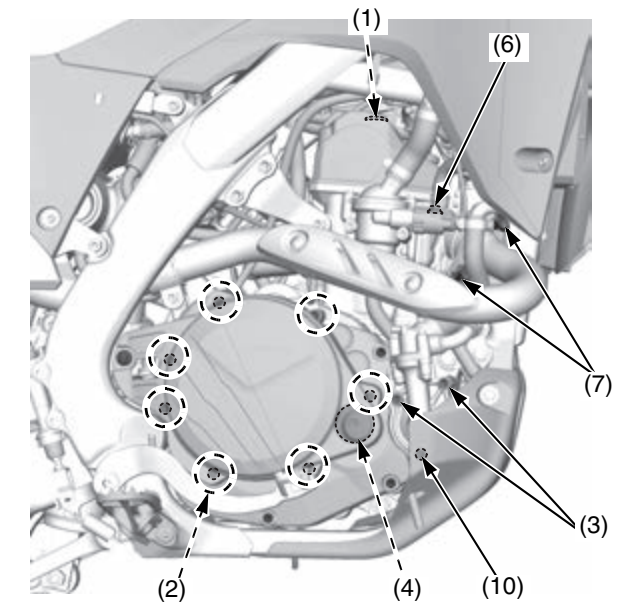
Nuts, Bolts, Fasteners

Check and tighten nuts, bolts, and fasteners before every outing.

LEFT SIDE



RIGHT SIDE



ENGINE

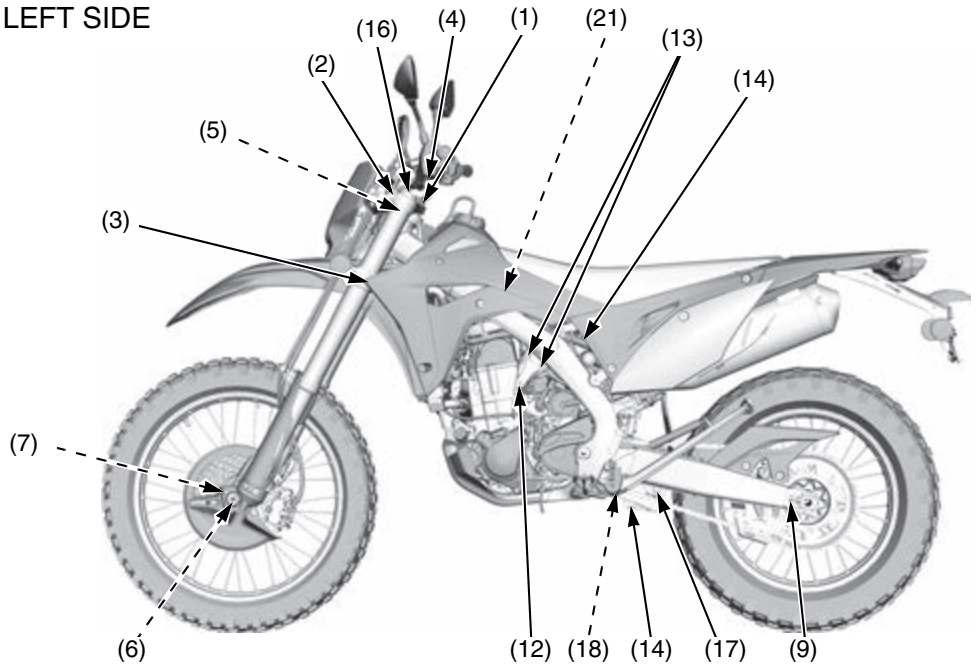
Item		Torque			Remarks
		lbf·ft	N·m	kgf·m	
1	Cylinder head cover socket bolts	7	10	1.0	
2	Clutch cover bolts	7	10	1.0	
3	Water pump cover bolts	7	10	1.0	
4	Crankshaft hole cap	11	15	1.5	NOTE 1
5	Oil filter cover bolts	7	10	1.0	
6	Cylinder head bolts	37	50	5.1	NOTE 2
7	Exhaust pipe joint nuts	16	22	2.2	
8	Drive sprocket bolt	23	31	3.2	
9	Engine oil drain bolt	13	18	1.8	NOTE 2
10	Coolant drain bolt	7	10	1.0	

NOTES: 1. Apply grease to the threads.
2. Apply engine oil to the threads and seating surface.

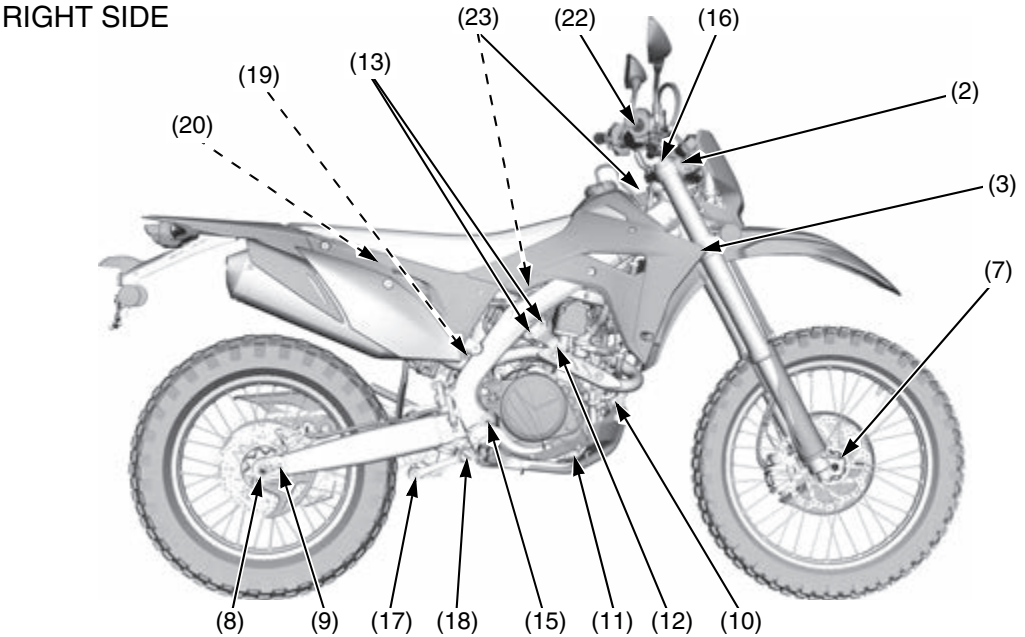
(cont'd)

Torque Specifications

LEFT SIDE



RIGHT SIDE

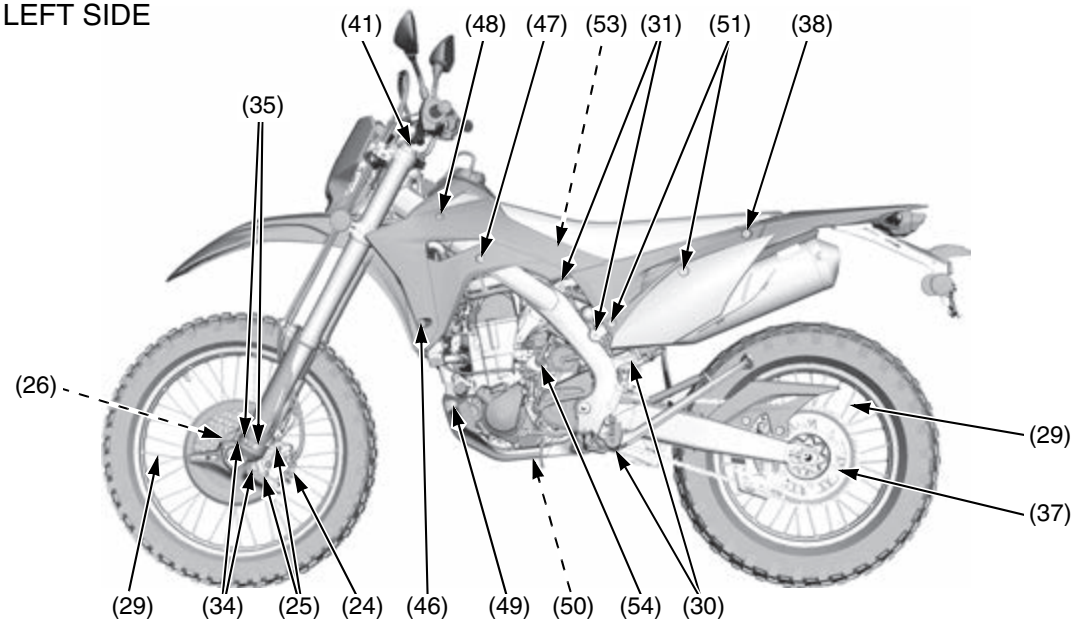


FRAME

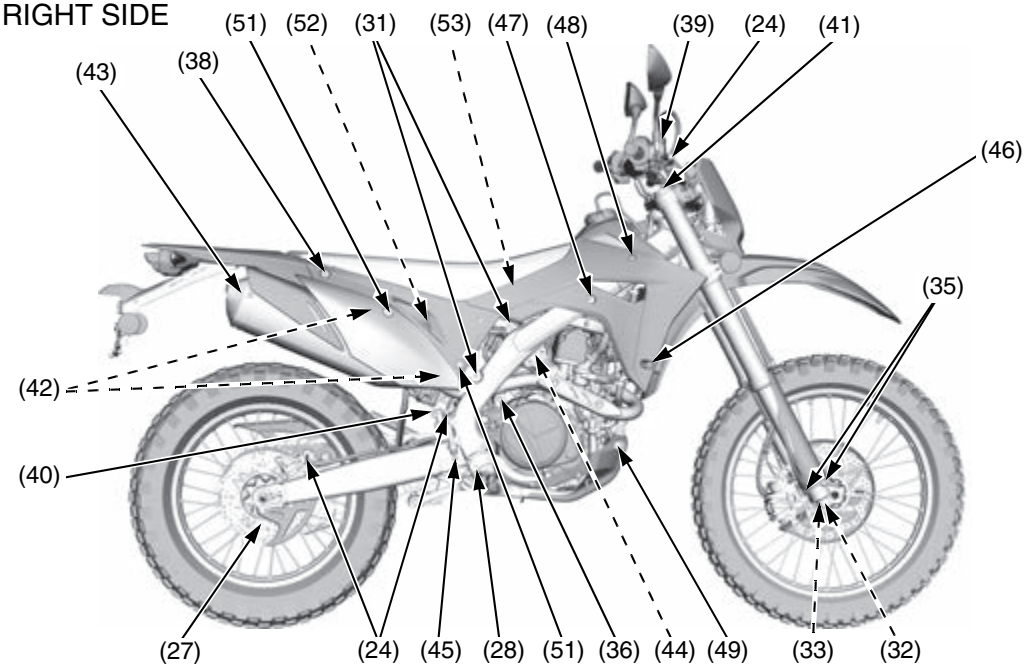
	Item	Torque			Remarks
		lbf·ft	N·m	kgf·m	
1	Steering stem nut	80	108	11.0	
2	Fork bridge upper pinch bolts	15	20	2.0	
3	Fork bridge lower pinch bolts	15	20	2.0	
4	Handlebar upper holder bolts	16	22	2.2	
5	Handlebar lower holder nuts	32	44	4.5	NOTE 1
6	Front axle nut	65	88	9.0	
7	Axle pinch bolts	15	20	2.0	
8	Rear axle nut	94	128	13.1	NOTE 1
9	Chain adjuster lock nuts	20	27	2.8	NOTE 2
10	Front engine hanger nuts	40	54	5.5	
	Front engine hanger plate nuts	19	26	2.7	
11	Lower engine hanger nut	40	54	5.5	
12	Cylinder head hanger bolts	40	54	5.5	
13	Cylinder head hanger plate bolts	24	32	3.3	
14	Rear suspension (upper)	32	44	4.5	NOTE 1
	(lower)	32	44	4.5	NOTE 1
15	Swingarm pivot nut	65	88	9.0	NOTE 1
16	Fork				
	(fork damper assembly)	56	76	7.7	
	(fork bolt assembly)	22	30	3.1	
17	Rear shock arm nuts				
	(swingarm side)	38	52	5.3	NOTE 1, 5
	(shock link side)	38	52	5.3	NOTE 1, 5
18	Rear shock link bolts	27	37	3.8	NOTE 1, 5
19	Rear shock spring lock nut	32	44	4.5	
20	Battery terminal bolts	1.5	2.0	0.2	
21	Fuel pump mounting nuts/ cap nut	8	11	1.1	
22	Front brake master cylinder holder bolts	7.3	9.9	1.0	
23	Fuel tank bolts	7	10	1.0	

NOTES: 1. U-nut
2. UBS nut
5. Apply molybdenum oil to the threads and flange surface.

LEFT SIDE



RIGHT SIDE



FRAME

Item			Torque lbf·ft	Torque N·m	Torque kgf·m	Remarks
24	Brake hose oil bolts		25	34	3.5	
25	Front brake caliper mounting bolts		22	30	3.1	NOTE 4
26	Front brake disc nuts		12	16	1.6	NOTE 1
27	Rear brake disc nuts		12	16	1.6	NOTE 1
28	Brake pedal pivot bolt		27	36	3.7	
29	Spokes	(front)	2.7	3.7	0.4	
		(rear)	2.7	3.7	0.4	
30	Drive chain roller	(upper)	9	12	1.2	NOTE 4
		(lower)	9	12	1.2	NOTE 1
31	Subframe bolts	(upper)	24	32	3.3	
		(lower)	36	49	5.0	
32	Fork center bolt		51	69	7.0	
33	Fork center bolt lock nut		21	28	2.9	
34	Disc cover bolts		10	13	1.3	
35	Fork protector socket bolts		5.2	7.0	0.7	NOTE 4
36	Muffler clamp bolt		15	20	2.0	
37	Driven sprocket nuts		24	32	3.3	NOTE 1
38	Seat mounting bolts		19	26	2.7	
39	Front brake reservoir cap screws		0.7	1.0	0.1	
40	Rear brake reservoir cap bolts		0.7	1.0	0.1	
41	Fork air pressure release screw		1.0	1.3	0.1	
42	Muffler mounting bolt A		19	26	2.7	
	Muffler mounting bolt B		19	26	2.7	
43	Tail cap cover bolts		6.6	9.0	0.9	
	Spark arrester mounting bolts		3.9	5.25	0.5	
44	Throttle cable adjuster lock nuts		3.0	4.0	0.4	
45	Rear master cylinder push rod lock nut		4.4	5.9	0.6	
46	Shroud A bolts		7	10	1.0	
47	Shroud B bolts		7	10	1.0	
48	Shroud C bolts		3.8	5.2	0.5	
49	Engine guard A bolts/washers		7	10	1.0	
50	Engine guard B bolt/washer		7	10	1.0	
51	Side cover bolts		7	10	1.0	
52	Air cleaner retaining bolt		1.8	2.4	0.2	
53	Seat support base mounting bolts		7	10	1.0	
54	Starter motor terminal bolt		5.2	7	0.7	

NOTES: 1. U-nut
4. Alock bolt: replace with a new one.

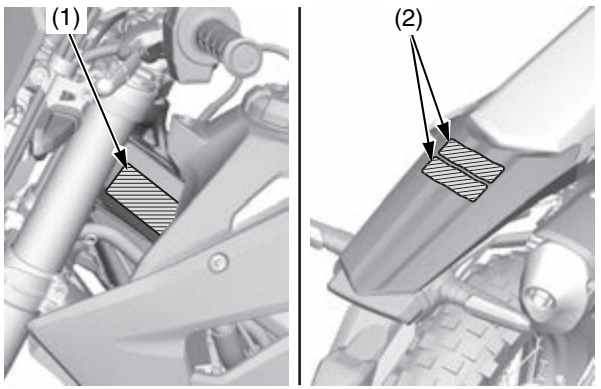
Emission Control Systems

Your motorcycle engine emits combustion byproducts, including carbon monoxide (CO), oxides of nitrogen (NOx), and hydrocarbons (HC). Gasoline evaporation also emits hydrocarbons. Controlling the production of NOx, CO, and HC is important for the environment.

Exhaust Emission Requirements

The U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Environment and Climate Change Canada (ECCC) require that your motorcycle comply with applicable exhaust, crankcase, and fuel permeation emission standards during its useful life, when operated and maintained according to the instructions provided. CARB also requires that your motorcycle comply with applicable evaporative emission requirements during its useful life, when operated and maintained according to the instructions provided.

Compliance with the terms of the Distributor's Warranties for Honda Motorcycle Emission Control Systems is necessary in order to maintain a valid emissions system warranty. (USA only)



(1) vehicle emission control information label (USA only)
(2) vehicle emission control information labels (Canada only)

The Vehicle Emission Control Information label is attached to the left side of the frame. (USA only) The Vehicle Emission Control Information labels are attached on the rear fender. (Canada only)

Noise Emission Requirements

The EPA requires that motorcycles built after January 1, 1983 comply with applicable noise emission standards for one year or 3,730 miles (6,000 km) after the time of purchase when operated and maintained according to the instructions provided.

Exhaust Emission Control System

The exhaust emission control system includes the following components that should not need adjustment, although periodic inspection by your dealer is recommended.

PGM-FI System
The PGM-FI (programmed fuel injection) system uses sequential multiport fuel injection, and is comprised of air intake, engine control, fuel control, and exhaust control subsystems. The engine control module (ECM) uses sensors to determine how much air enters the engine, and then controls how much fuel to inject.

Ignition Timing Control System
The ignition timing control system adjusts the ignition timing to reduce the amount of HC, CO, and NOx produced.

Secondary Air Injection System
The secondary air injection system adds filtered air into the exhaust gas to help improve emission control performance.

Catalytic Converter
The exhaust system contains a catalytic converter. Catalytic converter uses a catalyst to convert most of the harmful exhaust gas compounds into harmless compounds.

Evaporative Emission Control System

50 STATE (meets California)
An evaporative emissions control system uses a canister filled with charcoal to adsorb fuel vapor from the fuel tank while the engine is off. The vapor is drawn into the engine and burned while riding.

Crankcase Emission Control System

The engine is equipped with a closed crankcase system to prevent discharging emissions into the atmosphere. Blow-by gas is returned to combustion chamber through the air cleaner housing and throttle body.

Fuel Permeation Emission Control System

The fuel tank, fuel hoses, and fuel vapor charge hoses use fuel permeation control technologies to prevent fuel vapor emissions. Tampering with these components to reduce or defeat the effectiveness of the fuel permeation technologies is prohibited.

Noise Emission Control System

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED:
U. S. federal law prohibits, or Canadian provincial laws may prohibit the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE FOLLOWING ACTS:

- Removal of, or puncturing the muffler, baffles, header pipes or any other component which conducts exhaust gases.
- Removal of, or puncturing of any part of the intake system.
- Lack of proper maintenance.
- Removing or disabling any emissions compliance component, or replacing any compliance component with a noncompliant component.

Problems Affecting Motorcycle Exhaust Emissions

Have your motorcycle inspected and repaired by your dealer if you experience any of the following symptoms:

- Hard starting or stalling after starting
- Rough idling
- Misfiring or backfiring during acceleration
- Poor engine performance and poor fuel economy

Catalytic Converter

This motorcycle is equipped with a three-way catalytic converter. The catalytic converter contains precious metals that serve as catalysts in high temperature chemical reactions that convert hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gasses into safe compounds.

A defective catalytic converter contributes to air pollution and can impair your engine's performance. A replacement unit must be an original Honda part or equivalent.

Follow these guidelines to protect your motorcycle's catalytic converter.

- Always use unleaded gasoline. Leaded gasoline will damage the catalytic converter.
- Keep the engine in good running condition. A poorly running engine can cause the catalytic converter to overheat causing damage to the converter or the motorcycle.
- If your engine is misfiring, backfiring, stalling, or otherwise not running properly, stop riding and turn off the engine. Have your motorcycle serviced as soon as possible.

Some conventional gasolines are being blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help reduce emissions.
If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement.

Before using an oxygenated fuel, try to confirm the fuel's contents. Some states/province require this information to be posted on the pump.

The following fuel blends are EPA-approved and have been approved for use in your motorcycle:

ETHANOL (ethyl or grain alcohol) up to 10% by Volume
You may use gasoline containing up to 10% ethanol by volume. Gasoline containing ethanol may be marketed under the name "Gasohol".

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

If you notice any undesirable operating symptoms, try another service station or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned above are not covered under warranty.

Oxygenated fuels can damage paint and plastic. Be careful not to spill fuel when filling the fuel tank. Wipe up any spills immediately.

NOTICE

Oxygenated fuels can damage paint and plastic. Damage caused by spilled fuel is not covered by warranty.

Off-Road Logbook

Any serious off-road effort relies heavily on the knowledge gained and compiled from previous racing events. The best way to organize the many bits of information is to record them in a logbook.

Your logbook can include such information as suspension adjustments, gearing, and tire selection. This detailed information, along with your comments, can prove valuable when you compete at the same track or on similar terrain.

Your logbook can also tell you when maintenance was performed and when it will be necessary again. Your logbook also lets you record any repairs and lets you keep track of the running time on the engine and suspension components.

If you choose to sell your motorcycle, the accurate maintenance records in your logbook might be the deciding deal-maker for a potential buyer.

Consider using different color pens or pencils to record important information on specific subjects. For example, record results in black, suspension/chassis settings in blue, and gearing selections in green.
Color codes will help you identify the information you want with a glance.

Tuning & Adjustment Records
Keep track of the settings and adjustments that worked best at a particular location. These items include:
- basic track conditions, altitude, and temperature
- suspension settings
- chassis adjustments tested and selected
- gearing
- tire selection
- air pressure

Off-Road Records
- your placings
- thoughts to improve performance next time: both yours and your motorcycle's
- strategy notes

Maintenance Records
- regular interval maintenance
- repairs
- running time on engine
- running time on suspension components

Timekeeping
This Manual lists maintenance intervals for every-so-many races or every-so-many hours of running.

Because all races are not the same, the most effective way to schedule maintenance is by the hours you have run your motorcycle.

An official "guesstimate" is close enough for our timekeeping purposes. You may choose to record your time the same way aircraft operators do (but without the benefit of an electrical hourmeter). All running time is broken down into hours and tenths of an hour (each 6 minutes represents one tenth of an hour).

Racing Records
Information worth recording for this section of your logbook may include:
- Your placing in each race and overall finishing position.
- Thoughts on what you could do to improve your performance next time.
- Notes on any patterns noted in choice of starting gate positions or in riding portions of the course as the day progressed that may prove helpful in future events.
- Any places on the course where you chose the wrong line and were passed too easily.
- Notes on strategy used by your competition or by riders in another event that are worth remembering.

Maintenance Records
Regular maintenance items you'll want to record in your logbook should include:
- Dates and results of cylinder, piston and ring examinations
- Patterns for frequency of need for decarbonization with a particular oil
- When you last performed shock linkage and swingarm pivot bearing maintenance
- Engine and suspension oil changes
- Chain, sprocket, chain roller and slider replacements
- Coolant changes and related component replacements
- Spark plug, brake pad and control cable replacements

In addition, you should record any irregularities noted in component wear so you'll remember to keep a close eye on these areas in the future.

Date	Running Time	Location/Event	Comments (Suspension Settings, Gearing, Chassis Adjustments, Maintenance Performed, etc.)

(Make several photocopies of this page for future use)

Optional Parts List

These tools may be ordered from your authorized dealer.

TOOLS	Remarks
Pin spanner A 	To adjust spring preload. (two spanners required)
Workstand 	For maintenance
Air gauge	For checking tire air pressure

There are numerous spare parts you can take to an event to help ensure you get in a full day of riding. In addition to the usual nuts and bolts, consider the following:

Spare Parts

spark plugs
air cleaner (clean & oiled, sealed in a plastic bag)
chain & masterlinks
chain guide slider
chain guide
chain rollers
tire tubes (front & rear)
fenders
footpegs
fuel feed hose
fuel pump filter
number plate & side covers
handlebar
grips
levers (brake & clutch)
clutch lever handlebar mount
clutch cable
throttle assembly
throttle cable
shift lever
brake pedal
spokes (front & rear, each side)
sprockets (larger & smaller than standard)
assorted nuts, bolts, washers, screws, cotter pins

Additional Spares
fuel pump
front brake master cylinder
rear brake assembly
wheels & tires (front & rear, mounted)
clutch discs and plates
engine oil
seat
ignition components
radiator hoses
radiator shrouds (L & R)
brake hoses (front & rear)

General Tools

sockets (3/8 in drive)
screwdrivers: blade & Phillips No. 1, 2, 3
wrench, large adjustable
wrenches: open end & box
wrenches: hex (Allen)
wrench, spoke
torque wrench (metric scale, click-stop style)
pliers: standard, needle-nose, channel-lock set
hammer, plastic head
syringe with adjustable stop
air pressure gauge
tire irons
tire pump or air tank
feeler gauge set
vernier caliper (metric)
pressure/vacuum testing equipment

Honda Special Tools

Any special tools for your motorcycle purchased from your dealer.

• Tensioner stopper	07AMG-001A100
• Lock Nut Wrench	07WMA-KZ30100
• Spoke Wrench	07JMA-MR60100
• Spoke Wrench	070MA-KZ30100
• Piston Base	07958-2500001
• Fork Rod Holder	07AMB-KZ3A100 (USA only)

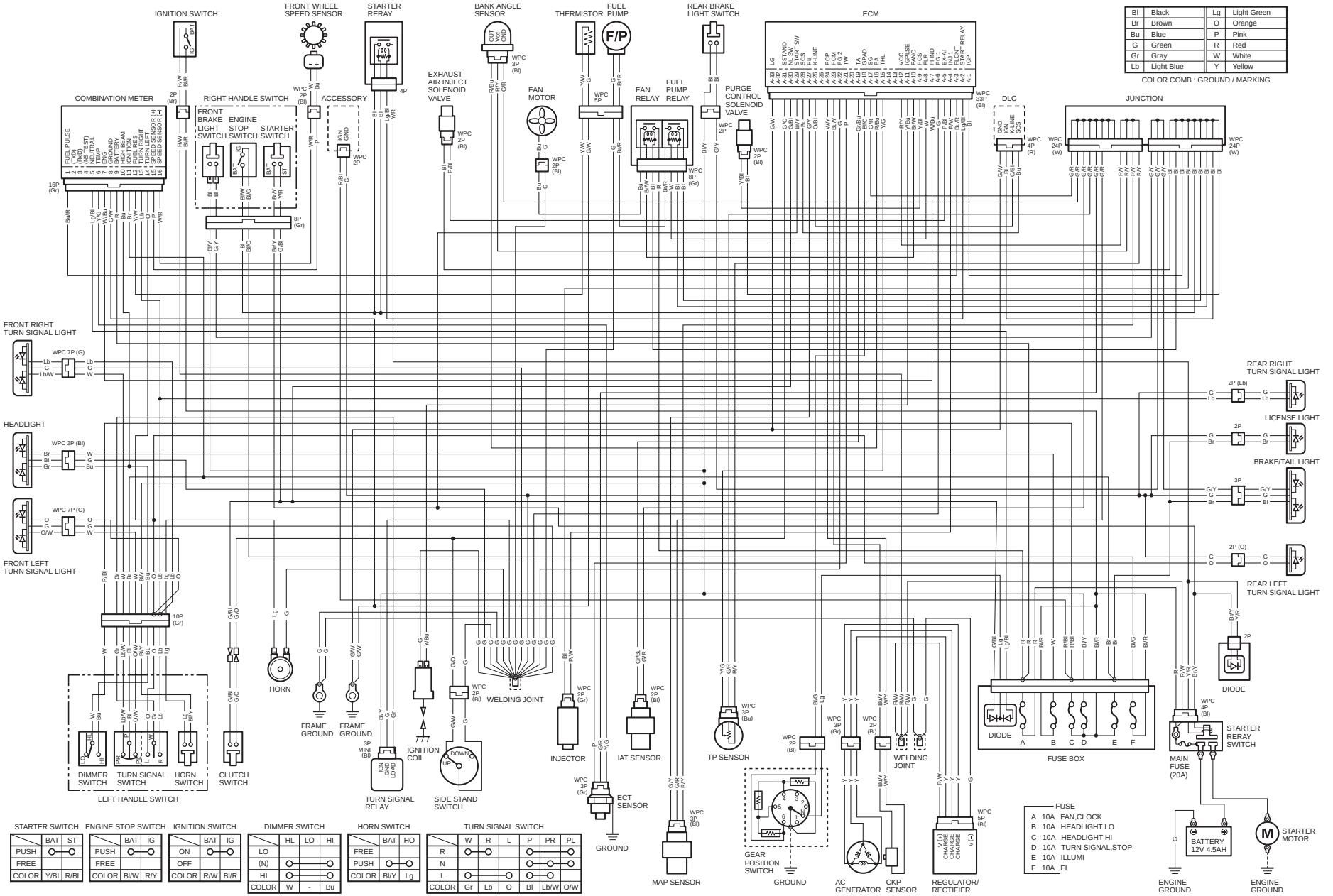
Chemical Products

Pro Honda GN4 4-stroke Oil (Engine Oil)
Pro Honda HP Fork Oil, SS-19
Honda DOT 4 Brake Fluid
Pro Honda HP Chain Lube
Pro Honda Foam Air Filter Oil
Pro Honda Hondabrite
Pro Honda Dielectric Grease
Pro Honda Handgrip Cement
Pro Honda Hondalock
Molybdenum disulfide grease (containing more than 3% molybdenum disulfide additive Moly Paste 77)
Pro Honda Foam Air Filter Sealer
Multi-Purpose Grease
Rust-inhibiting oil
Cable lubricant
Pro Honda HP Coolant
Urea based multi-purpose grease designed for high temperature, high pressure performance (example: EXCELITE EP2 manufactured by KYODO YUSHI, Japan or equivalent)

Other Products

pliers-safety wire
safety wire
mechanic’s wire
duct tape
plastic wire bands
hose clamps
drop light
electrical tape
Scotch-Brite Hand Pad #7447 (maroon)
Teflon tape

Wiring Diagram



This section contains information about contacting Honda and how to get an official Honda Service Manual.

Authorized Manuals

The Service Manual used by your authorized dealer is available from your Honda dealer or Helm, Inc. (USA only, Canada: See your dealer to order authorized manuals.)

Also available but not necessary to service your model is the Honda Common Service Manual which explains theory of operation and basic service information for various systems on Honda motorcycles, scooters and ATV.

The Winter Storage Guide in conjunction with the Owner's Manual and Service Manual can help you prepare your Honda motorcycle, scooter, ATV, and SxS for winter storage (USA only).

These Honda manuals are written for the professional technician, but most mechanically-capable owners should find them helpful if they have the proper tools and skills. Special Honda tools are necessary for some procedures.

Publication Item No.	Description
61MKE50	2019 CRF450L Service Manual
61CSM00	Common Service Manual
S9507	Winter Storage Guide
31MKE900	2019 CRF450L Owner’s Manual

USA only: Order On-Line: www.helminc.com
Order Toll Free: 1-888-CYCLE93 (1-888-292-5393)
(NOTE: For Credit Card Orders Only)
Monday - Friday 8:00 AM - 6:00 PM EST

Your new Honda is covered by the following warranties:

- Motorcycle Limited Warranty
- Emission Control System Warranty
- Noise Control Warranty (USA only)

The responsibilities, restrictions, and exclusions that apply to these warranties are explained in the Warranties Booklet given to you by your Honda dealer at the time of purchase. Always keep your Honda owner's card with your Warranties Booklet.

Canada: Please refer to the Warranty Booklet posted on our website at www.honda.ca.

It is important to realize that your warranty applies only to defects in material or workmanship of your Honda. Your warranty coverage does not apply to the normal wear and deterioration associated with use of the motorcycle.

Your warranty coverage is not voided if you perform your own maintenance. However, failures that occur due directly to improper maintenance are not covered by these warranties.

You can extend almost all of your warranty coverage through the Honda Protection Plan. For more information, see your Honda dealer. (USA only)

Warranty Service

Please remember that maintenance recommended in the Maintenance Schedule is not included in your warranty coverage. If you believe you have a problem with your motorcycle, call the service department of your Honda dealer. Make an appointment for an inspection and diagnosis. You will be asked to authorize that inspection, and your dealer will return the results of the inspection. If a problem exists and is covered under warranty, your dealer will perform the warranty repairs. If you have any questions about your warranty coverage or the nature of the repair, talk to the Service Manager of your Honda dealer.

If a misunderstanding occurs and you aren't satisfied with your dealer's handling of the situation, we suggest you discuss your problem with the appropriate member of the dealership's management team. If you are still not satisfied, contact the owner of the dealership or their designated representative.

Your owner's manual was written to cover most of the questions you might ask about your motorcycle. Any questions not answered in the owner's manual can be answered by your dealer. If your dealer doesn't have the answer right away, they will get it for you.

If you have a difference of opinion with your dealer, please remember that each dealership is independently owned and operated. That's why it's important to work to resolve any differences at the dealership level.

If you wish to comment on your experiences with your motorcycle or with your dealer, please send your comments to the following address:

Motorcycle Division,
American Honda Motor Co., Inc.,
P.O. Box 2200, Torrance,
CA 90509- 2200
Mailstop: 100-4C-7B,
Telephone: (866) 784-1870.

Canada: Honda Canada Inc.
Customer Relations Department,
180 Honda Boulevard
Markham, Ontario
L6C 0H9
Telephone: (888) 946–6329
Fax: (877) 939–0909
E-mail: honda_cr@ch.honda.com

Please include the following information in your letter:

- Name, address, and telephone number
- Product model, year, and VIN
- Date of purchase
- Dealer name and address

We will likely ask your Honda dealer to respond, or possibly acknowledge your comments directly.

Your Honda Dealer

Once you purchase your new Honda, get familiar with the organization of your Honda dealer so you can utilize the full range of services available.

The service department is there to perform regular maintenance and unexpected repairs. It has the latest available service information from Honda. The service department will also handle warranty inspections and repairs.

The parts department offers Honda Genuine Parts, Pro Honda products, Honda Genuine Accessories (USA only), and Honda accessories and products (Canada only). The same quality that went into your Honda can be found in Honda Genuine replacement parts. You'll also find comparable quality in the accessories and products available from the parts department.

The sales department offers the Honda Protection Plan to extend almost all of your warranty coverage (USA only).
Your Honda dealer can inform you about competition and other riding events in your area. You'll also find that your dealer is a source of information about safety training available in your local area.

We're sure you'll be as pleased with the service your Honda dealer continues to provide after the sale as you are with the quality and dependability of your Honda.

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying American Honda Motor Co., Inc.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or American Honda Motor Co., Inc.

To contact NHTSA, you may call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to http://www.safercar.gov; or write to: Administrator, NHTSA, 1200 New Jersey Avenue, SE., Washington, DC 20590.

You can also obtain other information about motor vehicle safety from *http://www.safercar.gov*.

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The following is a brief, but important collection of information you need to know about your motorcycle. You'll also find space to record important notes.

How To Avoid Costly Repairs

The engine of your motorcycle can be the most expensive component to repair. Proper maintenance, especially the use of the recommended fluids and filters, prevents premature wear and damage.

Frequent causes of costly engine repairs are:

- Engine oil: insufficient quantity, improper oil.
- Air cleaner: dirty, leaking because of improper installation (poor seal)

Record important information here:

VIN	
Engine No.	
Owner's:	
Name	
Address	
City/State	
Phone	
Dealer's:	
Name	
Address	
City/State	
Phone	
Service Mgr.	

Maintenance	On-Road use: Initial: 100 miles (150 km) Regular: every 600 miles (1,000 km) Off-Road use: The maintenance schedule (page 37) lists service frequencies for: each race or about 3.5 hours, every 4 races or about 15.0 hours and every 8 races or about 30.0 hours					
Pre-ride Inspection	Check the items listed on the Pre-ride Inspection checklist each time before you ride (page 19)					
Periodic Checks	Check the items listed on the Periodic Checks checklist each time before you ride (page 34)					
Fuel/Tank Capacity	unleaded gasoline, pump octane number of 91 or higher tank: 2.01 US gal (7.6 ℓ)					
Engine Oil/Capacity	Pro Honda GN4 4-stroke Oil or an equivalent motorcycle oil. 1.22 US qt (1.15 ℓ) after draining and filter change 1.16 US qt (1.10 ℓ) after draining					
Maximum Weight Capacity	220 lb (100 kg) rider, all cargo and accessories					
Tires	Front	80/100-21 M/C 51P		Rear	120/80-18 M/C 62P	
		IRC	GP-21F		IRC	GP-22R
	Type	bias-ply, tube				
Tire Pressure (cold)	Front: 22 psi (150 kPa, 1.50 kgf/cm^2) Rear: 22 psi (150 kPa, 1.50 kgf/cm^2)					
Spark Plug	standard: SILMAR9A-9S (NGK) optional: SILMAR10A-9S (NGK)					
Coolant	ethylene glycol antifreeze (silicate-free) for aluminum engines in 50/50 solution with Pro Honda HP Coolant or an equivalent distilled water.					
Fuse	main: 20 A other: 10 A					
Drive Chain Size/Link	RK520EXU/116LE					

Quick Reference

These symbols are used in Operating Controls and Basic Operating Instructions sections:

SYMBOL	COMPONENT	SEE PAGE
	fast idle knob	25
	START button	15
	RUN – engine stop switch	15
	STOP – engine stop switch	15
	HI – headlight dimmer switch	15
	LO – headlight dimmer switch	15
	turn signal switch	15
	horn button	15
	PASS – headlight dimmer switch	15

California Proposition 65 Warning

⚠ WARNING

Operating, servicing and maintaining a passenger vehicle or off-highway motor vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.

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