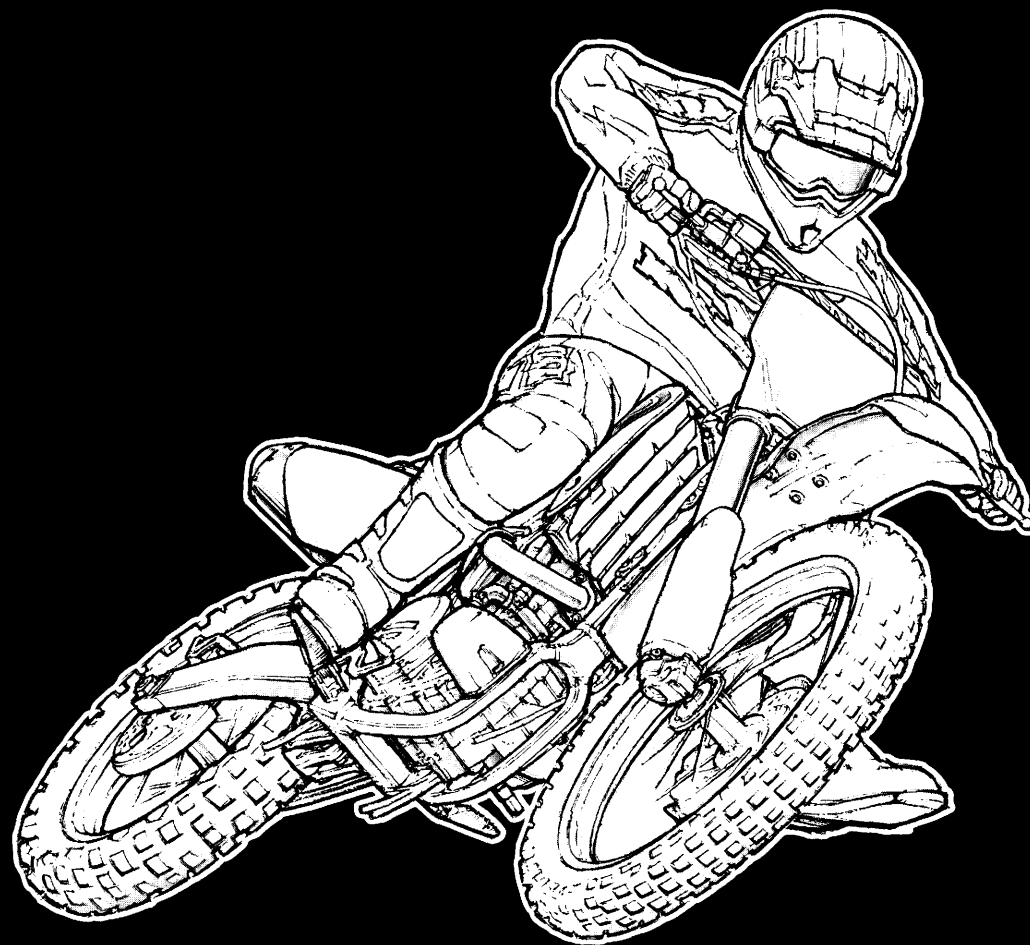




CRF450R



OWNER'S MANUAL & COMPETITION HANDBOOK
MANUEL DU CONDUCTEUR ET DE COMPETITION
FAHRER-HANDBUCH und WETTBEWERBSANLEITUNG

INSTRUCTIEBOEKJE & WEDSTRIJDHANDBOEK
MANUAL DEL PROPIETARIO Y GUÍA DE COMPETICIONES
MANUALE D'USO E DEGLI ASSETTI DA COMPETIZIONE

HONDA

CRF450R

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INSTRUCTIEBOEKJE & WEDSTRIJDHANDBOEK	D
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IMPORTANT NOTICES

THIS MOTORCYCLE IS DESIGNED AND MANUFACTURED FOR COMPETITION USE ONLY AND IS SOLD "AS IS" WITH NO WARRANTY. IT DOES NOT CONFORM TO FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND OPERATION ON PUBLIC STREETS, ROADS, OR HIGHWAYS IS ILLEGAL.

STATE LAWS PROHIBIT OPERATION OF THIS MOTORCYCLE EXCEPT IN AN ORGANIZED RACING OR COMPETITIVE EVENT UPON A CLOSED COURSE WHICH IS CONDUCTED UNDER THE AUSPICES OF A RECOGNIZED SANCTIONING BODY OR BY PERMIT ISSUED BY THE LOCAL GOVERNMENTAL AUTHORITY HAVING JURISDICTION.

FIRST DETERMINE THAT OPERATION IS LEGAL.

OPERATOR ONLY, NO PASSENGERS.

This motorcycle is designed and constructed as an operator-only model.
The motorcycle load limit and seating configuration do not safely permit the carrying of a passenger.

READ THIS MANUAL CAREFULLY.

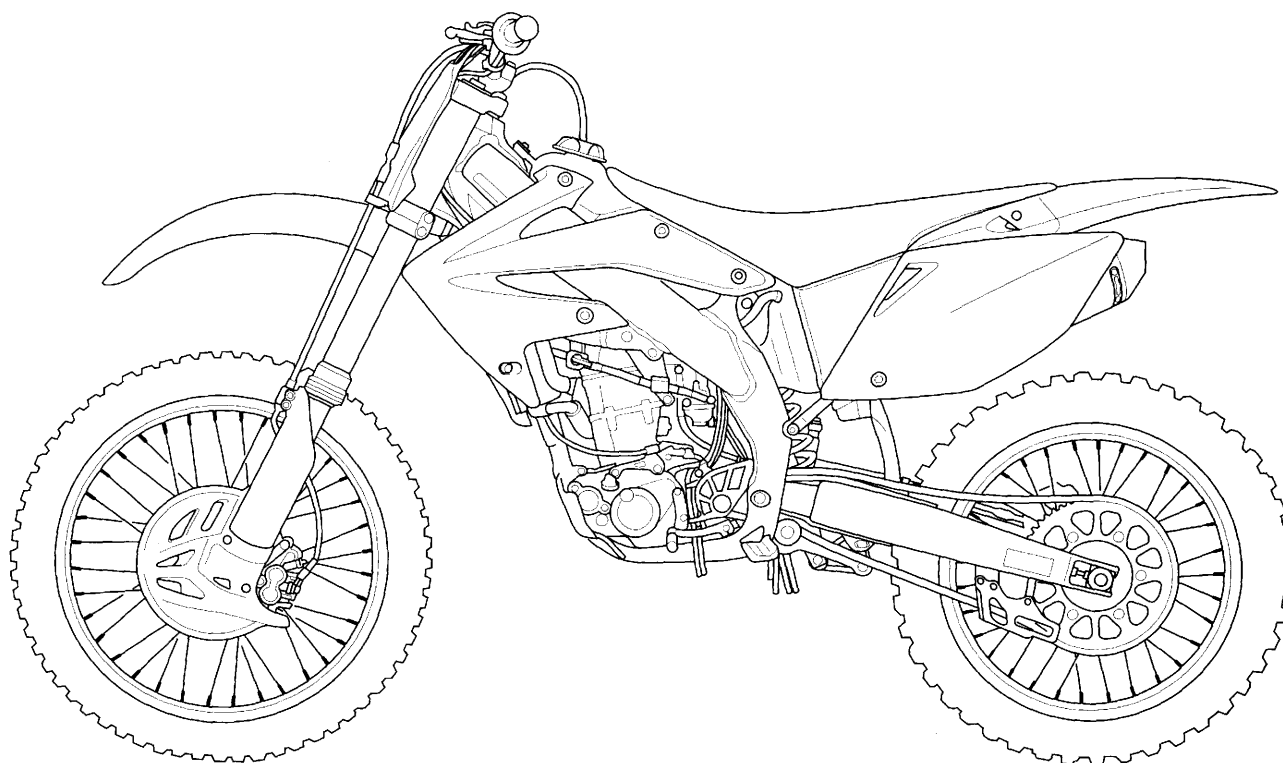
This manual should be considered a permanent part of the motorcycle and should remain with the motorcycle when it is resold.

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Honda CRF450R
OWNER'S MANUAL & COMPETITION HANDBOOK



Introduction

Congratulations on choosing your Honda CRF motocross 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.

Your CRF is a high performance racing motorcycle that utilizes the latest motocross technology and is intended for competition use in sanctioned, closed-course events by experienced riders only.

Be aware that motocross is a physically demanding sport that requires more than just a fine motorcycle. To do well, you must be in excellent physical condition and be a skillful rider. For the best results, work diligently on your physical conditioning and practice frequently.

Before riding, take time to get acquainted with your CRF and how it works. To protect your investment, we urge you to take responsibility for keeping your CRF 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 Honda, other property, or the environment.

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

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

Happy riding!


- The following codes in this manual indicate each country.
- The illustrations and pictures herein are based on the ED type.

ED	European direct sales
DE	Denmark
U	Australia, New Zealand
CM	Canada
IICM	Canada (Type II)

A Few Words About Safety

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

To help you make informed decisions about safety, this manual contains a section devoted to *Motorcycle Safety*, as well as a number of Safety Messages throughout the manual.

Safety Messages are 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.

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 judgement.

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

Important Safety Information.....2

 Important Safety Precautions.....2

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Important Safety Information

Important Safety Precautions

Your CRF can provide many years of pleasure, if you take responsibility for your own safety and understand the challenges you can meet in competitive racing.

As an experienced rider, you know there is much you can do to protect yourself when you ride. The following are a few precautions we consider most important.

Never Carry a Passenger.

Your CRF is designed for one operator only. Carrying a passenger can cause an accident in which you and others can be hurt.

Wear Protective Gear.

Whether you're practicing to improve your skills, or riding in competition, always wear an approved helmet, eye protection, and proper protective gear.

Take Time to Get to Know Your CRF.

Because every motorcycle is unique, take time to become thoroughly familiar with how this one operates and responds to your commands before placing your machine, and yourself, in competition.

Learn and Respect Your Limits.

Never ride beyond your personal abilities or faster than conditions warrant. Remember that alcohol, drugs, illness and fatigue can reduce your ability to perform well and ride safely.

Don't Drink and Ride.

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

Keep your Honda in Safe Condition.

Maintaining your CRF properly is critical to your safety. A loose bolt, for example, can cause a breakdown in which you can be seriously injured.

Accessories & Modifications

Installing non-Honda accessories, removing original equipment, or modifying your CRF in any way that would change its design or operation, could seriously impair your CRF's handling, stability, and braking, making it unsafe to ride.

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 modifications and accessories.

Safety Labels

Read this label carefully and don't remove it.

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

(CM, IICM type)

IMPORTANT INFORMATION

Operator only. No passengers. This Honda Motorcycle is sold as is without warranty, and the entire risk as to quality and performance is with the buyer. Read owner's manual.

This vehicle is designed, manufactured and sold for competition use only. It does not conform to Federal Motor Vehicle Safety Standards or U.S. EPA Noise and Emissions Standards. Operation on public streets, roads, highways or for off-road recreation is illegal.

State and Federal laws prohibit operation of this vehicle except in an organized racing or competitive event on a closed course. Or by permit issued by the local governmental agency having jurisdiction.

(ED, DE, U type)

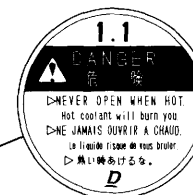
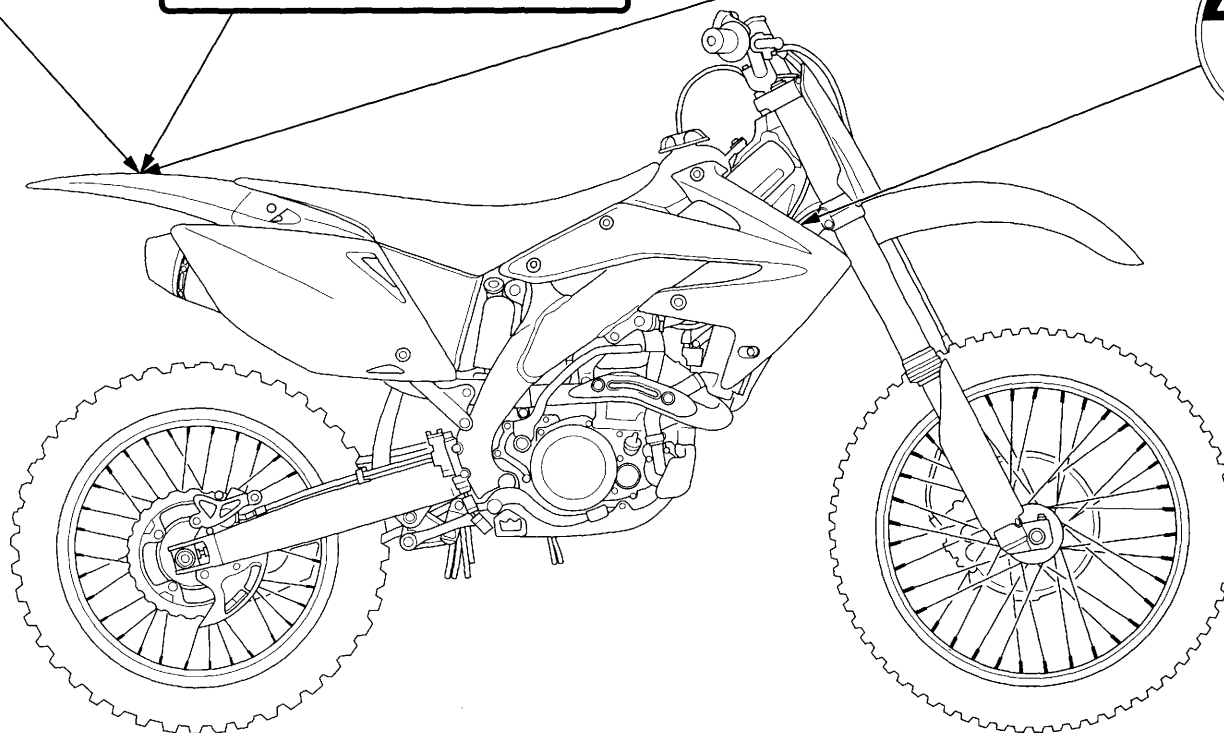
IMPORTANT INFORMATION

OPERATOR ONLY. NO PASSENGERS. THIS HONDA MOTORCYCLE IS SOLD AS IS WITHOUT WARRANTY, AND THE ENTIRE RISK AS TO QUALITY AND PERFORMANCE IS WITH THE BUYER. READ OWNER'S MANUAL.

THIS VEHICLE IS DESIGNED AND MANUFACTURED FOR COMPETITION USE ONLY. IT DOES NOT CONFORM TO FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND OPERATION ON PUBLIC STREETS, ROADS, OR HIGHWAYS IS ILLEGAL. STATE LAWS PROHIBIT OPERATION OF THIS VEHICLE EXCEPT IN AN ORGANIZED RACING OR COMPETITIVE EVENT UPON A CLOSED COURSE WHICH IS CONDUCTED UNDER THE AUSPICES OF A RECOGNIZED SANCTIONING BODY OR BY PERMIT ISSUED BY THE LOCAL GOVERNMENTAL AUTHORITY HAVING JURISDICTION. FIRST DETERMINE THAT OPERATION IS LEGAL.

(CM, IICM type)

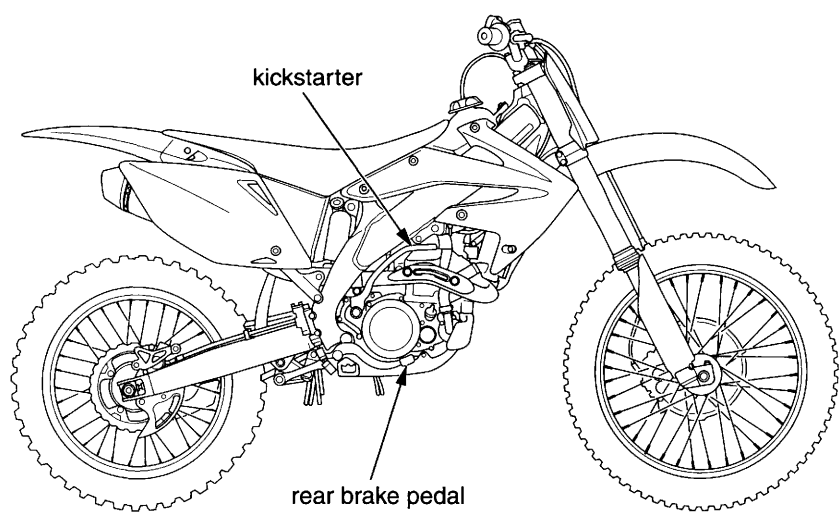
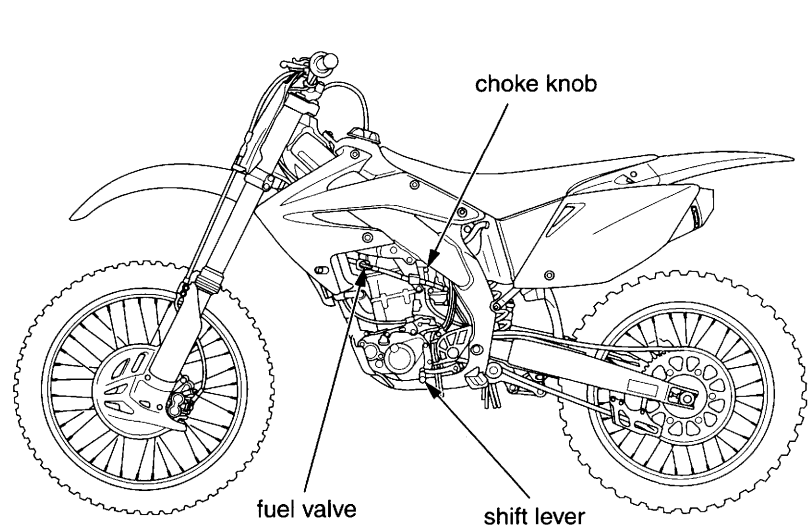
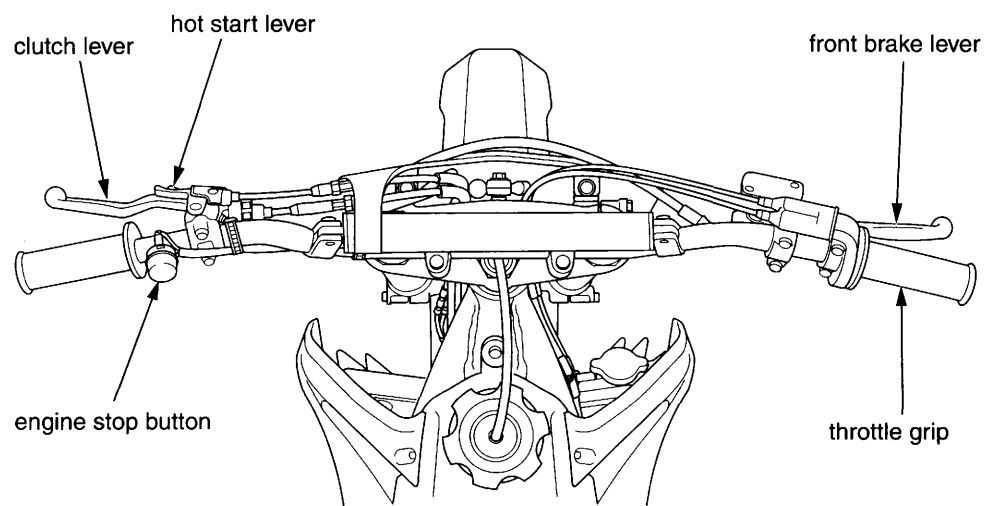
THIS COMPETITION VEHICLE IS FOR USE EXCLUSIVELY IN CLOSED-COURSE COMPETITION AND IS NOT INTENDED FOR USE ON PUBLIC HIGHWAYS.
CE VÉHICULE DE COMPÉTITION EST DESTINÉ À ÊTRE UTILISÉ EXCLUSIVEMENT DANS LES COURSES EN CIRCUIT FERMÉ ET N'EST PAS DESTINÉ AUX VOIES PUBLIQUES.



Read this section carefully before you ride. It presents the location of the basic controls on your CRF.

Operation Component Locations6

Operation Component Locations



Before each ride, you need to make sure you and your Honda are both ready to ride. To help get you prepared, this section discusses how to evaluate your riding readiness, and what items you should check on your CRF.

For information about suspension, carburetor, and other adjustments, see page 97.

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Are You Ready to Ride?

Before riding your CRF for the first time, we strongly recommend that you read this owner's manual, make sure you understand the safety messages, and know how to operate the controls.

Before each ride, it's also important to make sure you and your CRF are both ready to ride.

For information about suspension, carburetor, and other adjustments, see page 97.

Whether you're preparing for competition or for practice, always make sure you are:

- In good physical and mental condition
- Free of alcohol and drugs
- Wearing an approved helmet, eye protection, and other appropriate riding gear

Although complete protection is not possible, wearing the proper gear can reduce the chance or severity of injury when you ride.

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.

Competitive riding can be tough on a motorcycle, so it's important to inspect your CRF and correct any problems you find before each ride. Check the following items (page numbers are at the right):

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

Check the following before each ride:

- Engine oil level37
- Transmission oil level40
- Coolant for proper level..... 41
- Cooling system and hoses for condition.....42
- Spark plug for proper heat range, carbon fouling and spark plug wire terminal for looseness54
- Air cleaner for condition and contamination.....43
- Clutch lever adjustment and freeplay49
- Hot start lever freeplay53
- Breather drain for cleaning45
- Steering head bearing and related parts for condition.....93
- Carburetor throttle operation46
- Tyres for damage or improper inflation pressure83
- Spokes for looseness.....82
- Rim locks for looseness.....82
- Front and rear suspension for proper operation73, 74
- Front and rear brakes, check operation78
- Drive chain for correct slack and adequate lubrication85, 86
- Drive chain sliders and drive chain rollers for damage or wear85, 86
- Exhaust pipe/Muffler inspection.....88
- Steering damper operation inspection91
- Every possible part for looseness (such as cylinder head nuts, engine mounting bolts/nuts, axle nuts, handlebar holder bolts, fork bridge pinch bolts, drive chain adjuster, drive chain guide, wire harness connectors, kickstarter mounting bolt)149-151

This section gives basic information on how to start and stop your engine as well as break-in guidelines.

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Basic Operating Instructions

Safe Riding Precautions

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

For your safety, avoid starting or operating the engine in an enclosed area such as a garage. Your CRF's exhaust contains poisonous carbon monoxide gas which can collect rapidly in an enclosed area and cause illness or death.

Starting & Stopping the Engine

Always follow the proper starting procedure described below.

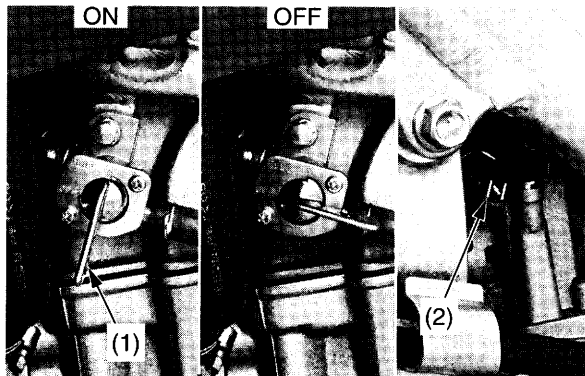
Your CRF can be kickstarted with the transmission in gear by pulling in the clutch lever before operating the kickstarter.

Preparation

Make sure that the transmission is in neutral.

Starting Procedure

Always follow the proper starting procedure described as follow.



(1) fuel valve

(2) choke knob

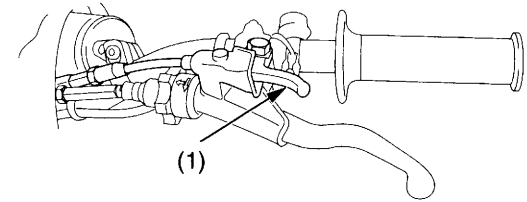
Check the engine oil, transmission oil and coolant levels before starting the engine (pages 37, 40, 41).

Cold Engine Starting

1. Turn the fuel valve (1) ON.
2. Shift the transmission into neutral.
3. If the temperature is 35°C (95°F) or below, pull the choke knob (2) fully out.
4. If the temperature is below 0°C (32°F), open the throttle two or three times. (The engine requires a richer mixture for starting in cold weather. When the throttle is so opened, the accelerator pump will feed extra fuel to the cylinder, thereby facilitating starting in cold weather.)
5. With the throttle closed, operate the kickstarter starting from the top of the kickstarter stroke, kick through to the bottom with a rapid, continuous motion. (Do not open the throttle, As the carburetor is equipped with an accelerator pump, excessive fuel will be charged into the engine, and the spark plug will be fouled if the throttle is opened and closed repeatedly. Excessive fuel in the engine makes kickstarting difficult.)
6. About a minute after the engine starts, push the choke knob all the way to fully OFF. If idling is unstable, open the throttle slightly.

Warm Engine Starting

1. Turn the fuel valve ON.
2. Shift the transmission into neutral.
3. Pull the hot start lever (1) and kick-start the engine. (Do not open the throttle.)
4. As soon as the engine starts, release the hot start lever.



(1) hot start lever

Starting the engine after a stall during riding or after a fall:

1. Shift the transmission into neutral.
2. Pull the hot start lever and kick-start the engine. (Do not open the throttle.)
3. As soon as the engine starts, release the hot start lever.

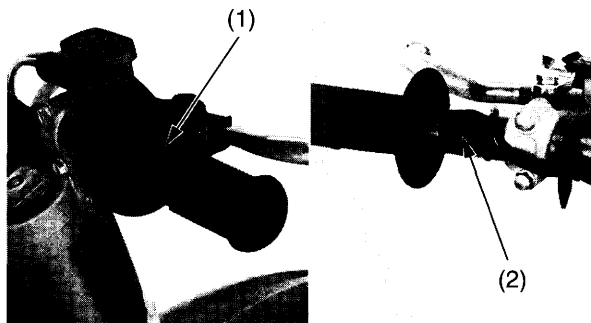
Flooded Engine

If the engine fails to start after repeated attempts, it may be flooded with excess fuel. To clear a flooded engine:

1. Shift the transmission into neutral.
2. With the throttle fully opened, repeat kickstarter operation approximately ten times very slowly to discharge excessive fuel from the engine.
3. With the throttle closed, pull the hot start lever and kick-start the engine (Do not open the throttle.)
4. As soon as the engine starts, release the hot start lever.

Starting & Stopping the Engine

How to Stop the Engine



(1) throttle

(2) engine stop button

Normal Engine Stop

1. Shift the transmission into neutral.
2. Turn the fuel valve OFF.
3. Lightly open the throttle (1) two or three times, and then close it.
4. Depress and hold the engine stop button (2) until the engine stops completely.

Failure to close the fuel valve may cause the carburetor to overflow, result in hard starting.

Emergency Engine Stop

To stop the engine in an emergency, press the engine stop button.

Help assure your CRF's future reliability and performance by paying extra attention to how you ride during the first operating day or 25 km (15 miles).

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 CRF 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 CRF in good shape, this section includes a Maintenance Schedule for required servicing and step-by-step instructions for specific maintenance tasks. You'll also find important safety precautions, information on oils, and tips for keeping your Honda looking good.

An ICM (Ignition Control Module) system is used on this motorcycle; consequently, routine ignition timing adjustment is unnecessary. If you want to check the ignition timing, refer to the Honda Shop Manual.

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

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The Importance of Maintenance

Keeping your CRF well-maintained is absolutely essential to your safety. It's also a good way to get maximum performance during each heat. Careful pre-ride inspections and good maintenance are especially important because your CRF is designed to be ridden in off-road competition.

Remember, proper maintenance is your responsibility. Be sure to inspect your CRF before each ride 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.

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

Maintenance Schedule

To maintain the safety and reliability of your CRF, regular inspection and service is required as shown in the Maintenance Schedule that follows.

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 Honda dealer perform these tasks unless you have advanced mechanical skills and the required tools. Procedures for items in this schedule are provided in a shop manual available for purchase.

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.

If you do not feel capable of performing a given task or need assistance, remember that your Honda dealer knows your CRF 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.

Perform the pre-ride inspection (page 9) at each scheduled maintenance period.

Summary of Maintenance Schedule Notes and Procedures:

Notes:

1. Clean after every heat for dusty riding conditions.
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.

Maintenance Procedures:

I : inspect and clean, adjust, lubricate, or replace, if necessary

C: clean

L : lubricate

R: replace

Maintenance Schedule

Perform the Pre-ride Inspection (page 9) at each scheduled maintenance period.

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

FREQUENCY		NOTE	Each race or about 2.5 hours	Every 3 races or about 7.5 hours	Every 6 races or about 15.0 hours	Every 9 races or about 22.5 hours	Every 12 races or about 30.0 hours	Ref. Page
ITEMS								
THROTTLE OPERATION			I					47
HOT START SYSTEM			I					53
AIR FILTER		(NOTE 1)	C					43
CRANKCASE BREATHER			I					45
SPARK PLUG			I					54
RADIATOR COOLANT		(NOTE 2)	I					41
VALVE CLEARANCE / DECOMPRESSOR SYSTEM		(NOTE 4)			I			55/62
ENGINE OIL		(NOTE 3)			R			36
ENGINE OIL FILTER		(NOTE 3)			R			37
ENGINE IDLE SPEED			I					48
PISTON AND PISTON RINGS					R			68
PISTON PIN							R	68
TRANSMISSION OIL					R			39
COOLING SYSTEM			I					41
DRIVE CHAIN			I, L	R				85
DRIVE CHAIN SLIDER			I					85
DRIVE CHAIN ROLLER			I					86
DRIVE SPROCKET			I					87
DRIVEN SPROCKET			I					87
BRAKE FLUID		(NOTE 2)	I					79
BRAKE PADS WEAR			I					81
BRAKE SYSTEM			I					78
CLUTCH SYSTEM			I					49
CONTROL CABLES			I, L					93
EXHAUST PIPE/MUFFLER			I					88
SUSPENSION			I					73, 74
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DAMPER						R		
NUTS, BOLTS, FASTENERS			I					94, 149-151
WHEELS/TYRES			I					82-84
STEERING HEAD BEARINGS						I		93

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

- NOTE: 1.Clean after every heat 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.

General Competition Maintenance

Perform maintenance on firm, level ground using 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 equivalent when servicing your CRF.

Clean parts in non-flammable (high flash point) cleaning solvent (such as kerosene) when disassembling. Lubricate any sliding surface, 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.

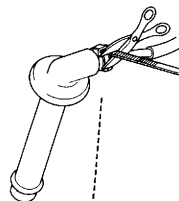
All Pre-ride Inspection Items
Refer to *Pre-ride Inspection* page 9.

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. (page 21).

Spark Plug Cap

Install a small plastic tie-wrap 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 heats. 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 min⁻¹ (rpm) performance. Follow the servicing instructions in the Maintenance section. Use Honda Foam Air Filter Oil or an equivalent. Be sure to grease the air cleaner flange where it contacts the air cleaner housing. Honda White Lithium Grease, or an equivalent, is handy for this because any dirt that penetrates this sealing area will show up clearly (page 43).

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 and crankshaft.

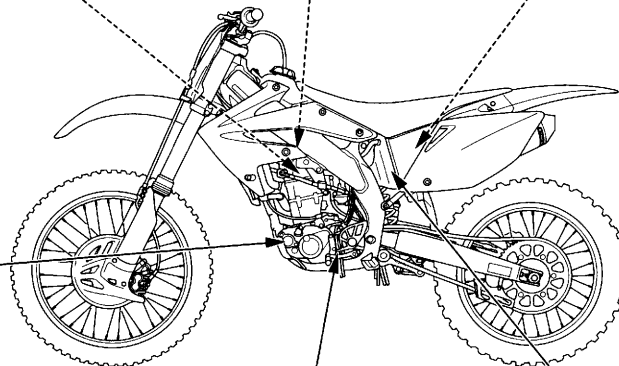
Also replace engine oil filter often to ensure the greatest service life. Frequent changes will also assure consistent performance of power and response. (page 37).

Transmission Oil

Drain and replace transmission oil often to ensure the greatest service life of the transmission and clutch. Frequent changes will also assure consistent performance of both shifting and clutch action (page 40).

Air Cleaner Housing Sealing

Remove and reseal the air cleaner housing boot where it connects to the air cleaner housing with Hand Grip Cement or equivalent if there is any doubt to its sealing integrity. Inspect the air cleaner and air intake tract regularly for signs of deterioration or dirt penetration.



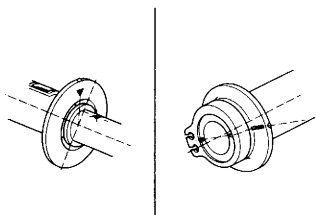
General Competition Maintenance

Handgrips

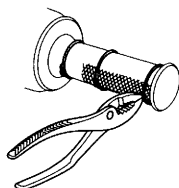
Always use Hand Grip Cement when replacing handgrips. Refer to the Shop Manual for installation instructions.

Throttle Grip

Align the index mark on the throttle grip with the index mark of the throttle cable guide. Left handlebar grip: Align the "Δ" mark on the left handlebar grip with the paint mark on the handlebar.



For added security, you may choose to bind the hand grips 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.



Throttle Control

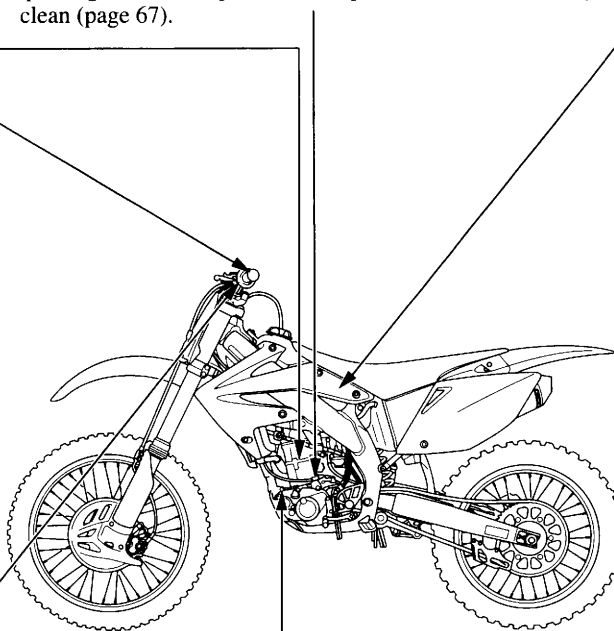
Remove the throttle control every few rides, clean the inside of the throttle pipe and handlebar thoroughly, and apply a light coating of oil. Inspect the cable carefully for kinks or other damage that may restrict throttle control in anyway. Move the handlebar from lock to lock to be sure there is no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

Gaskets

Always use new gaskets when reassembling components.

Cylinder

Put a little grease on the cylinder mounting dowels to prevent corrosion from dissimilar metals. The tolerances are quite tight, so it's important to keep these dowels absolutely clean (page 67).



Engine Mounting Bolts and Nuts

Make sure the engine mounting bolts and nuts are tightened to the proper torque specification. For added peace of mind, remove the nuts, clean the threads, and apply Honda Thread Lock or an equivalent prior to torquing the nuts.

Fuel Filter

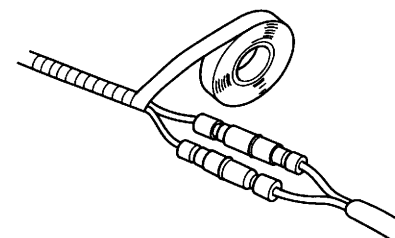
Periodically drain the fuel from the fuel tank, remove and clean the fuel valve/filter. Replace the fuel valve O-ring if there are any signs of damage or deterioration (page 35).

Fuel Contamination

Refer to *Fuel System* in your Owner's Manual, page 34. Check the fuel lines for deterioration, damage, or leakage. Replace the fuel lines, if necessary. Periodically drain the fuel from the fuel tank, remove and clean the fuel valve/filter. Replace the fuel valve O-ring if there are any signs of damage or deterioration (page 35). Loosen the carburetor drain screw and examine the fuel that flows out of the float bowl. If you notice anything in the fuel, such as water or dirt, remove the float bowl and inspect its contents (page 123). For maximum efficiency, drain and replace fuel that has remained in your fuel tank for more than a month.

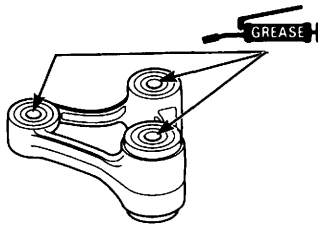
Electrical Connectors

Clean electrical connectors and wrap them with electrical tape to reduce the possibility of unwanted disconnections, water shorts or corrosion. Additional corrosion protection is offered by using Honda Dielectric Grease on all electrical connections.



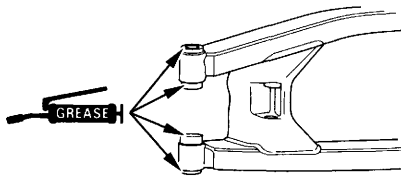
Suspension Linkage Lubrication

Disassemble, clean, inspect and lubricate all suspension linkage pivot bearings with grease after each 7.5 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 grease. Be sure all of the dust seals are in good condition.

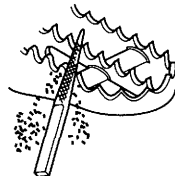


Swingarm

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.

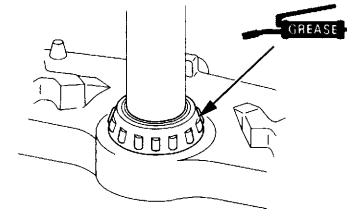


Brake Fluid Replacement

Refer to *Brake Pad Wear* in your Owner's Manual, page 81. **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 the Honda Shop Manual for brake fluid replacement instructions. Replace the hydraulic 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.

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 Shell stamina EP2 or equivalent)



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 the Honda Shop Manual. Use only Honda ULTRA CUSHION OIL SPECIAL 5W or equivalent which contains special additives to assure maximum performance of your CRF's front suspension.

Frame

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

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 82).

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 Honda Thread Lock or an equivalent and tighten to the specified torque.

Bleed Hole

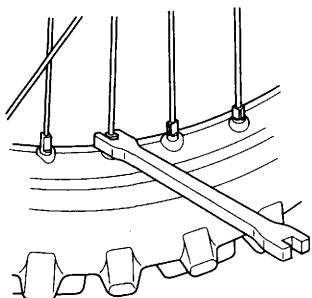
After every race, check the bleed hole, located just below the water pump cover on the right crankcase cover. Clean away any clogged dirt or sand, if necessary. Check for signs of seal leakage. A small amount of "weeping" from the bleed hole is normal.

Before & After Competition Maintenance

Between Heats & Practice Maintenance

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

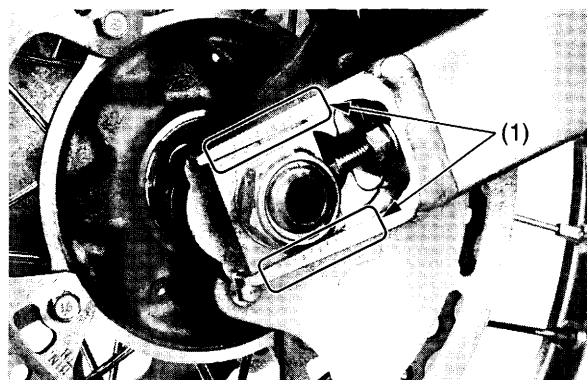
- Clean accumulated dirt from under the fenders and off the wheels, suspension components, handgrips, controls, and footpegs. A stiff, nylon parts cleaning brush works well.
- Check tyre air pressure.
- Check spoke tension, and make sure the rim locks are secure.



- 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.

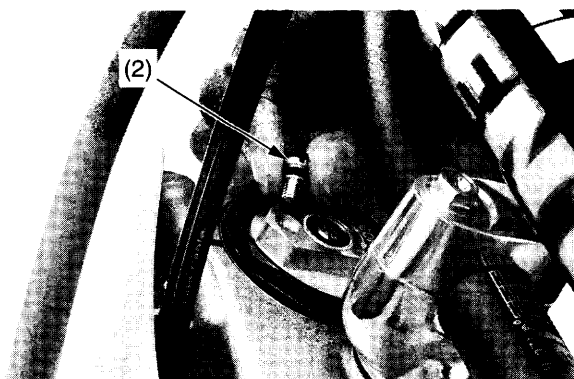
Do not perform maintenance while engine is running. Injury to your fingers or hands may result.

- 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 fork air pressure release screws (2) to release the built-up pressure (in excess of normal atmospheric pressure: 0 kPa (0 kgf/cm², 0 psi)) in the fork tubes. This pressure is caused by normal fork action while riding. (If you are riding at altitude, remember that fork pressure of 0 at sea level will increase as elevation increases.)



(2) fork air pressure release screws

After Competition Maintenance

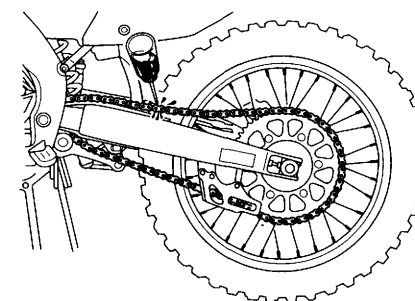
It is important to the long term performance of your CRF to practice a consistent maintenance program. Right after the event is a good time to begin your next maintenance cycle.

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 (page 86). Be sure the chain is wiped clean and is dry before lubricating the chain.



Routine Cleaning

If your CRF 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.

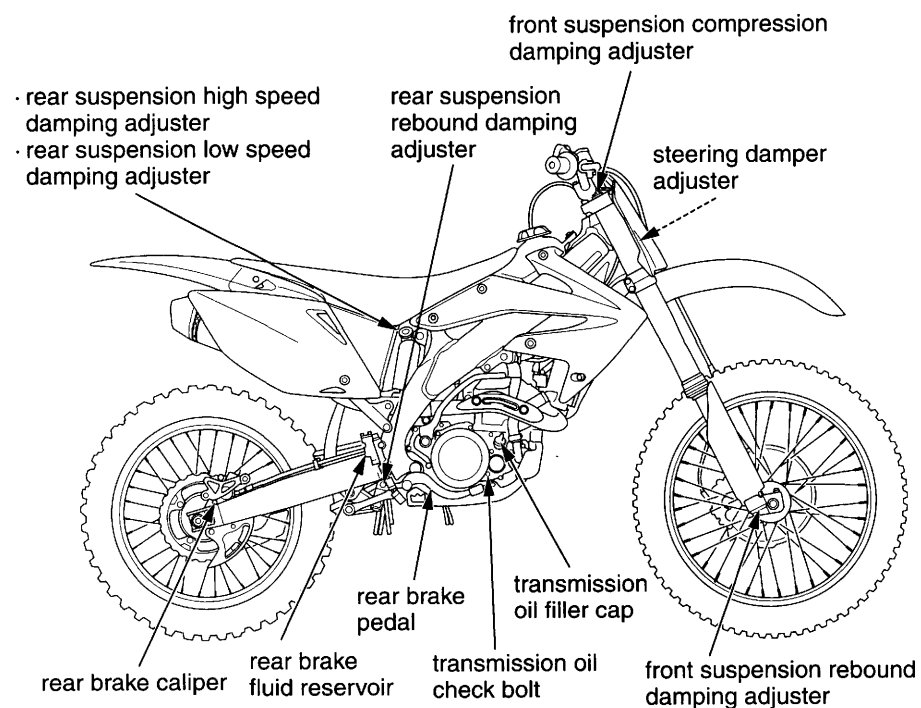
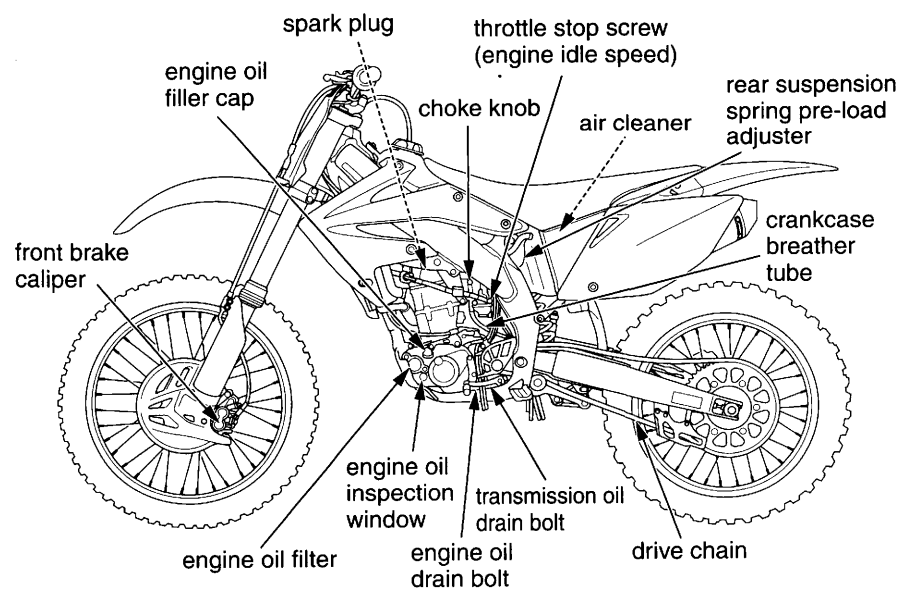
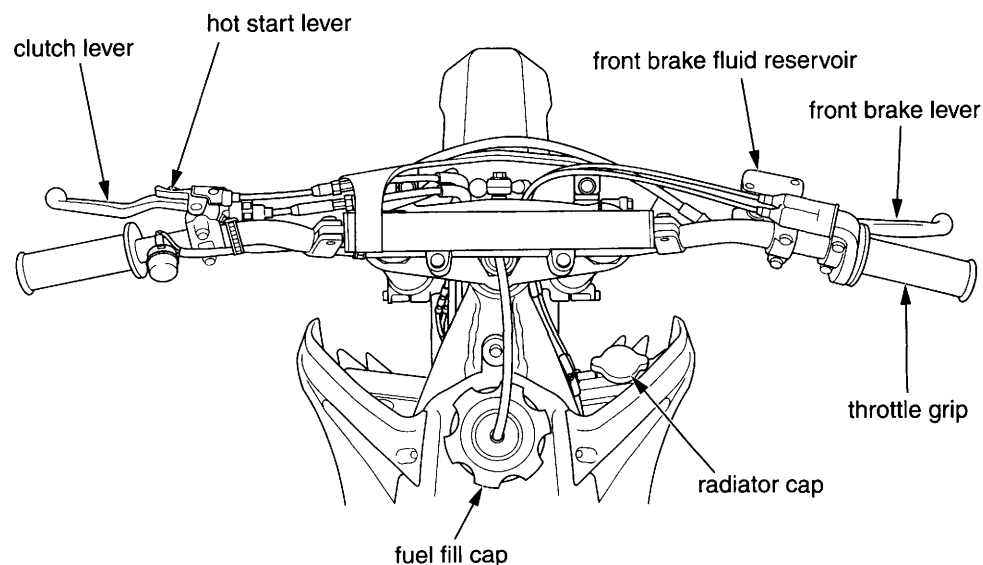
Take care to prevent catching your fingers between the chain and sprocket.

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 CRF. Avoid using stiff, abrasive brushes on the plastic or rubber parts.

If your CRF 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 CRF or use cleaners, refer to *Appearance Care* (page 95).

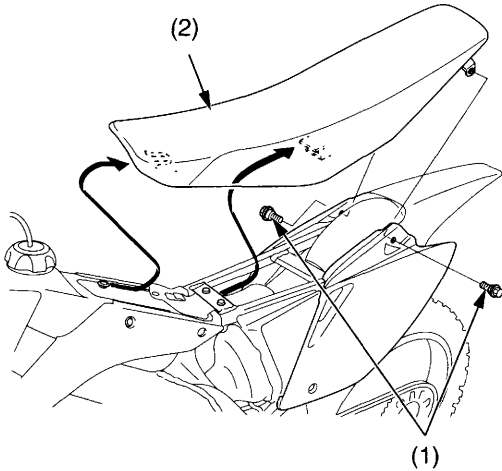
Maintenance Component Locations



Refer to *Safety Precautions* on page 19.

Removal

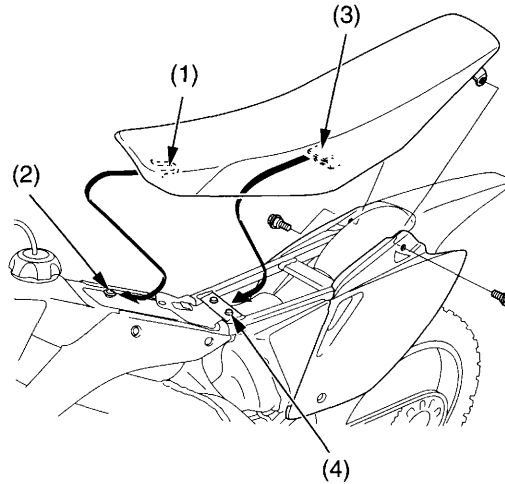
1. Remove the seat mounting bolts (1).
2. Remove the seat (2) by sliding it backward.



(1) seat mounting bolts (2) seat

Installation

1. Install the seat while aligning the seat front prong (1) with the seat bracket (2) and seat rear prong (3) with the frame (4).
2. Install and tighten the seat mounting bolts to the specified torque:
26 N·m (2.7 kgf·m, 19 lbf·ft)



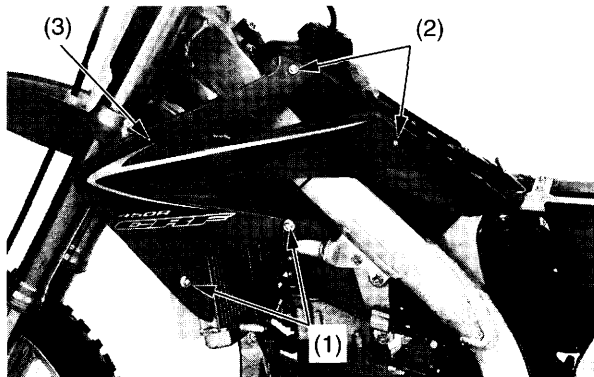
(1) seat front prong
(2) seat bracket
(3) seat rear prong
(4) frame

Fuel Tank

Refer to *Safety Precautions* on page 19.

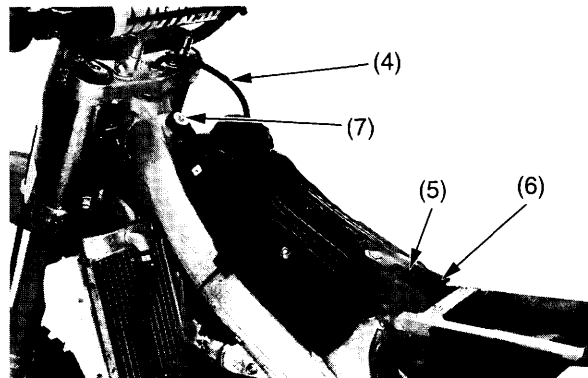
Removal

1. Turn the fuel valve OFF.
2. Remove the seat (page 29).
3. Remove the shroud A bolts/collars (1).
4. Remove the shroud B bolts (2) and shrouds (3).



- (1) shroud A bolts/collars
(2) shroud B bolts
(3) shrouds

5. Pull the breather tube (4) out of steering stem nut.
6. Unhook the fuel tank band (5).
7. Unhook the air cleaner case cover (6) and remove the fuel tank band.
8. Remove the fuel tank bolt/collar (7).



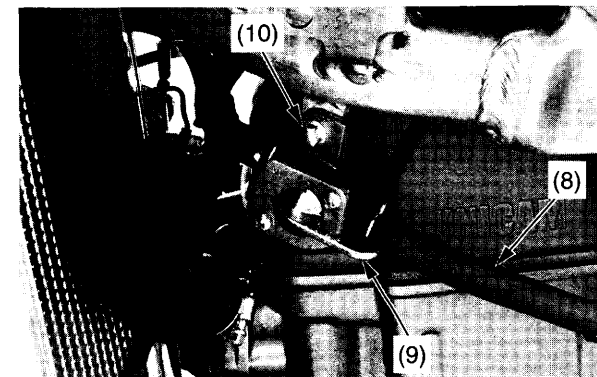
- (4) breather tube
(5) fuel tank band
(6) air cleaner case cover
(7) fuel tank bolt/collar

9. Disconnect the fuel line (8) from the fuel valve (9). The fuel line leading to the carburetor must be disconnected, not the fuel line leading to the fuel tank.
10. Remove the fuel valve bolt (10) and fuel valve.
11. Remove the fuel tank.

⚠ WARNING

Petrol 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.

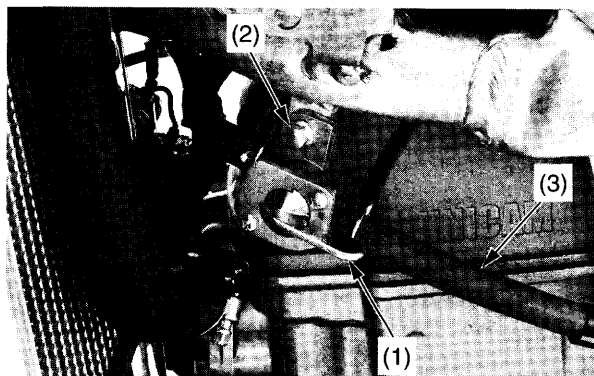


- (8) fuel line
(9) fuel valve

- (10) fuel valve bolt

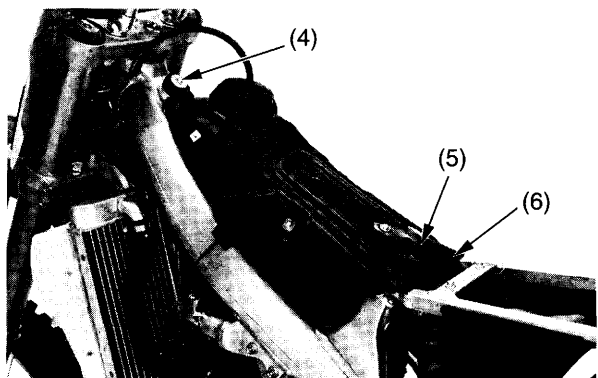
Installation

1. Install the fuel tank on the frame.
2. Install the fuel valve (1) and tighten the fuel valve bolt (2).
3. Connect the fuel line (3) to the fuel valve.



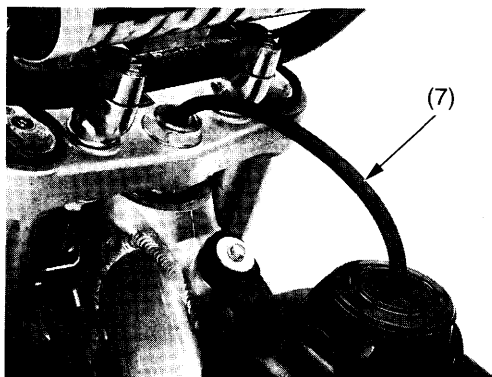
- (1) fuel valve
(2) fuel valve bolt
(3) fuel line

4. Install and tighten the fuel tank bolt/collar (4).
5. Install and hook the fuel tank band (5).
6. Hook the air cleaner case cover (6).



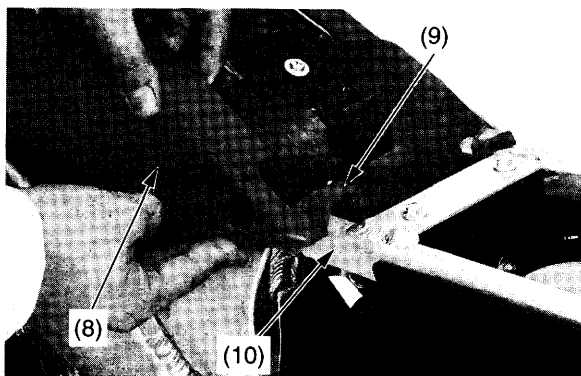
- (4) fuel tank bolt/collar
(5) fuel tank band
(6) air cleaner case cover

7. Put the breather tube (7) in the steering stem nut.



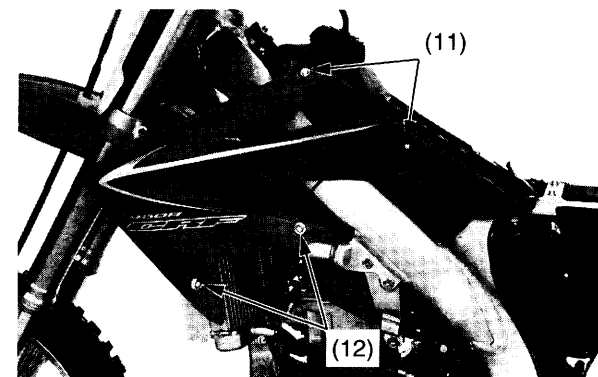
- (7) breather tube

8. Install the shrouds (8) by aligning it's tab (9) with subframe (10).



- (8) shrouds
(9) tab
(10) subframe

9. Install the shroud B bolts (11) and A bolts/collars (12).



- (11) shroud B bolts
(12) shroud A bolts/collars

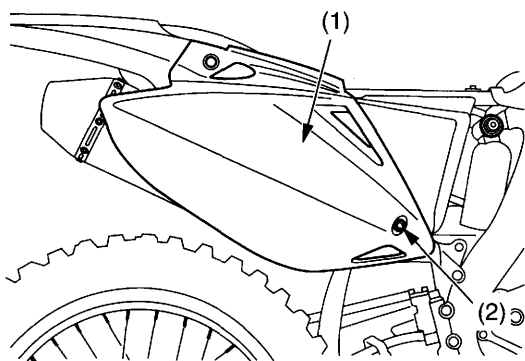
10. Install the seat (page 29).

Subframe

Refer to *Safety Precautions* on page 19.

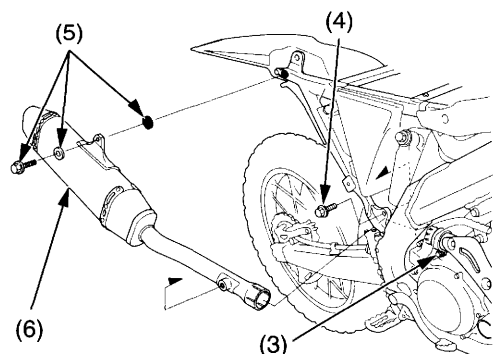
Removal

1. Remove the seat (page 29).
2. Remove the side covers (1) by removing the bolts (2).



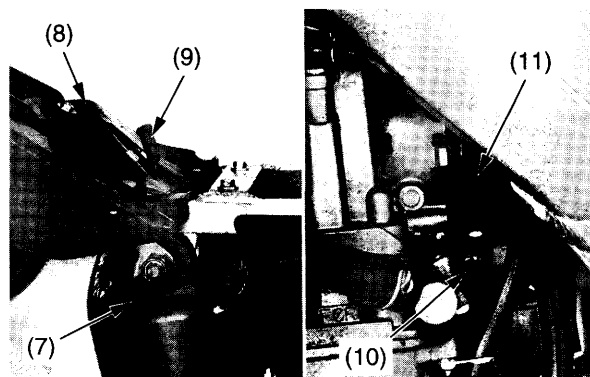
- (1) side cover
(2) bolt

3. Loosen the muffler clamp bolt (3).
4. Remove the muffler mounting A bolt (4), muffler mounting B bolt/washers (5) and muffler (6).



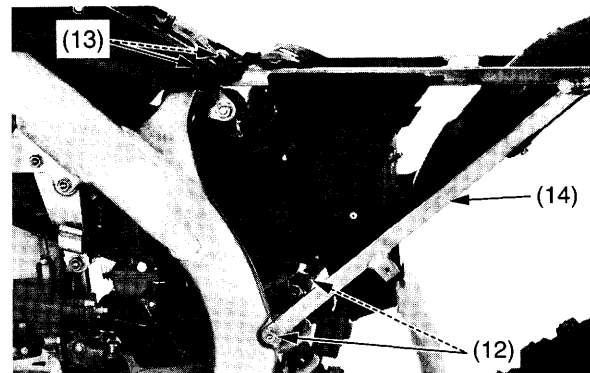
- (3) muffler clamp bolt
(4) muffler mounting A bolt
(5) muffler mounting B bolt/washers
(6) muffler

5. Disconnect the crankcase breather tube (7).
6. Unhook the air cleaner case cover (8).
7. Unhook the fuel tank band (9), and remove it.
8. Loosen the screw (10) on the air cleaner connecting tube clamp (11).



- (7) crankcase breather tube
(8) air cleaner case cover
(9) fuel tank band
(10) screw
(11) air cleaner connecting tube clamp

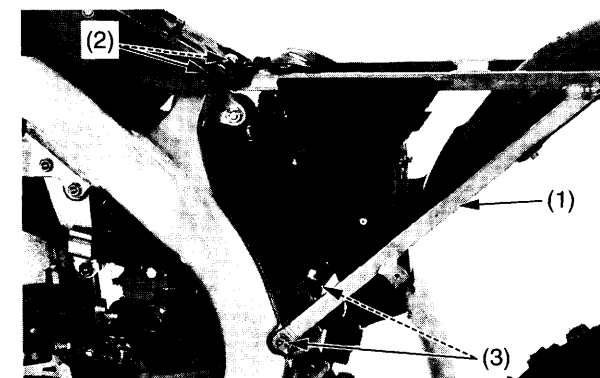
9. Remove the subframe mounting lower bolts (12) and subframe mounting upper bolts (13). Then remove the subframe (14) by pulling it straight backward.



- (12) subframe mounting lower bolts
(13) subframe mounting upper bolts
(14) subframe

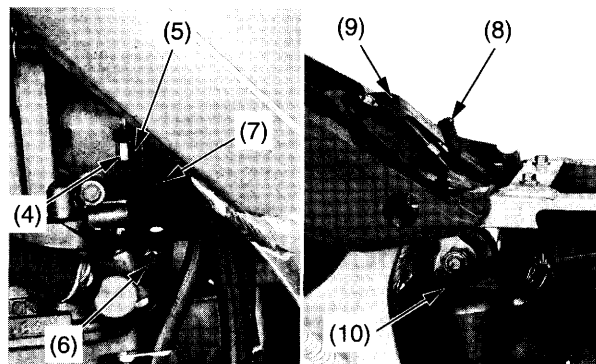
Installation

1. Loosely attach the upper and lower ends of the subframe (1) to the mainframe while connecting the air cleaner connecting tube to the carburetor. Then align the subframe with the rear wheel and tighten the subframe mounting upper bolts (2) and subframe mounting lower bolts (3) to the specified torque:
upper bolts: 30 N·m (3.1 kgf·m, 22 lbf·ft)
lower bolts: 49 N·m (5.0 kgf·m, 36 lbf·ft)



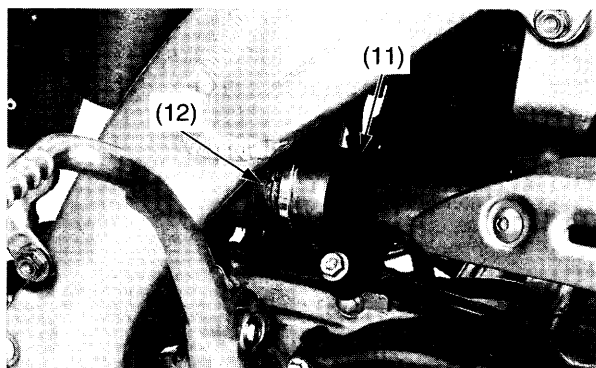
- (1) subframe
(2) subframe mounting upper bolts
(3) subframe mounting lower bolts

2. Make sure the carburetor lug (4) aligns with the air cleaner connecting tube slot (5).
3. Tighten the screw (6) on the air cleaner connecting tube clamp (7).
4. Install and hook the fuel tank band (8).
5. Hook the air cleaner case cover (9).
6. Connect the crankcase breather tube (10).



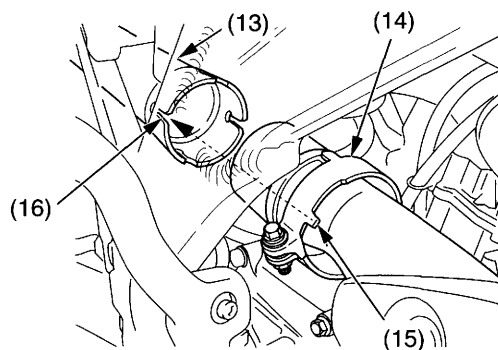
- (4) carburetor lug
 (5) air cleaner connecting tube slot
 (6) screw
 (7) air cleaner connecting tube clamp
 (8) fuel tank band
 (9) air cleaner case cover
 (10) crankcase breather tube

7. Remove the old gasket from exhaust pipe.
8. Install the muffler clamp (11) and a new gasket (12) to the exhaust pipe.



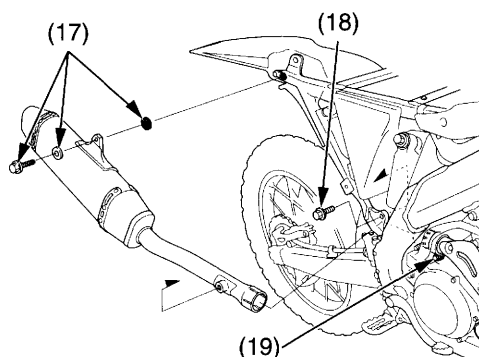
- (11) muffler clamp (12) gasket (new)

9. Install the muffler (13).
10. Install the muffler clamp (14) by aligning the tab (15) of the muffler clamp with the cut-out (16) of the muffler.



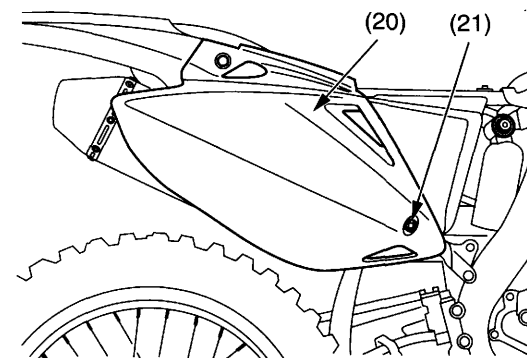
- (13) muffler (15) tab
 (14) muffler clamp (16) cut-out

11. Tighten the muffler mounting B bolt/washers (17) and muffler mounting A bolt (18) to the specified torque:
 21 N·m (2.1 kgf·m, 15 lbf·ft)
12. Tighten the muffler clamp bolt (19) to the specified torque:
 21 N·m (2.1 kgf·m, 15 lbf·ft)



- (17) muffler mounting B bolt/washers
 (18) muffler mounting A bolt
 (19) muffler clamp bolt

13. Install the side covers (20) and bolts (21).
14. Install the seat (page 29).



- (20) side cover
 (21) bolt

Fuel System

Refer to *Safety Precautions* on page 19.

Fuel Recommendation

Type	Unleaded
Research Octane Number	95 (or higher)

We recommend that you use unleaded fuel because it produces fewer engine deposits and extends the life of exhaust system components.

Your engine is designed to use any petrol that has a pump octane number $(R + M)/2$ of 91 or higher, or a research octane number of 95 or higher. Petrol pumps at service stations normally display the pump octane number. For information on the use of *Petrol Containing Alcohol*, see page 152.

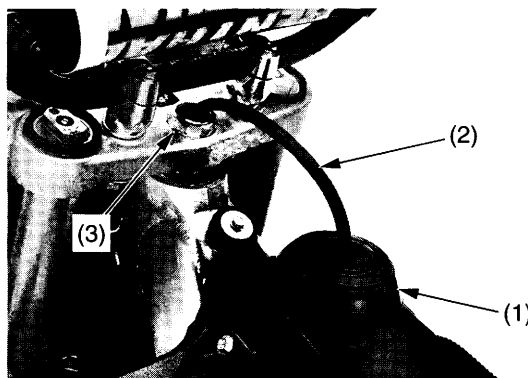
Use of lower octane petrol can cause persistent “pinging” or “spark knock” (a louder rapping noise) which, if severe, can lead to engine damage. (Light pinging experienced while operating under a heavy load, such as climbing a hill, is no cause for concern.)

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

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

Refueling Procedure

Fuel Tank Capacity: 7.2 ℓ (1.90 US gal, 1.58 Imp gal)



(1) fuel fill cap (3) steering stem nut
(2) breather tube

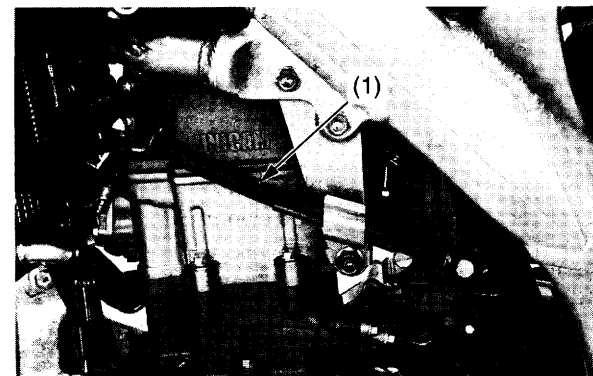
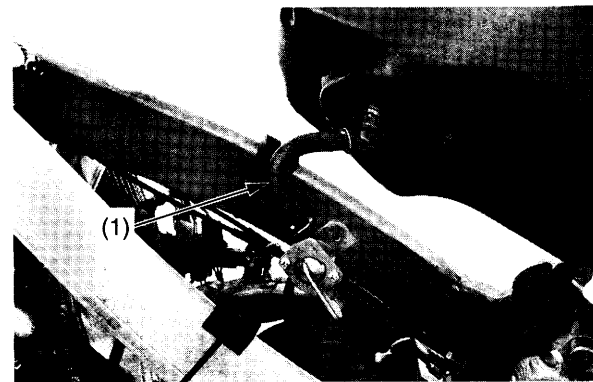
1. To open the fuel fill cap (1), pull the breather tube (2) out of the steering stem nut (3). Turn the fuel fill cap counterclockwise and remove it.
2. Add fuel until the level reaches the bottom of the filler neck. Avoid overfilling the tank. There should be no fuel in the filler neck.
3. Close the fuel fill cap and insert the breather tube in the steering stem nut.

⚠ WARNING

Petrol 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.

Fuel Line



(1) fuel line

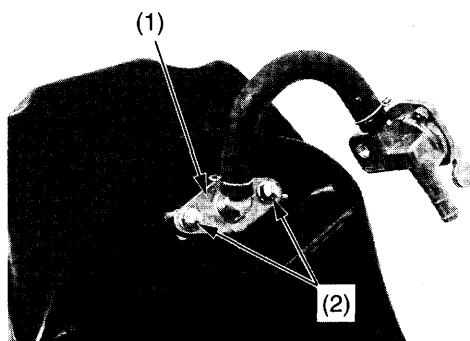
1. Check for leaks.
2. Check the fuel line (1) for cracks, deterioration, damage or leakage. Replace the fuel line, if necessary.
3. Check for interference between the frame and tank and adjust if necessary.

Fuel Filter

The fuel filter is mounted on the bottom left side of the fuel tank. Dirt accumulated in the filter will restrict the flow of the fuel to the carburetor. Therefore, the fuel filter should be serviced frequently.

To service the fuel filter:

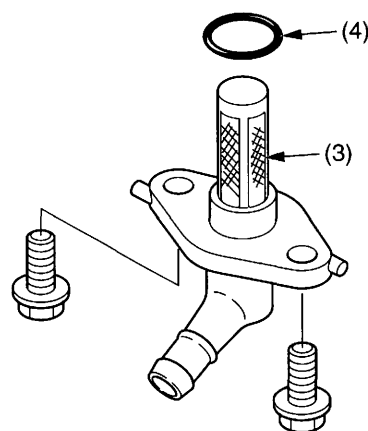
1. Remove the fuel tank (page 30).
2. Drain the fuel from the fuel tank into an approved petrol container. Disconnect the fuel valve and fuel line.
3. Remove the fuel joint (1) from the fuel tank by removing the bolts (2).



(1) fuel joint

(2) bolts

4. Wash the fuel filter (3) in high flash-point cleaning solvent.
5. Check that the O-ring (4) is in good condition.
6. Install the fuel joint in the fuel tank by tightening the bolts to the specified torque: 10 N·m (1.0 kgf·m, 7 lbf·ft). Attach the fuel valve and fuel line.
7. Install the fuel tank (page 31).
Refill the fuel tank and turn the fuel valve to ON; check for fuel leaks.



(3) fuel filter

(4) O-ring

Engine Oil

Refer to *Safety Precautions* on page 19.

Using the proper oil, 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.

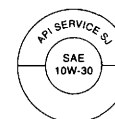
Oil Recommendation

API classification	SG or higher except oils labeled as energy conserving on the circular API service label
viscosity (weight)	SAE 10W-30
JASO T 903 standard	MA
suggested oil	Honda "4-STROKE MOTORCYCLE OIL" or equivalent

- Your CRF 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" service label on the container. They may affect lubrication.

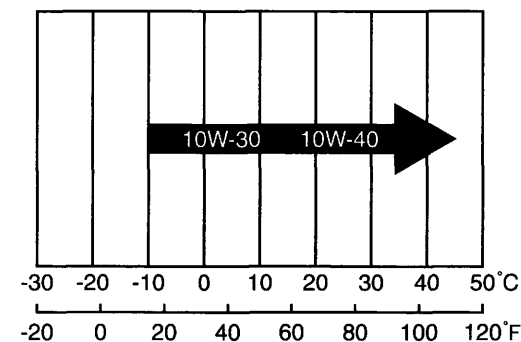


NOT RECOMMENDED



OK

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

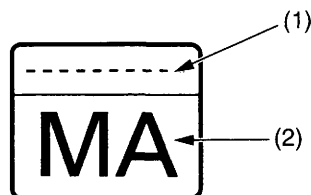


JASO T 903 standard

The JASO T 903 standard is an index for engine oils for 4-stroke motorcycle engines.

There are two classes: MA and MB.

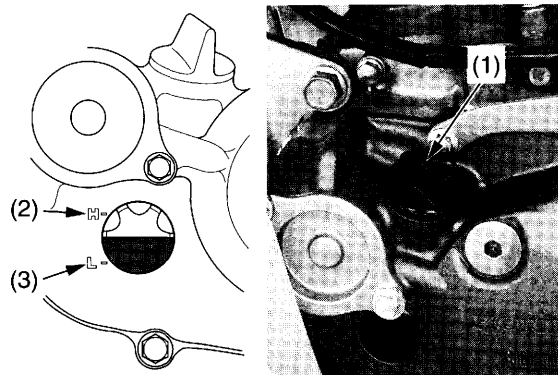
Oil conforming to the standard is labeled on the oil container. For example, the following label shows the MA classification.



PRODUCT MEETING JASO T 903
COMPANY GUARANTEEING THIS MA PERFORMANCE:

- (1) code number of the sales company of the oil
(2) oil classification

Checking & Adding Oil



- (1) engine oil filler cap
(2) upper level (H) mark
(3) lower level (L) mark

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 CRF in an upright position on a level surface.
4. Remove the engine oil filler cap (1).
5. Check that the oil level is between the upper (2) and lower (3) level marks in the inspection window.
 - 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 filler cap.
Repeat steps 1–5.
6. Reinsert the engine oil filler cap.
7. Check for oil leaks.

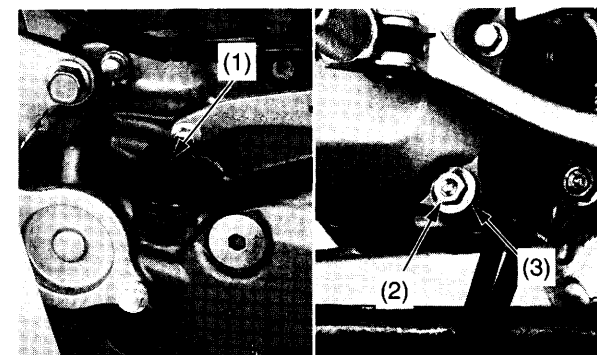
Changing Engine Oil & Filter

1. Run the engine at idle for 3 minutes, then shut it off.
2. Support the CRF in an upright position on a level surface.
3. Remove the engine oil filler cap (1) from the left crankcase cover.
4. Place an oil drain pan under the engine to catch the oil. Then remove the engine oil drain bolt (2) and sealing washer (3).
5. With the engine stop button pushed, repeat kickstarter operation approximately five times to drain the engine oil completely.
6. After the oil has drained, apply engine oil to the drain bolt threads and tighten it with a new sealing washer to the specified torque: 16 N·m (1.6 kgf·m, 12 lbf·ft)

Pour the drained oil into a suitable container and dispose of it in an approved manner (page 142).

NOTICE

Improperly disposal of drained fluids is harmful to the environment.

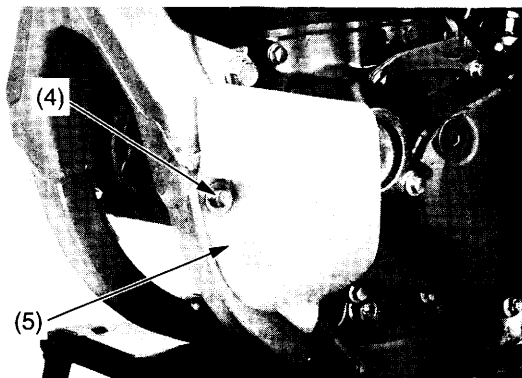


- (1) engine oil filler cap
(2) engine oil drain bolt
(3) sealing washer

(cont'd)

Engine Oil

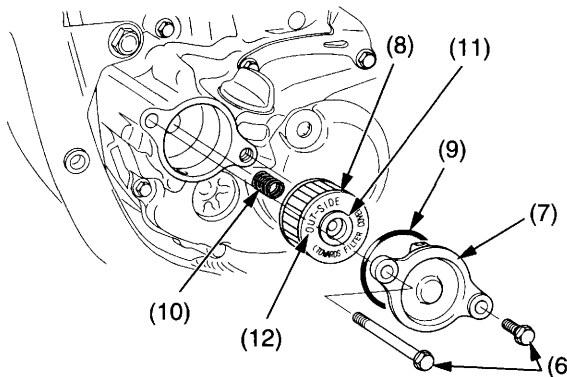
7. It is recommended to replace the oil and filter every 6 races or about every 15.0 hours. However, if you replace only the oil before the recommended interval, see page 21.
8. Remove the left engine guard bolt (4) and left engine guard (5).



- (4) left engine guard bolt
(5) left engine guard

9. Remove the oil filter cover bolts (6) and oil filter cover (7).
10. Remove the oil filter (8) from the oil filter cover.

11. Check that the oil filter cover O-ring (9) is in good condition and replace it if necessary.



- (6) oil filter cover bolts
(7) oil filter cover
(8) oil filter
(9) oil filter cover O-ring
(10) spring
(11) rubber seal
(12) "OUT-SIDE" mark

NOTICE

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

12. Apply grease to the filter side of the spring end, then install the spring (10) into the new oil filter.
13. Position the spring against the engine crankcase and install a new oil filter with the rubber seal (11) facing out, away from the engine. You should see the "OUT-SIDE" mark (12) 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.

14. Apply engine oil to the O-ring and install it to the oil filter cover.
15. Install the oil filter cover being careful not to damage the O-ring, then tighten the oil filter cover bolts to the specified torque:
12 N·m (1.2 kgf·m, 9 lbf·ft)
16. Install the left engine guard and tighten the left engine guard bolt.
17. Fill the crankcase with the recommended oil.
Capacity: 0.69 l (0.73 US qt, 0.61 Imp qt) after draining and filter change
0.66 l (0.70 US qt, 0.58 Imp qt) after draining
18. Install the engine oil filler cap.
19. Check the engine oil level by following the steps in *Checking & Adding Oil* (page 37).

Pour the drained oil into a suitable container and dispose of it in an approved manner (page 142).

NOTICE

Improper disposal of drained fluids is harmful to the environment.

Refer to *Safety Precautions* on page 19.

Using the proper oil, and regularly checking, adding, and changing oil will help extend the service life of the transmission and clutch. 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 and transmission.

Oil Recommendation

API classification (4-stroke engine oil only)	SG or higher except oils labeled as energy conserving on the circular API service label
viscosity (weight)	SAE 10W-30
JASO T903 standard	MA
others	without friction modifiers as molybdenum additives
suggested oil	Honda "4-STROKE MOTORCYCLE OIL" or equivalent

- Your CRF does not need oil additives. Use the recommended oil.
- Do not use oils with graphite or molybdenum additives. They may adversely affect clutch operation.
- Do not use API SH or higher 4-stroke engine oils displaying a circular API "energy conserving" service label on the container. They may affect lubrication and clutch performance.

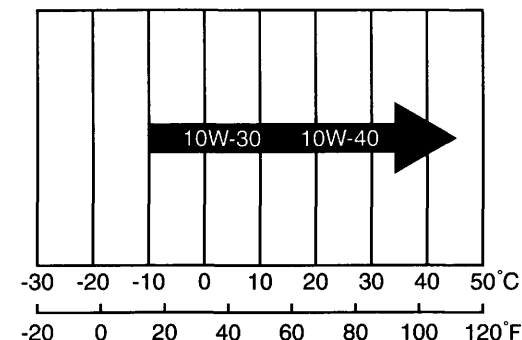


NOT RECOMMENDED



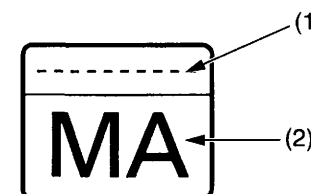
OK

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.

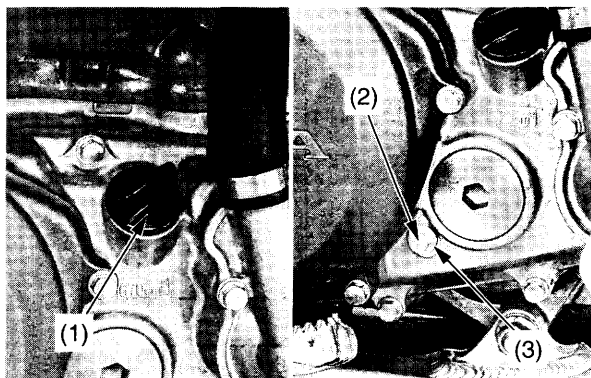


PRODUCT MEETING JASO T 903
COMPANY GUARANTEEING THIS MA PERFORMANCE:

- (1) code number of the sales company of the oil
(2) oil classification

Transmission Oil

Checking & Adding Oil

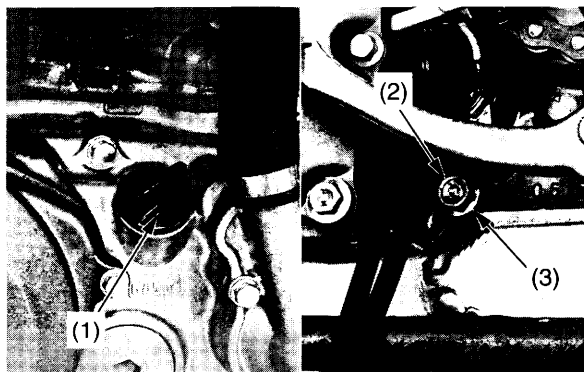


(1) transmission oil filler cap (3) sealing washer
(2) oil check bolt

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 clutch and transmission.
3. Support the CRF in an upright position on a level surface.
4. Remove the transmission oil filler cap (1), oil check bolt (2) and sealing washer (3) from the right crankcase cover. A small amount of oil should flow out of the oil check bolt hole. Allow any excess oil to flow out of the oil check bolt hole.
If no oil flows out of the oil check bolt hole, add oil slowly through the transmission oil filler hole until oil starts to flow out of the oil check bolt hole.
Install the oil check bolt with a new sealing washer and transmission oil filler cap. Repeat steps 1–4.
5. After inspecting the oil level or adding oil, tighten the oil check bolt to the specified torque:
10 N·m (1.0 kgf·m, 7 lbf·ft)

Replacing Transmission Oil

1. Run the engine at idle for 3 minutes, then shut it off.
2. Support the CRF in an upright position on a level surface.
3. Remove the transmission oil filler cap (1) from the right crankcase cover.
4. Place an oil drain pan under the engine to catch the oil. Then remove the transmission oil drain bolt (2) and sealing washer (3).
5. After the oil has drained, apply engine oil to the transmission oil drain bolt threads and tighten it with a new sealing washer to the specified torque:
16 N·m (1.6 kgf·m, 12 lbf·ft)



(1) transmission oil filler cap
(2) transmission oil drain bolt
(3) sealing washer

6. Fill the crankcase with recommended oil.
Capacity: 0.59 l (0.62 US qt, 0.52 Imp qt) after draining.
7. Check the transmission oil level by following the steps in *Checking & Adding Oil* (this page).

Pour the drained oil into a suitable container and dispose of it in an approved manner (page 142).

NOTICE

Improper disposal of drained fluids is harmful to the environment.

Your CRF'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 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 water 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.

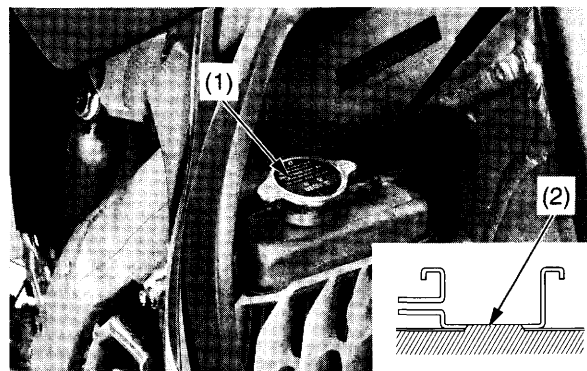
Decreasing the concentration of antifreeze to less than 40% will not provide proper corrosion protection.

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 *Safety Precautions* on page 19.

1. With the engine cold, remove the radiator cap (1) and check coolant level. The coolant level is correct when it is at the bottom of the radiator filler neck (2).



- (1) radiator cap
(2) radiator filler neck

⚠ 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.

2. Add coolant up to the filler neck if the level is low.
Inspect the coolant level before each outing. A coolant loss of 20 – 60 cm³ (0.7 – 2.0 US oz, 0.7 – 2.1 Imp oz) through the overflow tube is normal. If coolant loss is more than this, inspect the cooling system.
Capacity:
1.12 l (1.18 US qt, 0.99 Imp qt) after disassembly
1.03 l (1.09 US qt, 0.91 Imp qt) after draining
3. Install the radiator cap securely.

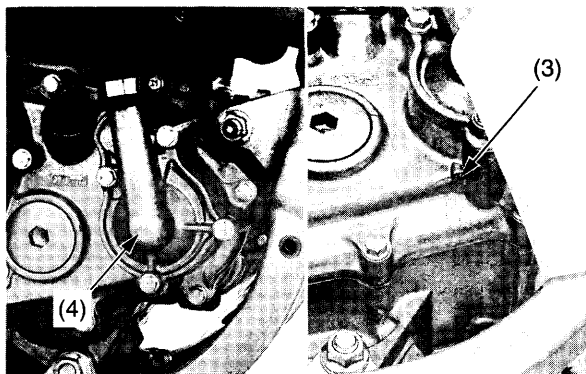
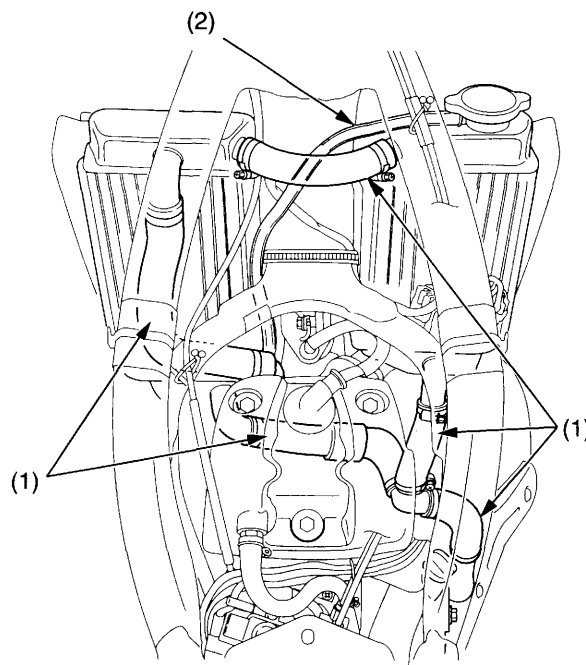
NOTICE

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

Coolant

Cooling System Inspection

1. Check the cooling system for leaks (see the Honda Shop Manual for troubleshooting of leaks).
2. Check the water hoses (1) for cracks, deterioration, and radiator hose clamp for looseness.
3. Check the radiator mount for looseness.
4. Make sure the overflow hose (2) is connected and not clogged.
5. Check the radiator fins for clogging.
6. Check the bleed hole (3) below the water pump cover (4) for leakage. Check for signs of seal leakage. A small amount of “weeping” from the bleed hole is normal. See the Honda Shop Manual or consult your Honda dealer for replacing the water seal or the oil seal. Both seals should be replaced at the same time.



- (1) water hoses
(2) overflow hose
(3) bleed hole
(4) water pump cover

Coolant Replacement

Refer to *Safety Precautions* on page 19.

Coolant should be replaced by your Honda dealer, unless you have the proper tools and service data and are mechanically qualified. Refer to the Honda Shop Manual.

⚠ 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*, page 142.

NOTICE

Improper disposal of drained fluids is harmful to the environment.

Refer to *Safety Precautions* on page 19.

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 off-road vehicles. 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 Honda dealer can help you determine the correct service interval for your riding conditions.

Your CRF'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 damage.

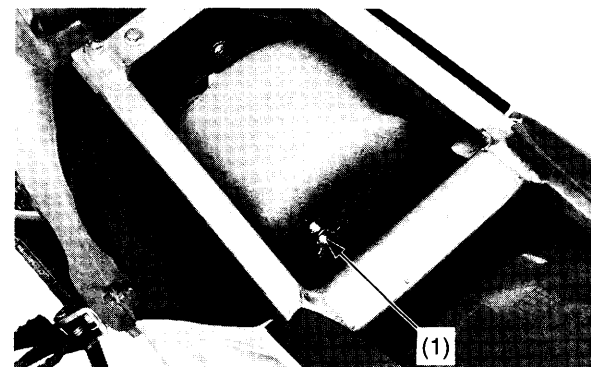
Proper air cleaner maintenance can prevent premature engine wear or damage, expensive repairs, low engine power, poor gas mileage, and spark plug fouling.

NOTICE

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

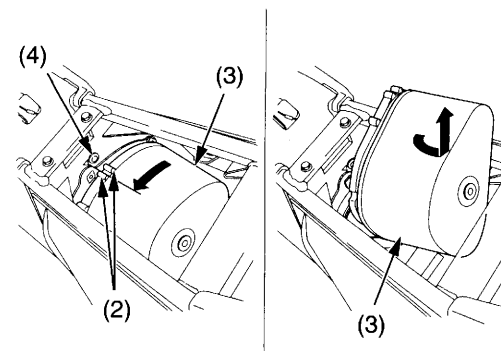
Cleaning

1. Remove the seat (page 29).
2. Remove the air cleaner retaining bolt (1).



(1) air cleaner retaining bolt

3. Align the two access top tabs (2) of the air cleaner assembly (3) and "Δ" mark (4) of the air cleaner housing by rotating the air cleaner assembly counterclockwise.
4. Remove the air cleaner assembly keeping the two access top tabs up.

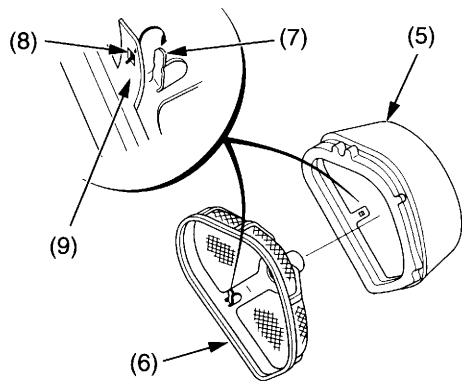


- (2) two access top tabs
(3) air cleaner assembly
(4) "Δ" mark

(cont'd)

Air Cleaner

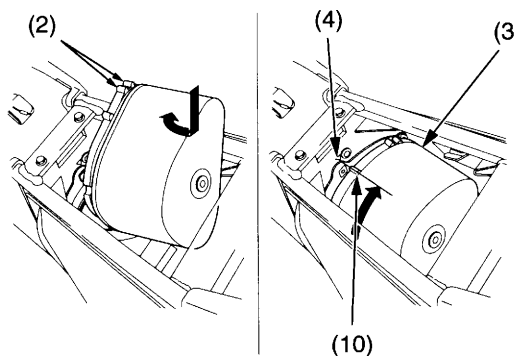
5. Remove the air cleaner element (5) from the air cleaner holder (6).



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

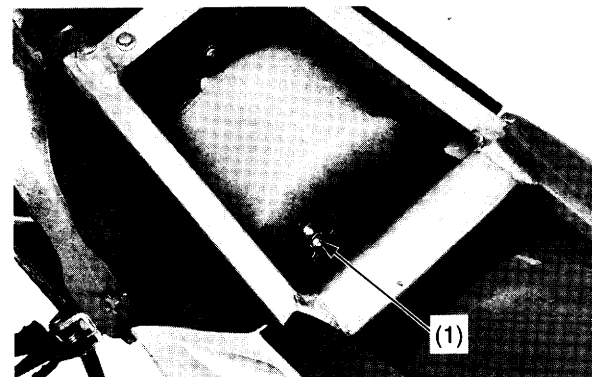
6. Wash the air cleaner in clean non-flammable cleaning solvent. Then wash in hot, soapy water, rinse well, and allow to dry thoroughly. The air cleaner element is made in two pieces: inner and outer, which cannot be separated.
7. Clean the inside of the air cleaner housing.
8. Allow the air cleaner to dry thoroughly. After drying, soak the air cleaner element in clean Honda Foam Air Filter Oil or an equivalent air cleaner oil. Apply air cleaner oil to the entire surface, inner and outer, and rub it with both hands to saturate the air cleaner element with oil. Squeeze out excess oil.

9. Assemble the air cleaner element and holder. Install the tab (7) of the holder in the hole (8) of the air cleaner tab (9).
10. Apply 3 – 5 g (0.1 – 0.2 oz) of Honda White Lithium Grease or equivalent to the air cleaner housing contact area of the air cleaner element.
11. Install the air cleaner assembly into the air cleaner housing keeping the two access top tabs (2) up.
12. Carefully position the sealing flange of the element to prevent dirt intrusion.
13. Align the set tab (10) of the air cleaner element with the “Δ” mark (4) of the air cleaner housing by rotating the air cleaner assembly (3) clockwise.



- (2) two access top tabs
(3) air cleaner assembly
(4) “Δ” mark
(10) set tab

14. Install and tighten the air cleaner retaining bolt (1) securely.



(1) 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.

15. Install the seat (Page 29).

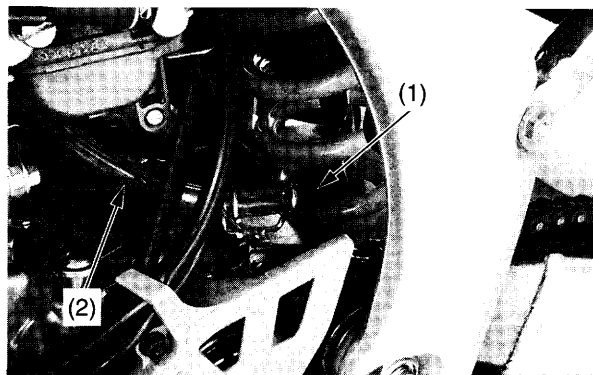
Refer to *Safety Precautions* on page 19.

Service more frequently if your CRF is ridden in the rain or often at full throttle.

Service the breather if you can see deposits in the transparent section of the drain tube.

Draining

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

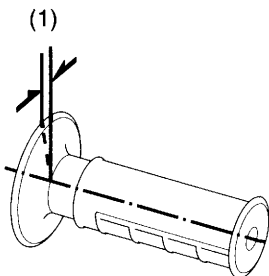


(1) crankcase breather tube plug
(2) tube

Throttle

Refer to *Safety Precautions* on page 19.

Throttle Freeplay



(1) freeplay

Inspection

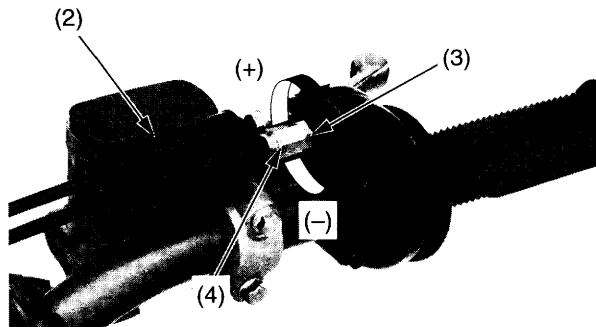
Check freeplay (1).

Freeplay: 3 – 5 mm (0.1 – 0.2 in)

If necessary, adjust to the specified range.

Upper Adjustment

Minor adjustments are generally made with the upper adjuster.



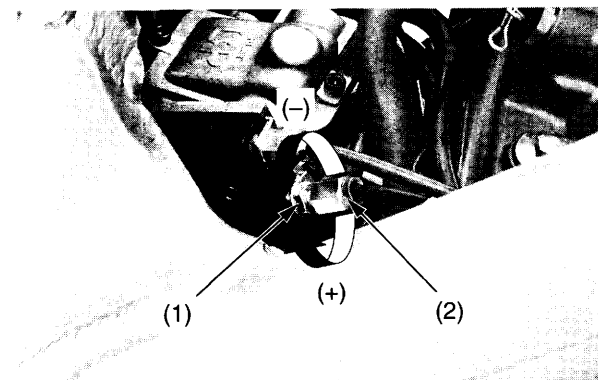
(2) dust cover
(3) lock nut
(4) adjuster

(+) increase
(-) decrease

1. Pull the dust cover (2) back.
2. Loosen the lock nut (3).
3. Turn the adjuster (4).
Turning the adjuster in direction (-) will decrease freeplay and turning it in direction (+) will increase freeplay.
4. Tighten the lock nut to the specified torque:
4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)
Return the dust cover to its normal position.
5. 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 to the specified torque:
4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)
Install the dust cover and 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 carburetor. It is also used if you cannot get the proper adjustment with the upper adjuster.



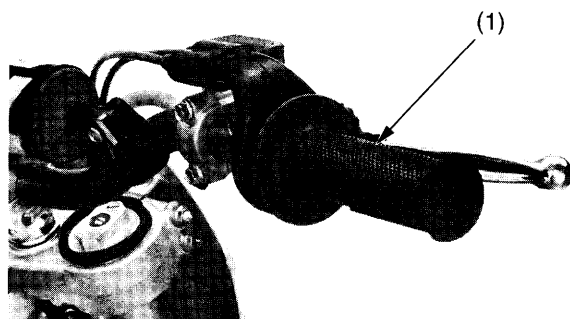
(1) lock nut
(2) adjuster

(+) increase freeplay
(-) decrease freeplay

1. Remove the fuel tank (page 30).
2. Loosen the lock nut (1).
3. Turn the adjuster (2) in direction (-) to decrease freeplay, and in direction (+) to increase freeplay.
4. Tighten the lock nut to the specified torque:
4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)
5. Operate the throttle grip to ensure that it functions smoothly and returns completely.
6. Install the fuel tank (page 31).

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

Throttle Inspection



(1) throttle

1. Check that the throttle assembly is positioned properly and the securing bolts are tight.
2. Check for smooth rotation of the throttle (1) from fully open to fully closed in all steering positions. If there is a problem, see your Honda dealer.
3. Inspect the condition of the throttle cables from the throttle grip down to the carburetor. 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 to prevent premature rust and corrosion.

Engine Idle Speed

Refer to *Safety Precautions* on page 19.

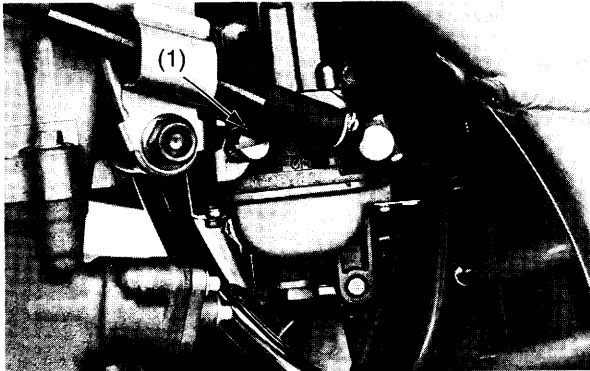
Remember, idle speed adjustment is not a “cure-all” for other problems in your engine’s fuel-delivery system. Adjusting the idle will not compensate for a fault elsewhere.

The engine must be at normal operating temperature for accurate idle speed adjustment. The best way to assure proper carburetion is to see your Honda dealer for regularly scheduled servicing, including carburetor adjustment.

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. Keep the motorcycle in an upright position.
5. Adjust idle speed with the throttle stop screw (1).

Idle speed: $1,700 \pm 100 \text{ min}^{-1} \text{ (rpm)}$



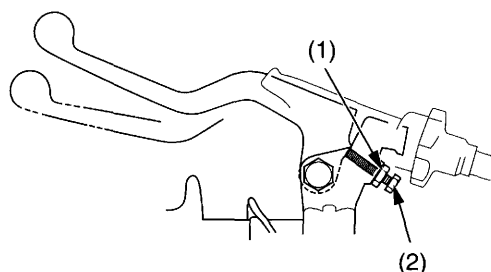
(1) throttle stop screw

Refer to *Safety Precautions* on page 19.

Clutch Lever Adjustment

The distance between the tip of the clutch lever and the grip may be adjusted.

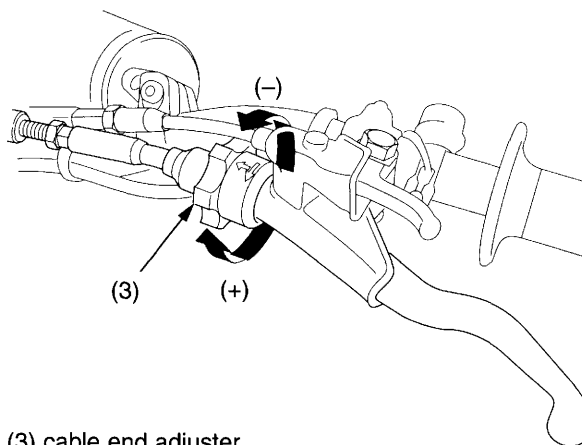
Make sure to adjust the clutch lever freeplay after the clutch lever position adjustment or clutch cable disconnected.



(1) lock nut (2) adjuster

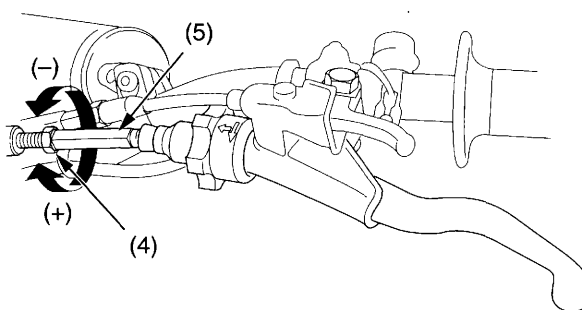
1. Loosen the lock nut (1).
2. To position the clutch lever farther away from the handgrip, turn the adjuster (2) counterclockwise. To position the brake lever closer to the handgrip, turn the adjuster clockwise.
3. Tighten the lock nut.

4. Turn the cable end adjuster (3) in direction (+) until it seats lightly and then turn it out five turns.



(3) cable end adjuster
(+) increase freeplay
(-) decrease freeplay

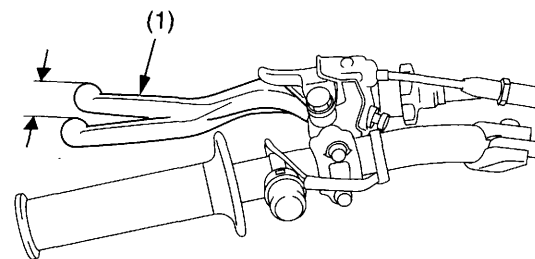
5. Loosen the lock nut (4) and turn the integral cable adjuster (5) to adjust the clutch lever freeplay 10 – 20 mm (0.4 – 0.8 in) at the tip of lever. Tighten the lock nut.



(4) lock nut
(5) integral cable adjuster
(+) increase freeplay
(-) decrease freeplay

6. Adjust the cable end adjuster for minor adjustment (page 50).

Clutch Lever Freeplay



(1) clutch lever

Inspection

Check freeplay.

Freeplay: 10 – 20 mm (0.4 – 0.8 in)

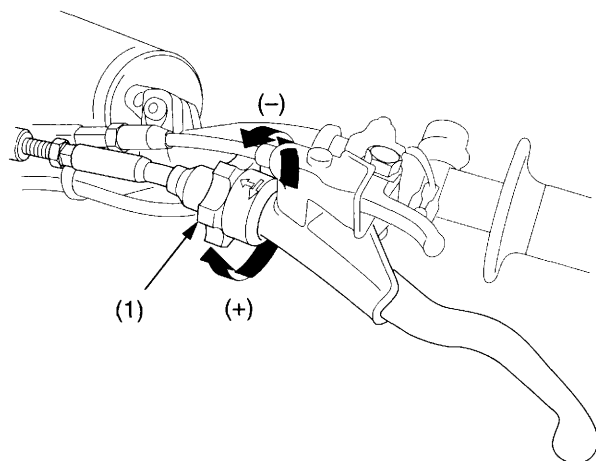
If necessary, adjust to the specified range. Improper freeplay adjustment can cause premature clutch wear.

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

Clutch System

Cable End Adjustment

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



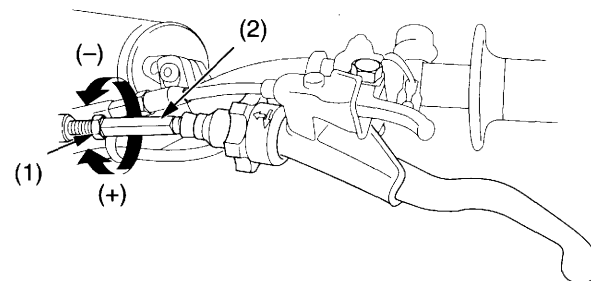
(1) cable end adjuster
(+) increase freeplay
(-) decrease freeplay

Turning the cable end adjuster (1) in direction (+) will increase freeplay and turning it in direction (-) will 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 one turn 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.



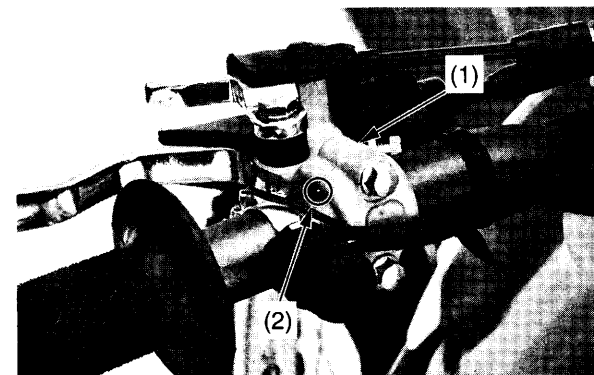
(1) lock nut
(2) integral cable adjuster
(+) increase freeplay
(-) decrease freeplay

1. Turn the cable end adjuster in direction (+) until it seats lightly and then turn it out five turns.
2. Loosen the lock nut (1).
3. Turn the integral cable adjuster (2) to obtain the specified freeplay.
4. Tighten the lock nut. Check the freeplay.
5. 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 CRF 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 51).

Other Inspections & Lubrication

- 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

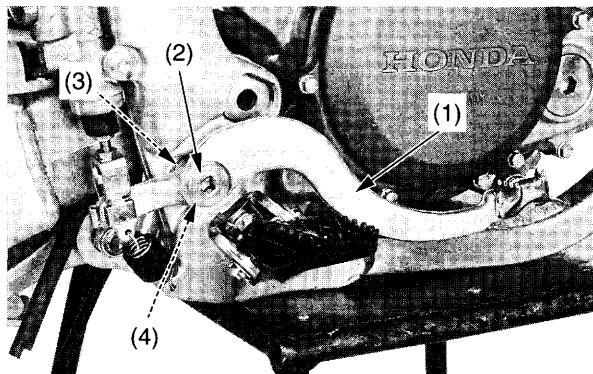
- Check the clutch cable for kinks or signs of wear. If necessary, have it replaced.
- Lubricate the clutch cable with a commercially-available cable lubricant to prevent premature wear and corrosion.

Clutch Operation

1. Check for smooth clutch lever operation. If necessary, lubricate the clutch lever pivot or clutch cable.
2. Check the clutch cable for deterioration, kinks, or damage.

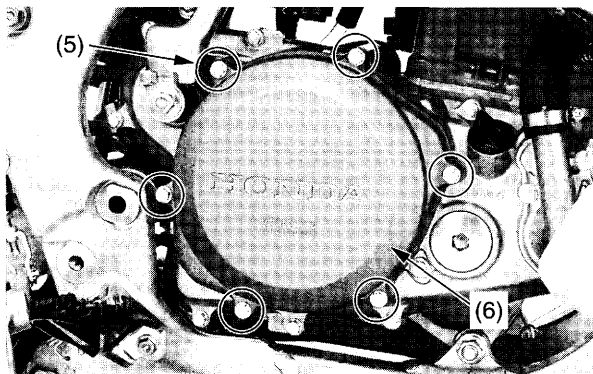
Clutch Cover/Disc/Plate Removal

1. Drain the transmission oil (page 40).
2. Remove the rear brake pedal (1) by removing its pivot bolt (2), washer (3) and dust seals (4).



- (1) rear brake pedal
(2) brake pedal pivot bolt
(3) washer
(4) dust seals

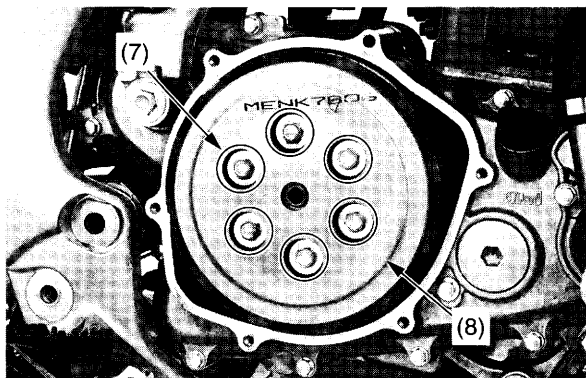
3. Remove the six clutch cover bolts (5) and clutch cover (6).



- (5) clutch cover bolts
(6) clutch cover

4. Remove the six clutch spring bolts and springs (7).
Loosen the bolts in a crisscross pattern in two or three progressive steps.

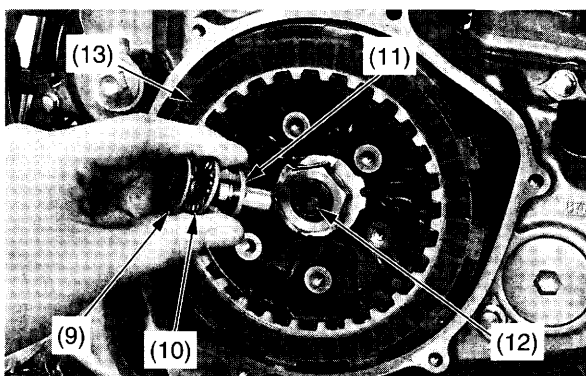
5. Remove the clutch pressure plate (8).



- (7) clutch spring bolts and springs
(8) clutch pressure plate

6. Remove the washer (9), needle bearing (10), clutch lifter (11) and clutch lifter rod (12).

7. Remove the eight clutch discs and seven clutch plates (13).
Assemble the clutch lifter, needle bearing and washer. Turn the needle bearing with your finger. The needle bearing should turn smoothly and quietly. Replace the needle bearing and washer if the needle bearing does not turn smoothly.

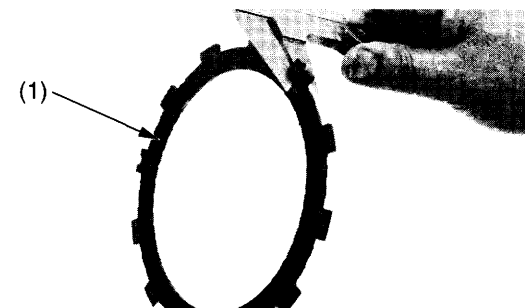


- (9) washer
(10) needle bearing
(11) clutch lifter
(12) clutch lifter rod
(13) clutch discs and plates

Clutch Disc/Plate Inspection

Replace the clutch discs (1) if they show signs of scoring or discolouration. Measure the thickness of each clutch disc. Service Limit: 2.85 mm (0.112 in)

Replace the clutch discs and clutch plates as a set.

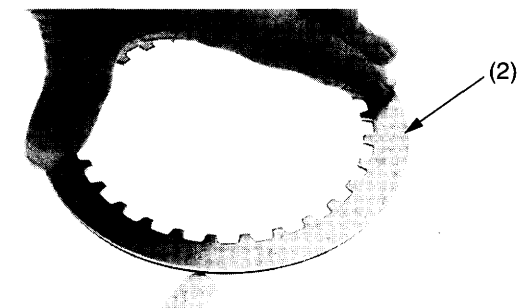


- (1) clutch disc

Check the clutch plates (2) for excessive warpage or discolouration.

Check the plate warpage on a surface plate using a feeler gauge. Service Limit: 0.15 mm (0.006 in)

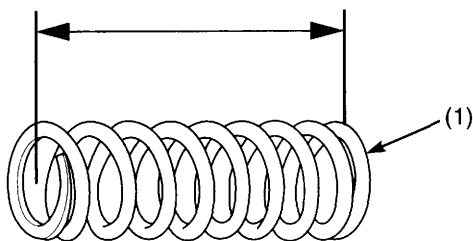
Replace the clutch discs and plates as a set.



- (2) clutch plate

Clutch System

Clutch Spring Inspection



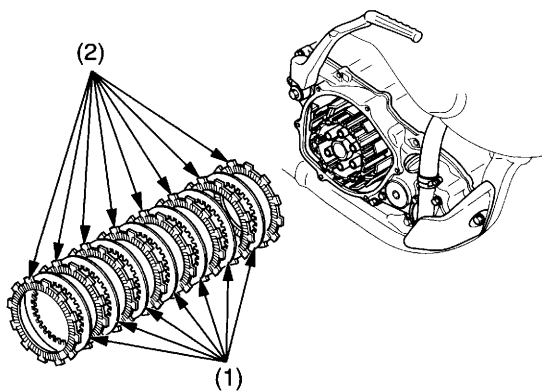
(1) clutch spring

Measure the free length of each spring.
Service Limit: 43.7 mm (1.72 in)

Replace the clutch springs as a set if any one of them is below the service limit or if the clutch plates have been burnt/heat discoloured.

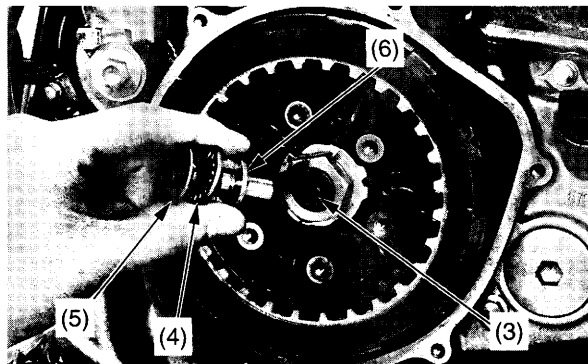
Clutch Disc/Plate Installation

1. Coat the clutch plates with engine oil.
2. Install the eight clutch discs (2) and seven clutch plates (1) alternately, starting with a disc.



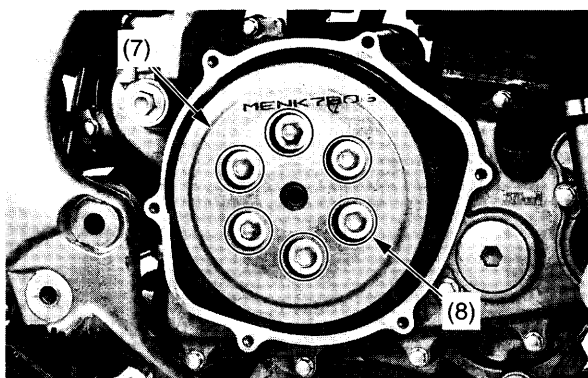
(1) seven clutch plates
(2) eight clutch discs

3. Apply grease to the clutch lifter rod (3).
4. Insert the clutch lifter rod into the mainshaft.
5. Apply engine oil to the needle bearing (4) and washer (5) and install them onto the clutch lifter (6).
6. Install the clutch lifter onto the rod.



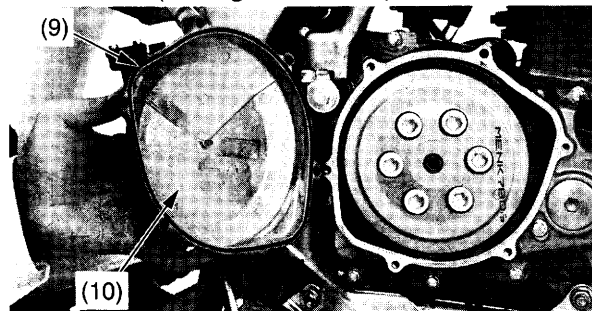
(3) clutch lifter rod
(4) needle bearing
(5) washer
(6) clutch lifter

7. Install the clutch pressure plate (7).
8. Install the six clutch springs and bolts (8).
9. Tighten the bolts in a crisscross pattern in two or three steps, to the specified torque:
12 N·m (1.2 kgf·m, 9 lbf·ft)



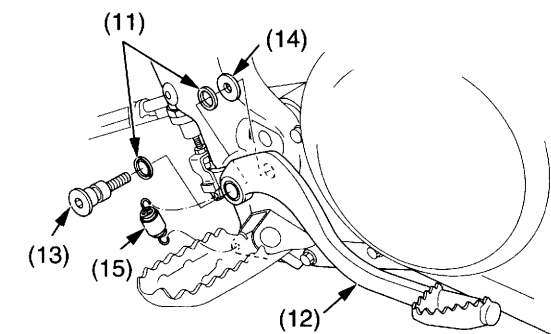
(7) clutch pressure plate
(8) clutch springs and bolts

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



(9) O-ring
(10) clutch cover

12. Lubricate the dust seals (11), rear brake pedal (12) pivot and rear brake pedal pivot bolt (13) with Honda Lithium Grease or equivalent.
13. Apply locking agent to the brake pedal pivot bolt threads.
14. Install the dust seals into the rear brake pedal.
15. Install the pivot bolt with the washer (14) and tighten the pivot bolt to the specified torque:
36 N·m (3.7 kgf·m, 27 lbf·ft)
Connect the brake pedal return spring (15) if it was removed.

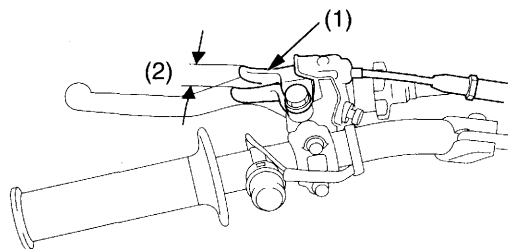


(11) dust seals
(12) rear brake pedal
(13) brake pedal pivot bolt
(14) washer
(15) brake pedal return spring

16. Fill the crankcase with transmission oil (page 40).

Refer to *Safety Precautions* on page 19.

Hot Start Lever Freeplay



- (1) hot start lever
- (2) hot start lever freeplay

Inspection

Check freeplay:

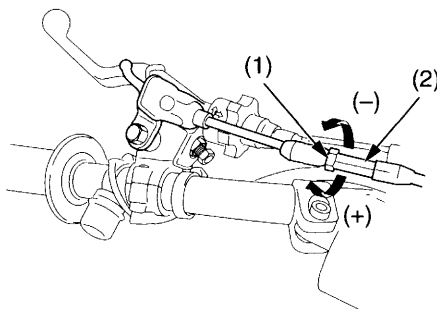
2 – 3 mm (0.08 – 0.12 in)

If necessary, adjust to the specified range.

Adjustment

Adjustments can be made with the cable end adjuster.

Loosen the lock nut (1) and turn the adjuster (2). Turning the adjuster clockwise (+) will increase freeplay and turning it counterclockwise (–) will decrease freeplay. After adjustment, tighten the lock nut.



- (1) lock nut
- (2) adjuster

- (+) increase freeplay
- (–) decrease freeplay

Spark Plug

Refer to *Safety Precautions* on page 19.

Spark Plug Recommendation

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

Standard	IFR8H11 (NGK) or VK24PRZ11 (DENSO)
Optional	IFR9H11 (NGK) or VK27PRZ11 (DENSO)

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.

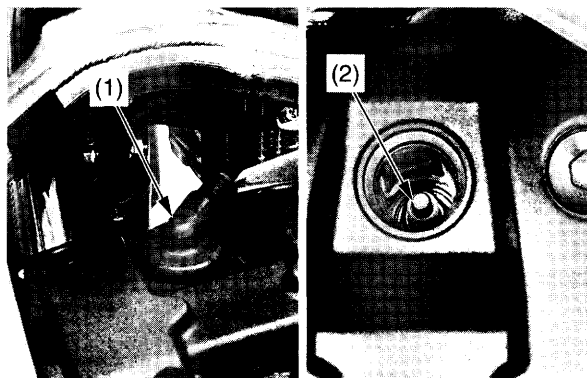
This motorcycle uses spark plug that have an iridium tip in the centre electrode and a platinum tip in the side electrode.

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 centre 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

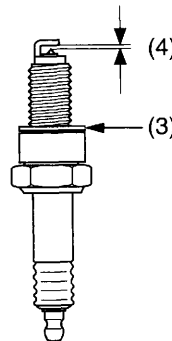
1. Remove the seat and fuel tank (pages 29, 30).
2. Disconnect the spark plug cap (1).
3. Clean any dirt from around the spark plug base.
4. Remove the spark plug (2).



- (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:
1.0 – 1.1 mm (0.039 – 0.043 in)



- (3) sealing gasket
(4) spark plug gap

7. To obtain accurate spark plug readings, accelerate up to speed on a straightaway. Push 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 centre electrode should appear tan or medium gray.

If you're using a new plug, ride for at least 10 minutes before taking a plug reading; a brand-new plug will not colour 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 132).

Check the carburetor, fuel 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:
1/8 turn after it seats.
 - If installing a new plug, tighten it twice to prevent loosening:
 - a) First, tighten the plug:
NGK: 3/4 turn after it seats.
DENSO: 1/2 turn after it seats.
 - b) Then loosen the plug.
 - c) Next, tighten the plug again:
1/8 turn after it seats.

NOTICE

An improperly tightened spark plug can damage the engine. If a plug is too loose, a 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 29, 31).

Refer to *Safety Precautions* on page 19.

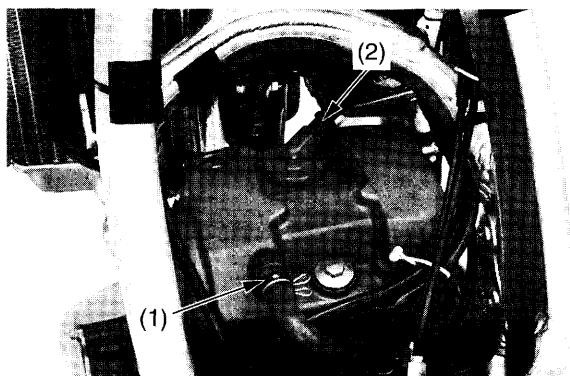
Excessive valve clearance will cause noise and eventual engine damage. Little or no clearance will prevent the valve from closing and cause valve damage and power loss. Check valve clearance when the engine is cold at the intervals specified in the Maintenance Schedule (page 21).

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

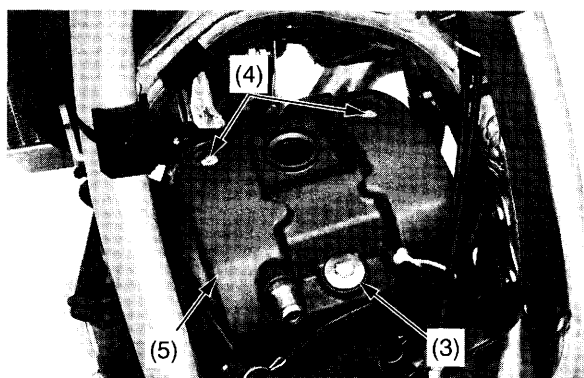
Before inspection, clean the engine thoroughly to keep dirt from entering the engine.

1. Remove the seat and fuel tank (pages 29, 30).
2. Disconnect the breather tube (1) and spark plug cap (2).



(1) breather tube (2) spark plug cap

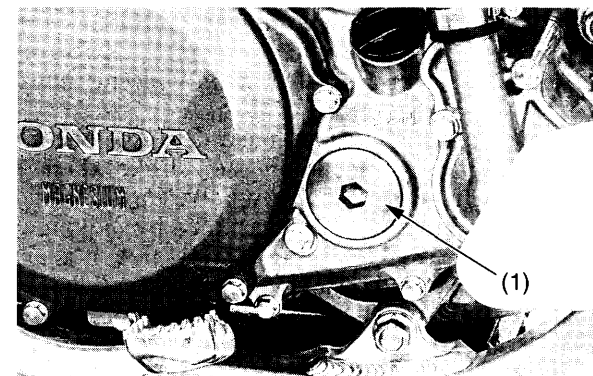
3. Remove the cylinder head cover A bolt/rubber seal (3), cylinder head cover B bolts/rubber seals (4) and cylinder head cover (5).



(3) cylinder head cover A bolt/rubber seal
(4) cylinder head cover B bolts/rubber seals
(5) cylinder head cover

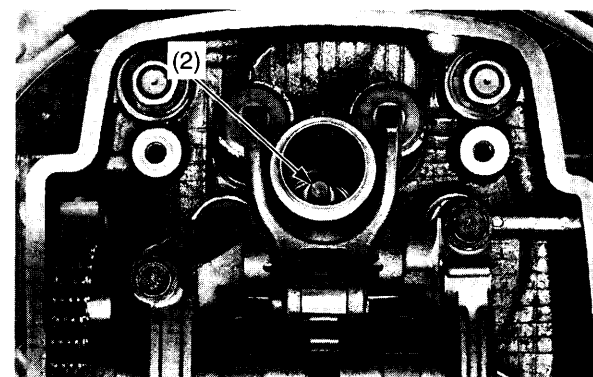
Positioning At Top Dead Centre On The Compression Stroke

1. Remove the crankshaft hole cap (1).



(1) crankshaft hole cap

2. Remove the spark plug (2).



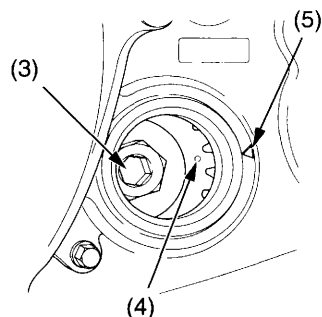
(2) spark plug

(cont'd)

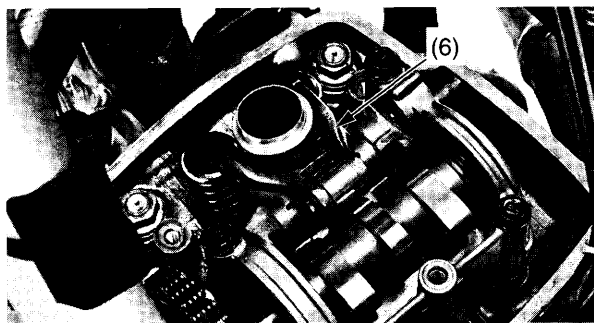
Valve Clearance

3. Rotate the crankshaft by turning the primary drive gear bolt (3) clockwise until the punch mark (4) on the primary drive gear aligns with the index mark (5) on the right crankcase cover. In this position, the piston may either be on the compression or exhaust stroke. If the crankshaft passed the punch mark, rotate the primary drive gear bolt clockwise again and align the punch mark with the index mark.

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 exhaust rocker arm (6). If it is free, it is an indication that the valves are closed and that the piston is on the compression stroke. If it is tight and the valves are open, rotate the primary drive gear bolt 360° and realign the punch mark with the index mark.



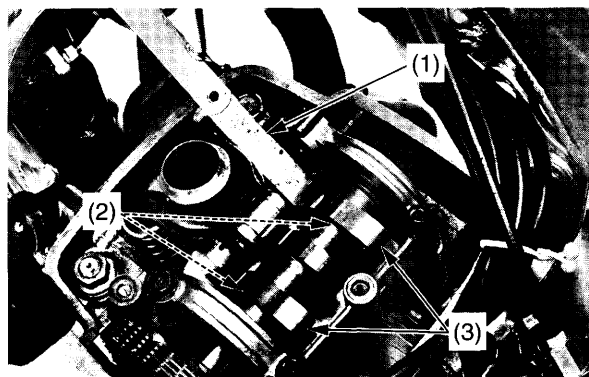
(3) primary drive gear bolt (5) index mark
(4) punch mark



(6) exhaust rocker arm

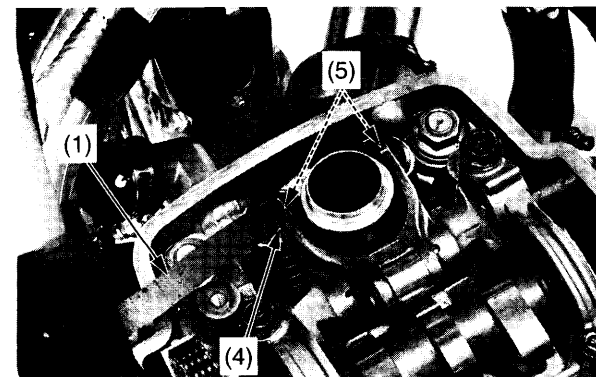
Valve Clearance Inspection

1. Measure the intake valve clearance by inserting a feeler gauge (1) between the valve lifters (2) and cam lobes (3).



(1) feeler gauge
(2) valve lifters
(3) cam lobes

2. Measure the exhaust valve clearance by inserting a feeler gauge (1) between the exhaust rocker arm (4) and shims (5).



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

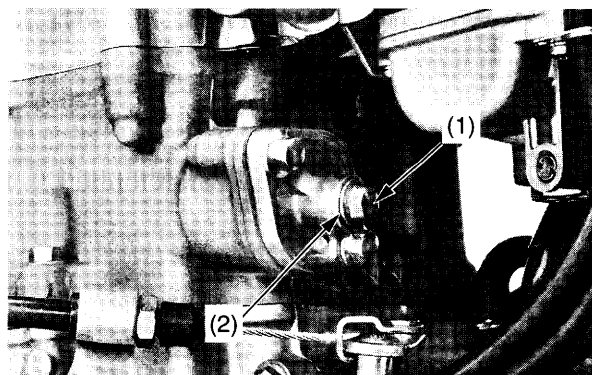
Valve Clearance:

IN: 0.16 ± 0.03 mm (0.006 ± 0.001 in)
EX: 0.28 ± 0.03 mm (0.011 ± 0.001 in)

If intake valve clearance and exhaust valve clearance need adjustment, see *Camshaft Holder Assembly Removal* (page 57) and select the correct shim for each valve.

Camshaft Holder Assembly Removal

1. Record the intake valve and exhaust valve clearances.
Make sure the piston is at TDC (Top Dead Centre) on the compression stroke (page 55).
2. Remove the cam chain tensioner lifter cover bolt (1) and sealing washer (2).

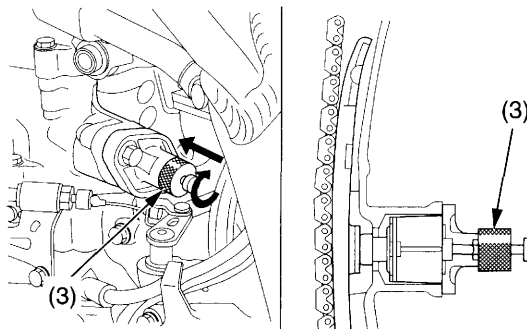


(1) cam chain tensioner lifter cover bolt
(2) sealing washer

Use the tensioner stopper tool.

- Tensioner stopper 070MG-0010100

3. Turn the tensioner shaft clockwise with the tensioner stopper (3) until it stops, in order to retract the tensioner fully.
Then insert the stopper tool fully to hold the stopper in the fully retracted position.

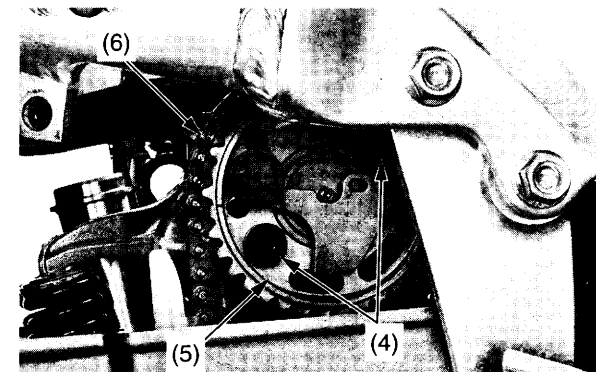


(3) tensioner stopper

4. Loosen the cam sprocket bolt (4).
Rotate the primary drive gear bolt (crankshaft) clockwise one turn and remove the other sprocket bolt. Rotate the primary drive gear bolt (crankshaft) clockwise one turn again and remove the remaining sprocket bolt.
5. Remove the cam sprocket (5) and then attach a piece of wire to the cam chain (6) to prevent it from falling into the crankcase.

NOTICE

Do not let the bolts, sprocket and cam chain fall into the crankcase.



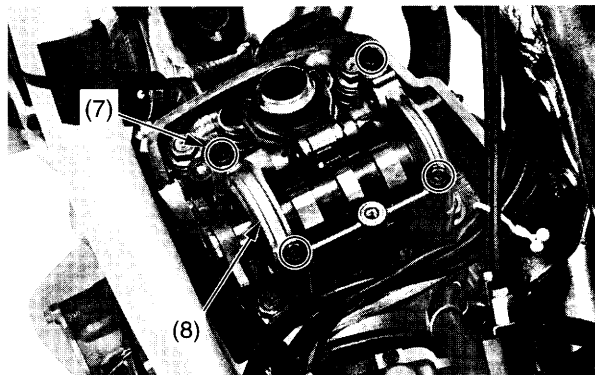
(4) cam sprocket bolts
(5) cam sprocket
(6) cam chain

(cont'd)

Valve Clearance

6. Make sure the piston is at TDC (Top Dead Centre) on the compression stroke. Loosen the camshaft holder assembly bolts (7) in a crisscross pattern in two or three steps. Remove the camshaft holder assembly bolts, camshaft holder assembly (8), intake valve lifters and shims.

- As you remove the camshaft holder assembly, the intake valve lifters and intake valve shims may be sticking in the camshaft holder assembly.
- Keep the intake valve lifters and the shims separate so you can easily identify the originally installed location such as intake or exhaust, right or left.

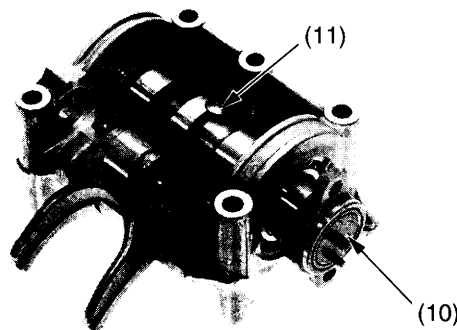
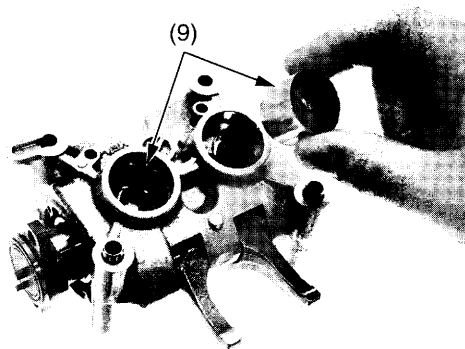


(7) camshaft holder assembly bolts
(8) camshaft holder assembly

NOTICE

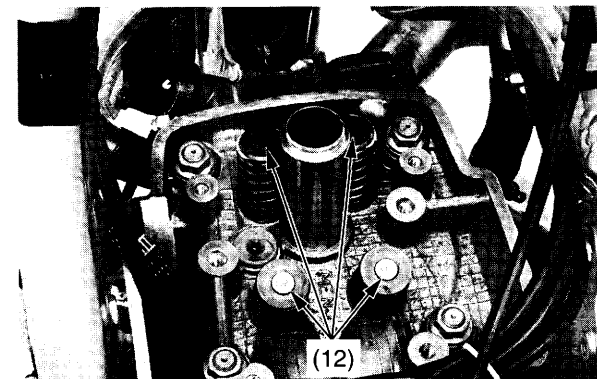
Do not let the valve lifters, shims, decompressor shaft and plunger fall into the crankcase.

7. Remove the intake valve lifters (9), decompressor shaft (10) and plunger (11).



(9) intake valve lifters
(10) decompressor shaft
(11) plunger

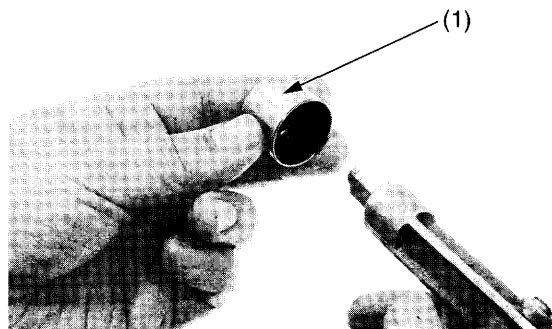
8. Remove the valve shims (12).



(12) valve shims

Shim Selection

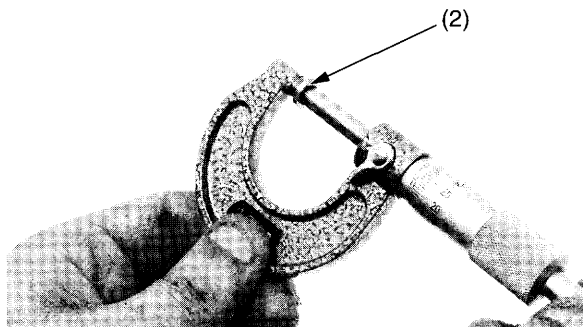
1. Clean the valve shim contact area in the valve lifter (1) with compressed air.



(1) valve lifter

2. Measure the shim thickness with a micrometer and record it.

Seventy-three different thickness shims (2) are available from the thinnest (1.200 mm thickness) shim to the thickest (3.000 mm thickness) in intervals of 0.025 mm.



(2) shim

3. 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 intake valve seat if carbon deposits result in a calculated dimension of over 2.450 mm.
Reface the exhaust valve seat if carbon deposits result in a calculated dimension of over 3.000 mm.

			
1.80 mm	1.825 mm	1.85 mm	1.875 mm

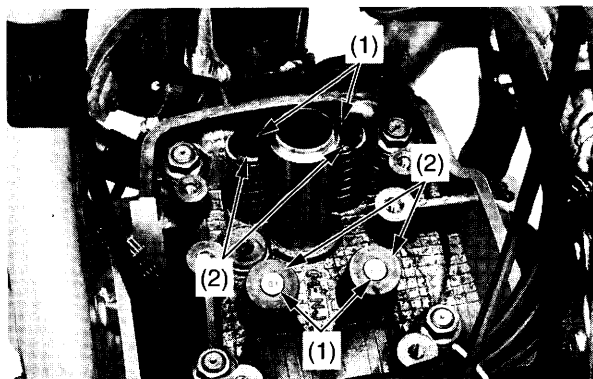
Valve Clearance

Camshaft Holder Assembly Installation

1. Install the newly selected shims (1) on the valve spring retainers (2).

NOTICE

Do not let the shims fall into the crankcase.

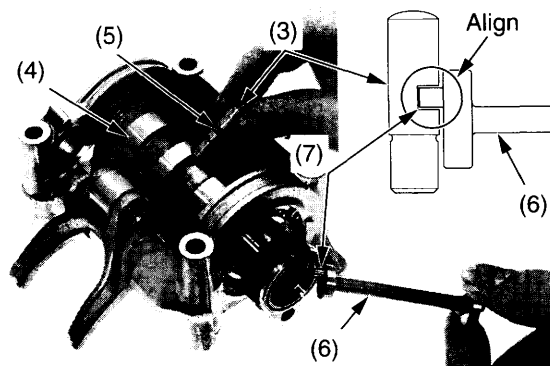


- (1) shims
(2) valve spring retainers

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) to the following parts.
 - camshaft cam lobes
 - each valve lifter outer surface
 - plunger whole surface
 - decompressor shaft sliding area

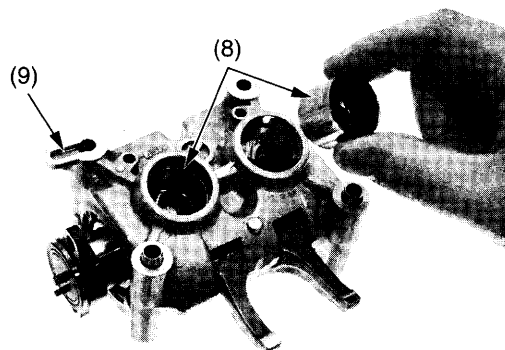
3. Install the plunger (3) into the camshaft (4) with its rounded surface facing up and groove (5) side toward the decompressor shaft (6). Install the decompressor shaft while aligning its tab (7) with the groove of the plunger shown.

Check the operation of the plunger by turning the decompressor shaft with your finger, then pushing down and pull up the plunger smoothly.



- (3) plunger
(4) camshaft
(5) groove
(6) decompressor shaft
(7) tab

4. Install the each valve lifter (8) in their original location into the camshaft holder assembly (9).



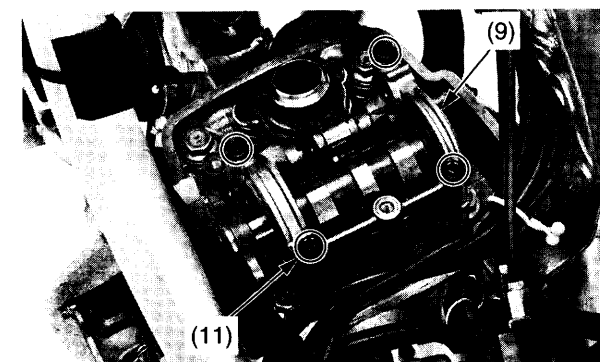
- (8) valve lifters
(9) camshaft holder assembly

5. Install the camshaft holder assembly (9) onto the cylinder head with the intake cam lobes (10) facing up as illustrated below. Apply engine oil to the camshaft holder assembly bolt threads and seating surface. Tighten the camshaft holder assembly bolts (11) to the specified torque:
14 N·m (1.4 kgf·m, 10 lbf·ft)

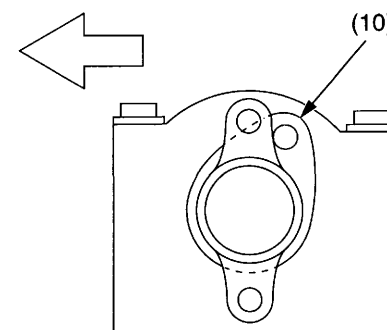
NOTICE

Do not let the decompressor shaft and plunger fall into the crankcase.

Tighten the camshaft holder assembly bolts in a criss-cross pattern in two or three steps.

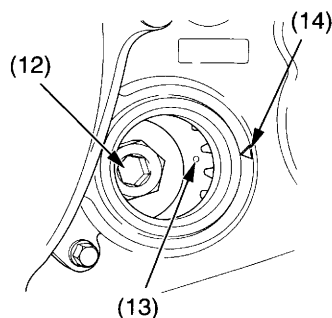


Exhaust side



- (9) camshaft holder assembly
(10) intake cam lobes
(11) camshaft holder assembly bolts

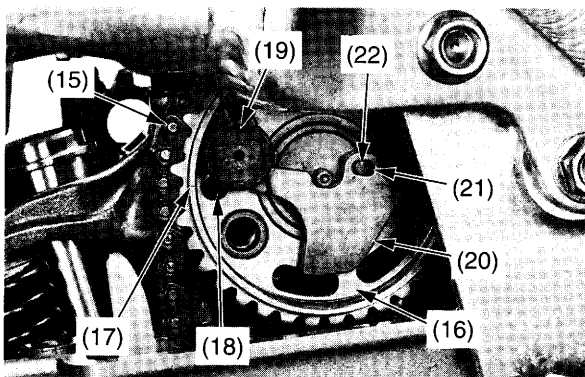
6. While holding the cam chain, rotate the primary drive gear bolt (12) (crankshaft) clockwise and align the punch mark (13) with the index mark (14).
Make sure the piston is at TDC (Top Dead Centre) on the compression stroke.



- (12) primary drive gear bolt
(13) punch mark
(14) index mark

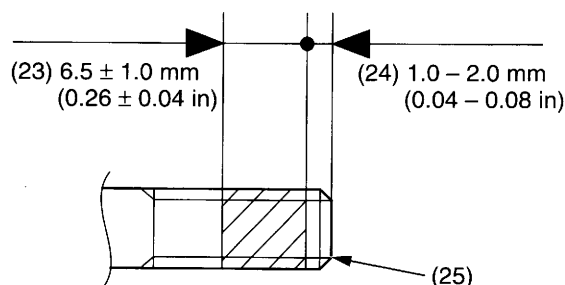
7. Install the cam chain (15) over the sprocket without rotating the sprocket.
Place the cam sprocket (16) and align the timing mark (17) on the cam sprocket with the "Δ" mark (18) on the camshaft holder assembly.
When installing the cam sprocket with decompressor weight pin (19) toward the front side.

8. Set the decompressor weight (20) by aligning its hole (21) with out side weight pin (22) as shown.



- (15) cam chain
(16) cam sprocket
(17) timing mark
(18) "Δ" mark
(19) decompressor weight pin
(20) decompressor weight
(21) hole
(22) out side weight pin

9. Clean and apply a locking agent to the cam sprocket bolt (25) threads (coating width as shown).



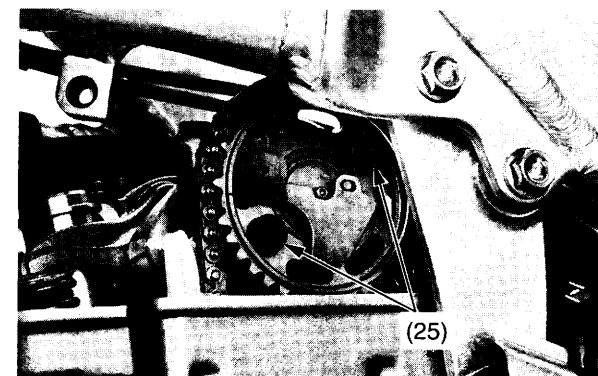
- (23) coating width
(24) no coating width
(25) cam sprocket bolt

10. Temporarily install the cam sprocket bolt (25) by aligning the bolt holes of the cam sprocket and camshaft.
Rotate the primary drive gear bolt (crankshaft) clockwise one turn and tighten the sprocket bolt to the specified torque:
20 N·m (2.0 kgf·m, 15 lbf·ft)

Rotate the primary drive gear bolt (crankshaft) clockwise one turn again and tighten the other sprocket bolt to the specified torque (see above).

NOTICE

Do not let the bolts fall into the crankcase.

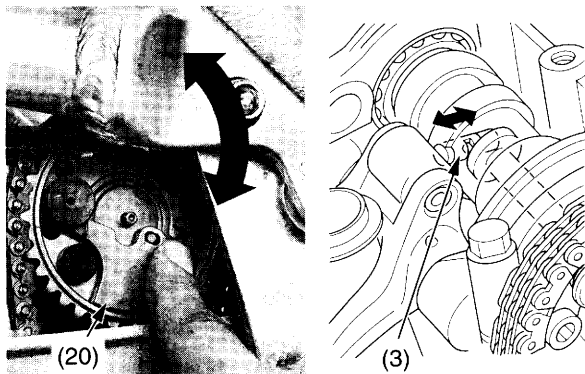


(25) cam sprocket bolts

(cont'd)

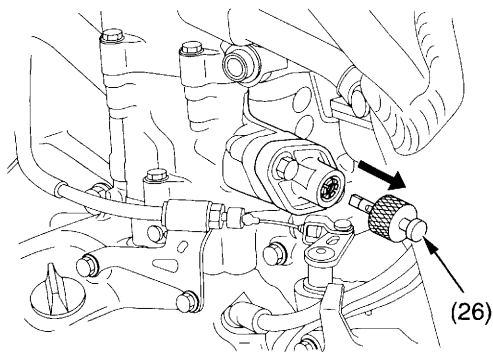
Valve Clearance

11. Check the operation of the plunger (3) by pushing the decompressor weight (20) with your finger and then pushing the plunger down. Release the decompressor weight and pull up the plunger.



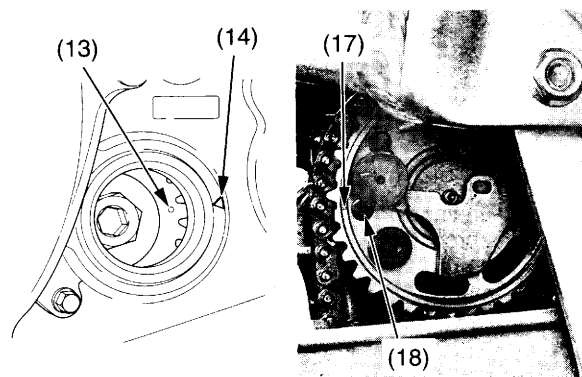
(3) plunger
(20) decompressor weight

12. Remove the tensioner stopper (26) from the cam chain tensioner lifter.



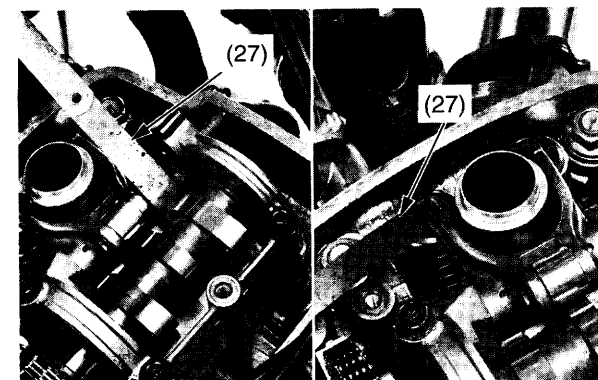
(26) tensioner stopper

13. Rotate the primary drive gear bolt (crankshaft) clockwise two turns and align the punch mark (13) with the index mark (14). Make sure that the timing mark (17) on the sprocket align with the "Δ" mark (18) on the camshaft holder assembly.
If the timing mark doesn't align with the "Δ" mark, remove the cam sprocket. Then realign the valve timing.



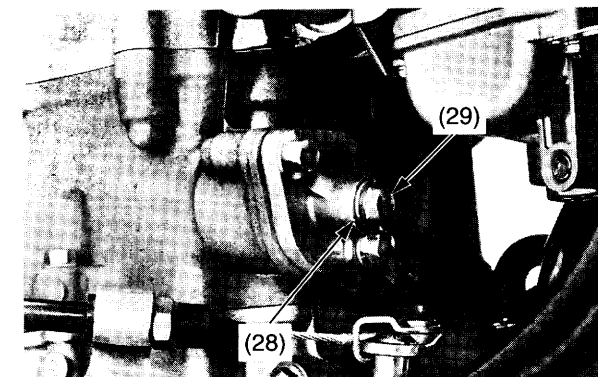
(13) punch mark
(14) index mark
(17) timing mark
(18) "Δ" mark

14. Measure the intake valve and exhaust valve clearances by inserting a feeler gauge (27).
Valve Clearance:
IN: 0.16 ± 0.03 mm (0.006 ± 0.001 in)
EX: 0.28 ± 0.03 mm (0.011 ± 0.001 in)



(27) feeler gauge

15. Install a new sealing washer (28) and tighten the cam chain tensioner lifter cover bolt (29).

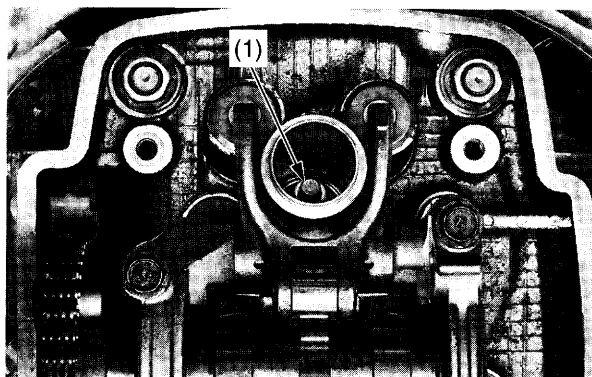


(28) sealing washer
(29) cam chain tensioner lifter cover bolt

Spark Plug Installation

Tighten the spark plug (1):

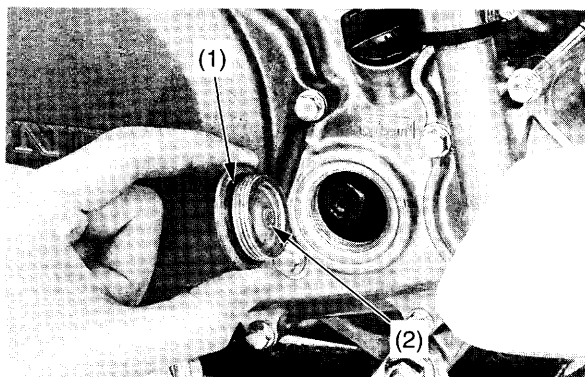
- If the old plug is good:
1/8 turn after it seats.
- If installing a new plug, tighten it twice to prevent loosening:
 - a) First, tighten the plug:
NGK: 3/4 turn after it seats.
DENSO: 1/2 turn after it seats.
 - b) Then loosen the plug.
 - c) Next, tighten the plug again:
1/8 turn after it seats.



(1) spark plug

Crankshaft Hole Cap Installation

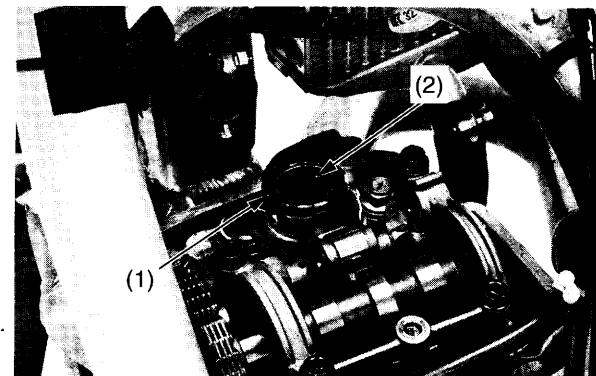
Coat a new O-ring (1) with engine oil and install it onto the crankshaft hole cap (2).
Apply grease to the crankshaft hole cap threads.
Install and tighten the crankshaft hole cap to the specified torque:
15 N·m (1.5 kgf·m, 11 lbf·ft)



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

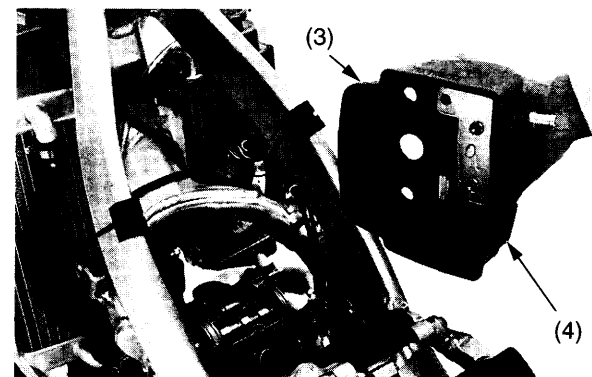
Cylinder Head Cover Installation

1. Remove the spark plug hole packing (1) from the cylinder head cover.
Apply engine oil to the spark plug hole packing and install it to the spark plug hole (2).



(1) spark plug hole packing
(2) spark plug hole

2. Install the cylinder head cover packing (3) into the groove of the cylinder head cover (4).

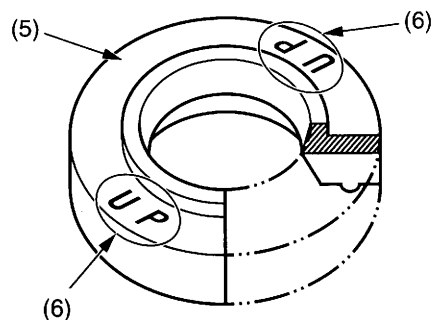


(3) cylinder head cover packing
(4) cylinder head cover

(cont'd)

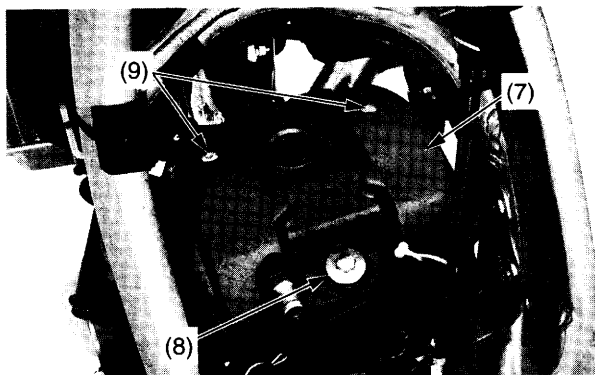
Valve Clearance

3. Check 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.



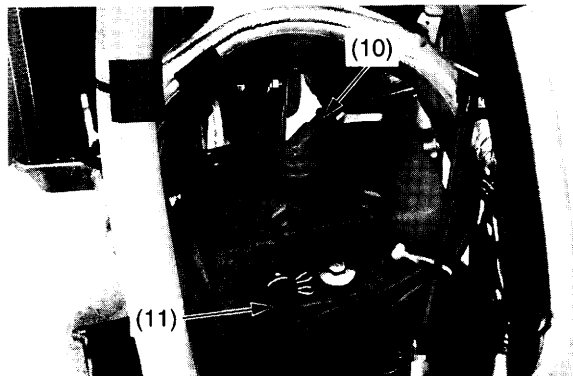
- (5) rubber seal
(6) "UP" marks

4. Install the cylinder head cover (7).
5. Tighten the cylinder head cover A bolt (8) and cylinder head cover B bolts (9) to the specified torque:
10 N·m (1.0 kgf·m, 7 lbf·ft)



- (7) cylinder head cover
(8) cylinder head cover A bolt
(9) cylinder head cover B bolts

6. Connect the spark plug cap (10) and breather tube (11).

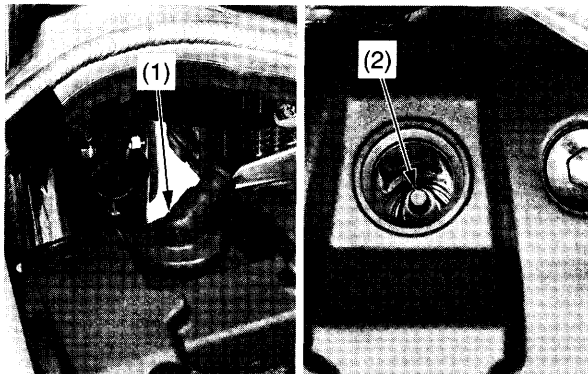


- (10) spark plug cap
(11) breather tube

7. Install the fuel tank and seat (page 29, 31).

Cylinder Head Removal

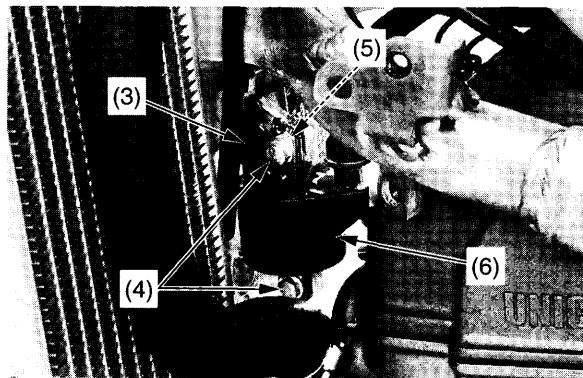
1. Clean the area above the engine before disassembly to prevent dirt falling into the engine.
2. Drain the radiator coolant after cooling the motorcycle (page 42).
3. Remove the seat and fuel tank (pages 29, 30).
4. Remove the muffler (page 88) and subframe (page 32).
5. Remove the carburetor (page 123).
6. Remove the exhaust pipe (page 90).
7. Disconnect the spark plug cap (1) and remove any dirt from around the spark plug base. Remove the spark plug (2).



(1) spark plug cap

(2) spark plug

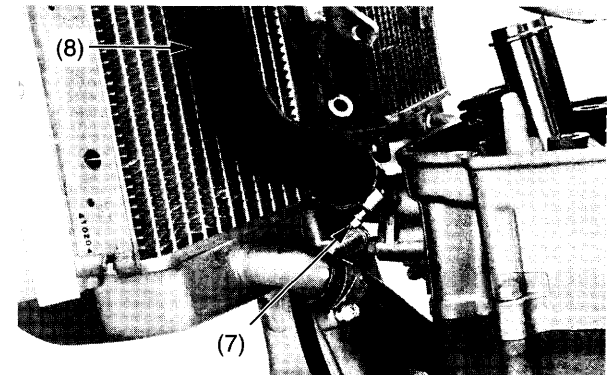
8. Disconnect the primary wire connector (3). Remove the bolts (4), nut (5) and ignition coil (6).



(3) primary wire connector (5) nut
(4) bolts (6) ignition coil

9. Remove the cylinder head cover (page 55).

10. Position the piston at top dead centre on the compression stroke (page 55).
11. Remove the camshaft holder assembly (page 57).
12. Loosen the radiator hose clamp screw (7) and disconnect the radiator hose (8).

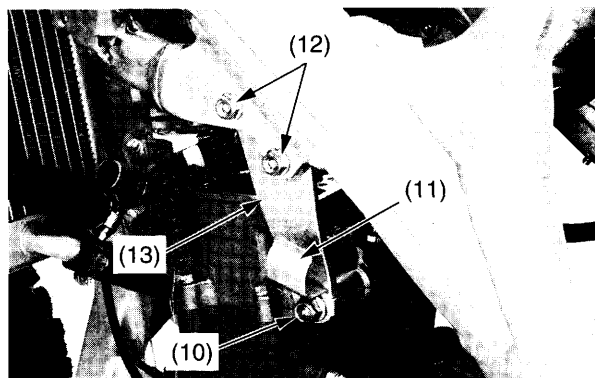
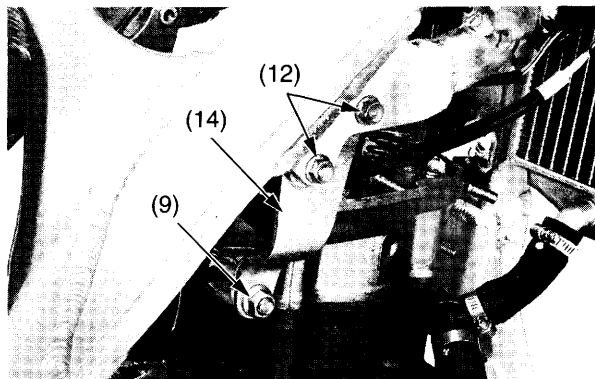


(7) radiator hose clamp screw
(8) radiator hose

(cont'd)

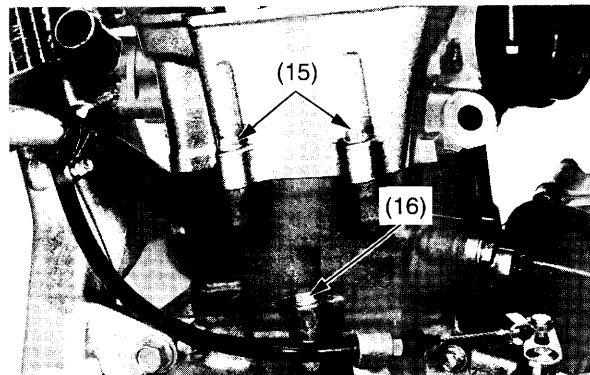
Piston/Piston Rings/Piston Pin

13. Remove the engine hanger nut (9), engine hanger bolt (10) and fuel hose guide (11). Remove the engine hanger plate bolts (12), left engine hanger plate (13) and right engine hanger plate (14).



- (9) engine hanger nut
(10) engine hanger bolt
(11) fuel hose guide
(12) engine hanger plate bolts
(13) left engine hanger plate
(14) right engine hanger plate

14. Remove the cylinder head bolts (15).
15. Loosen the cylinder bolt (16).



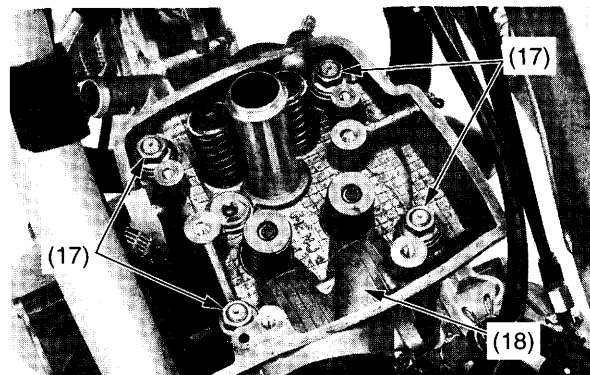
- (15) cylinder head bolts
(16) cylinder bolt

16. Remove the cylinder head nuts and washers (17) and the cylinder head (18).

Loosen the nuts in a criss-cross pattern in two or three steps.

NOTICE

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

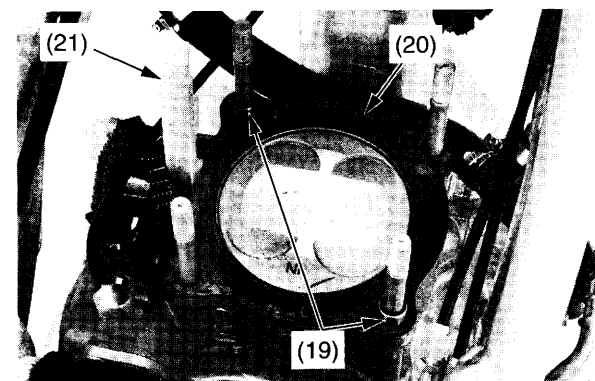


- (17) cylinder head nuts and washers
(18) cylinder head

17. Remove the dowel pins (19), cylinder head gasket (20) and cam chain guide (21).

NOTICE

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



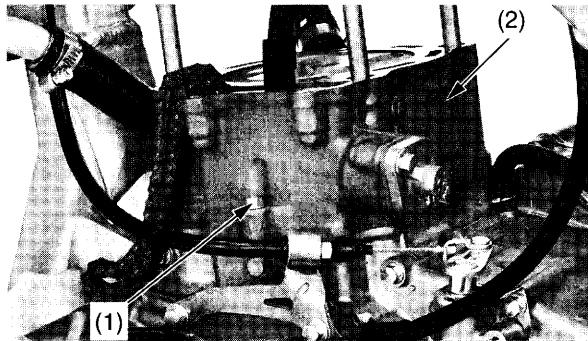
- (19) dowel pins
(20) cylinder head gasket
(21) cam chain guide

Cylinder Removal

1. Remove the cylinder bolt (1) and cylinder (2).

NOTICE

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

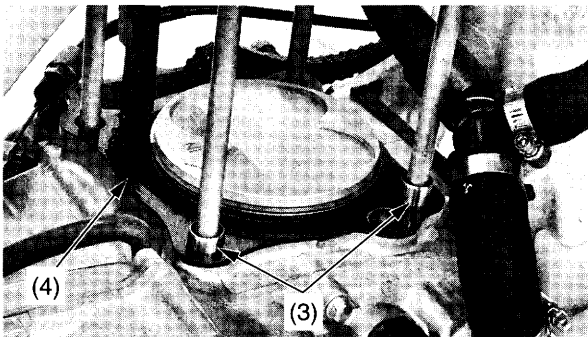


(1) cylinder bolt (2) cylinder

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

NOTICE

Do not let the dowel pins fall into the crankcase.

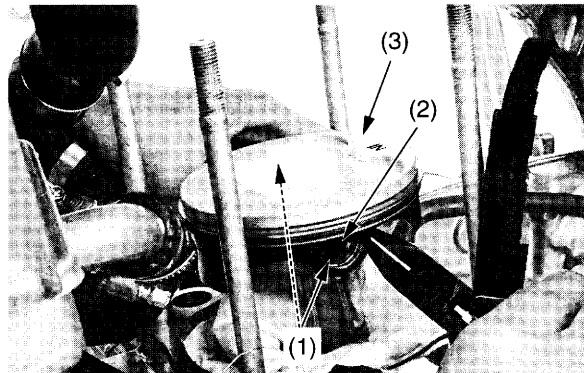


(3) dowel pins (4) cylinder gasket

Piston Removal

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

Under racing conditions, the piston and rings should be replaced after 15.0 hours of running.
Replace the piston pin after 30.0 hours of running.



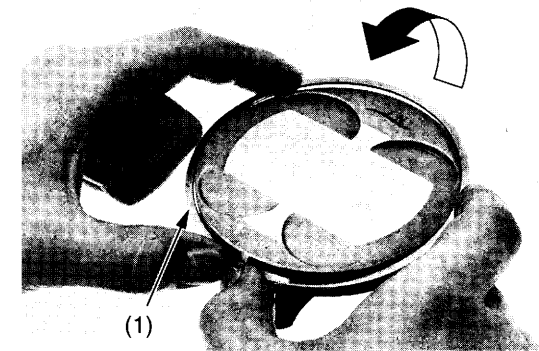
(1) piston pin clips (3) piston
(2) piston pin

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

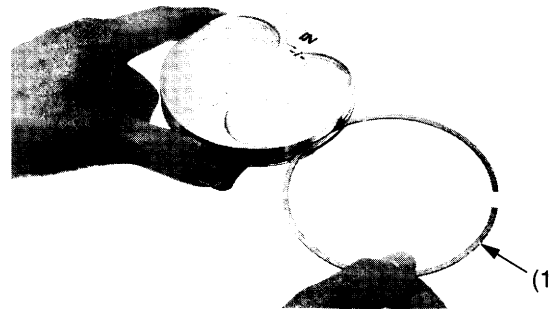
Piston/Piston Rings/Piston Pin

Piston/Piston Pin/ Piston Ring Inspection

We recommend you consult the Shop Manual or your Honda dealer for correct Service Limit measurements.

Piston Ring Installation

1. Remove the carbon deposits from the piston head and piston ring grooves with the removed ring (1).



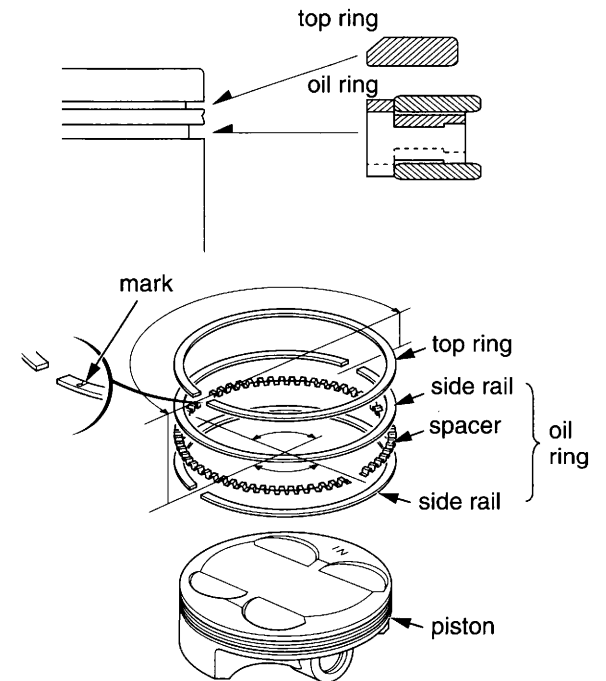
(1) removed ring

2. Apply engine oil to each piston ring whole surface and install them to the piston.

NOTICE

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

- To install the oil ring, install the spacer first, then install the side rails.
 - Install the top ring on the piston with the marking side facing up.
3. After installing the rings they should rotate freely, without sticking.
Space the ring end gaps 180 degrees apart between top ring and upper side rail.
Space the ring end gaps 90 degrees apart between upper side rail, spacer and lower side rail.

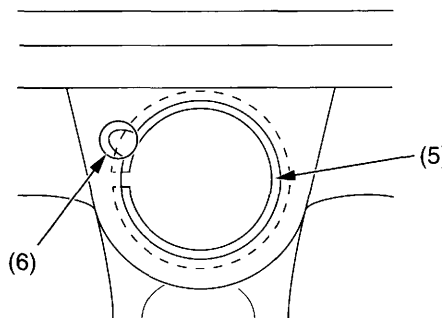
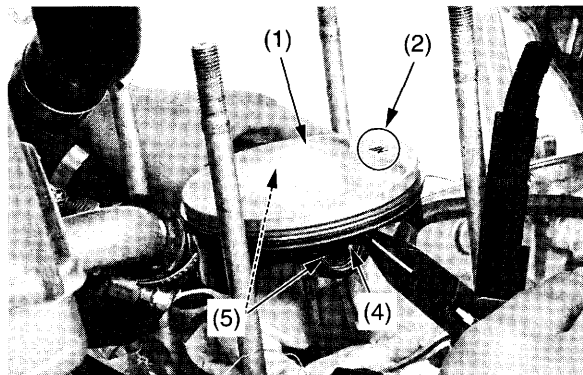
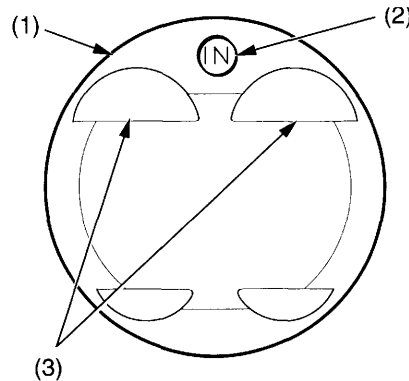


Piston Installation

1. Place clean shop towels 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) to the connecting rod small end inner surface.
3. Install the piston (1) with the "IN" mark (2) and/or the large valve recesses (3) facing the intake side of the engine.
4. Apply engine oil to the piston pin (4) 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 (5).

NOTICE

*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 cut-out (6).*



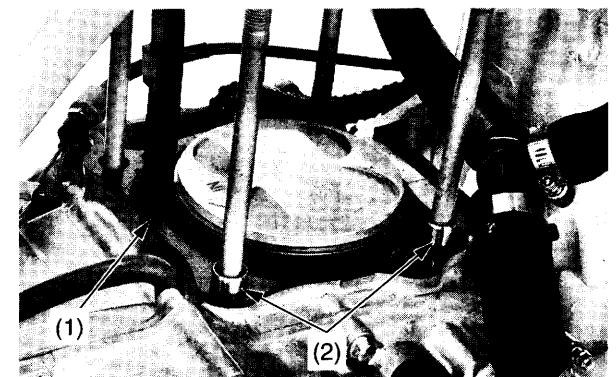
- | | |
|--------------------------|----------------------|
| (1) piston | (4) piston pin |
| (2) "IN" mark | (5) piston pin clips |
| (3) large valve recesses | (6) piston cut-out |

Cylinder Installation

1. Clean off any gasket material from the gasket surface of the crankcase, being careful not to let any material fall into the crankcase.
Be careful not to remove any metal from the gasket surface.
2. Remove the shop towel. Do not let any gasket debris fall into the crankcase.
3. Install a new cylinder gasket (1) and dowel pins (2).

NOTICE

Do not let the dowel pins fall into the crankcase.



- | | |
|---------------------|----------------|
| (1) cylinder gasket | (2) dowel pins |
|---------------------|----------------|

4. Clean any gasket material off the cylinder.

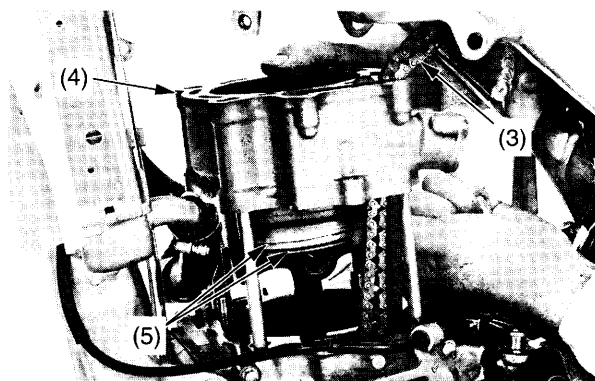
(cont'd)

Piston/Piston Rings/Piston Pin

5. Apply engine oil to the cylinder wall, piston outer surface and piston rings.
Route the cam chain (3) through the cylinder (4).
Install the cylinder over the piston rings by hand while compressing the piston rings (5).

NOTICE

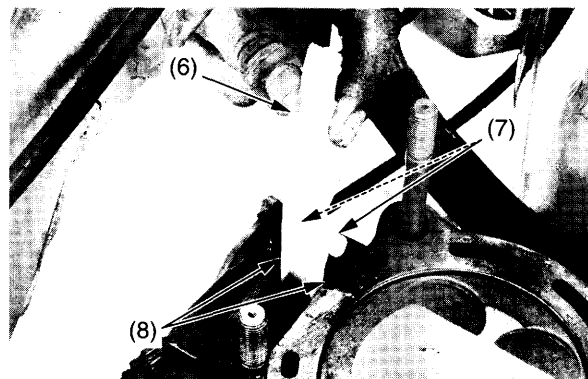
Do not damage the piston rings and cylinder walls.



(3) cam chain
(4) cylinder

(5) piston rings

6. Install the cam chain guide (6) and fit the cam chain guide tabs (7) in the cylinder cut-outs (8).
Push the guide until it bottoms in the crankcase guide hole.



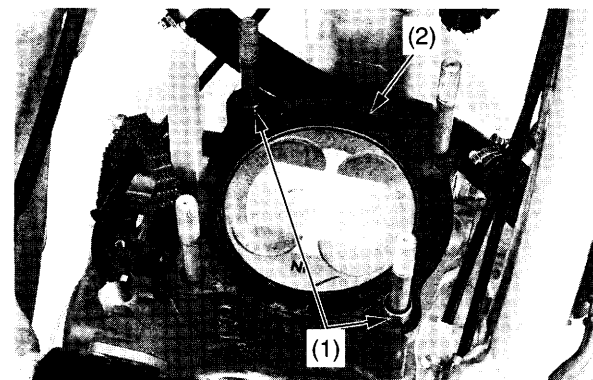
(6) cam chain guide
(7) cam chain guide tabs
(8) cylinder cut-outs

Cylinder Head Installation

1. Install the dowel pins (1) and a new cylinder head gasket (2).

NOTICE

Do not let the dowel pins fall into the crankcase.



(1) dowel pins
(2) cylinder head gasket

2. Route the cam chain through the cylinder head.
Install the cylinder head (3).

NOTICE

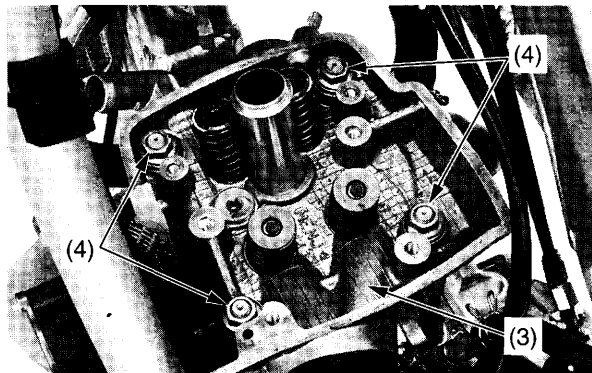
Do not damage mating surfaces when installing the cylinder head.

3. Apply engine oil to all cylinder head nut threads and seating surface.
Install the washers and cylinder head nuts (4) and tighten them to the specified torque:
59 N·m (6.0 kgf·m, 44 lbf·ft)

NOTICE

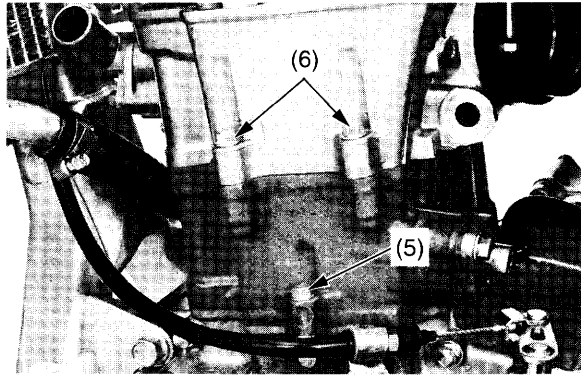
Do not let the washers and nuts fall into the crankcase.

Tighten the cylinder head nuts in a criss-cross pattern in two or three steps.



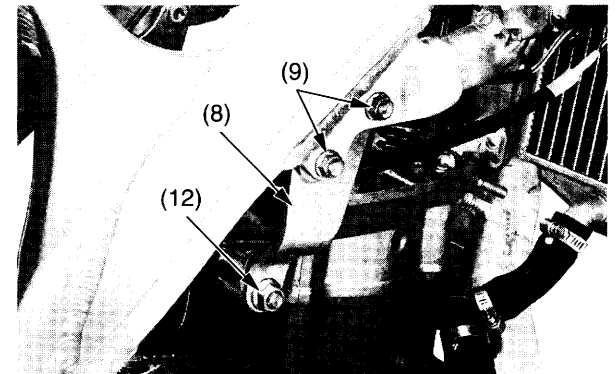
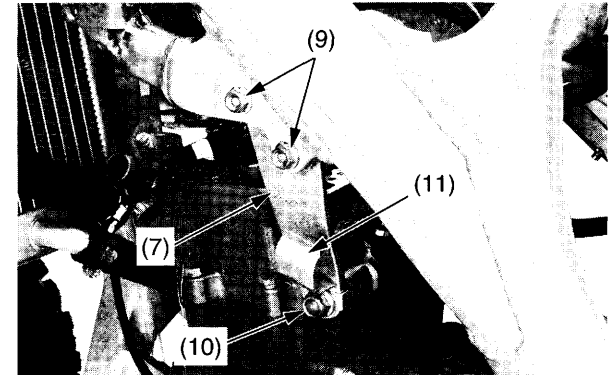
(3) cylinder head
(4) cylinder head nuts and washers

4. Install the cylinder bolt (5), cylinder head bolts (6) and tighten them to the specified torque:
10 N·m (1.0 kgf·m, 7 lbf·ft)



(5) cylinder bolt
(6) cylinder head bolts

5. Install the left engine hanger plate (7), right engine hanger plate (8) and engine hanger plate bolts (9), then tighten the engine hanger plate bolts until lightly contact the frame.
Install the engine hanger bolt (10), fuel hose guide (11) and engine hanger nut (12), then tighten the engine hanger nut until it lightly contacts the engine hanger plates.
Tighten the engine hanger plate bolts to the specified torque:
26 N·m (2.7 kgf·m, 19 lbf·ft)
Tighten the engine hanger nut to the specified torque:
54 N·m (5.5 kgf·m, 40 lbf·ft)

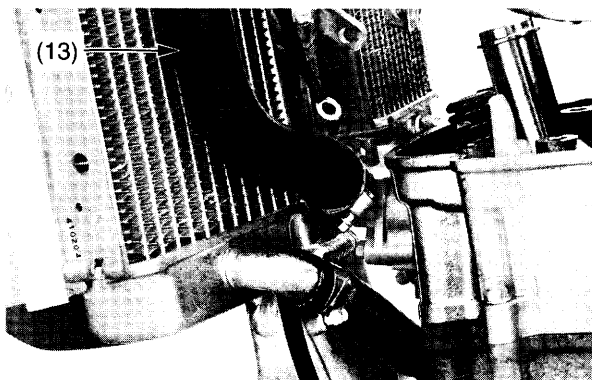


(7) left engine hanger plate
(8) right engine hanger plate
(9) engine hanger plate bolts
(10) engine hanger bolt
(11) fuel hose guide
(12) engine hanger nut

(cont'd)

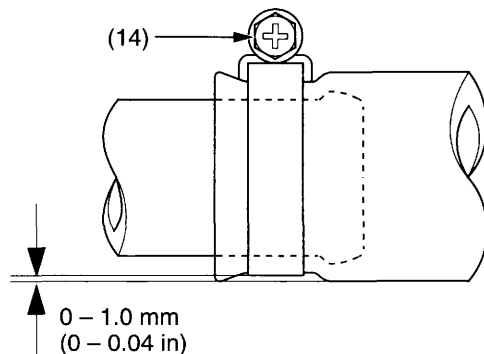
Piston/Piston Rings/Piston Pin

6. Connect the radiator hose (13) to the cylinder head.



(13) radiator hose

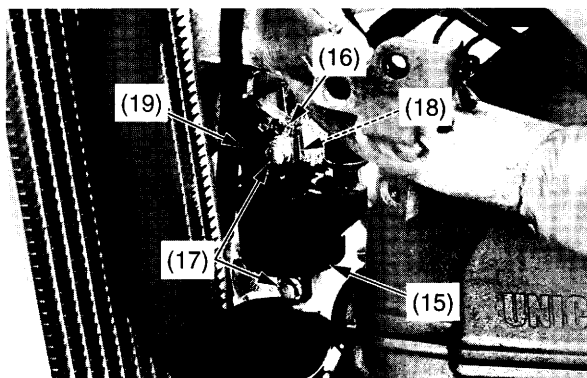
7. Tighten the radiator hose clamp screw (14) as illustrated below.



(14) radiator hose clamp screw

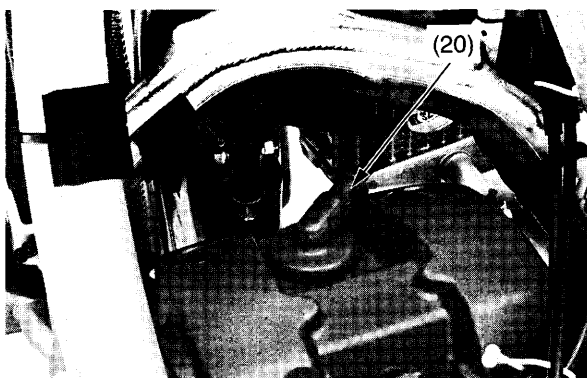
8. Install the camshaft holder assembly (page 60).
9. Install the spark plug (page 63).

10. Install the crankshaft hole cap (page 63).
11. Install the cylinder head cover (page 63).
12. Install the ignition coil (15), ground terminal (16), bolts (17) and nut (18).
Connect the primary wire connector (19).



(15) ignition coil
(16) ground terminal
(17) bolts
(18) nut
(19) primary wire connector

13. Install the spark plug cap (20).



(20) spark plug cap

14. Install the exhaust pipe (page 90).
15. Install the carburetor (page 126).
16. Install the subframe (page 32) and muffler (page 89).
17. Install the fuel tank and seat (pages 29, 31).
18. Fill and bleed the cooling system (page 41).

Check for the following:

- compression leaks
- abnormal engine noise
- secondary air leaks
- coolant leaks

Refer to *Safety Precautions* on page 19.

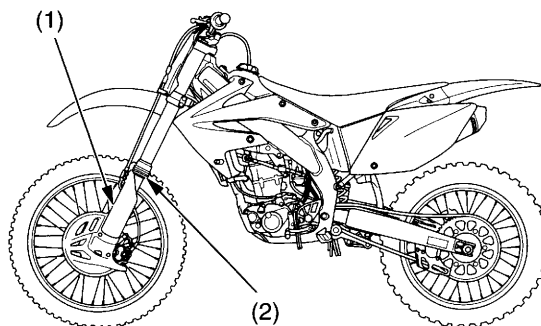
Loose, worn, or damaged suspension components may adversely affect the handling and stability of your CRF. If any suspension components appear worn or damaged, see your Honda dealer for further inspection. Your dealer is qualified to determine whether or not replacement parts or repairs are needed.

Front Suspension Inspection

- When your CRF is new, break it in for approximately 1 hour to ensure that the suspension has worked in (page 15).
- After break-in, test run your CRF 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 CRF for 3 hours. See page 97 for fork disassembly.
- Replace the fork oil every 3 races or 7.5 hours of running. See page 76 for oil capacity adjustment after changing the fork oil.
- Replace the damper oil every 9 races or 22.5 hours of running. See page 102 for damper fork oil replacement.
- Use Honda ULTRA CUSHION OIL SPECIAL 5W or an equivalent which contains special additives to assure maximum performance of your CRF'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 117). 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.

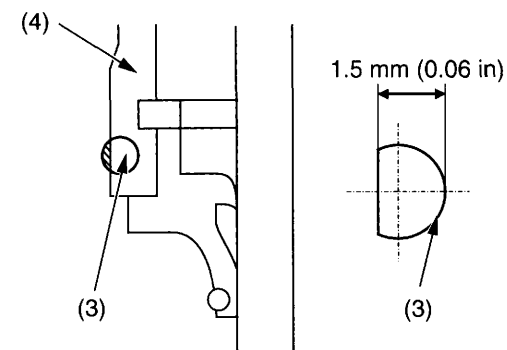
1. Make sure that the fork protectors (1) and dust seals (2) are clean and not packed with mud and dirt.
2. Check for signs of oil leakage. Damaged or leaking fork seals should be replaced before your CRF is ridden.



(1) fork protector

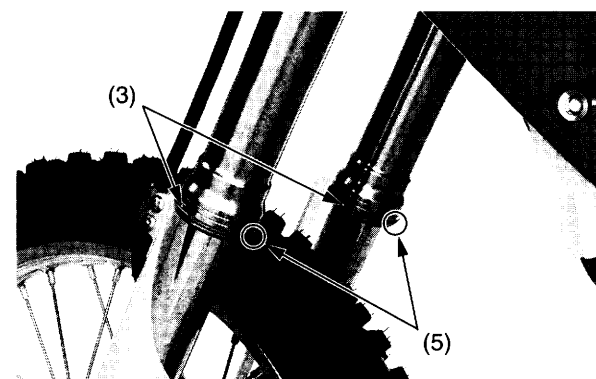
(2) dust seal

3. Inspect the wear rings (3) for wear or damage. Replace the wear ring if it is 1.5 mm (0.06 in) or flat 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 ring

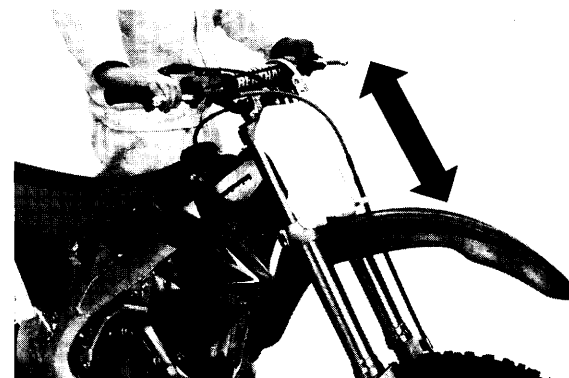
(4) outer tube



(3) wear rings

(5) end gaps

4. Make a quick check of fork operation by locking the front brake and pushing down on the handlebar several times.



Suspension

Rear Suspension Inspection

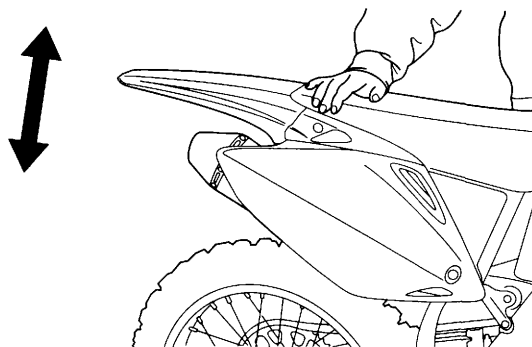
The swingarm is controlled by one hydraulic shock absorber with an aluminum reservoir for oil and nitrogen gas pressure. The gas pressure in the reservoir is contained within a rubber bladder.

The shock absorber's spring pre-load and damping adjustments (compression and rebound) should be adjusted for the rider's weight and track conditions (pages 114, 116, 119).

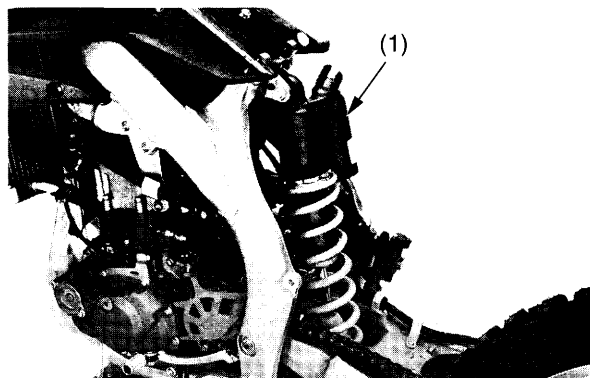
Do not attempt to disassemble, service, or dispose of the damper; see your Honda dealer. The instructions found in this owner's manual are limited to adjustments of the shock assembly only.

- When your CRF 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 119). Make all rebound and compression damping adjustments in one click or 1/12 turn increments. (Adjusting two or more increments 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 113. 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 subframe (page 32).
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 Honda dealer.

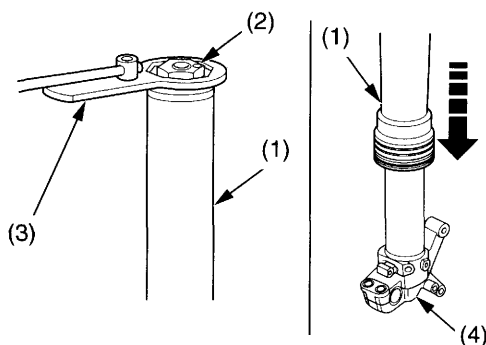
Recommended Fork Oil

viscosity (weight)	5 W
suggested oil	Honda ULTRA CUSHION OIL SPECIAL or equivalent

Fork Oil Change

Refer to *Front Suspension Disassembly* on page 99.

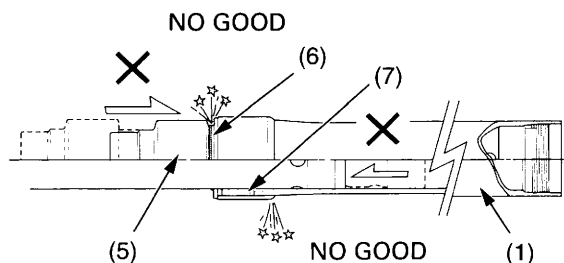
1. Clean the fork assembly, especially the sliding surface of the slider and dust seal.
2. Record the rebound damping adjuster position and turn the adjuster counterclockwise until it stops.
3. Hold the outer tube (1), then remove the fork damper (2) from the outer tube using the lock nut wrench (3). Gently slide the outer tube down onto the lower end of the slider (4).



(1) outer tube
(2) fork damper
(3) lock nut wrench
(4) slider, lower end

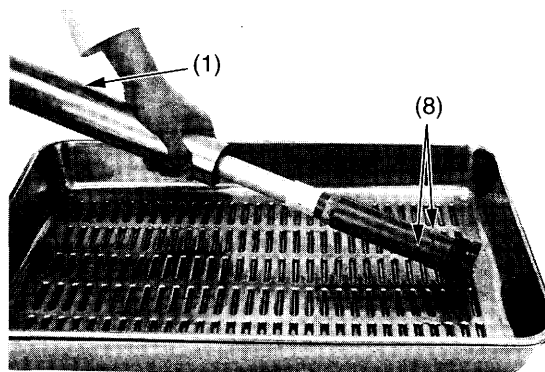
NOTICE

The outer tube (1) can drop on the slider (5) and damage the fork dust seal (6) and guide bushing (7) when the fork damper is removed. To avoid damage hold both the outer tube and slider when removing the fork damper.



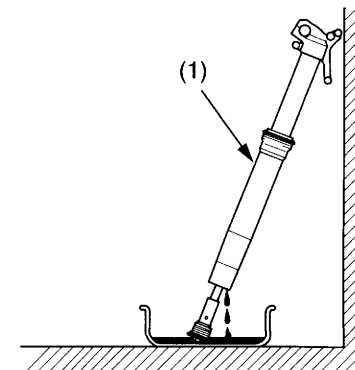
(1) outer tube
(5) slider
(6) fork dust seal
(7) guide bushing

4. Drain the fork oil from the outer tube (1).
Drain the fork oil from the oil holes (8) of the fork damper.



(1) outer tube
(8) oil holes

5. Drain the fork oil by turning the outer tube (1) upside down. (About 12 cm³ (0.4 US oz, 0.4 Imp oz) of fork oil will be left in the outer tube when it is left inverted for about 20 minutes at 20°C/68°F.)



(1) outer tube

Pour the drained oil into a suitable container and dispose of it in an approved manner (page 142).

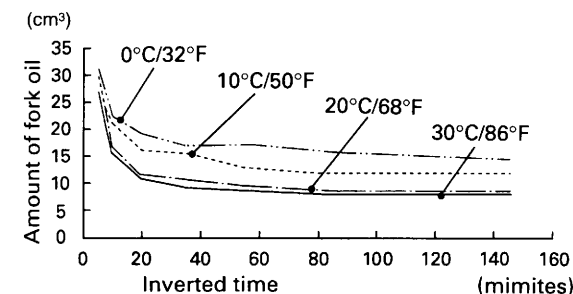
NOTICE

Improper disposal of drained oil is harmful to the environment.

Amount of fork oil left in the fork (within damper and spring)

minute °C/°F	5	10	20	35	55	85	145
30/86	27	15.3	10.6	9.4	8.3	7.9	7.9
20/68	29.4	16.5	11.8	10.6	9.4	8.2	8.2
10/50	28.2	21.2	16.5	15.3	12.9	11.8	11.8
0/32	30.6	22.4	18.8	16.5	16.5	15.3	14.1

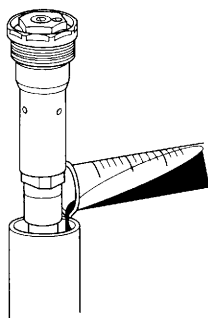
unit: cm³



(cont'd)

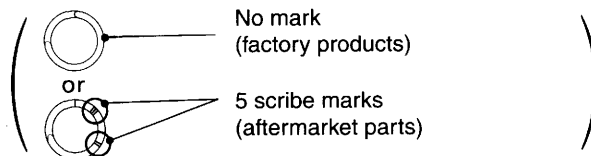
Suspension

6. Pour the recommended fork oil (page 75) into the outer tube.



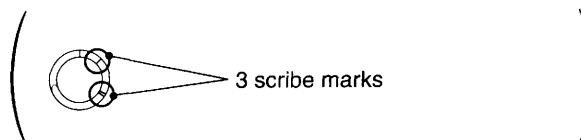
Fork Oil Capacity (ED, U, CM, IICM type):

Standard 0.47 kgf/mm (26.32 lbf/in) Fork Spring



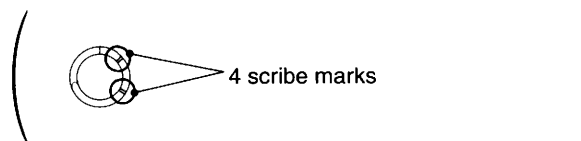
Standard oil capacity	406.5 cm ³ (13.75 US oz) (14.31 Imp oz)	
Maximum oil capacity	419 cm ³ (14.2 US oz) (14.7 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	323 cm ³ (10.9 US oz) (11.4 Imp oz)	Slightly softer as it nears full compression.

Optional Softer 0.45 kgf/mm (25.20 lbf/in) Fork Spring



Standard oil capacity	404 cm ³ (13.7 US oz) (14.2 Imp oz)	
Maximum oil capacity	416 cm ³ (14.1 US oz) (14.6 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	320 cm ³ (10.8 US oz) (11.3 Imp oz)	Slightly softer as it nears full compression.

Optional Stiffer 0.49 kgf/mm (27.44 lbf/in) Fork Spring

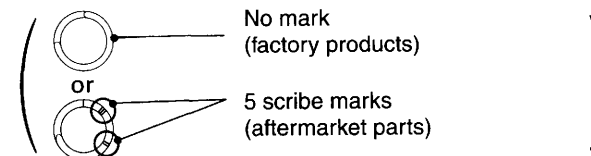


Standard oil capacity	401 cm ³ (13.6 US oz) (14.1 Imp oz)	
Maximum oil capacity	413 cm ³ (14.0 US oz) (14.5 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	317 cm ³ (10.7 US oz) (11.2 Imp oz)	Slightly softer as it nears full compression.

Be sure the oil capacity is the same in both fork legs.

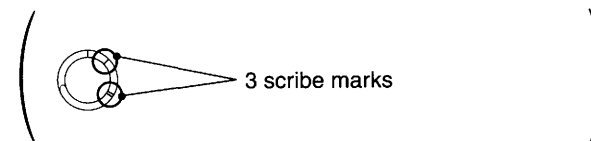
Fork Oil Capacity (DE type):

Standard 0.47 kgf/mm (26.32 lbf/in) Fork Spring



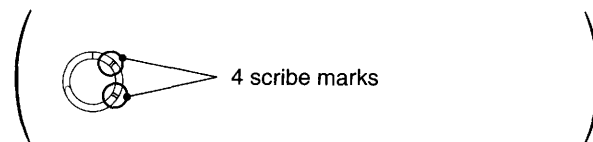
Standard oil capacity	404 cm ³ (13.7 US oz) (14.2 Imp oz)	
Maximum oil capacity	432 cm ³ (14.6 US oz) (15.2 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	336 cm ³ (11.4 US oz) (11.8 Imp oz)	Slightly softer as it nears full compression.

Optional Softer 0.45 kgf/mm (25.20 lbf/in) Fork Spring



Standard oil capacity	401 cm ³ (13.6 US oz) (14.1 Imp oz)	
Maximum oil capacity	429 cm ³ (14.5 US oz) (15.1 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	334 cm ³ (11.3 US oz) (11.8 Imp oz)	Slightly softer as it nears full compression.

Optional Stiffer 0.49 kgf/mm (27.44 lbf/in) Fork Spring



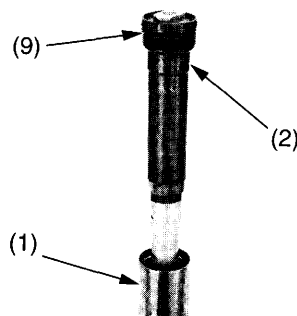
Standard oil capacity	398 cm ³ (13.5 US oz) (14.0 Imp oz)	
Maximum oil capacity	427 cm ³ (14.4 US oz) (15.0 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	331 cm ³ (11.2 US oz) (11.7 Imp oz)	Slightly softer as it nears full compression.

Be sure the oil capacity is the same in both fork legs.

- Check that the O-ring (9) on the fork damper (2) is in good condition. Apply the recommended fork oil to the O-ring. Temporarily install the fork damper to the outer tube (1). After installing the fork leg (page 109), tighten the fork damper to the specified torque:
Actual:
34 N·m (3.5 kgf·m, 25 lbf·ft)

Torque wrench scale reading:
31 N·m (3.2 kgf·m, 23 lbf·ft), using a 50cm (20 in) long torque wrench.

When using the lock nut wrench, use a 50cm (20 in) 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.



- (1) outer tube
- (2) fork damper
- (9) O-ring

Brakes

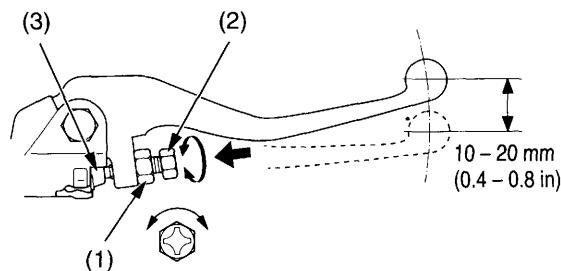
Refer to *Safety Precautions* on page 19.

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 front brake lever or rear brake pedal freeplay does not feel within the normal range while riding, check the brake pads. If they are not worn beyond the recommended limit (page 81), there is probably air in the brake system. Refer to the Honda Shop Manual or see your Honda dealer to have the air bled from the system.

Front Brake Lever Adjustment



(1) lock nut
(2) adjuster

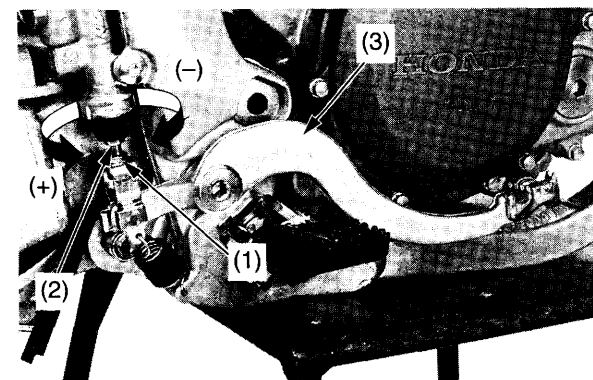
(3) knocker arm

1. Loosen the lock nut (1).
2. To position the front brake lever farther away from the handgrip, turn the adjuster (2) clockwise.
To position the front brake lever closer to the handgrip, turn the adjuster counterclockwise.
3. While holding the adjuster, tighten the lock nut to the specified torque:
5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)
4. Apply the brake, release it, then spin the wheel and check that it rotates freely. Repeat this procedure several times.
5. Check freeplay by pulling in slowly on the front brake lever until the brake starts to engage.
Freeplay: 10 – 20 mm (0.4 – 0.8 in)
6. Apply silicone grease to the contacting faces of the adjuster and knocker arm (3).

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 adjusting bolt (2) in direction (+) to raise the rear brake pedal (3) or in direction (–) to lower it.
2. Tighten the adjuster lock nut to the specified torque at the desired pedal height.
5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)

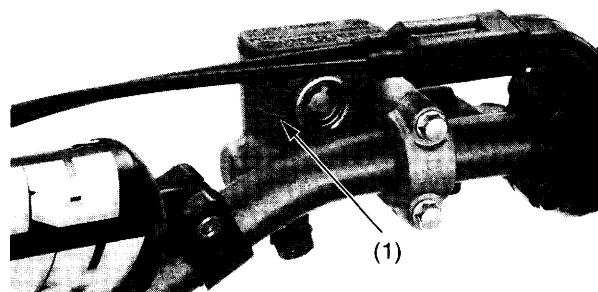


(1) lock nut
(2) adjusting bolt
(3) rear brake pedal

(+) raise the pedal height
(–) lower the pedal height

Fluid Level Inspection

Front Brake Fluid Level Check



(1) LWR mark

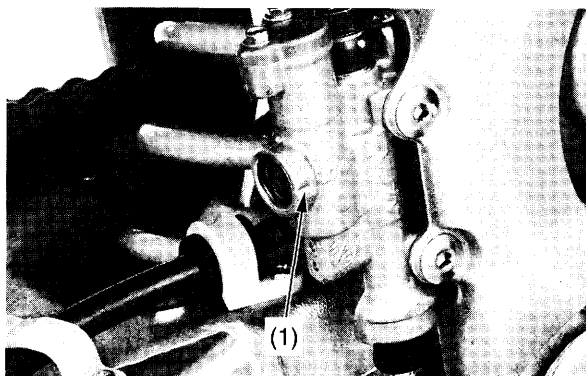
With the motorcycle in an upright position, check the fluid level.

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 81).

Worn brake pads should be replaced. If the pads are not worn, have your brake system inspected for leaks.

If the front brake lever freeplay exceeds 20 mm (0.8 in), there is probably air in the brake system and it must be bled. Refer to the Honda Shop Manual or see your Honda motorcycle dealer for brake bleeding.

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 81).

Worn brake pads should be replaced. If the pads are not worn, have your brake system inspected for leaks.

If the rear brake pedal freeplay exceeds 20 mm (0.8 in), there is probably air in the brake system and it must be bled. Refer to the Honda Shop Manual or see your Honda motorcycle dealer for brake bleeding.

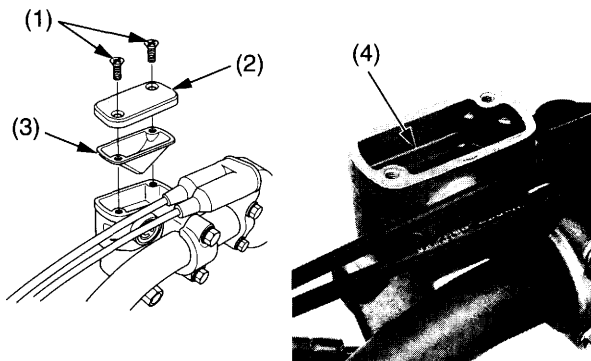
Brakes

Adding Front Brake Fluid

NOTICE

Spilled brake fluid will severely damage instrument lenses and 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 DOT 4 brake fluid or an equivalent.



- (1) front brake reservoir cap screws
- (2) reservoir cap
- (3) diaphragm
- (4) upper level mark

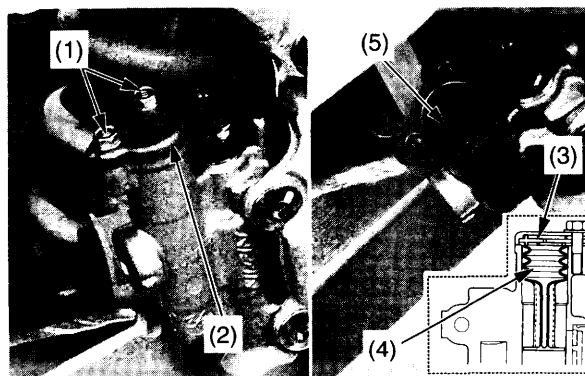
1. Remove the front brake reservoir cap screws (1), reservoir cap (2) and diaphragm (3).
2. Fill the reservoir with DOT 4 brake fluid to the upper level mark (4). Do not overfill.
3. Install the diaphragm and reservoir cap.
4. Tighten the front brake reservoir cap screws to the specified torque:
1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Adding Rear Brake Fluid

NOTICE

Spilled brake fluid will severely damage instrument lenses and 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 DOT 4 brake fluid or an equivalent.



- (1) rear brake reservoir cap bolts
- (2) reservoir cap
- (3) set plate
- (4) diaphragm
- (5) upper level mark

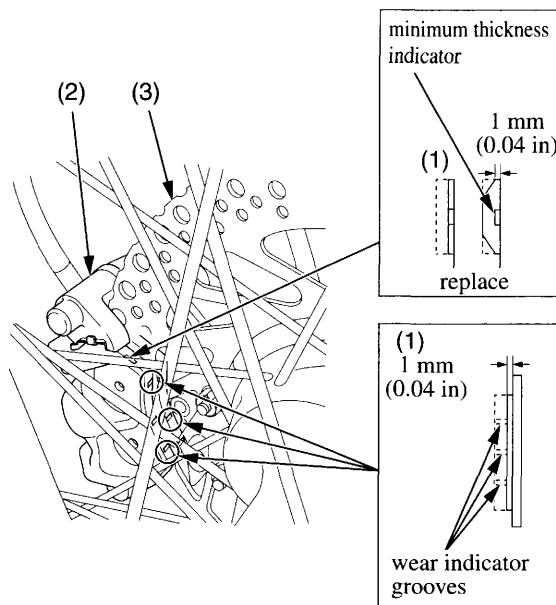
1. Remove the rear brake reservoir cap bolts (1), reservoir cap (2), set plate (3) and diaphragm (4).
2. Fill the reservoir with DOT 4 brake fluid to the upper level mark (5). Do not overfill.
3. Install the diaphragm, set plate and reservoir cap.
4. Tighten the rear brake reservoir cap bolts to the specified torque:
1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Brake Pad Wear

Brake pad wear depends on the severity of usage and track conditions. (Generally, the pads will wear faster on wet and dirty tracks) Inspect the brake pads at each regular maintenance interval (page 21).

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 1 mm (0.04 in), both brake pads must be replaced.

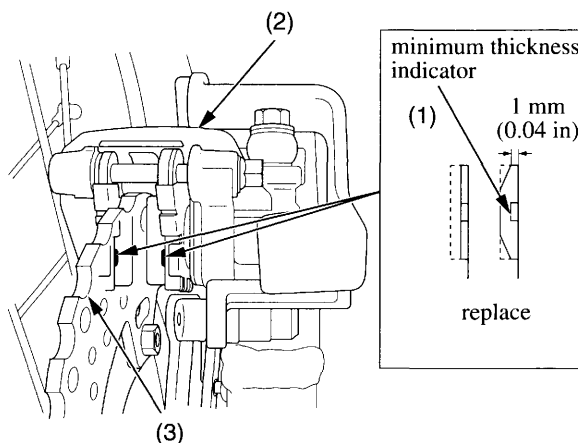


(1) brake pads
(2) front brake caliper

(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 1 mm (0.04 in), both 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 and the securing bolts are tight.

Make sure there are no fluid leaks. Check for deterioration or cracks in the hoses and fittings.

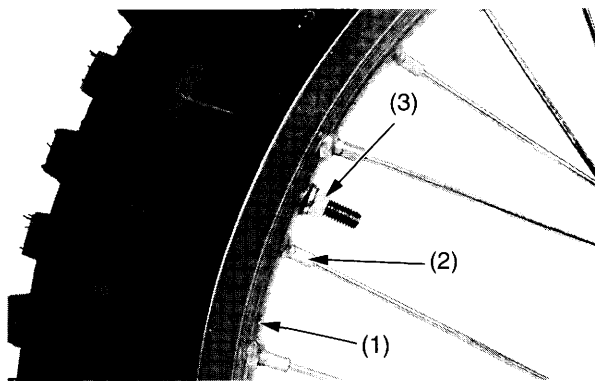
Wheels

Refer to *Safety Precautions* on page 19.

Maintenance of spoke tension and wheel trueness (roundness) is 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's also important that the rim locks are secure to prevent tyre slippage.

It is not necessary to remove the wheels to perform the recommended service in the Maintenance Schedule (page 21). However, information for wheel removal is provided for emergency situations.

Wheel Rims & Spokes



(1) wheel rim
(2) spoke

(3) rim lock

1. Inspect the wheel rims (1) and spokes (2) for damages.

2. Tighten, any loose spokes and rim locks (3) to the specified torque:

Spokes :

(front) 3.68 N·m (0.4 kgf·m, 2.7 lbf·ft)

(rear) 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

Rim Locks : 12 N·m (1.2 kgf·m, 9 lbf·ft)

3. Check wheel rim runout. If runout is noticeable, see the Honda Shop Manual for inspection instructions.

Axles & Wheel Bearings

See the Honda Shop Manual for inspection information:

1. Check the axle shaft for runout.
2. Check the condition of the wheel bearings.

Refer to *Safety Precautions* on page 19.

To safely operate your CRF, the tyres must be the proper type (off-road) and size, in good condition with adequate tread, and correctly inflated.

⚠ WARNING

Using tyres 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 tyre inflation and maintenance.

The following pages give detailed information on how and when to check your air pressure, how to inspect your tyres for wear and damage, and our recommendations on tyre repair and replacement.

Air Pressure

Properly inflated tyres provide the best combination of handling, tread life, and riding comfort. Generally, underinflated tyres wear unevenly, adversely affect handling, and are more likely to fail from being overheated. Underinflated tyres can also cause wheel damage on hard terrain. Overinflated tyres make your CRF 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.

Always check air pressure when your tyres are “cold.” If you check air pressure when your tyres are “warm” — even if your CRF has only been ridden for a few miles — the readings will be higher. If you let air out of warm tyres to match the recommended cold pressures, the tyres will be underinflated.

The correct “cold” tyre pressures are:

Front	100 kPa (1.0 kgf/cm ² , 15 psi)
Rear	100 kPa (1.0 kgf/cm ² , 15 psi)

If you decide to adjust tyre pressures for a particular riding condition, make changes a little at a time.

Inspection

Take time to inspect your tyres and wheels before you ride.

- Inspect carefully for bumps or bulges in the side of the tyre or the tread. Replace any tyre that has a bump or bulge.
- Look closely for cuts, slits, or cracks in the tyres. Replace a tyre if you can see fabric or cord.
- Check for rocks or other objects embedded in the tyre or tread. Remove any objects.
- Check the position of both valve stems. A tilted valve stem indicates the tube is slipping inside the tyre or the tyre is slipping on the rim.

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.

Tyres & Tubes

Tyre Replacement

The tyres that came on your CRF were designed to provide a good combination of handling, braking, durability, and comfort across a broad range of riding conditions.

⚠ WARNING

Installing improper tyres 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 tyres recommended in this owner's manual.

U, CM, IICM type:

Front	80/100 – 21 51M	
	DUNLOP	D742FA
Rear	110/90 – 19 62M	
	DUNLOP	D756
Type	bias-ply, tube	

ED, DE type:

Front	80/100 – 21 M/C 51R MST	
	PIRELLI	MT32A
Rear	110/90 – 19 NHS	
	PIRELLI	MT32
Type	bias-ply, tube	

- Use a replacement tyre equivalent to the original.
- Replace the tube any time you replace a tyre. The old tube will probably be stretched and, if installed in a new tyre, could fail.

Refer to *Safety Precautions* on page 19.

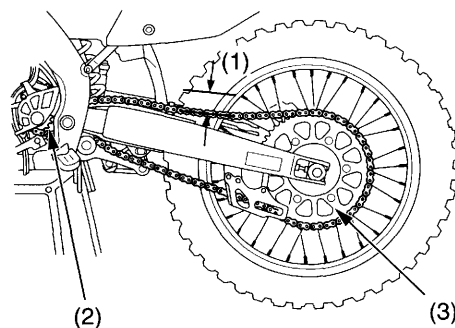
The service life of the chain depends on proper lubrication and adjustment. Poor maintenance can cause premature wear or damage to the drive chain or sprockets.

When the motorcycle is ridden on unusually dusty or muddy tracks, more frequent maintenance will be necessary.

Before servicing your drive chain, turn the engine OFF 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 (2) and driven (3) sprockets. Drive chain slack should allow the following vertical movement by hand:
25 – 35 mm (1.0 – 1.4 in)



(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

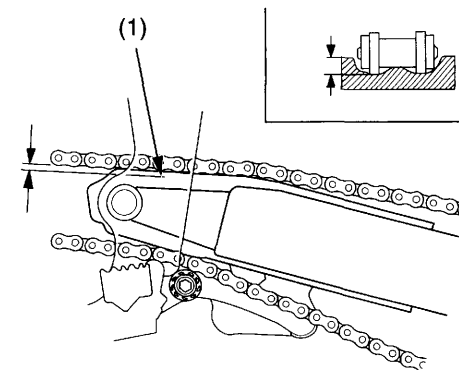
Excessive chain slack may allow the drive chain to damage the engine cases.

4. Inspect the drive chain for:
 - damaged rollers
 - loose pins
 - dry or rusted links
 - kinked or binding links
 - excessive wear

Replace the drive chain (page 87) if it has damaged rollers, loose pins, or kinks that cannot be free. Lubricate the drive chain (page 86) 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 86).

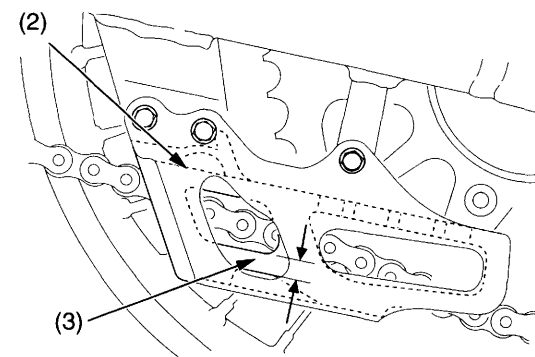
Drive Chain Sliders

1. Check the chain slider (1) for wear. If the wear is 5 mm (0.2 in) or more, replace it.



(1) chain slider

2. Check the chain guide slider (2) for wear. Replace the guide slider if it is worn to the bottom of the wear limit (3).



(2) chain guide slider

(3) wear limit

Drive Chain

Drive Chain Rollers

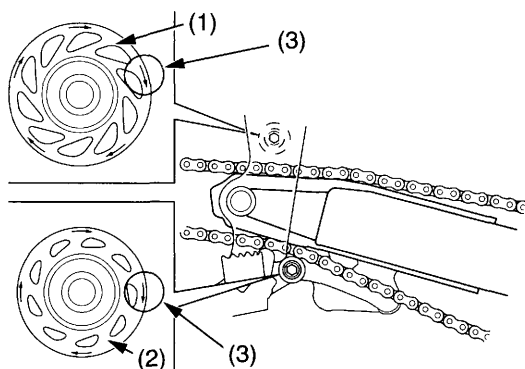
1. Measure the diameter of the upper (1) and lower drive chain rollers (2). Replace them if below the service limit.

SERVICE LIMIT:

upper roller: 39 mm (1.5 in)

lower roller: 35 mm (1.4 in)

2. Replace the roller if necessary as follows. Install the upper drive chain roller (Green) with the "→" mark (3) facing toward the frame and lower drive chain roller (Black) with the "→" mark (3) side facing out.

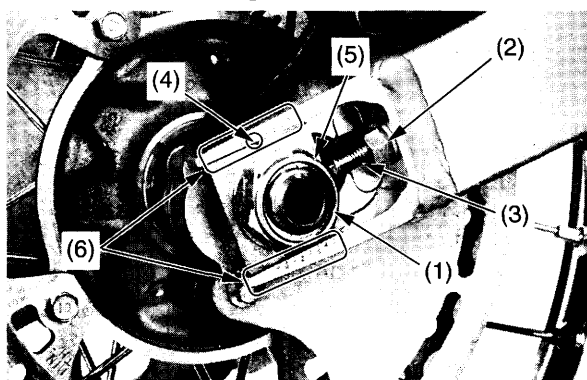


- (1) upper drive chain roller (Green) (3) "→" mark
(2) lower drive chain roller (Black)

3. Check the driven sprocket nut torque values after each race.
32 N·m (3.3 kgf·m, 24 lbf·ft)

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.



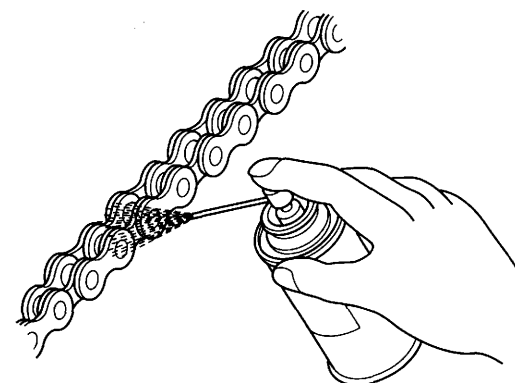
- (1) rear axle nut (4) index mark
(2) chain adjuster lock nut (5) axle plate
(3) adjusting bolt (6) reference marks

3. Tighten the rear axle nut to the specified torque:
128 N·m (13.1 kgf·m, 94 lbf·ft)
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 nut to the specified torque while holding the adjusting bolt with a wrench.
27 N·m (2.8 kgf·m, 20 lbf·ft)

Lubrication

Commercially prepared drive chain lubricants may be purchased at most motorcycle shops and should be used in preference to motor oil. Chain Lube or an equivalent, or SAE 80 or 90 gear oil is recommended.

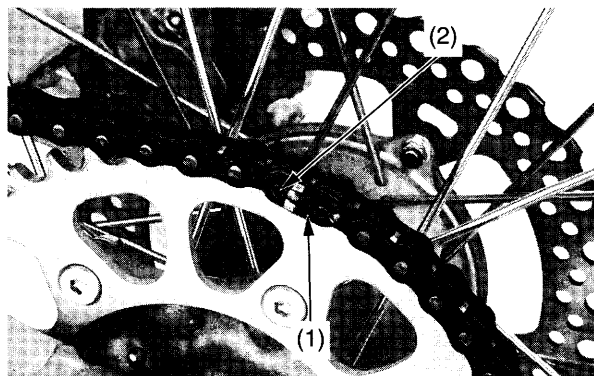
Saturate each chain joint so that the lubricant penetrates the space between adjacent surfaces of the link plates and rollers.



Removal, Cleaning & Replacement

For maximum service life, the drive chain should be cleaned, lubricated, and adjusted before each outing.

1. Remove the master link retaining clip (1) with pliers. Do not bend or twist the clip. Remove the master link (2). Remove the drive chain.



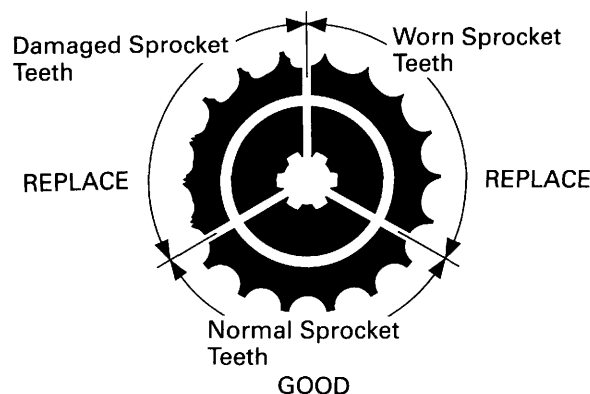
(1) master link retaining clip
(2) master link

2. Clean the drive chain in high flash-point solvent and allow it to dry.
3. Inspect the drive chain for possible wear or damage. Replace the drive chain if it has damaged rollers, loose fitting links, or otherwise appears unserviceable.

Replacement chain:

Size/link: D.I.D 520DMA2/114

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

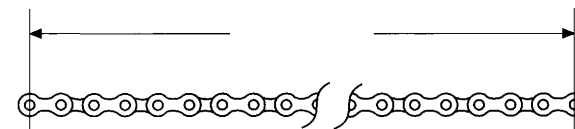
Use of a new chain with worn sprockets will cause rapid chain wear.

5. Measure a section of the drive chain to determine whether the chain is worn beyond its service limit. Put the transmission in gear, and then turn the rear wheel forward until the lower section of the chain is pulled taut. With the chain held taut and any kinked joints straightened, measure the distance between a span of 17 pins, from pin centre to pin centre. If the measurement exceeds the service limit, replace the chain. After the chain is measured, shift the transmission into neutral again before proceeding with inspection and service.

Replacement chain:

Size/link: D.I.D 520DMA2/114

Service limit: 259.0 mm (10.20 in)



MEASURE A SPAN OF 17 PINS (16 PITCHES)

6. Lubricate the drive chain (page 86).
7. Pass the chain over the sprockets and join the ends of the chain with the master link. For ease of assembly, hold the chain ends against adjacent rear sprocket teeth while inserting the master link. Install the master link retaining clip so that the closed end of the clip will face the direction of forward wheel rotation.
8. Recheck chain slack and adjust as necessary.

More About Drive Chain

- The master link is the most critical element of drive chain security. Master links are reusable, as long as they remain in excellent condition. We recommend installing a new master link retaining clip when the drive chain is reassembled.
- You may find it easier to install a new chain by connecting it to the old chain with a master link and pulling the old chain to position the new chain on the sprockets.

Exhaust Pipe/Muffler

Exhaust Pipe/Muffler Inspection

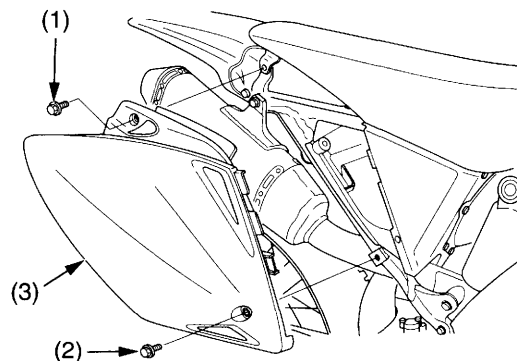
Check the mounting bolts and exhaust pipe joint nuts for tightness.

Check the exhaust pipe and muffler for cracks or deformation.

A damaged exhaust pipe and muffler may reduce engine performance.

Muffler Removal

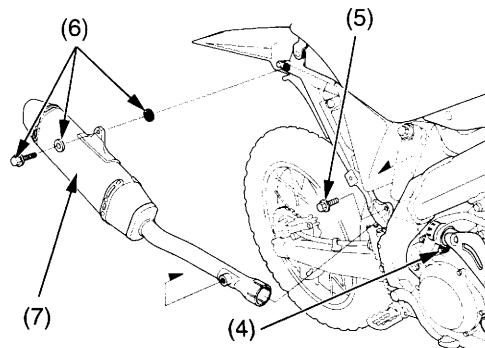
1. Remove the seat mounting bolt (1), side cover bolt (2) and right side cover (3).



(1) seat mounting bolt
(2) side cover bolt

(3) right side cover

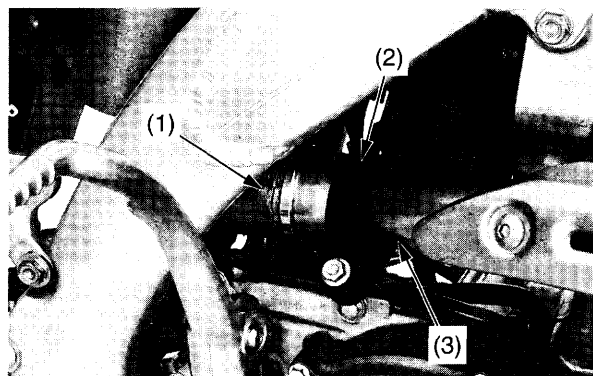
2. Loosen the muffler clamp bolt (4).
3. Remove the muffler mounting A bolt (5), muffler mounting B bolt/washers (6) and muffler (7).



(4) muffler clamp bolt
(5) muffler mounting A bolt
(6) muffler mounting B bolt/washers
(7) muffler

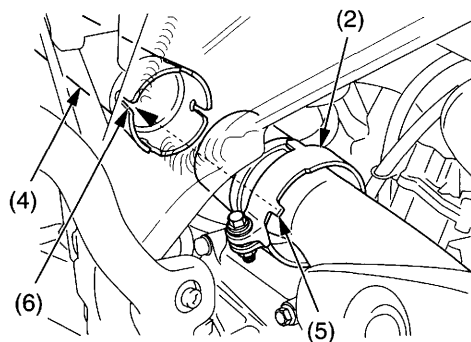
Muffler Installation

1. Remove the gasket (1).
2. Install the muffler clamp (2) and a new gasket onto the exhaust pipe (3).



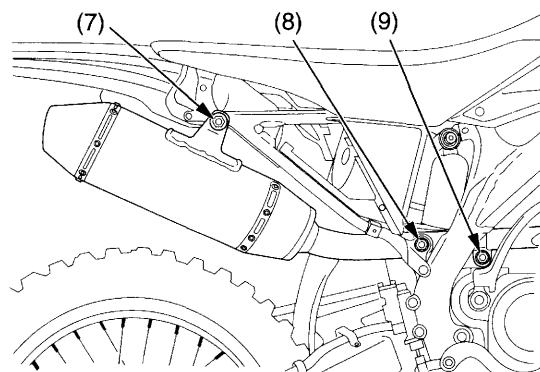
(1) gasket
(2) muffler clamp
(3) exhaust pipe

3. Install the muffler (4).
4. Install the muffler clamp (2) by aligning the tab (5) of the muffler clamp with the cut-out (6) of the muffler.



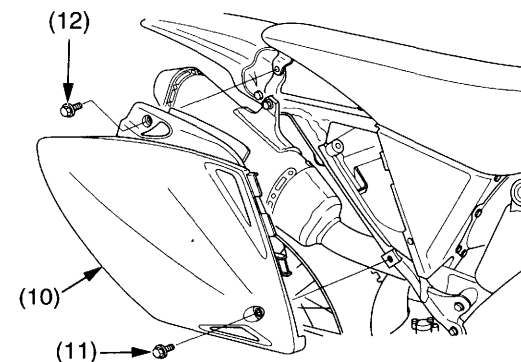
(2) muffler clamp
(4) muffler
(5) tab
(6) cut-out

5. Tighten the muffler mounting B bolt/washers (7) and muffler mounting A bolt (8) to the specified torque:
21 N·m (2.1 kgf·m, 15 lbf·ft)
6. Tighten the muffler clamp bolt (9) to the specified torque:
21 N·m (2.1 kgf·m, 15 lbf·ft)



(7) muffler mounting B bolt/washers
(8) muffler mounting A bolt
(9) muffler clamp bolt

7. Install the right side cover (10) and side cover bolt (11).
8. Install the seat mounting bolt (12) and tighten it to the specified torque:
26 N·m (2.7 kgf·m, 19 lbf·ft)

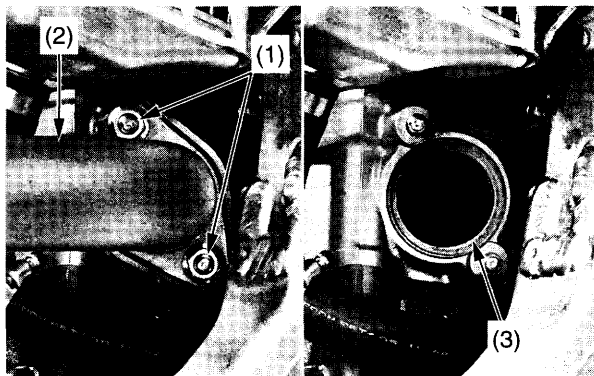


(10) right side cover
(11) side cover bolt
(12) seat mounting bolt

Exhaust Pipe/Muffler

Exhaust Pipe Removal

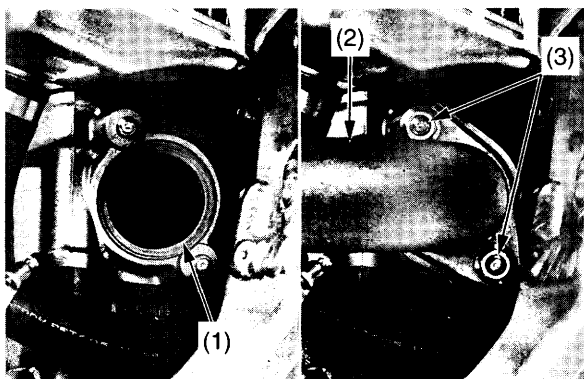
1. Remove the muffler (page 88).
2. Remove the exhaust pipe joint nuts (1), exhaust pipe (2) and old gasket (3).



- (1) exhaust pipe joint nuts
(2) exhaust pipe
(3) gasket (old)

Exhaust Pipe Installation

1. Install a new exhaust pipe gasket (1) as shown.
2. Install the exhaust pipe (2) and exhaust pipe joint nuts (3).



- (1) exhaust pipe gasket (new)
(2) exhaust pipe
(3) exhaust pipe joint nuts

3. Install the muffler (page 89) but do not tighten the bolts yet.
4. Tighten the exhaust pipe joint nuts to the specified torque:
21 N·m (2.1 kgf·m, 15 lbf·ft)
5. Tighten the muffler clamp bolt, muffler mounting A bolt and B bolt (page 89).
6. Installation can be done in the reverse order of removal.

Refer to *Safety Precautions* on page 19.

Loose, worn or damaged steering damper components may adversely affect the handling and stability of your CRF. If any steering damper components appear worn or damaged, see your Honda dealer for further inspection. Your dealer is qualified to determine whether or not replacement parts are needed.

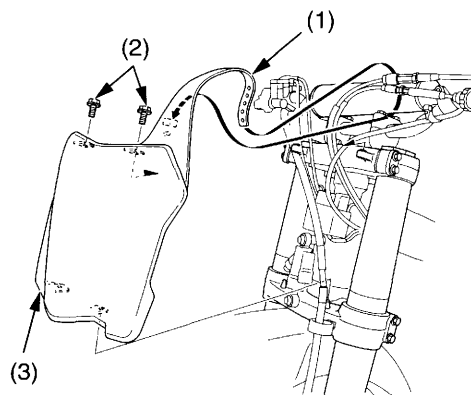
Do not attempt to disassemble the steering damper; see your Honda dealer.

The instructions found in this owner's manual are limited to adjustment and service of the steering damper assembly only.

Steering Damper Operation Inspection

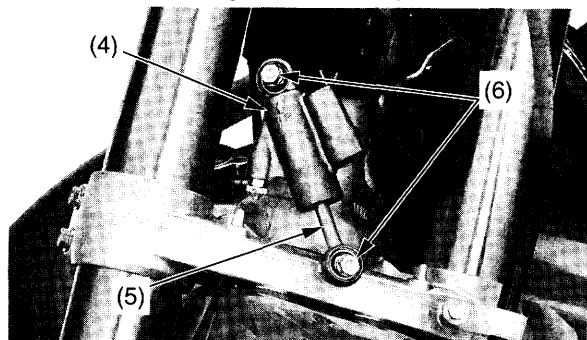
- When your CRF is new, break it in for approximately 1 hour to ensure that the steering damper is broken (page 15).
- After break-in, test run your CRF with the steering damper at the standard setting before making any adjustments.
- Check the spherical bearings and dust seal for dust, dirt, and foreign materials.
- Make all 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 have a problem finding an acceptable adjustment, return to the standard position and begin again.

1. Unlock the number plate tab (1) from the handlebar pad. Remove the bolts (2) and number plate (3).



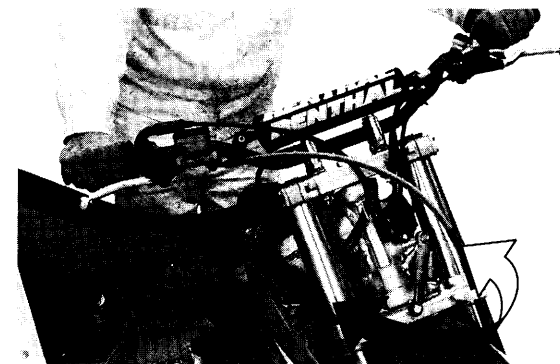
(1) number plate tab
(2) bolts
(3) number plate

2. Check the steering damper (4) for deformation or oil leaks. Check the damper rod (5) for bending or damage. Replace the damper case or damper rod if there is any abnormality. Refer to Honda Shop Manual or see your Honda dealer for steering damper disassembly. Check the torque of the steering damper mounting bolts (6):
20 N·m (2.0 kgf·m, 15 lbf·ft)

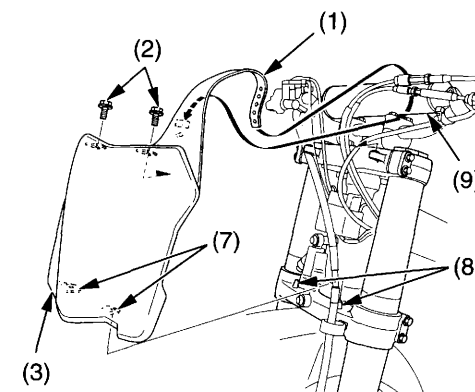


(4) steering damper
(5) damper rod
(6) steering damper mounting bolts

3. With your CRF on a box or an optional workstand (front wheel elevated), check that the steering moves smoothly from side-to-side.



4. Install the number plate (3) by aligning its holes (7) with the tabs (8) on the steering stem. Install and tighten the bolts (2) securely. Route the number plate tab (1) around the handlebar pad (9) as shown.

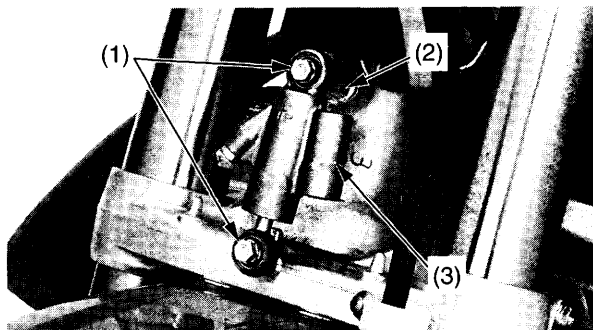


(1) number plate tab
(2) bolts
(3) number plate
(7) holes
(8) tabs
(9) handlebar pad

Steering Damper

Removal

1. Remove the number plate (page 91).
2. Remove the steering damper mounting bolts (1), collar (2) and steering damper (3).

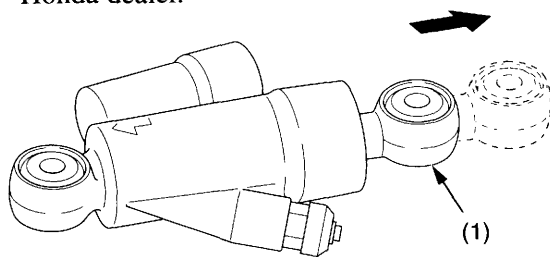


- (1) steering damper mounting bolts
(2) collar
(3) steering damper

Inspection

1. Check the damper rod (1) operation.
The damper rod is fully extended and compressed by hand. Release the damper rod, then check that it extends to its maximum length.

If the damper rod does not extend its maximum length, disassemble and inspect for steering damper.
Refer to the Honda Shop Manual or see your Honda dealer.

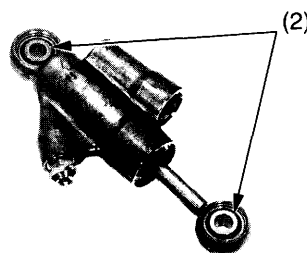


(1) damper rod

2. Check the condition of the spherical bearings (2).

Move the spherical bearing with your finger. The spherical bearing should move smoothly and quietly.

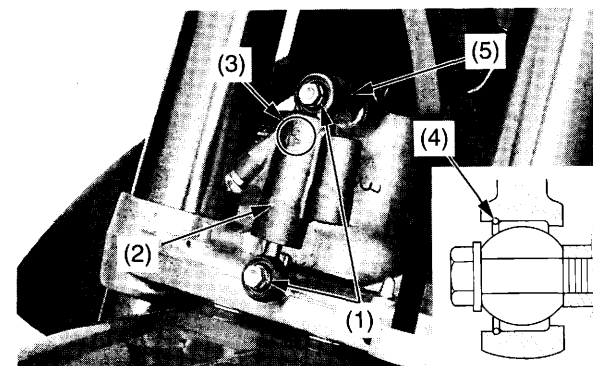
Replace the spherical bearing if it does not move smoothly and quietly.
Refer to the Honda Shop Manual or see your Honda dealer.



(2) spherical bearings

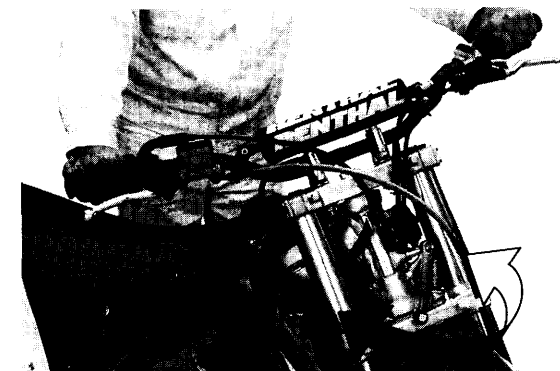
Installation

1. Clean and apply a locking agent to the steering damper mounting bolt threads.
2. Install the steering damper (2) with its "UP" mark (3) facing up and forward. Turn the damper rod and its stopper ring (4) facing toward the front side.
3. Install the collar (5) and steering damper mounting bolts (1).
Be sure to install the collar with its wide flange side facing toward the steering head pipe side.
4. Tighten the steering damper mounting bolts to the specified torque:
20 N·m (2.0 kgf·m, 15 lbf·ft)



- (1) steering damper mounting bolts
(2) steering damper
(3) "UP" mark
(4) stopper ring
(5) collar

5. With your CRF on a box or an optional workstand (front wheel elevated), check that the steering moves smoothly from side-to-side.

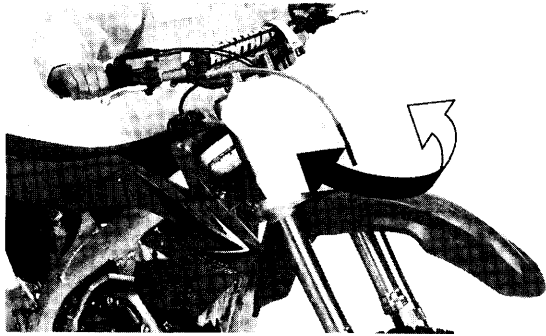


6. Install the number plate (page 91).

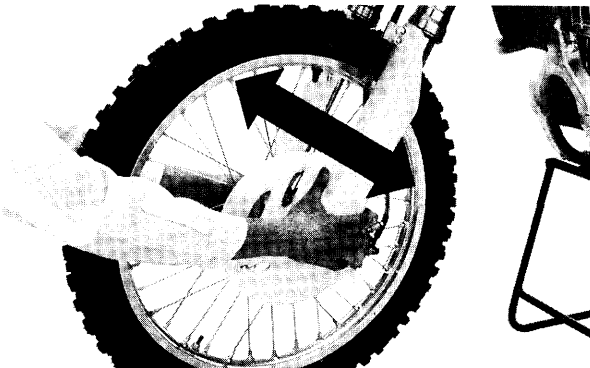
Refer to *Safety Precautions* on page 19.

Steering Head Bearing Inspection

1. With your CRF on a box or optional workstand (front wheel elevated), turn the handlebar to the right and left to check for roughness in the steering head bearings.

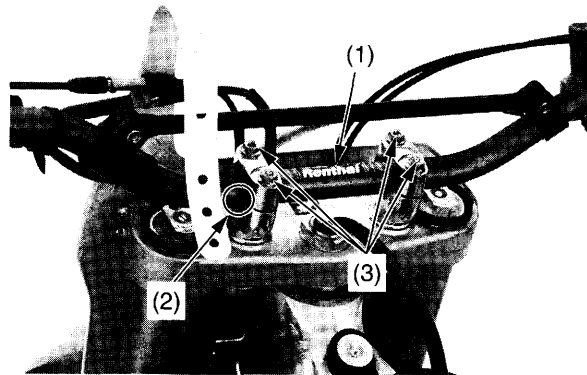


2. Stand in front of your CRF, grab the fork (at the axle), look at the steering head, and push the fork in and out (toward the engine) to check for play in the steering head bearings. If any roughness or play is felt, but you do not see any movement in the steering head, the fork bushings may be worn. Refer to the Honda Shop Manual for replacement or adjustment procedures, or see your Honda dealer.



Handlebar Inspection

1. Check the handlebar (1) for bends or cracks.
2. Check that the handlebar has not moved from its proper position (by inspecting the paint mark (2)).
3. Check the torque of the handlebar upper holder bolts (3):
22 N·m (2.2 kgf·m, 16 lbf·ft)
Tighten the front bolts first.



(1) handlebar
(2) paint mark

(3) handlebar upper holders bolts

Control Cables

Periodically, disconnect the throttle, clutch and hot start cables at their upper ends. Thoroughly lubricate the cable pivot points with a commercially-available cable lubricant. If the clutch lever, hot start 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.

Additional Maintenance Procedures

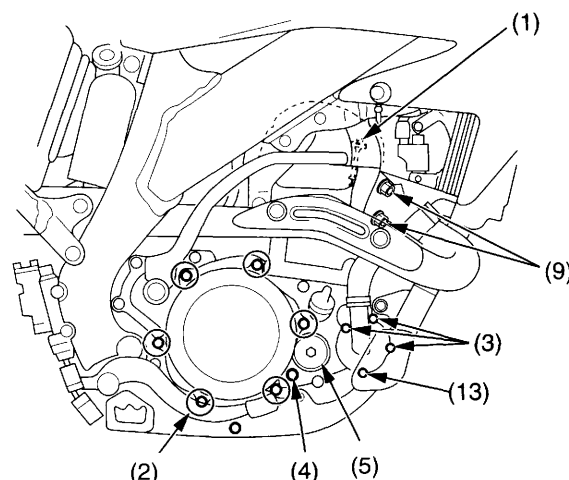
Nuts, Bolts, Fasteners

Check and tighten nuts, bolts, and fasteners before every outing.

ENGINE

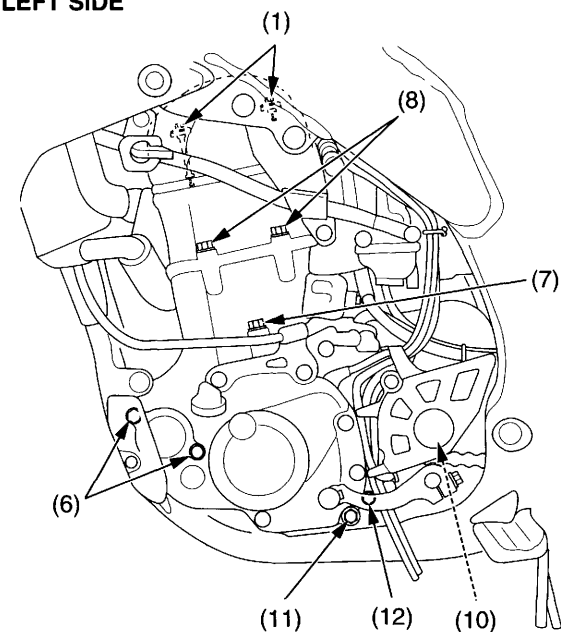
	Item	Torque		
		N•m	kgf•m	lbf•ft
1	Cylinder head cover bolts	10	1.0	7
2	Clutch cover bolts	10	1.0	7
3	Water pump cover bolts	10	1.0	7
4	Transmission oil check bolt	10	1.0	7
5	Crankshaft hole cap	15	1.5	11
6	Oil filter cover bolts	12	1.2	9
7	Cylinder bolt	10	1.0	7
8	Cylinder head bolts	10	1.0	7
9	Exhaust pipe joint nuts	21	2.1	15
10	Drive sprocket bolt	31	3.2	23
11	Engine oil drain bolt	16	1.6	12
12	Transmission oil drain bolt	16	1.6	12
13	Coolant drain bolt	10	1.0	7

RIGHT SIDE



- (1) cylinder head cover bolts
- (2) clutch cover bolts
- (3) water pump cover bolts
- (4) transmission oil check bolt
- (5) crankshaft hole cap
- (9) exhaust pipe joint nuts
- (13) coolant drain bolt

LEFT SIDE



- (1) cylinder head cover bolts
- (6) oil filter cover bolts
- (7) cylinder bolt
- (8) cylinder head bolts
- (10) drive sprocket bolt
- (11) engine oil drain bolt
- (12) transmission oil drain bolt

Refer to *Safety Precautions* on page 19.

Frequent cleaning and polishing will keep your Honda looking newer longer. Frequent cleaning also identifies you as an owner who values his motorcycle. A clean CRF is also easier to inspect and service.

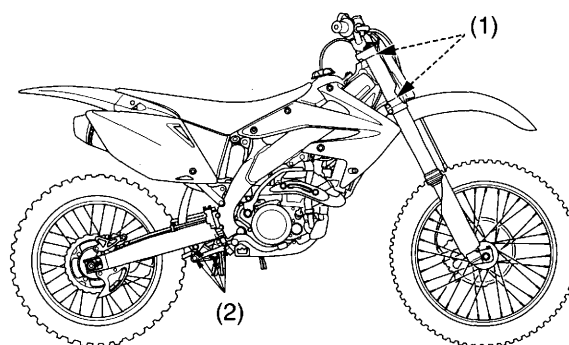
While you're cleaning, be sure to look for damage, wear, and petrol or oil leaks.

General Recommendations

- To clean your CRF you may use:
 - water
 - 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 CRF or discolour the seat and decals.
- If your CRF is still warm from recent operation, give the engine and exhaust system time to cool off.
- We recommend the use of a garden hose to wash your CRF. High pressure washers (like those at coin-operated car washes) can damage certain parts of your CRF. 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:

wheel hubs
muffler outlet
under seat
engine stop button
brake master cylinders
under fuel tank
drive chain
carburetor
steering head bearings
suspension pivot points



- (1) steering head bearings
(2) suspension pivot points

NOTICE

High pressure water (or air) can damage certain parts of your CRF.

You may use 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 the multi-surface cleaner/degreaser and rinse with a garden hose at full pressure. Stubborn deposits may require a quick wipe with a sponge.

Washing Your Motorcycle with a Mild Detergent

1. Rinse your CRF thoroughly with cool water 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 CRF 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.

NOTICE

Do not use steel wool to clean the frame as it could damage or discolour 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 CRF thoroughly with plenty of clean water to remove any residue.
5. Dry your CRF with a chamois or a soft towel.
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.

Appearance Care

Condensation Control

Some condensation can form within the transmission cavity as well. This is natural and just one more reason you should change the engine and transmission oil often.

After Cleaning Lubrication

There are some things you should do just after washing your CRF to help prevent rust and corrosion.

Once your CRF 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.

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 discolour the frame surface. Muffler stain remover (Scotch Brite Hand Pad #7447-maroon) is for removing stains on the non-coated aluminum frame only.

Exhaust Pipe Maintenance

The exhaust pipe is stainless steel, but may become stained by oil or mud.

To remove mud or dust, use a wet sponge and a liquid kitchen abrasive, then rinse well with clean water. Dry with a 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 CRF for maximum competition performance.

Initial suspension adjustments should be performed after a minimum of 2 hours of easy break-in time.

Optional front and rear suspension springs are available in both stiffer and softer than standard rates, in order to tailor your CRF specifically for your weight, riding style and course conditions.

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) requires an optional stiffer or softer rear spring. The need for either optional rear spring may need to be balanced by installing the optional fork springs of a similar rate.

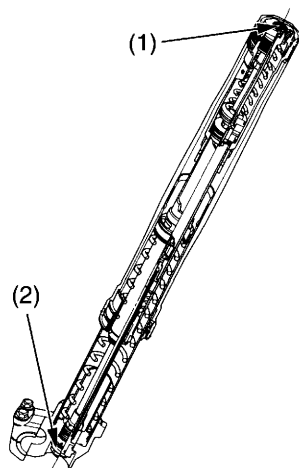
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Handlebar Position, Width & Shape.....	138

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:

- **Oil volume** — The effects of higher or lower fork oil capacity are only felt during the final 100 mm (3.9 in) of fork travel.
- **Compression damping** — Turning the compression damping adjuster adjusts how quickly the fork compresses.
- **Rebound damping** — Turning the rebound damping adjuster adjusts how quickly the fork extends.
- **Fork springs** — Optional springs are available in softer and stiffer types than the standard rate. (pages 155, 156)

The inverted fork on your CRF features sealed damper cartridges with dual (separate air and oil) chambers to prevent aeration. The design also isolates the oil in each fork tube/slider, which may contain air bubbles and/or metal particles, from the sealed cartridge to provide more consistent damping.



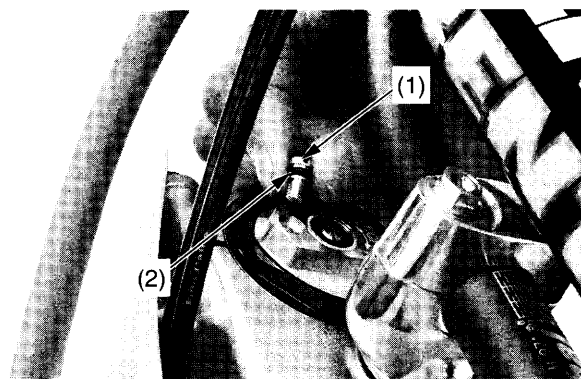
(1) compression damping adjuster
(2) rebound damping adjuster

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 CRF will get stiffer during a race. For this reason, release built-up air pressure in the fork legs between heats. Be sure the fork is fully extended with the front tyre off the ground when you release the pressure.

The standard air pressure is 0 kPa (0 kgf/cm², 0 psi). You may relieve accumulated air pressure in the fork legs by using the fork air 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 fork air pressure release screw (1).
3. Check that the O-ring (2) is in good condition.
4. Install and tighten the fork air pressure release screw to the specified torque:
1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



(1) fork air pressure release screw (2) O-ring

Front Suspension Damping

Rebound Damping Adjustment

The fork rebound damping adjuster (1) has 16 positions or more. Turning the adjuster screw one full turn clockwise advances the adjuster four positions. To adjust the rebound damping to the standard setting, proceed as follows:
Turn the adjuster clockwise until it will no longer turn (lightly seats). This is the full hard position. The adjuster is set in the standard position when the adjuster is turned counterclockwise 7 clicks (ED, U, CM, IICM type), 8 clicks (DE type). Make sure that both fork legs are adjusted to the same position.

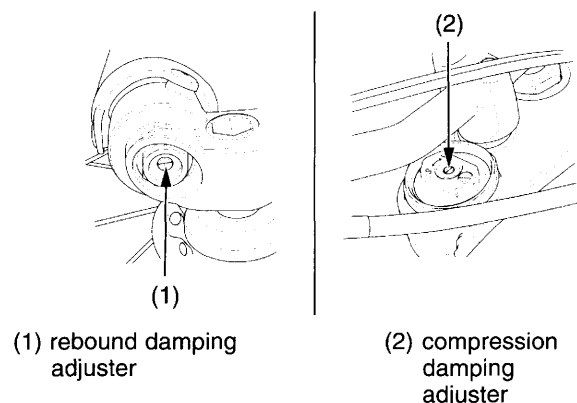
Compression Damping Adjustment

This adjustment affects how quickly the fork compresses. The fork compression damping adjuster (2) has 16 positions or more. Turning the adjuster screw one full turn changes the adjuster four positions. To adjust the compression damping to the standard position, proceed as follows:
Turn the adjuster clockwise until it will no longer turn (lightly seats). This is the full hard position. The adjuster is set in the standard position when the adjuster is turned counterclockwise 8 clicks (ED, U, CM, IICM type), 7 clicks (DE type). Make sure that both fork legs are adjusted to the same position.

Both compression and rebound damping can be increased by turning the adjuster clockwise.

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 rebound and compression adjusters are firmly located in a detent, and not between positions.



Fork Springs

The fork springs in CRF's are about right for riders weighing between 68 kg (150 lbs) and 73 kg (160 lbs) (less riding gear). So if you're a heavier rider, you have to go up on the oil capacity or get a stiffer spring. Do not use less oil than the minimum specified for each spring or there will be a loss of rebound damping control near full extension. If the fork is too hard on big bumps, turn the damping adjuster counterclockwise 1-turn and lower the oil capacity in increments of 5 cm³ (0.2 US oz, 0.2 Imp oz) in both fork legs until the desired performance is obtained. Do not, however, lower the oil capacity below the minimum oil capacity.

(ED, U, CM, IICM type)

Minimum oil capacity:

Standard spring: 323 cm³ (10.9 US oz, 11.4 Imp oz)
Softer spring: 320 cm³ (10.8 US oz, 11.3 Imp oz)
Stiffer spring: 317 cm³ (10.7 US oz, 11.2 Imp oz)

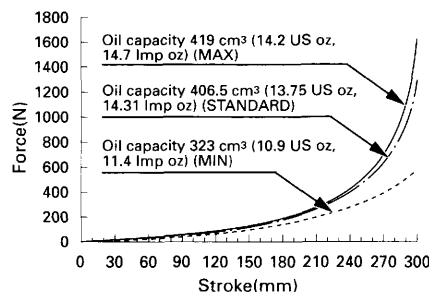
(DE type)

Minimum oil capacity:

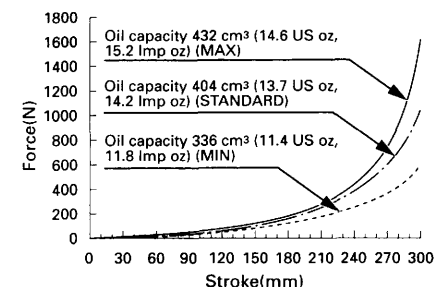
Standard spring: 336 cm³ (11.4 US oz, 11.8 Imp oz)
Softer spring: 334 cm³ (11.3 US oz, 11.8 Imp oz)
Stiffer spring: 331 cm³ (11.2 US oz, 11.7 Imp oz)

When adjusting oil capacity, bear in mind that the air in the fork will increase in pressure while riding; therefore, the higher the oil capacity, the higher the eventual pressure of any air in the fork.

(ED, U, CM, IICM type)

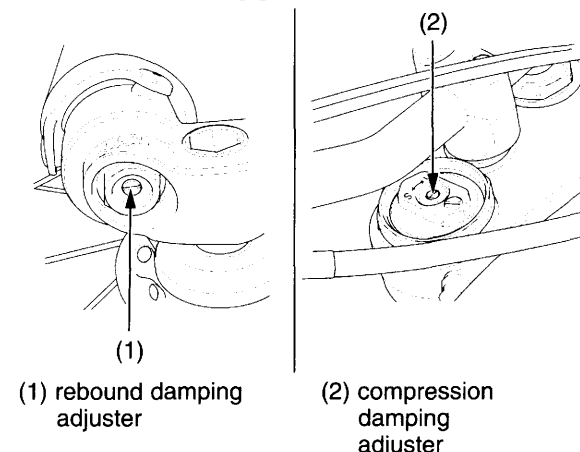


(DE type)



Front Suspension Disassembly

- If your CRF is brand-new, put enough part-throttle break-in time (about 1 hour) on it to ensure that the suspension has worked in.
- For optimum performance, and extended fork life, the fork should be completely disassembled and cleaned after the first 3 hours of riding. See the Shop Manual or your Honda dealer for this service.
- When disassembling the fork, turn the rebound (1) and compression (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).

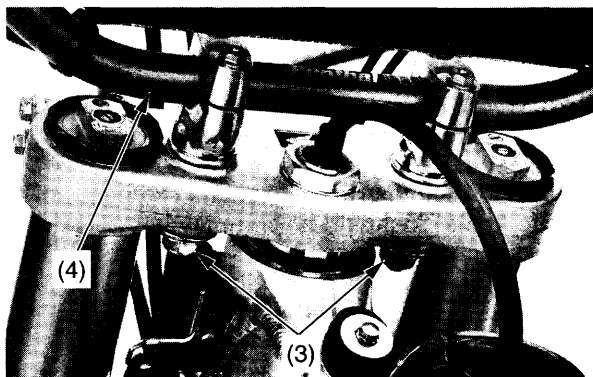


Front Suspension Adjustments

1. Remove the number plate (page 91).
2. Place your CRF on an optional workstand or equivalent support with the front wheel off the ground.
3. 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.

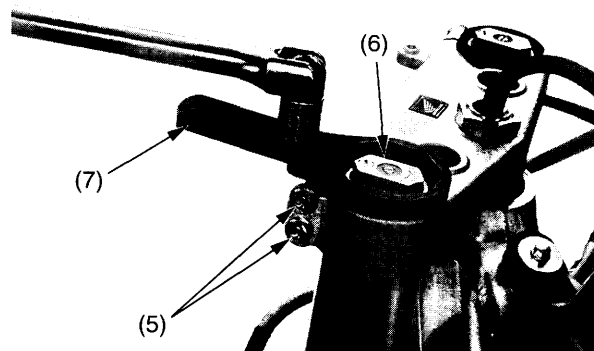


- (3) handlebar lower holder nuts/washers/
mounting rubbers
(4) handlebar

4. Loosen the fork bridge upper pinch bolts (5).
5. Loosen the fork damper (6) using a lock nut wrench (7), but do not remove them yet.

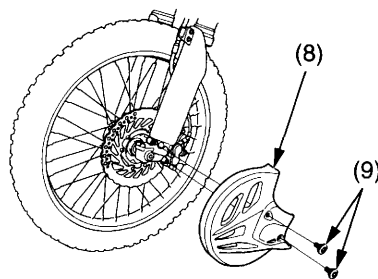
NOTICE

Do not use an adjustable wrench to loosen the fork damper: it may damage them.



- (5) fork bridge upper pinch bolts
(6) fork damper
(7) lock nut wrench

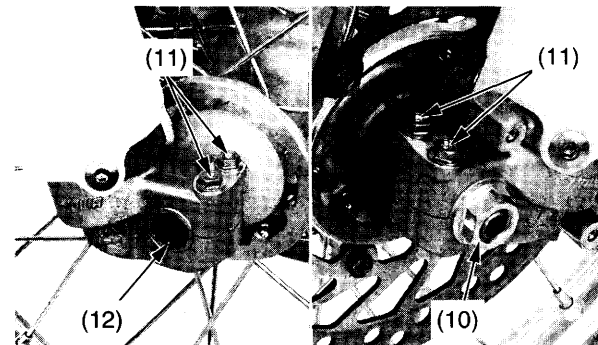
6. Remove the disc cover (8) by removing the disc cover bolts (9).



(8) disc cover

(9) disc cover bolts

7. Remove the front axle nut (10) and loosen the axle pinch bolts (11) on both forks. Pull the front axle shaft (12) out of the wheel hub and remove the front wheel.

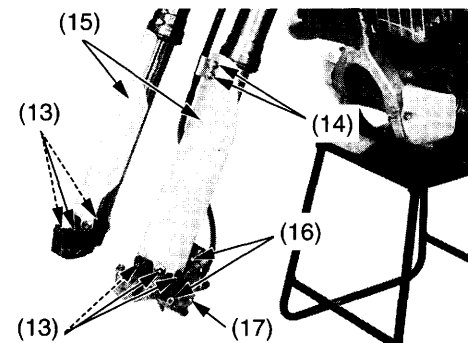


(10) front axle nut
(11) axle pinch bolts

(12) front axle shaft

8. Remove the fork protector bolts (13), brake hose clamp bolts (14) and fork protectors (15).
9. Remove the brake caliper mounting bolts (16) and brake caliper (17).

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.

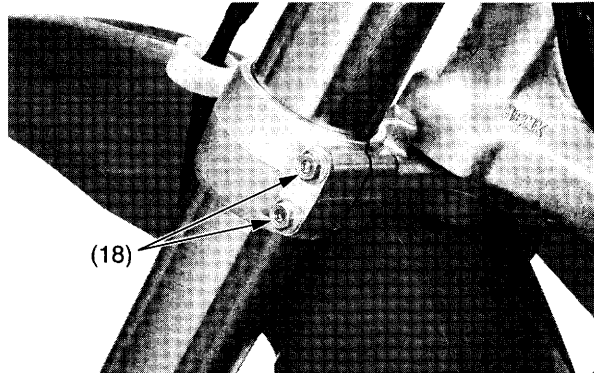


(13) fork protector bolts
(14) brake hose clamp bolts
(15) fork protectors
(16) brake caliper mounting bolts

(17) brake caliper

Front Suspension Adjustments

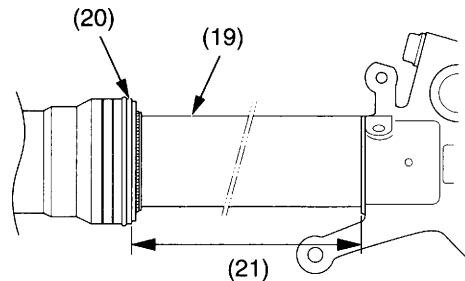
10. Loosen the fork bridge lower pinch bolts (18), then pull the fork legs down and out.



(18) fork bridge lower pinch bolts

11. Clean the fork assembly, especially the sliding surface (19) of the slider and fork dust seal (20).

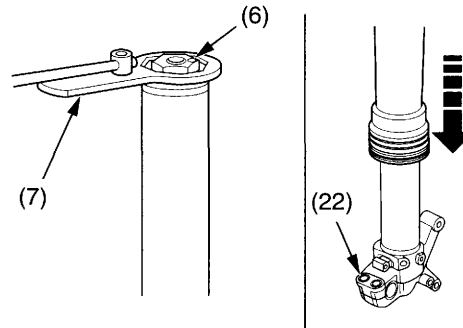
12. Measure the length (21) between the axle holder and outer tube and record it before disassembling the fork.



(19) sliding surface
(20) fork dust seal

(21) length

13. Hold the outer tube, then remove the fork damper (6) from the outer tube using a lock nut wrench (7). Gently slide the outer tube down onto the lower end (axle holder) (22).

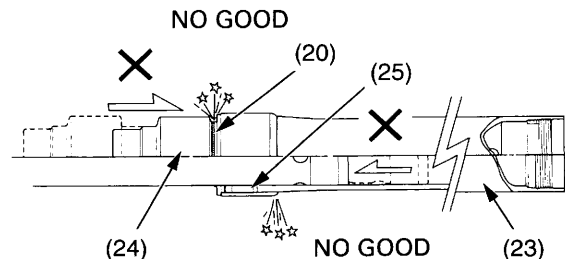


(6) fork damper
(7) lock nut wrench

(22) axle holder

NOTICE

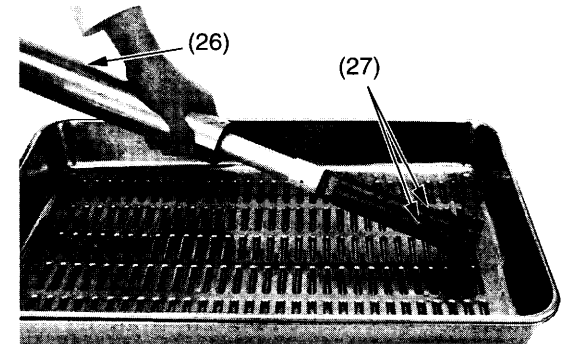
The outer tube (23) can drop on the slider (24) and damage the fork dust seal (20) and guide bushing (25) when the fork damper is removed. To avoid damage hold both the outer tube and slider when removing the fork damper.



(20) fork dust seal
(23) outer tube

(24) slider
(25) guide bushing

14. Drain the fork oil from the outer tube/slider (26). Drain the fork oil from the oil holes (27) of the fork damper.



(26) outer tube/slider

(27) oil holes

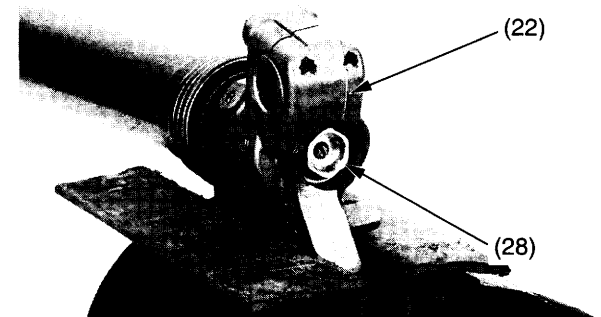
15. Temporarily install the fork damper to the outer tube.

16. Place the lower end (axle holder) (22) of the slider in a vise with a piece of wood or soft jaws to avoid damage.

NOTICE

Overtightening the vice can damage the axle holder.

17. Loosen the fork centre bolt (28).



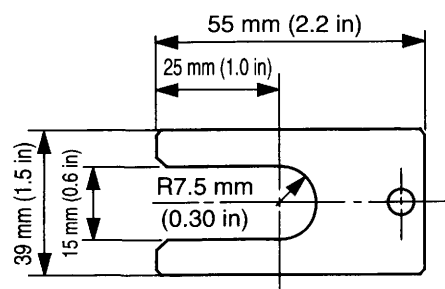
(22) axle holder

(28) fork centre bolt

(cont'd)

Front Suspension Adjustments

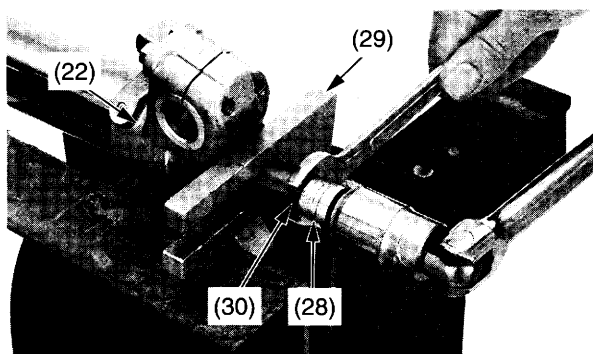
18. Make the mechanic's stopper tool out of a thin piece of steel (2.0 mm (0.08 in) thick) as shown if you do not have the special tool.



19. Push out the fork centre bolt (28) from the axle holder (22) of the slider by pushing the fork damper. While the fork centre bolt is pushed out, install the piston base (29) or a mechanic's stopper tool between the axle holder and fork centre bolt lock nut (30).
20. Hold the fork centre bolt lock nut and remove the fork centre bolt 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 cannot reassemble the fork damper.

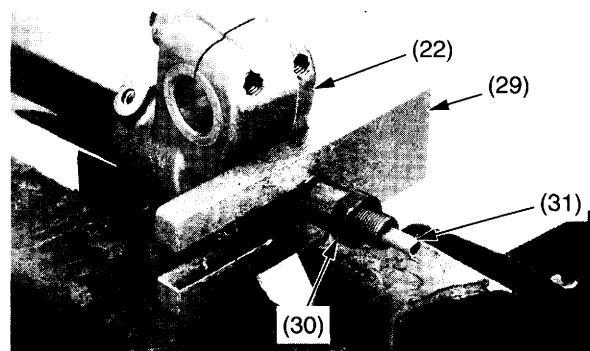


- (22) axle holder (29) piston base
(28) fork centre bolt (30) fork centre bolt lock nut

21. Remove the push rod (31) from the fork damper.
22. Remove the piston base (29) or mechanic's stopper tool between the axle holder (22) and fork centre bolt lock nut (30) while pushing the fork damper.

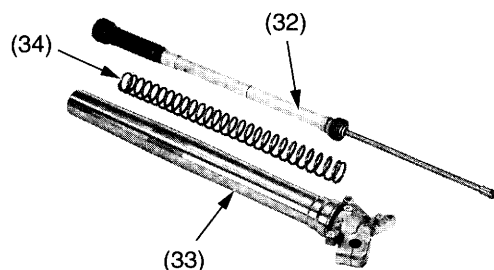
NOTICE

Be careful not to damage the lock nut and fork centre bolt hole.



- (22) axle holder (30) fork centre bolt lock nut
(29) piston base (31) push rod

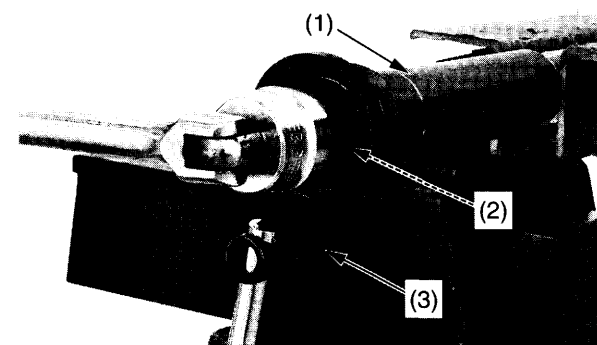
23. Remove the fork damper assembly (32) from the fork assembly (33).
Remove the fork from the vise.
Remove the fork spring (34) from the fork assembly.



- (32) fork damper assembly (34) fork spring
(33) fork assembly

Damper Oil Change

1. Place the fork damper (1) in a vise with a piece of wood or soft jaws to avoid damage.
2. Loosen the fork cap assembly (2) while holding the fork damper using the lock nut wrench (3).

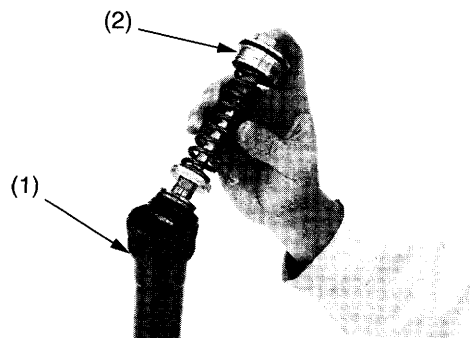


- (1) fork damper (3) lock nut wrench
(2) fork cap assembly

Front Suspension Adjustments

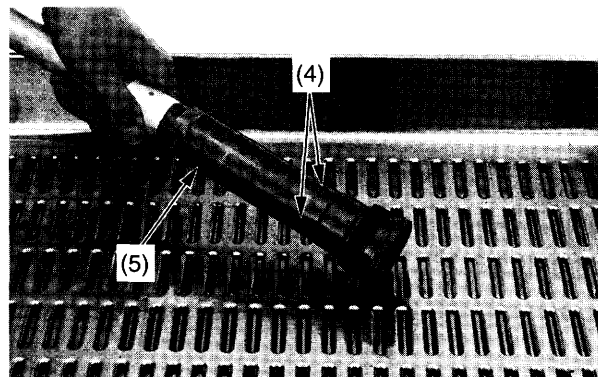
- Remove the fork cap assembly (2) from the fork damper (1).

Be careful not to damage the fork cap piston ring. Do not disassemble the fork cap assembly. Replace the fork cap as an assembly if it is damaged.



(1) fork damper (2) fork cap assembly

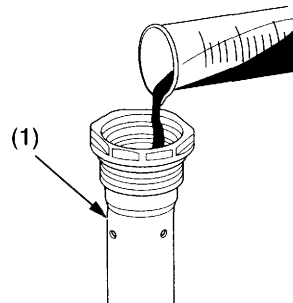
- Empty the fork oil from the oil holes (4) of the fork damper spring chamber (5) by pumping the damper rod several times.



(4) oil holes (5) fork damper spring chamber

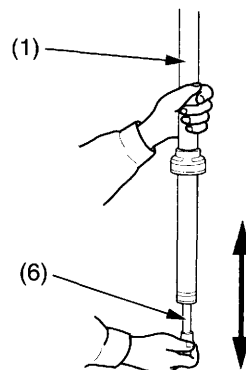
- Clean the fork cap and fork damper threads.

- Extend the fork damper piston rod to maximum. Pour the recommended fork oil into the fork damper (1).
Recommended Oil:
Honda ULTRA CUSHION OIL SPECIAL 5 W or equivalent
Recommended Amount:
187 cm³ (6.3 US oz, 6.6 Imp oz)



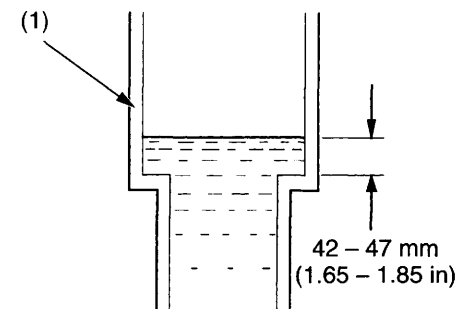
(1) fork damper

- Pump the fork damper piston rod (6) slowly several times to bleed the air from the fork damper (1).



(1) fork damper (6) fork damper piston rod

- Extend the fork damper piston rod to maximum. Adjust the oil level of the fork damper (1) as shown.
Oil Level: 42 – 47 mm (1.65 – 1.85 in)

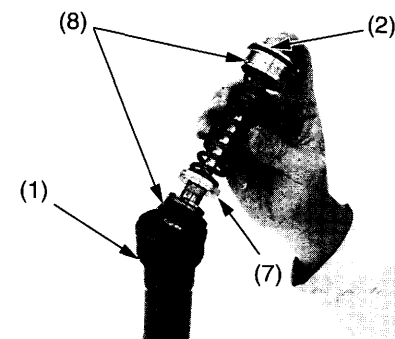


(1) fork damper

- Apply fork oil to fork cap piston ring (7) and new O-rings (8) on the fork cap assembly (2).

Extend the fork damper piston rod to maximum, holding it, install the fork cap assembly to the fork damper (1).

Be careful not to damage the fork cap piston ring. If it is difficult to install the fork cap assembly, the fork damper oil level might be higher than standard oil level. Inspect the fork damper oil level again.

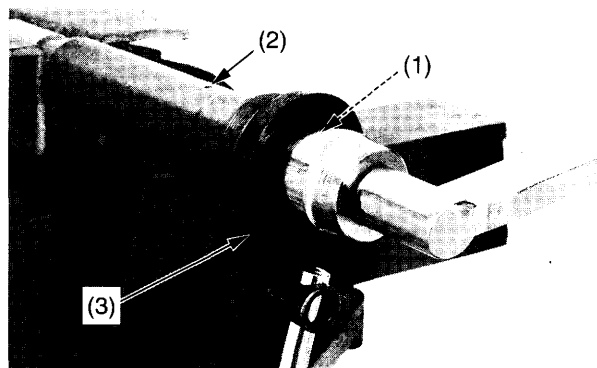


(1) fork damper (7) fork cap piston ring
(2) fork cap assembly (8) O-rings

(cont'd)

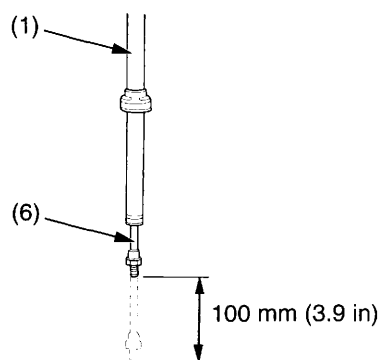
Front Suspension Adjustments

10. Place the fork damper (1) in a vise with a piece of wood or soft jaws to avoid damage. Tighten the fork cap assembly (2) while holding the cut out of the fork damper using the lock nut wrench (3) to the specified torque:
30 N·m (3.1 kgf·m, 22 lbf·ft)



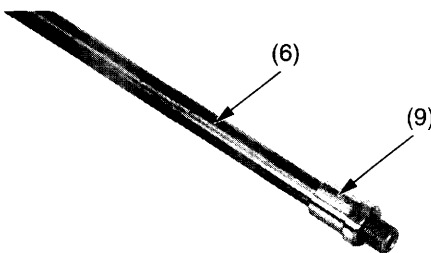
(1) fork damper
(2) fork cap assembly
(3) lock nut wrench

11. Hold the fork damper (1) in an upright position and pump the fork damper piston rod (6) to 100 mm (3.9 in) slowly several times.



(1) fork damper
(6) fork damper piston rod

12. Screw in the fork centre bolt lock nut (9) to the fork damper piston rod (6) fully.



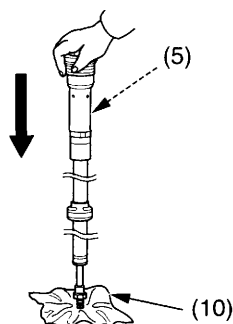
(6) fork damper piston rod (9) fork centre bolt lock nut

Turn the rebound adjuster and compression adjuster counterclockwise to the softest position. Check the fork damper piston rod sliding surface for damage. Apply fork oil to the fork damper piston rod sliding surface. Cover the fork damper piston rod end with soft jaws (10) to prevent fork damage.

NOTICE

Be careful not to bend or damage the fork damper piston rod when the piston rod is stroked.

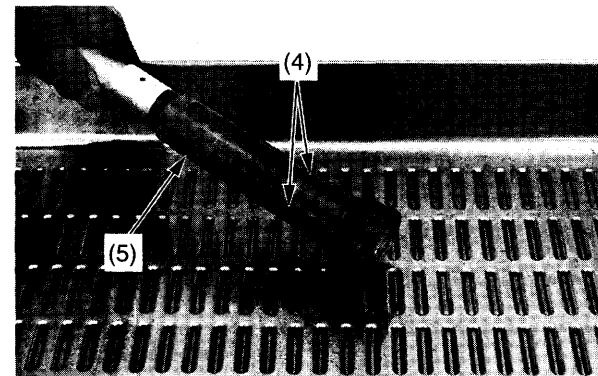
13. Blow the extra oil off to the fork damper spring chamber (5) by pumping the fork damper piston rod to full stroke.



(5) fork damper spring chamber
(10) soft jaws

14. Drain the extra oil from the oil holes (4) of the fork damper spring chamber (5).

By doing this procedure, about 17 cm³ (0.6 US oz, 0.6 Imp oz) of fork fluid will be drained from the damper spring chamber through the oil hole and cause 170 cm³ (5.7 US oz, 6.0 Imp oz) of fork fluid to be left in the chamber.

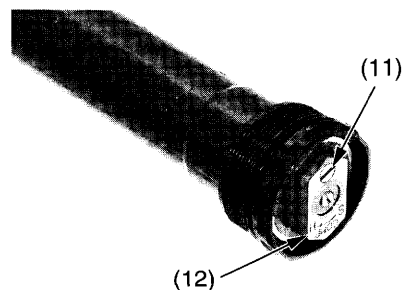


(4) oil holes (5) fork damper spring chamber

15. Blow out the oil from the fork damper spring chamber using compressed air to the oil hole. Wipe the oil completely off the fork damper.

16. If you cannot use compressed air, remove the fork air pressure release screw (11) on the fork cap (12).

Hold the fork damper up side down for 10 minutes and drain the oil from the fork damper spring chamber.



(11) fork air pressure release screw (12) fork cap

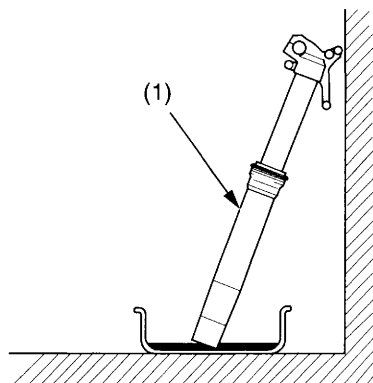
Pour the drained oil into a suitable container and dispose of it in an approved manner (page 142).

NOTICE

Improper disposal of drained fluids is harmful to the environment.

Fork Assembly

1. Drain the fork oil from the fork assembly (1) by placing it upside down.
(About 7cm³ (0.2 US oz, 0.2 Imp oz) of fork oil will be left in the outer tube/slider 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* (page 142).

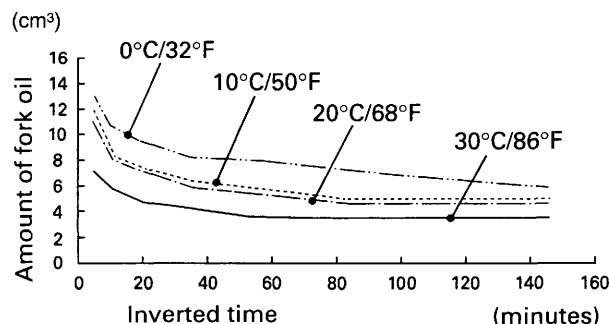
NOTICE

Improper disposal of drained fluids is harmful to the environment.

Amount of fork oil left in the fork
(without damper and spring)

unit: cm³

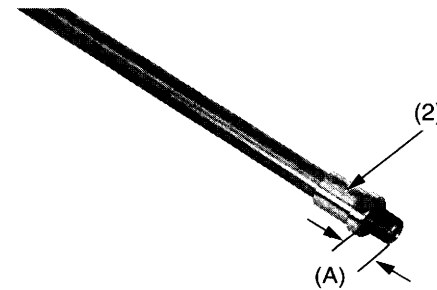
minute °C/°F	5	10	20	35	55	85	145
30/86	7.1	5.9	4.7	4.2	3.5	3.5	3.5
20/68	10.6	8.2	7.1	5.9	5.6	4.7	4.7
10/50	11.8	8.3	7.2	6.2	5.8	4.9	4.8
0/32	12.9	10.6	9.4	8.2	7.9	7.1	5.9



2. Tighten the fork centre bolt lock nut (2) fully and measure the thread length (A) as shown.

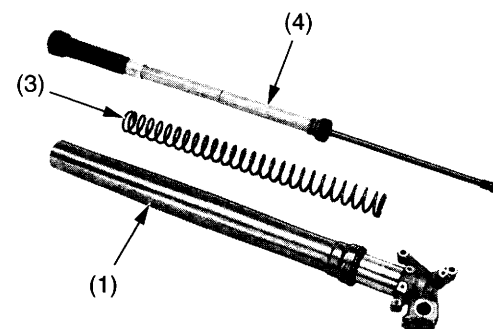
Standard: 11 – 13 mm (0.43 – 0.51 in)

Wipe the oil completely off the fork damper.



(2) fork centre bolt lock nut (A) thread length

3. Blow out the oil completely off the fork spring (3) using the compressed air. Install the fork spring.
Install the fork damper assembly (4) to the fork assembly (1).



(1) fork assembly
(3) fork spring

(4) fork damper assembly

(cont'd)

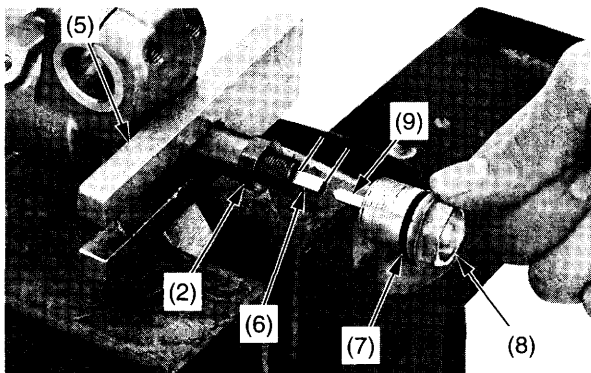
Front Suspension Adjustments

4. Place the lower end (axle holder) of the slider in a vise with a piece of wood or soft jaws to avoid to damage.

NOTICE

Overtightening the vise can damage the axle holder.

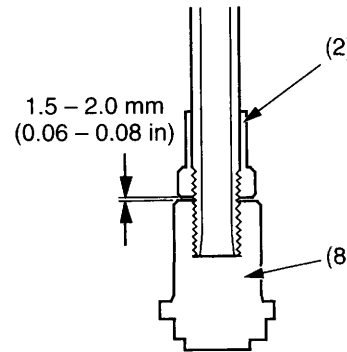
5. Push out the fork damper piston rod from the axle holder of the slider by pushing the fork damper.
Apply pressure to the fork damper and insert the piston base (5) or mechanic's stopper tool between the axle holder and fork centre bolt lock nut (2).
Measure the thread length again.
Standard: 11 – 13 mm (0.43 – 0.51 in)
6. Install the push rod (6) into the fork damper piston rod until it stops.
Check the push rod installation by turning the push rod right and left.
7. Apply fork oil to a new O-ring (7) and install it to the fork centre bolt (8).
Install the fork centre bolt to the fork damper piston rod aligning the adjusting rod (9) to the push rod. Tighten the fork centre bolt fully by hand.



(2) fork centre bolt lock nut (7) O-ring
(5) piston base (8) fork centre bolt
(6) push rod (9) adjusting rod

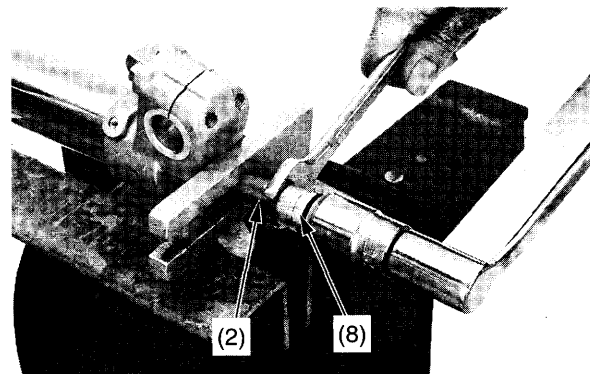
8. Measure the length of the fork centre bolt lock nut (2) and fork centre bolt (8) clearance.
Standard: 1.5 – 2.0 mm (0.06 – 0.08 in)

If the clearance is out of specification, check the fork centre bolt lock nut and fork centre bolt installation.



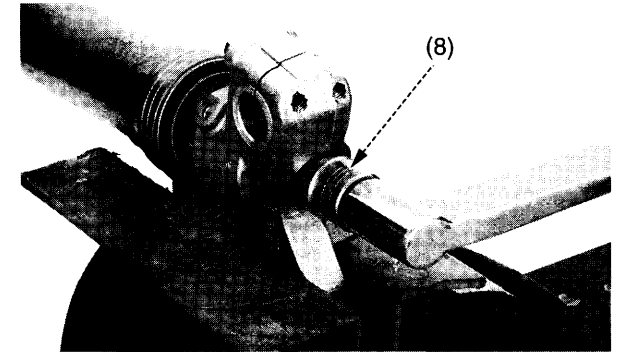
(2) fork centre bolt lock nut (8) fork centre bolt

9. Tighten the fork centre bolt lock nut (2) to the fork centre bolt (8) closely by hand. Tighten the fork centre bolt lock nut to the specified torque:
22 N·m (2.2 kgf·m, 16 lbf·ft)



(2) fork centre bolt lock nut
(8) fork centre bolt

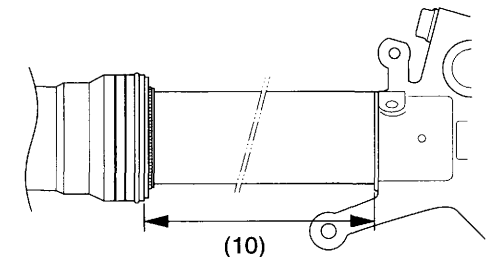
10. Remove the piston base or mechanic's stopper tool while pushing the fork damper.
Apply locking agent to the fork centre bolt threads.
Install the fork centre bolt (8) to the axle holder and tighten it to the specified torque:
69 N·m (7.0 kgf·m, 51 lbf·ft)



(8) fork centre bolt

11. Measure the length between the axle holder and outer tube.
Standard: 317 ± 2 mm (12.5 ± 0.1 in)
12. Compare the length (10) at assembly and at disassembly. They should be the same length.

If the length at assembly is longer than at disassembly, check the fork centre bolt and fork centre bolt lock nut installation.

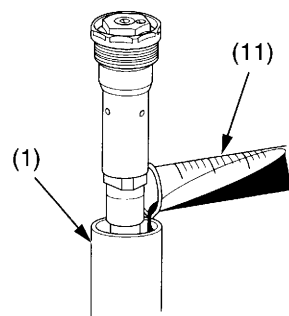


(10) length

Front Suspension Adjustments

13. Pour the recommended fork oil (11) into the fork assembly (1).

Recommended Oil:
Honda ULTRA CUSHION OIL SPECIAL 5 W
or equivalent.

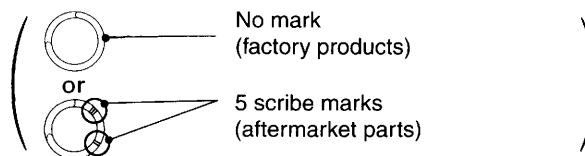


(1) fork assembly

(11) fork oil

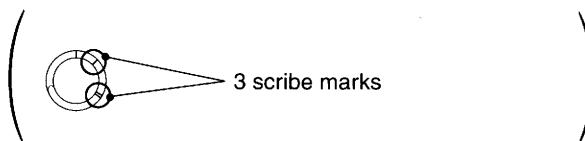
Fork Oil Capacity (ED, U, CM, IICM type):

Standard 0.47 kgf/mm (26.32 lbf/in) Fork Spring



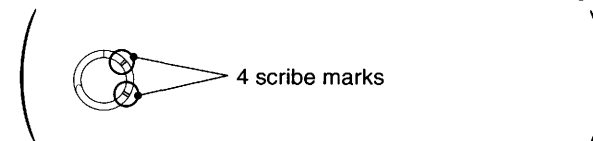
Standard oil capacity	406.5 cm ³ (13.75 US oz) (14.31 Imp oz)	
Maximum oil capacity	419 cm ³ (14.2 US oz) (14.7 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	323 cm ³ (10.9 US oz) (11.4 Imp oz)	Slightly softer as it nears full compression.

Optional Softer 0.45 kgf/mm (25.20 lbf/in) Fork Spring



Standard oil capacity	404 cm ³ (13.7 US oz) (14.2 Imp oz)	
Maximum oil capacity	416 cm ³ (14.1 US oz) (14.6 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	320 cm ³ (10.8 US oz) (11.3 Imp oz)	Slightly softer as it nears full compression.

Optional Stiffer 0.49 kgf/mm (27.44 lbf/in) Fork Spring



Standard oil capacity	401 cm ³ (13.6 US oz) (14.1 Imp oz)	
Maximum oil capacity	413 cm ³ (14.0 US oz) (14.5 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	317 cm ³ (10.7 US oz) (11.2 Imp oz)	Slightly softer as it nears full compression.

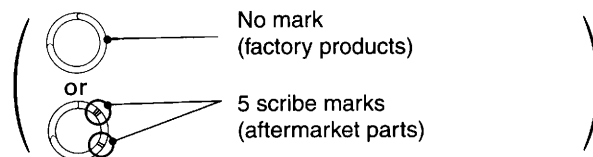
Be sure the oil capacity is the same in both fork legs.

(cont'd)

Front Suspension Adjustments

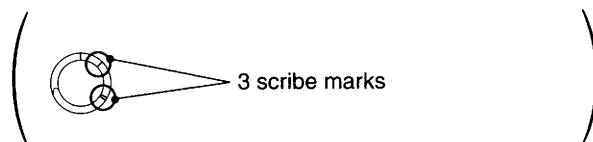
Fork Oil Capacity (DE type):

Standard 0.47 kgf/mm (26.32 lbf/in) Fork Spring



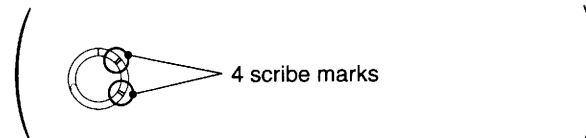
Standard oil capacity	404 cm ³ (13.7 US oz) (14.2 Imp oz)	
Maximum oil capacity	432 cm ³ (14.6 US oz) (15.2 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	336 cm ³ (11.4 US oz) (11.8 Imp oz)	Slightly softer as it nears full compression.

Optional Softer 0.45 kgf/mm (25.20 lbf/in) Fork Spring



Standard oil capacity	401 cm ³ (13.6 US oz) (14.1 Imp oz)	
Maximum oil capacity	429 cm ³ (14.5 US oz) (15.1 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	334 cm ³ (11.3 US oz) (11.8 Imp oz)	Slightly softer as it nears full compression.

Optional Stiffer 0.49 kgf/mm (27.44 lbf/in) Fork Spring

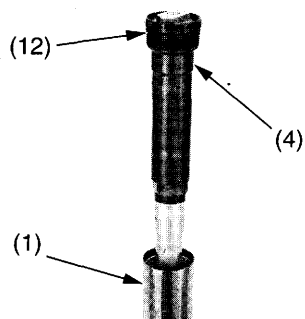


Standard oil capacity	398 cm ³ (13.5 US oz) (14.0 Imp oz)	
Maximum oil capacity	427 cm ³ (14.4 US oz) (15.0 Imp oz)	Slightly stiffer as it nears full compression.
Minimum oil capacity	331 cm ³ (11.2 US oz) (11.7 Imp oz)	Slightly softer as it nears full compression.

Be sure the oil capacity is the same in both fork legs.

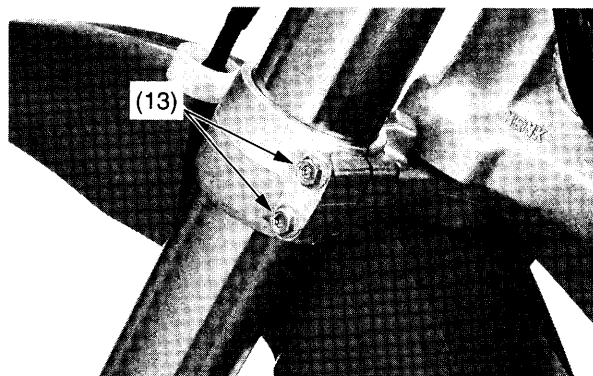
Front Suspension Adjustments

14. Check that the O-ring (12) on the fork damper assembly (4) is in good condition. Apply the recommended fork oil to the O-ring.
15. Pull up the fork assembly (1) slowly and install the fork damper assembly (4) into the outer tube.



(1) fork assembly
(4) fork damper assembly
(12) O-ring

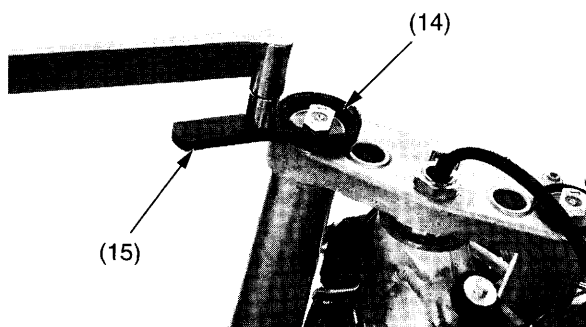
16. Insert both fork legs into the fork clamps. Tighten the fork bridge lower pinch bolts (13) to the specified torque:
20 N·m (2.0 kgf·m, 15 lbf·ft)



(13) fork bridge lower pinch bolts

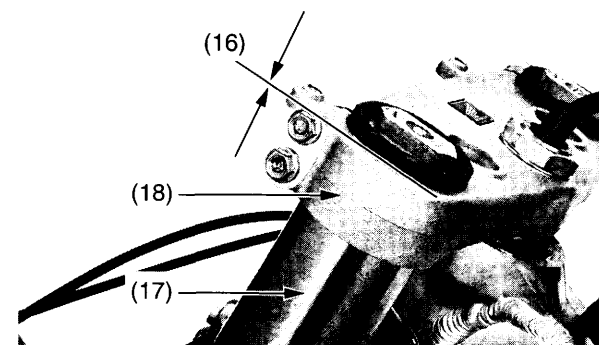
17. Tighten the fork damper (14) to the specified torque using the lock nut wrench (15).
Actual:
34 N·m (3.5 kgf·m, 25 lbf·ft)
Torque wrench scale reading:
31 N·m (3.2 kgf·m, 23 lbf·ft), using a 50 cm (20 in) long torque wrench.

When using the lock nut wrench, use a 50 cm (20 in) 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.



(14) fork damper
(15) lock nut wrench

18. For ease of releasing air pressure after the forks are installed, loosen the fork bridge lower pinch bolts and position the outer tubes so that the fork air pressure release screws are in front of the rebound damping adjusters. Align (16) the top of the outer tube (17) with the top surface of the upper fork clamp (18).

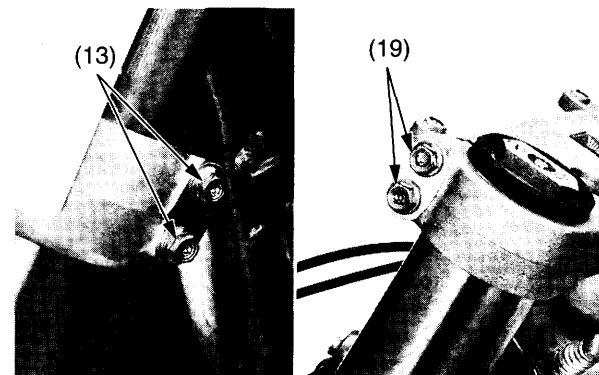


(16) align
(17) outer tube
(18) upper fork clamp

19. Tighten the fork bridge lower pinch bolts (13) to the specified torque:
20 N·m (2.0 kgf·m, 15 lbf·ft)
20. Tighten the fork bridge upper pinch bolts (19) to the specified torque:
22 N·m (2.2 kgf·m, 16 lbf·ft)

NOTICE

Over-tightening the pinch bolts can deform the outer tubes. Deformed outer tubes must be replaced.

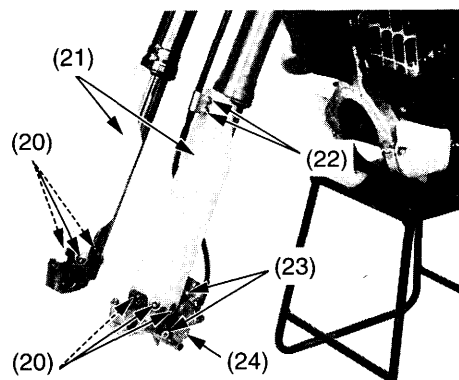


(13) fork bridge lower pinch bolts
(19) fork bridge upper pinch bolts

(cont'd)

Front Suspension Adjustments

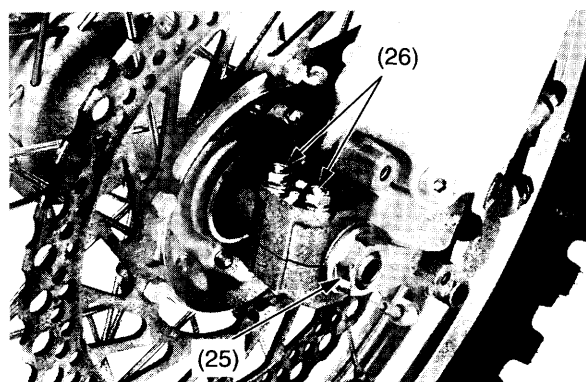
21. Clean the threads of the fork protector bolts (20) and axle holder thoroughly. Apply locking agent to the bolt threads. Install the fork protectors (21), fork protector bolts and brake hose clamp bolts (22). Tighten the fork protector bolts to the specified torque:
7 N·m (0.7 kgf·m, 5.2 lbf·ft)
22. Align the brake caliper (24) and hose 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.
23. Clean the threads of the brake caliper mounting bolts (23) and brake caliper thoroughly. Apply locking agent to the bolt threads. Install the brake caliper (24) on the slider and tighten the brake caliper mounting bolts to the specified torque:
30 N·m (3.1 kgf·m, 22 lbf·ft)



- (20) fork protector bolts
(21) fork protectors
(22) brake hose clamp bolts
(23) brake caliper mounting bolts
(24) brake caliper

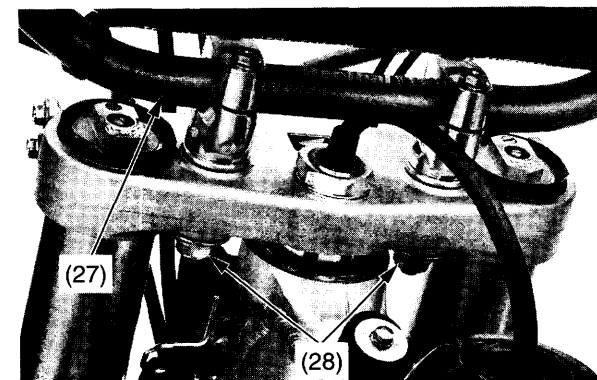
24. Clean the surfaces where the axle and axle clamps contact each other. Install the left and right side collars into the wheel hub. Insert the front axle shaft through the wheel hub from the right side. Make sure the front axle shaft is seated firmly onto the left fork leg clamp inner surface. Tighten the front axle nut (25) to the specified torque:
88 N·m (9.0 kgf·m, 65 lbf·ft)

Tighten the left axle pinch bolts (26) to the specified torque:
20 N·m (2.0 kgf·m, 15 lbf·ft)



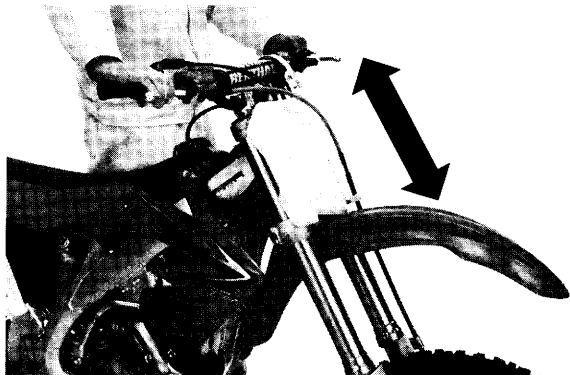
- (25) front axle nut
(26) left axle pinch bolts

25. Install the handlebar (27), mounting rubbers, washers and handlebar lower holder nuts (28) and tighten the handlebar holder nuts to the specified torque:
44 N·m (4.5 kgf·m, 32 lbf·ft)

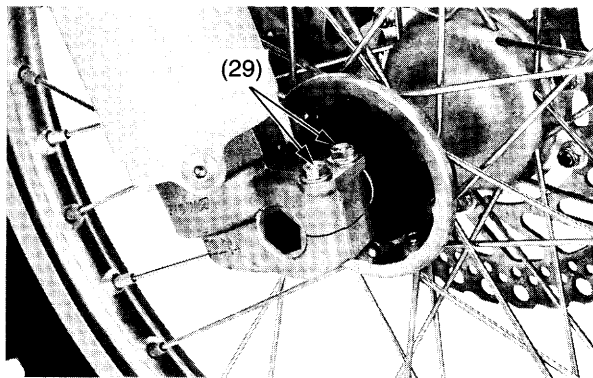


- (27) handlebar
(28) mounting rubbers/washers/handlebar lower holder nuts

26. With the front brake applied, pump the fork up and down several times to seat the axle and check front brake operation.



27. While keeping the forks parallel, alternately tighten the right axle pinch bolts (29) to the specified torque:
20 N·m (2.0 kgf·m, 15 lbf·ft)

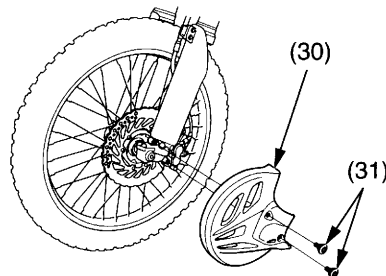


(29) right axle pinch bolts

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.

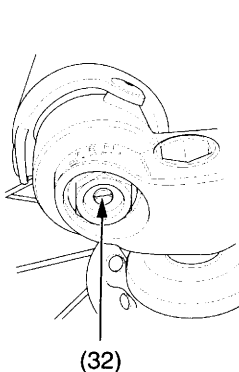
28. Install the disc cover (30) and tighten the disc cover bolts (31) to the specified torque:
13 N·m (1.3 kgf·m, 10 lbf·ft)



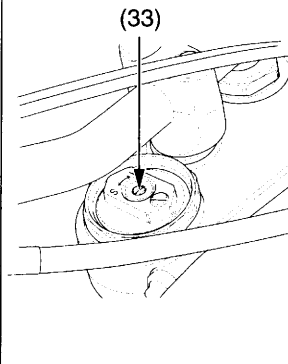
(30) disc cover

(31) disc cover bolts

29. Turn the rebound damping (32) and compression damping (33) adjuster screws back to their original settings.



(32) rebound damping adjuster screw



(33) compression damping adjuster screw

30. Install the number plate (page 91).

Rear Suspension Adjustments

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 shock absorber assembly includes a damper unit that contains high pressure nitrogen gas. Do not attempt to disassemble, service, or dispose of the damper; see your Honda 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 Honda dealer or a qualified mechanic, equipped with the proper tools, safety equipment and the official Honda Shop Manual.

If your CRF is new, put enough part-throttle break-in time (about 1 hour) on it to ensure that the suspension has worked in.

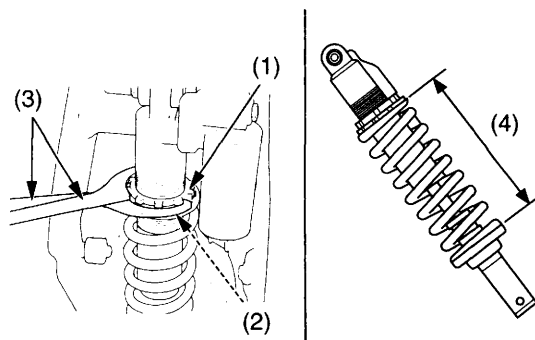
Rear Suspension Spring Pre-Load

Pre-load should be adjusted when the engine is cold because it is necessary to remove the muffler (page 88).

An optional pin spanner is available for turning the shock spring lock nut and adjusting nut to adjust spring pre-load.

1. Place your CRF on an optional workstand or equivalent support with the rear wheel off the ground.
2. Loosen the connecting tube clamp screw and remove the subframe upper and lower mounting bolts, then remove the subframe. See page 32.

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 adjuster nut changes the spring length by 1.5 mm (0.06 in).
4. After adjustment, hold the adjusting nut and tighten the shock spring lock nut to the specified torque:
44 N·m (4.5 kgf·m, 32 lbf·ft)



(1) shock spring lock nut (3) pin spanners
(2) adjusting nut (4) spring length

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:
249.0 mm (9.80 in)

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:
ED, U, CM, IICM type:
258.0 mm (10.16 in)
DE type:
258.2 mm (10.17 in)

Each turn of the adjuster changes spring length and spring pre-load. One turn equals: spring length/spring pre-load:
1.5 mm (0.06 in)/8.25 kg (18.19 lbf)

Pin spanners should be used for turning the shock spring lock nut and adjusting nut. See pages 155 and 156 for optional pin spanners.

Spring pre-load length (Standard spring)

Standard: **ED, U, CM, IICM type:**
257.0 mm (10.12 in)
DE type:
257.2 mm (10.13 in)
Min. : 249.0 mm (9.80 in)

Spring pre-load length (Optional spring)

Min. (Softer, 5.30 kgf/mm (296.8 lbf/in)): 251 mm (9.9 in)
Min. (Stiffer, 5.70 kgf/mm (319.2 lbf/in)): 251 mm (9.9 in)
Except IICM type:
Min. (Stiffer, 5.90 kgf/mm (330.4 lbf/in)): 250 mm (9.8 in)

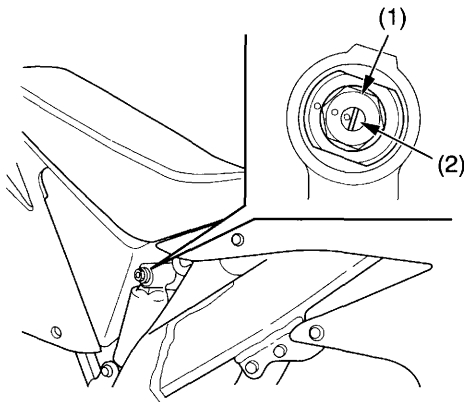
Rear Suspension Damping

Compression Damping

Compression damping may be adjusted in two stages with separate adjusters.

The high speed damping adjuster (1) is effective when damping adjustment is desired for high speed operation. The low speed damping adjuster (2) should be used when damping adjustment is desired at relatively low speeds.

- Both the high and low speed compression damping can be increased by turning the appropriate adjuster clockwise.
- Adjust the high speed compression adjuster in 1/12 turn increments.
- Be sure the low speed compression adjuster is firmly located in a detent, and not between positions.



(1) high speed damping adjuster
(2) low speed damping adjuster

High Speed Damping:

The high speed damping can be adjusted by turning the hexagonal portion of the compression adjuster.

To adjust to the standard position:

1. Turn the adjuster clockwise until it will no longer turn (lightly seats). This is the full hard setting.
2. Turn the adjuster counterclockwise 1 1/4 – 1 3/4 (ED, U, CM, IICM type), 1 5/12 – 1 11/12 (DE type) turns and the punch marks are aligned.

Low Speed Damping:

The low speed damping can be adjusted by turning the centre screw of the compression adjuster.

The low speed compression adjuster has 13 positions or more.

Turning the adjuster one full turn clockwise advances the adjuster 4 positions.

To adjust to the standard position:

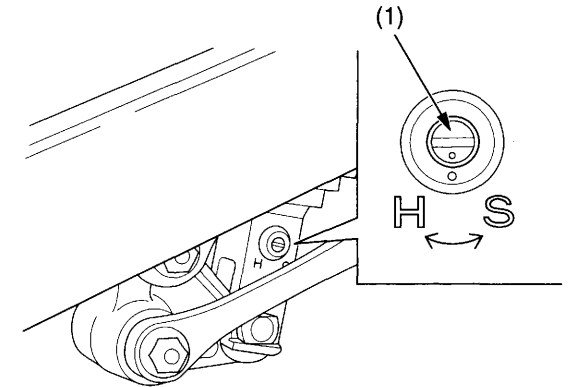
1. Turn the adjuster clockwise until it will no longer turn (lightly seat). This is the full hard setting.
2. Turn the adjuster counterclockwise 9 clicks and the punch marks are aligned.

Rebound Damping

The rebound damping adjuster (1) is located at the lower end of the shock absorber.

It has 17 positions or more. Turning the adjuster one full turn advances the adjuster 4 positions.

- 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.



(1) rebound damping adjuster

To adjust to the standard position:

1. Turn the adjuster clockwise until it will no longer turn (lightly seat). This is the full hard position.
2. Turn the adjuster counterclockwise 6 – 9 (ED, U, CM, IICM type), 5 – 8 (DE type) clicks with the punch marks on the adjuster and the shock absorber aligned.

Rear Suspension Adjustments

Rear Suspension Race Sag

Setting the proper race sag (ride height) is very important for competition use.

Race sag refers to the amount of rear wheel travel used by your CRF 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 CRF, 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 spring pre-load adjustment for your specific needs. Your CRF should be at normal racing weight, including fuel and transmission oil. You should be wearing all your normal protective apparel. You will need two helpers.

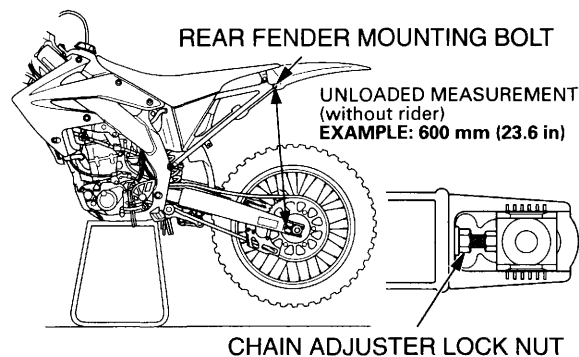
To calculate the proper adjustment, it is necessary to measure between two fixed points — from the centre of the rear fender mounting bolt to the centre of the chain adjuster lock nut as illustrated here — for three different situations:

unloaded: motorcycle on an optional workstand with rear suspension fully extended, no rider.

loaded with rider: motorcycle on ground, with rider.

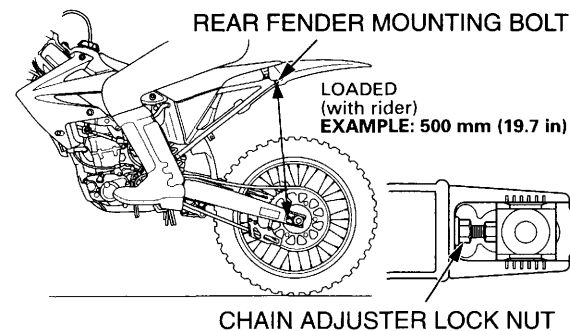
loaded without rider: motorcycle on ground, without rider

1. Support your CRF 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 CRF's seat, wearing your riding apparel. Ask one helper to steady your CRF 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.



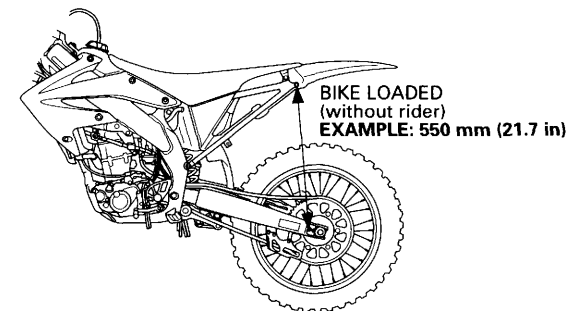
Example:
Unloaded = 600 mm (23.6 in)
– Loaded = 500 mm (19.7 in)
Race Sag = 100 mm (3.9 in)

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: 100 mm (3.9 in)

Adjust spring pre-load as necessary to obtain the desired handling results. Decreasing the race sag dimension (example: 90 mm, 3.5 in) improves turning ability for tight terrain at the cost of slightly reduced straight line stability.

Increasing the race sag dimension (example: 110 mm, 4.3 in) 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.

5. Measure the *loaded without rider* dimension. Do this with your CRF set at the standard race sag.



Example:
Unloaded = 600 mm (23.6 in)
– Loaded = 550 mm (21.7 in)
Sag = 50 mm (2.0 in)
(Without Rider)

6. Calculate the *free sag* dimension.

To do this, subtract the *loaded without rider* dimension (step 5) from the *unloaded* dimension (step 2).

Free sag indicates the distance your rear suspension should sag from the weight of the sprung portion of your CRF.

With the spring pre-load set to obtain the proper race sag, the rear suspension should sag 10 to 25 mm (0.4 to 1.0 in).

If the rear of your CRF sags less than 10 mm (0.4 in) from its own weight, the spring is too stiff for your weight. It is not compressed enough, even though you have the proper race sag adjustment. As a result, the rear suspension will not extend as far as it should.

Spring Rates

If you are lighter or heavier than the average rider and cannot set the proper ride height without altering the correct spring pre-load, consider an aftermarket shock absorber spring.

A spring that is too soft for your weight forces you to add excessive spring pre-load to get the right race sag and, as a result, the rear end of the motorcycle is raised. This can cause the rear wheel to unload too much in the air and top out as travel rebounds. The rear end may top out from light braking, or kick sideways over lips and square-edged terrain. It may even top-out when you dismount your CRF.

Because of the great absorption quality of the shock bumper rubber, it may be difficult for you to notice when your CRF's suspension is bottoming. Some riders may think the damping or perhaps the leverage ratio is too harsh. In reality, the problem is most likely insufficient spring pre-load or a spring that is too soft. Either situation prevents utilizing the full travel.

Keep in mind that a properly adjusted suspension system may bottom slightly every few minutes at full speed. Adjusting the suspension to avoid this occasional bottoming may cost more in overall suspension performance than it is worth.

A spring that is too stiff for your weight will not allow the rear tyre to hook up under acceleration and will pass more bumps on to you.

Suspension Adjustments for Track Conditions

Soft Surface

On soft ground, sand, and especially mud, consider increasing compression damping front and rear.

Sand often requires a bit more rebound damping to minimize rear end kick. Although sand bumps are usually larger, there's more distance between them, giving the shock more time to recover.

You may want a little bit stiffer front suspension for sand tracks to help keep the front end up and improve straight-line stability.

In a muddy event, stiffer aftermarket springs front and rear may help, especially if you are heavier than the average rider. Your CRF may be undersprung because of the added weight of the clinging mud. This additional weight may compress the suspension too much and affect traction.

Hard Surface

For a fast, hard track with no large jumps, you can probably run the same spring as normal, but run softer damping both ways-compression and rebound. If you run softer rebound damping, the wheel will follow the rough ground and small bumps much better, and you will hook up better. With a lot of rebound damping, the wheel returns very slowly and doesn't contact the ground quickly enough after each bump. The result is a loss of traction and slower lap times.

Suspension Adjustment Guidelines

Follow the procedures described below to accurately adjust your CRF, using the methods described on pages 98 – 116. 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. – Install the optional stiff spring. (Adjust compression damping to a softer position and rebound damping to a stiffer position at this time.)
Mud track	Adjust to a stiffer position because mud build-up increases your CRF's weight. Example: – Turn the compression damping adjuster to a stiffer setting. – Install the optional stiff spring.

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. If that doesn't solve the problem, install the optional stiff spring.
	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. If initial and middle travel are stiff: – Install the optional stiff spring. If initial travel is stiff after installing the optional stiff spring: – Test softer compression damping adjustments in one-click increments. If initial travel is still soft after installing the optional stiff spring: – Test stiffer compression damping adjustments in one-click increments. If final travel is still soft after installing the optional stiff spring: – Increase the fork oil capacity in increments of 5 cm ³ (0.2 US oz, 0.2 Imp oz).
	Entire travel too soft: • Front end shakes. • Fork bottoms over any type of terrain.	– Install the optional stiff spring. – Test stiffer compression damping adjustments in one-click increments. – Increase rebound damping in one-click increments.

Suspension Adjustment Guidelines

	Symptom	Action
Stiff suspension	Initial travel too stiff: <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> – 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. <p>If the front end dives while cornering, reduce the rebound damping in one click increments. If that doesn't solve the problem, install the optional stiff spring. If the stiff spring makes the suspension too stiff over the full range of travel: test softer compression damping adjustments in one-click increments until the desired compression damping for initial travel is obtained.</p>
	Middle travel too stiff: <ul style="list-style-type: none"> • 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. 	<p>If initial travel isn't stiff:</p> <ul style="list-style-type: none"> – Test stiffer compression damping adjustments in one-click increments. (This should produce smooth fork action from initial to middle travel.) <p>If initial and middle travel is stiff:</p> <ul style="list-style-type: none"> – Test softer compression damping adjustments in one-click increments. – Reduce the rebound damping in one-click increments.
	Final travel too stiff: <ul style="list-style-type: none"> • Doesn't bottom on landings, but feels stiff. • Stiff on large bumps, especially downhill bumps. • Stiff on large bumps when cornering. 	<p>If initial and middle travel aren't stiff:</p> <ul style="list-style-type: none"> – Test stiffer compression damping adjustments in one-click increments. (This should produce smooth fork action from initial to middle travel.) <p>If final travel is still stiff after the above adjustment, or</p> <p>If initial and middle travel becomes stiff:</p> <ul style="list-style-type: none"> – Install the optional soft spring. – Test softer compression damping adjustments in one-click increments. <p>If the entire travel feels stiff after the above adjustment:</p> <ul style="list-style-type: none"> – Test softer compression damping adjustments in one-click increments until the desired initial travel compression damping is obtained. – Lower the oil capacity by 5 cm³ (0.2 US oz, 0.2 Imp oz).
	Entire travel too stiff: <ul style="list-style-type: none"> • Stiff suspension on any type of terrain. 	<ul style="list-style-type: none"> – Test softer compression damping adjustments in one-click increments. – Reduce the rebound damping in one-click increments. – Lower the oil capacity by 5 cm³ (0.2 US oz, 0.2 Imp oz).

Suspension Adjustment Guidelines

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 (+5 to 10 mm/0.2 to 0.4 in).
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. – Install the optional stiff spring. – Reduce standard Race Sag (–5 to 10 mm/0.2 to 0.4 in).

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. 2. If it still feels stiff, replace the spring with a softer spring (optional) and begin with the standard settings to softer settings.
Soft suspension	Entire travel too soft	1. Test stiffer high and low speed compression adjustments simultaneously. 2. If it still feels soft, replace the spring with a stiffer spring (optional) and begin with the standard settings to stiffer setting.
	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, and replace the spring with a stiffer spring (optional) if necessary.
	Suspension bottoms after landing	1. Test stiffer low speed compression adjustment. 2. If it still bottoms, test stiffer high and low speed compression adjustments, and replace the spring with a stiffer spring (optional) if necessary.
	Suspension bottoms after end of continuous bumps	1. Test softer rebound dumping adjustment. 2. If it still bottoms, test stiffer high and low speed compression adjustments and softer rebound damping adjustment, and replace the spring with a stiffer spring (optional) if necessary.

Carburetor Adjustments & Tuning Tips

The carburetor used on your CRF should perform suitably with the standard recommended settings under average load, climatic, and barometric conditions. However, to fine tune the engine's power output, the carburetor may require adjustments for specific competition needs.

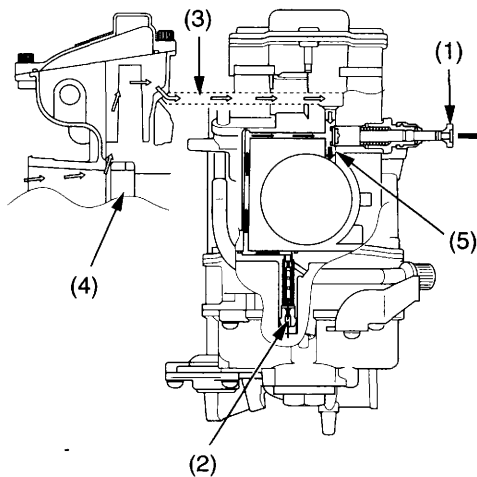
Optional jet needles, main jets, slow jets and leak jets are available for your CRF. See your Honda dealer.

Any engine or air cleaner modifications or the use of an aftermarket exhaust system may require jetting changes.

Carburetor Components

Cold Start Circuit

A very rich mixture must be delivered to the cylinder when a cold engine is being started. When the choke knob (1) is pulled out, fuel is metered by the starter jet (2) and is mixed with air from the air passage (3) (located above the throttle valve (4)) to provide a rich mixture for starting. The mixture discharges through the orifice (5) into the cylinder.

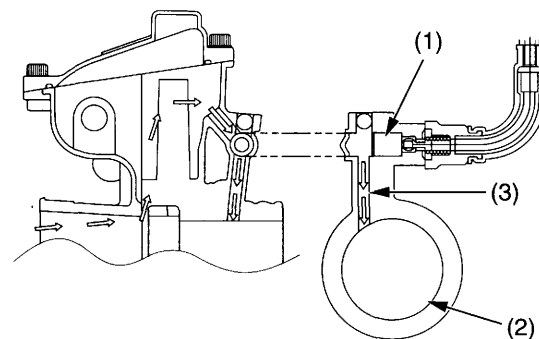


- (1) choke knob
- (2) starter jet
- (3) air passage

- (4) throttle valve
- (5) orifice

Hot Start Circuit

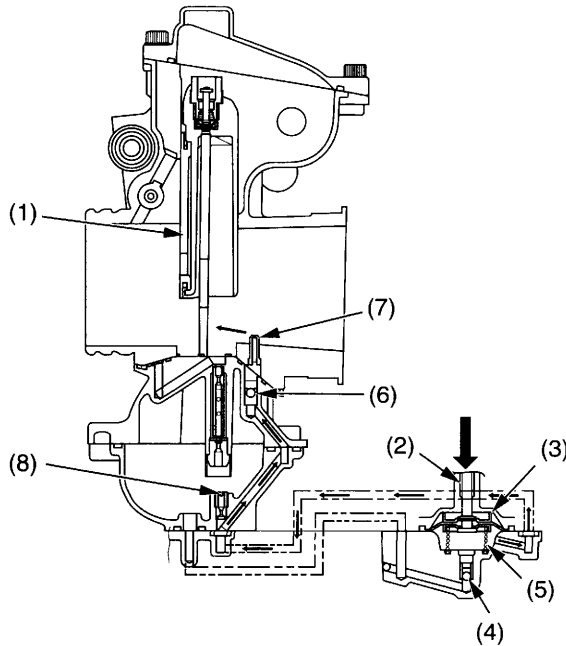
A lean mixture must be delivered to the cylinder when a hot engine is being started. When the hot start lever is pulled back, the hot start valve (1) opens, allowing air to be supplied to the main bore (2) through the hot start air passage (3). This extra air enters the air-fuel mixture from the slow circuit resulting in a lean condition.



- (1) hot start valve
- (2) main bore
- (3) hot start air passage

Accelerator Pump Circuit

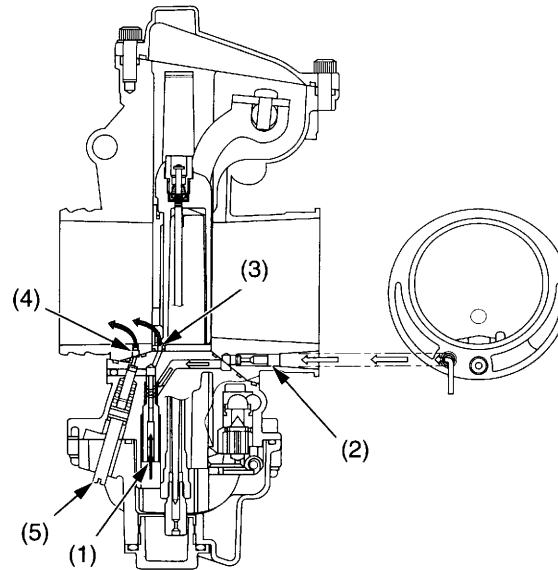
The accelerator pump circuit operates when the throttle is opened. As the throttle valve (1) opens, the pump rod (2) depresses the diaphragm (3). At this time, the inlet check valve (4) is shut resulting in a sharp increase in pressure in the pump chamber (5). The outlet check valve (6) then opens, supplying fuel to the main bore via the accelerator nozzle (7). Leak jet (8) operation is related to both the length of time before the fuel starts flowing after the opening of the throttle (time lag) and the flow amount.



- | | |
|-----------------------|------------------------|
| (1) throttle valve | (5) pump chamber |
| (2) pump rod | (6) outlet check valve |
| (3) diaphragm | (7) accelerator nozzle |
| (4) inlet check valve | (8) leak jet |

Slow Circuit

Fuel is metered by the slow jet (1) and mixed with air from the air passage (2). The mixture enters the venturi through the bypass (3) and pilot outlet (4) that has been metered by the pilot screw (5).



- | | |
|-----------------|------------------|
| (1) slow jet | (4) pilot outlet |
| (2) air passage | (5) pilot screw |
| (3) bypass | |

Main Circuit

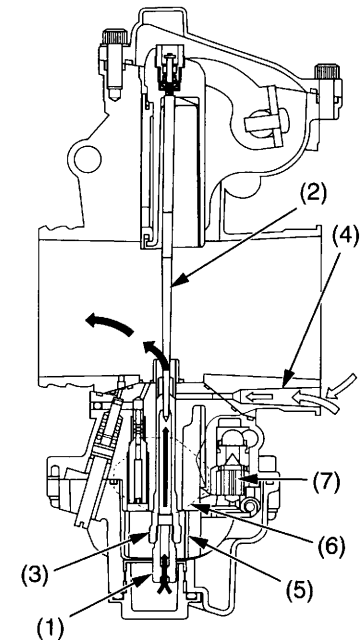
Fuel is metered by the main jet (1), jet needle (2) and needle jet (3). It is then mixed with air coming from the air jet (4) and enters the venturi past the needle jet.

Baffle Plate

The baffle plate (5) prevents foaming of fuel or abnormal fuel level around the main jet.

Float Bowl

The float (6) and float valve (7) operate to maintain a constant level of fuel in the float bowl.



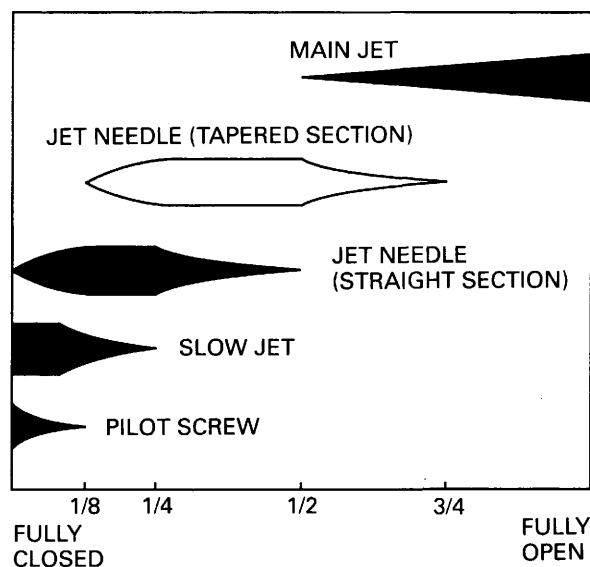
- | | |
|----------------|------------------|
| (1) main jet | (5) baffle plate |
| (2) jet needle | (6) float |
| (3) needle jet | (7) float valve |
| (4) air jet | |

Carburetor Adjustments & Tuning Tips

Carburetor Circuit Functions

The carburetor has several major circuits, each providing the fuel/air mixture over a given portion of throttle valve opening.

These major circuits overlap as shown below.



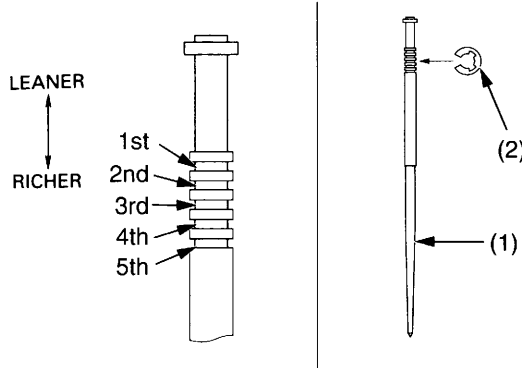
Main jet

The main jet affects fuel/air ratio from half (1/2) to full throttle (4/4). The size should be reduced at higher altitudes.

Honda carburetor jet sizes are numbered in increments of 2 or 3. When changing the main jet size, increase or decrease it gradually until the desired jetting is obtained. Because Honda jet size numbers do not correspond with other carburetor manufacturer's jet size numbers, use only Honda jets.

Jet Needle

The jet needle controls fuel/air mixture over fully closed to 3/4 throttle. The straight section (1) affects throttle response at smaller throttle openings. By changing the position of the clip (2) in its groove, you can improve acceleration at medium low and medium speed.



(1) straight section

(2) clip

Slow Jet and Pilot Screw

The slow jet and pilot screw affects fuel/air ratio over fully closed to 1/4 throttle.

Adjust the pilot screw to obtain the best off-idle performance.

- If the engine blubbers (rich) exiting a corner, turn the pilot screw clockwise to lean the mixture.
- If the engine surges (lean) exiting a corner, turn the pilot screw counterclockwise to richen the mixture.

The minimum to maximum range of pilot screw adjustment is 3/4 to 1 1/2 (ED, DE, U type), 1 1/8 to 1 7/8 (CM, IICM type) turns out from the lightly seated position.

If you exceed 1 1/2 (ED, DE, U type), 1 7/8 (CM, IICM type) turns out, the next larger slow jet is needed.

If you are under 3/4 (ED, DE, U type), 1 1/8 (CM, IICM type) turns out, the next smaller slow jet is needed.

Leak jet

The smaller the number, the smaller the jet bore diameter. This controls the amount of fuel returned to the float chamber under pressure, therefore the flow amount is increased or decreased. With a small jet, pressure is raised faster and the elapsed time before the fuel starts flowing is shortened.

Carburetor Removal

1. Remove the fuel tank (page 30).
2. Remove the subframe (page 32).
3. Turn the fuel valve OFF.
4. Drain the remaining fuel in the float bowl by loosening the drain screw (1).

⚠ WARNING

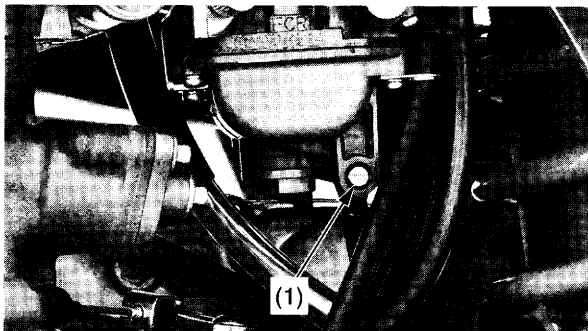
Petrol is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

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

Drain the carburetor into an approved petrol container and dispose of it in an approved manner (page 142).

NOTICE

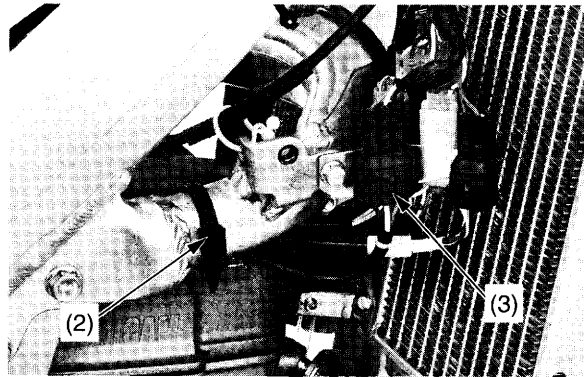
Improper disposal of drained fluids is harmful to the environment.



(1) drain screw

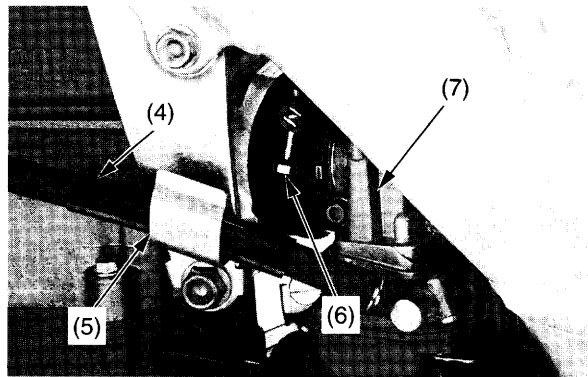
5. Tighten the drain screw.

6. Remove the wire band (2) and disconnect the throttle position sensor connector (3).



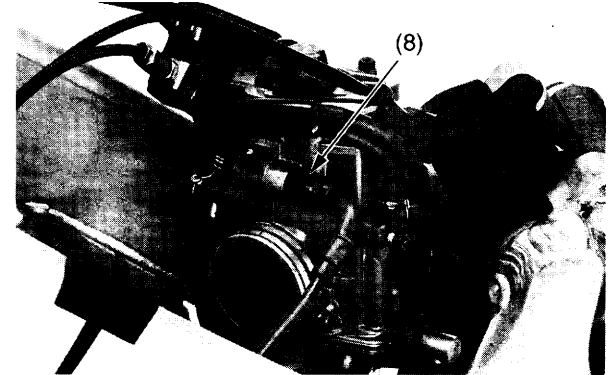
(2) wire band
(3) throttle position sensor connector

7. Remove the fuel hose (4) from the fuel hose guide (5).
8. Loosen the insulator band screw (6).
9. Remove the carburetor (7).



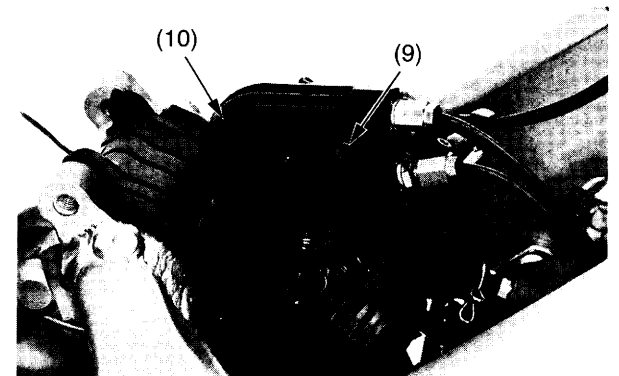
(4) fuel hose
(5) fuel hose guide
(6) insulator band screw
(7) carburetor

10. Remove the hot start cable holder (8).



(8) hot start cable holder

11. Remove the throttle drum cover bolt (9) and throttle drum cover (10).

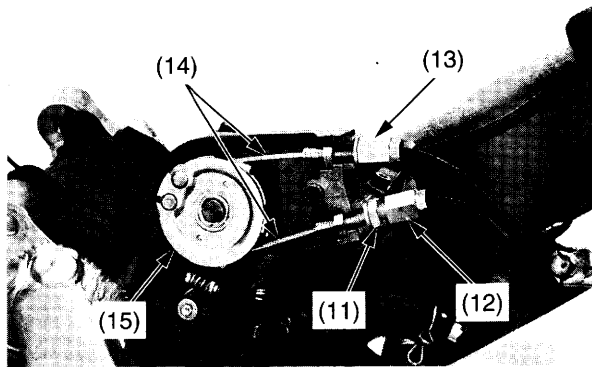


(9) throttle drum cover bolt
(10) throttle drum cover

(cont'd)

Carburetor Adjustments & Tuning Tips

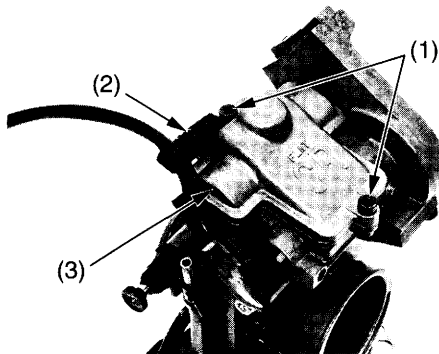
12. Loosen the throttle cable lock nut (11), adjuster (12), throttle cable bolt (13) and disconnect the throttle cables (14) from the throttle drum (15).



- (11) throttle cable lock nut
(12) adjuster
(13) throttle cable bolt
(14) throttle cables
(15) throttle drum

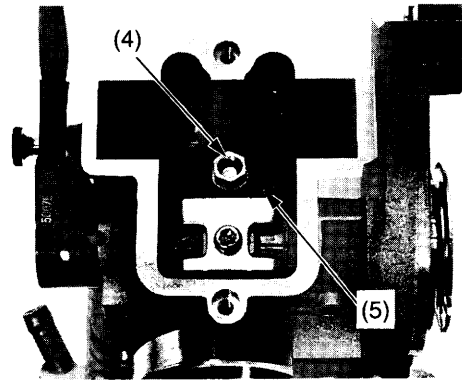
Carburetor Disassembly

1. Remove the carburetor top cover bolts (1), clamp (2) and carburetor top cover (3).



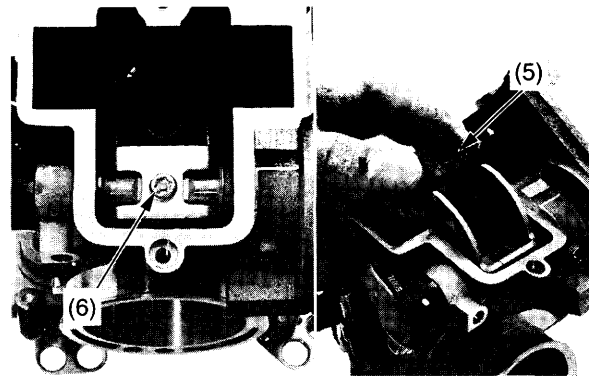
- (1) carburetor top cover bolts
(2) clamp
(3) carburetor top cover

2. Remove the jet needle/holder assembly (4) from the throttle valve (5).



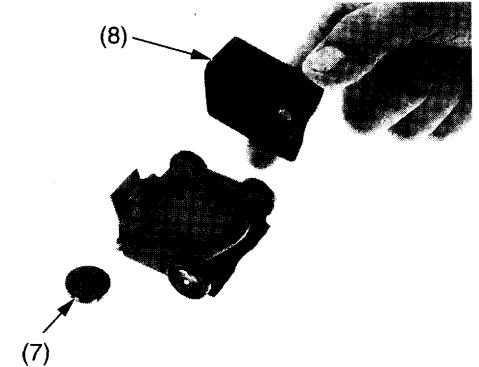
- (4) jet needle/holder assembly
(5) throttle valve

3. Remove the link arm torx screw (6) and throttle valve (5). When installing the link arm torx screw, apply a locking agent to the link arm torx screw threads.



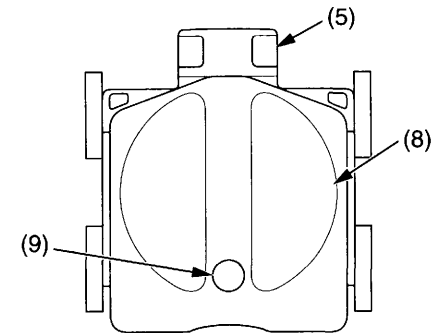
- (5) throttle valve
(6) link arm torx screw

4. Remove the throttle valve roller (7) and floating valve (8).



- (7) throttle valve roller
(8) floating valve

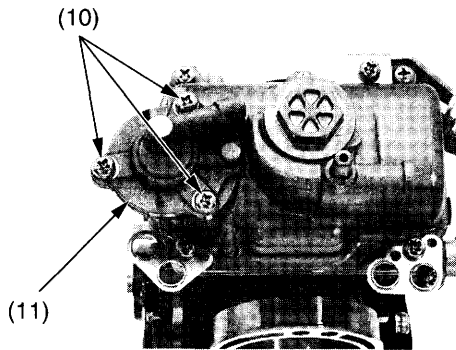
When installing the floating valve (8) onto the throttle valve (5) make sure the floating valve's flat side faces out and the hole (9) faces down.



- (5) throttle valve
(8) floating valve
(9) hole

Carburetor Adjustments & Tuning Tips

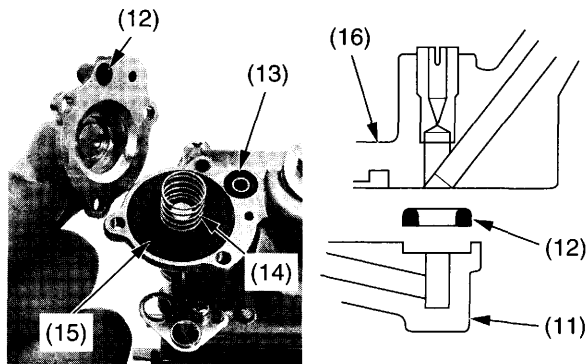
5. Remove the accelerator pump cover screws (10) and accelerator pump cover (11).



(10) accelerator pump cover screws
(11) accelerator pump cover

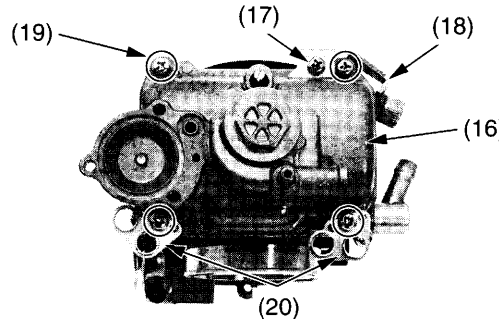
6. Remove the U-ring (12), O-ring (13), spring (14) and diaphragm (15).
Clean the diaphragm.

When installing the U-ring into the accelerator pump cover (11) make sure the U-ring flatside faces the accelerator pump cover, away from the float bowl (16).



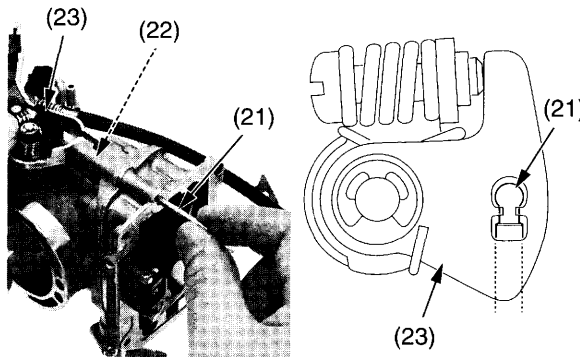
(11) accelerator pump cover
(12) U-ring
(13) O-ring
(14) spring
(15) diaphragm
(16) float bowl

7. Remove the holder screw (17), throttle stop screw holder (18), float bowl screws (19), tube guides (20) and float bowl (16).



(16) float bowl
(17) holder screw
(18) throttle stop screw holder
(19) float bowl screws
(20) tube guides

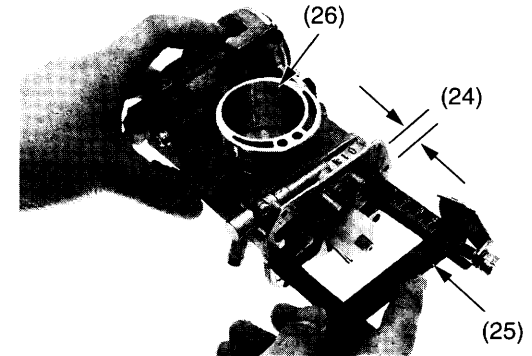
8. Remove the pump rod (21).
Clean the pump rod and rod passage (22).
Install the pump rod by pushing the rod forcibly into the link lever (23) until it snaps into place.



(21) pump rod
(22) rod passage
(23) link lever

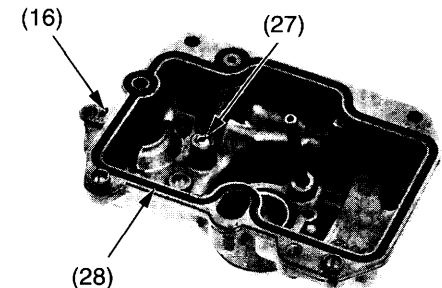
9. Measure the float level (24) with the float level gauge (25) while the float tab is just contacting the float valve with the carburetor intake (26) is facing up. The float level should be 6.0 mm (0.24 in).

If the float level is out of specification, adjust it by bending the float tab carefully.



(24) float level
(25) float level gauge
(26) carburetor intake

10. Remove the leak jet (27) and O-ring (28) from the float bowl (16).
Clean the leak jet.



(16) float bowl
(27) leak jet
(28) O-ring

Carburetor Adjustments & Tuning Tips

Carburetor Assembly

To assemble, reverse the disassembly procedures.
To install the carburetor, reverse the removal procedures.

Tighten the following parts to the specified torque.

float bowl screws:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

accelerator pump cover screws:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

carburetor top cover bolts:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

jet needle/holder assembly:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

link arm torx screw:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

throttle drum cover bolt:

3.4 N·m (0.3 kgf·m, 2.5 lbf·ft)

hot start cable nut:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

throttle cable lock nut:

4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)

throttle cable bolt:

4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)

leak jet:

0.3 N·m (0.03 kgf·m, 0.2 lbf·ft)

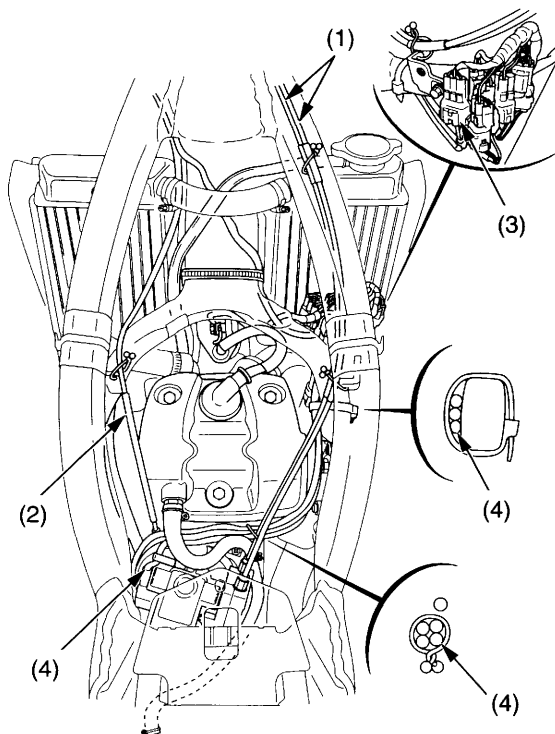
slow jet:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

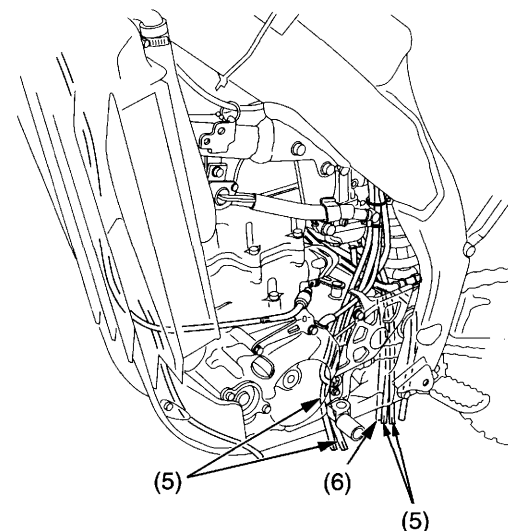
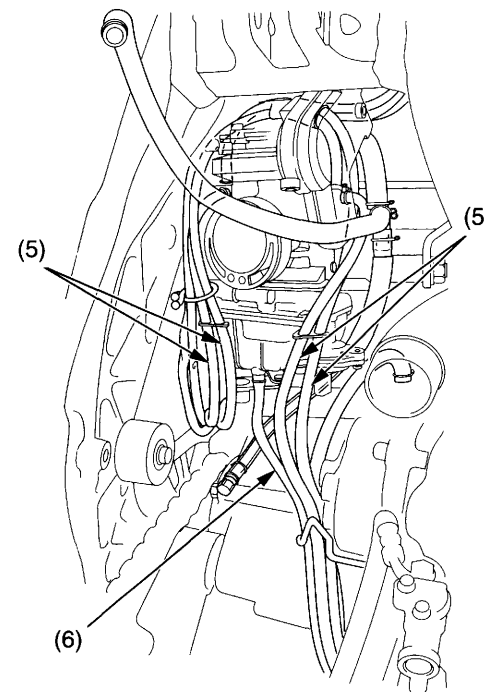
main jet:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

- Route the throttle cables (1), hot start cable (2) and throttle position sensor wire correctly.
- After installing the carburetor, adjust the throttle grip freeplay and hot start lever freeplay.
- After installing the carburetor, check the throttle position sensor connector (3) and wire (4) for correct routing.
- After installing the carburetor, check the air vent hoses (5) and overflow hose (6) for kinking or pinching and correct routing.
- Check that the U-ring and O-ring are in good condition. Replace them if necessary.



- (1) throttle cables
(2) hot start cable
(3) throttle position sensor connector
(4) throttle position sensor wire



- (5) air vent hoses
(6) overflow hose

Carburetor Adjustments & Tuning Tips (ED, DE, U Type)

Standard Tuning Recommendations

For the following recommendations to be accurate, you must use the standard settings as a baseline. Also, don't change any of the settings until you've determined what changes are necessary.

Adjustment	Standard settings
Pilot screw opening	1 1/4 turns out
Slow jet	#42
Jet needle	NKAT
Needle clip position	3rd groove
Main jet	#178
Float level	6.0 mm (0.24 in)
Identification number	FCR09C

Adjustments for Altitude & Temperature

All jetting recommendations are based on standard jetting with an unmodified engine. The following conditions can affect the fuel mixture.

Condition	Mixture will be:	Adjust to:
cold temperature	lean	richer
warm temperature	rich	leaner
dry air	lean	richer
high humidity	rich	leaner
high altitude	rich	leaner

All jetting is based on

- Standard jetting
- Unmodified Engine

TEMPERATURE ALTITUDE	CENT FAHR	-30°~ -17° -21°~ 0°	-18°~ -6° -1°~ 20°	-7°~ 5° 19°~ 40°	4°~ 16° 39°~ 60°	15°~ 27° 59°~ 80°	26°~ 38° 79°~ 100°	37°~ 49° 99°~ 120°
3,050 m (10,000 ft) to 2,300 m (7,500 ft)	PS: SJ: JN CLIP: JN: MJ:	1 1/4 42 3rd NKAT 178	1 1/4 42 3rd NKAT 175	1 42 2nd NKAT 175	1 42 2nd NKAT 172	1 40 2nd NKAT 172	3/4 40 2nd NKAT 170	3/4 40 2nd NKAT 170
2,299 m (7,499 ft) to 1,500 m (5,000 ft)	PS: SJ: JN CLIP: JN: MJ:	1 1/4 42 3rd NKAT 180	1 1/4 42 3rd NKAT 178	1 1/4 42 3rd NKAT 175	1 42 2nd NKAT 175	1 42 2nd NKAT 172	1 40 2nd NKAT 172	3/4 40 2nd NKAT 170
1,499 m (4,999 ft) to 750 m (2,500 ft)	PS: SJ: JN CLIP: JN: MJ:	1 1/2 42 4th NKAT 180	1 1/4 42 3rd NKAT 180	1 1/4 42 3rd NKAT 178	1 1/4 42 3rd NKAT 175	1 42 2nd NKAT 175	1 42 2nd NKAT 172	1 40 2nd NKAT 172
749 m (2,499 ft) to 300 m (1,000 ft)	PS: SJ: JN CLIP: JN: MJ:	1 1/2 45 4th NKAT 182	1 1/2 42 4th NKAT 180	1 1/4 42 3rd NKAT 180	1 1/4 42 3rd NKAT 178	1 1/4 42 3rd NKAT 175	1 42 2nd NKAT 175	1 42 2nd NKAT 172
299 m (999 ft) to 0 m Sea level	PS: SJ: JN CLIP: JN: MJ:	1 1/2 45 4th NKAT 182	1 1/2 45 4th NKAT 182	1 1/2 42 4th NKAT 180	1 1/4 42 3rd NKAT 180	STANDARD 1 1/4 42 3rd NKAT 178 JETTING	1 1/4 42 3rd NKAT 175	1 42 2nd NKAT 175

Legend

- PS: Pilot Screw opening from fully seated
- SJ: Slow Jet
- JN CLIP: Needle Clip position
- JN: Jet Needle
- MJ: Main Jet

Carburetor Adjustments & Tuning Tips (CM, IICM Type)

Standard Tuning Recommendations

For the following recommendations to be accurate, you must use the standard settings as a baseline. Also, don't change any of the settings until you've determined what changes are necessary.

Adjustment	Standard settings
Pilot screw opening	1 5/8 turns out
Slow jet	#42
Jet needle	NJGR
Needle clip position	3rd groove
Main jet	#178
Float level	6.0 mm (0.24 in)
Identification number	FCR00G

Adjustments for Altitude & Temperature

All jetting recommendations are based on standard jetting with an unmodified engine. The following conditions can affect the fuel mixture.

Condition	Mixture will be:	Adjust to:
cold temperature	lean	richer
warm temperature	rich	leaner
dry air	lean	richer
high humidity	rich	leaner
high altitude	rich	leaner

All jetting is based on

- Standard jetting
- Unmodified Engine

TEMPERATURE ALTITUDE	CENT FAHR	-30°~ -17° -21°~ 0°	-18°~ -6° -1°~ 20°	-7°~ 5° 19°~ 40°	4°~ 16° 39°~ 60°	15°~ 27° 59°~ 80°	26°~ 38° 79°~ 100°	37°~ 49° 99°~ 120°
3,050 m (10,000 ft) to 2,300 m (7,500 ft)	PS: SJ: JN CLIP: JN: MJ:	1 5/8 42 3rd NJGR 178	1 5/8 42 3rd NJGR 175	1 3/8 42 2nd NJGR 175	1 3/8 42 2nd NJGR 172	1 3/8 40 2nd NJGR 172	1 1/8 40 2nd NJGR 170	1 1/8 40 2nd NJGR 170
2,299 m (7,499 ft) to 1,500 m (5,000 ft)	PS: SJ: JN CLIP: JN: MJ:	1 5/8 42 3rd NJGR 180	1 5/8 42 3rd NJGR 178	1 5/8 42 3rd NJGR 175	1 3/8 42 2nd NJGR 175	1 3/8 42 2nd NJGR 172	1 3/8 40 2nd NJGR 172	1 1/8 40 2nd NJGR 170
1,499 m (4,999 ft) to 750 m (2,500 ft)	PS: SJ: JN CLIP: JN: MJ:	1 7/8 42 4th NJGR 180	1 5/8 42 3rd NJGR 180	1 5/8 42 3rd NJGR 178	1 5/8 42 3rd NJGR 175	1 3/8 42 2nd NJGR 175	1 3/8 42 2nd NJGR 172	1 3/8 40 2nd NJGR 172
749 m (2,499 ft) to 300 m (1,000 ft)	PS: SJ: JN CLIP: JN: MJ:	1 7/8 45 4th NJGR 182	1 7/8 42 4th NJGR 180	1 5/8 42 3rd NJGR 180	1 5/8 42 3rd NJGR 178	1 5/8 42 3rd NJGR 175	1 3/8 42 2nd NJGR 175	1 3/8 42 2nd NJGR 172
299 m (999 ft) to 0 m Sea level	PS: SJ: JN CLIP: JN: MJ:	1 7/8 45 4th NJGR 182	1 7/8 45 4th NJGR 182	1 7/8 42 4th NJGR 180	1 5/8 42 3rd NJGR 180	STANDARD 1 5/8 42 3rd NJGR 178	1 5/8 42 3rd NJGR 175	1 3/8 42 2nd NJGR 175

Legend

- PS: Pilot Screw opening from fully seated
- SJ: Slow Jet
- JN CLIP: Needle Clip position
- JN: Jet Needle
- MJ: Main Jet

Special Tuning Conditions

There are some unique atmospheric conditions or situations that may require additional adjustments.

It should not be necessary to go more than one jet size richer or leaner to fine tune your CRF. If larger jetting changes are necessary, check for air leaks, blocked or restricted exhaust or fuel systems, or a dirty air cleaner.

Condition	Main Jet Adjustment
long straights	next larger
uphill sections	
sand	
mud	next smaller
high humidity	
raining	
hotter than 45°C (113°F)	

Once you've adjusted the carburetor for temperature and altitude, it shouldn't need major readjustment unless race conditions change drastically. However, there are some unique atmospheric conditions or race day situations that may require additional adjustments. They are as follows.

To prevent engine damage, always adjust the main jet before adjusting the jet needle. Always choose the next richer jet if there is any doubt so there is a margin for safety.

- Main Jet
- Go richer on the main jet, by one size, when: the track has a very long straightaway or uphill section, a high percentage of sand, or the track is muddy.
 - Go leaner on the main jet, by one size, when: it is very humid or raining, or it is hotter than 45°C (113°F).

After using the chart, and making any adjustments for special conditions, it shouldn't be necessary to go more than one jet size richer or leaner to fine tune your CRF. If larger jetting changes are necessary, check for worn crankshaft seals, air leaks, blocked or restricted exhaust or fuel systems, or a dirty air cleaner.

Pre-Adjustment Checks

Before adjusting carburetor settings, check the following:

- air cleaner
- air leaks
- float level
- clogged carburetor jets
- spark plug fouling (improper heat range or other cause)
- freshness of fuel
- owner modifications (such as exhaust system, holes in the air cleaner, etc.)
- ignition timing
- compression

If the above check out, then, adjust the carburetor for your specific racing conditions. Engine response and appearance of the firing end of a spark plug are highly indicative of the engine condition.

Refer to the list on pages 155 and 156 for the optional carburetor parts.

To prevent engine damage, always adjust the main jet before adjusting the jet needle. If there is any doubt — always choose the next richer jet so there is a margin for safety.

Carburetor Adjustments & Tuning Tips

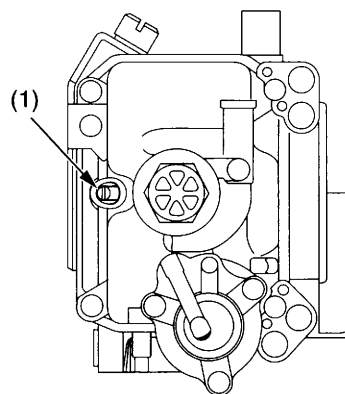
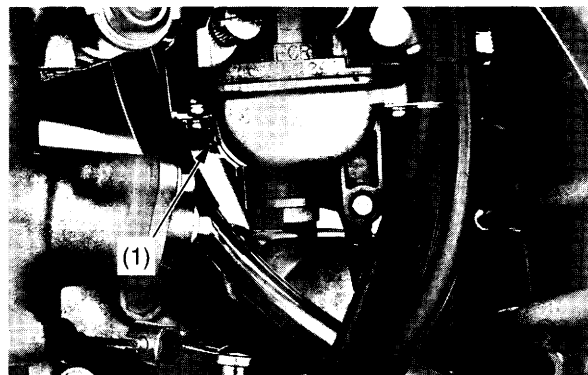
Carburetor Minor Adjustments

The standard carburetor settings are ideal for the following conditions: sea level altitude, and 20°C (68°F) air temperature. If your conditions are different, you may need to adjust the carburetor settings, using the tuning information on pages 128 – 129. Confirm your settings are correct before proceeding.

Minor Adjustments

1. Adjust the carburetor setting using the tuning information on pages 128 – 129.
2. When the engine is warm enough to run without the choke, push the choke knob in to its off position.
3. Adjust the pilot screw (1) to obtain the best off-idle performance.
 - If the engine blubbers (rich) exiting a corner, turn the pilot screw clockwise to lean the mixture.
 - If the engine surges (lean) exiting a corner, turn the pilot screw counterclockwise to richen the mixture.

The minimum to maximum range of pilot screw adjustments is 3/4 to 1 1/2 (ED, DE, U type), 1 1/8 to 1 7/8 (CM, IICM type) turns out from the lightly seated position. If you exceed 1 1/2 (ED, DE, U type), 1 7/8 (CM, IICM type) turns out, the next larger slow jet is needed. If you are under 3/4 (ED, DE, U type), 1 1/8 (CM, IICM type) turns out, the next smaller slow jet is needed.



(1) pilot screw

Adjustment Procedure

1. Warm up the engine.
2. Make two or three laps of a course with the standard setting or corrected jetting (page 128), and standard spark plug. Note engine acceleration and other engine conditions in relation to throttle opening. Verify carburetion by removing the spark plug and reading its firing end (page 132). It may take more than two or three laps to get a good spark plug reading with a new spark plug.
3. Change carburetor settings or select suitable carburetor jets, taking into consideration the engine conditions and factors for temperature and altitude (page 128).

⚠ WARNING

Petrol 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.

If you've determined that the main and slow jets must be changed, you must rotate the carburetor and remove the float bowl plug.

4. Turn the fuel valve OFF, and disconnect the fuel line from the fuel valve.
5. Drain the remaining fuel in the float bowl by loosening the drain screw (2). Then tighten the drain screw after draining the fuel.

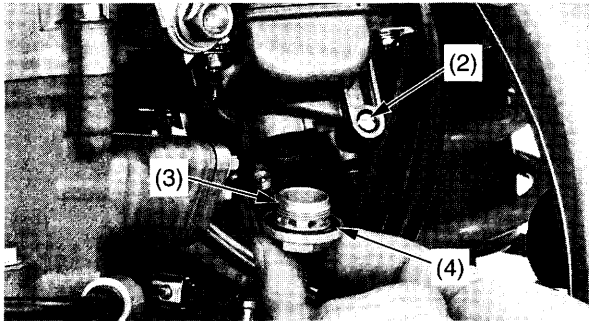
Drain the carburetor into an approved petrol container and dispose of it in an approved manner (page 142).

NOTICE

Improper disposal of drained fluids is harmful to the environment.

Carburetor Adjustments & Tuning Tips

6. Loosen the connecting and insulator band screws. Rotate the carburetor. Remove the float bowl plug (3). Check the float bowl plug O-ring (4) is in good condition. Replace it if necessary.



(2) drain screw
(3) float bowl plug
(4) float bowl plug O-ring

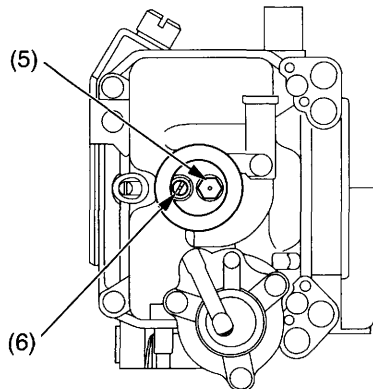
7. Change the main jet (5) and slow jet (6) as required.

Main jet:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

Slow jet:

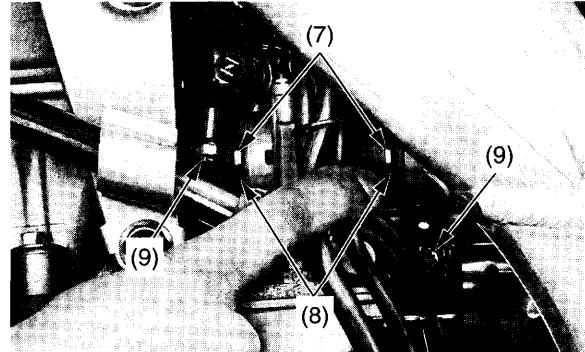
1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)



(5) main jet
(6) slow jet

8. Reinstall the float bowl plug and tighten it to the specified torque:
4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)

9. Rotate the carburetor and align the tabs (7) on the carburetor with the grooves (8) on the insulator and connecting tube. Tighten the connecting tube and insulator band screws (9).



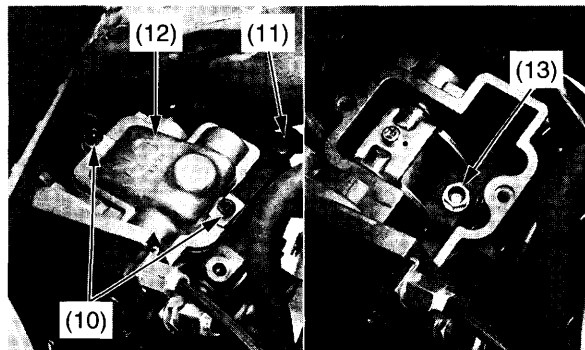
(7) tabs
(8) grooves
(9) insulator band screws

If you've determine that the jet needle or clip position of jet needle must be changed, you must remove the carburetor top.

10. Remove the fuel tank (page 30).

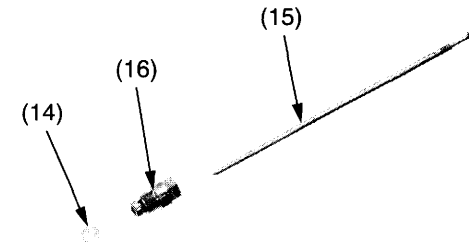
11. Remove the carburetor top cover bolts (10), clamp (11) and carburetor top cover (12).

12. Remove the jet needle/holder assembly (13).



(10) carburetor top cover bolts
(11) clamp
(12) carburetor top cover
(13) jet needle/holder assembly

13. Remove the clip (14) and jet needle (15) from the jet needle holder (16).



(14) clip
(15) jet needle
(16) jet needle holder

14. Change the clip position of jet needle or jet needle as required.

15. Reinstall the jet needle/holder assembly, and tighten it to the specified torque:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

16. Install the carburetor top, clamp and bolts, then tighten the carburetor top cover bolts to the specified torque:

2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

17. Install the fuel tank (page 31).

18. Start the engine.

If the engine idle speed is too high or too low or engine is not idling, adjust the engine idle speed (page 48).

19. Repeat steps 4 – 17 until the engine gives maximum power with the correct spark plug reading. It is always better to jet a little rich than a little lean. It is advisable to record the settings, course conditions, lap times, and climatic and barometric conditions for future reference.

Carburetor Adjustments & Tuning Tips

Spark Plug Reading

Refer to *Spark Plug* on page 54.

Check any jetting change by reading the spark plug. 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.

Before removing the spark plug, clean the spark plug area thoroughly to prevent dirt from entering the cylinder.

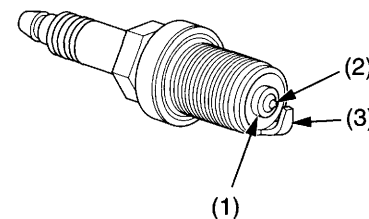
Ride for 10 – 15 minutes before taking a plug reading. A new plug will not colour immediately.

To obtain an accurate reading of a new spark plug:

1. Accelerate at full throttle on a straight.
2. Push the engine stop button and pull the clutch lever in to release the clutch.
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 centre electrode (2) should appear clean and colourless with a gray ring around the centre electrode where it exits the porcelain. Metallic specks indicate lean jetting that is removing metal from the piston. Black sooty streaks on the porcelain indicate rich jetting.

NOTICE

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



(1) porcelain insulator (3) side electrode
(2) centre electrode

Spark Plug Colouring Guidelines

Condition	Spark Plug Appearance	Mixture
Normal	Dark brown to light tan colour with dry electrode	correct
Overheating (Lean)	Light gray or white colour	lean
Wet (Rich)	Wet or sooty	rich

Remember that in addition to improper jetting:

- 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, use of a less-restrictive aftermarket exhaust system, or a hole or holes (deliberate or unintentional) in the air cleaner housing.
- A rich condition can be caused by a plugged or dirty air cleaner, use of a more-restrictive aftermarket exhaust system, a clogged spark arrester, or excessive oil on the air cleaner. Excessive smoking will occur.

The steering damper can be adjusted for riding conditions by using following method:

- **Damping** — Turning the steering damper adjuster adjusts how quickly the steering damper extends and retracts.

Steering Damper Adjustment

Damping Adjustment

The steering damper adjuster (1) has 11 positions or more. Turning the adjuster one full turn clockwise advances the adjuster six positions. To adjust the adjuster to the standard setting, proceed as follows:

Turn the adjuster clockwise until it will no longer turn (lightly seats). This is the full hard position.

The adjuster is set in the standard position when the adjuster is turned counterclockwise 9 (ED, U, CM, IICM type), 5 (DE type) clicks.

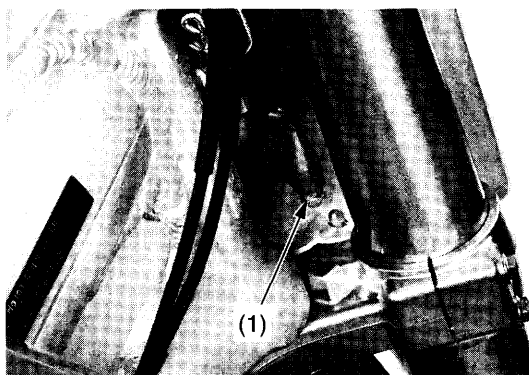
Damping can be increased by turning the adjuster clockwise.

NOTICE

Always start with full hard when adjusting damping.

Do not turn the adjuster more than the given positions or the adjuster may be damaged.

Be sure that the steering damper adjuster is firmly located in a detent, and not between positions.



(1) steering damper adjuster

Steering Damper Adjustment Guidelines

Follow the procedures described below to accurately adjust your CRF, using the methods described on this page.

Symptoms and Adjustment

- Always begin with the standard settings.
- Turn the steering damper adjuster in one-click increments at a time. Adjusting two or more clicks at a time may cause you to pass over the best adjustment. Test ride after each adjustment.

Symptom	Action
Steering is wobbling on large bumps	Adjust the steering damper adjuster to stiffer setting.
Steering is wobbling at sand track	Adjust the steering damper adjuster to stiffer setting.
Steering is heavy when cornering	Adjust the steering damper adjuster to softer setting.

The following suggestions may improve a specific concern. Subtle changes in overall handling may also be noted.

Rear End

If you have a problem with rear wheel traction, raise the rear end of your CRF by increasing the rear spring pre-load. Instead of running 100 mm (3.9 in) of sag, you can run 90 mm (3.5 in) so the rear of the bike will sit a little higher. This should produce more traction because of the change to the swingarm and location of your CRF's centre of gravity.

If you have a problem with the steering head shaking when you use the front brake hard or if your CRF wants to turn too quickly, lower the rear of the motorcycle by reducing the rear 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.

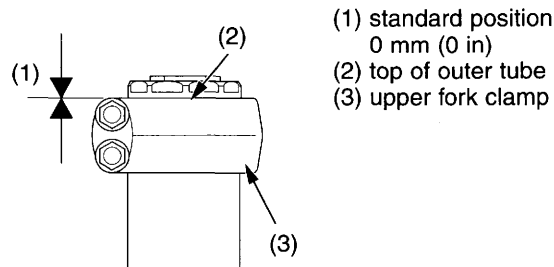
Keep the race sag adjustment (page 114) in the 90 – 110 mm (3.5 – 4.3 in) range.

Fork Height/Angle

The position of the fork tube in the clamp is not adjustable. Align the top of the outer tube (not the top of the fork cap) with the top of the upper fork clamp.

Standard Position

The standard position (1) align the top of the outer tube (2) (not the top of the fork cap) with the top of the upper fork clamp (3).



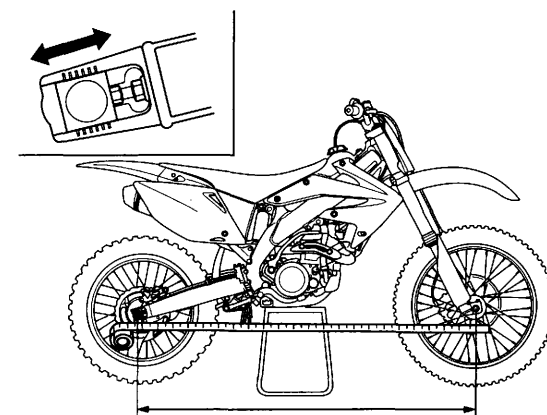
Wheelbase

Adjusting your CRF'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 CRF 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 CRF, you will probably find that the standard setting or a shorter wheelbase will offer more overall benefits.



Gearing

You can “adjust” the power delivery of the standard engine to suit track conditions by changing gearing. This allows you to utilize a different portion of the engine’s power range at a given throttle setting. New gearing may provide the change you are looking for without the need to consider further modifications.

The portion of your engine’s power range you use can be adjusted by changing the final drive ratio with different sized rear sprockets. Gearing changes allow you to more closely match the type of terrain and the available traction. Normally, a change of one tooth on the driven sprocket will be sufficient.

There is a choice of both higher and lower final drive ratios with two optional driven sprockets. Like the optional springs, these sprockets are listed in the Optional Parts List section of this manual (pages 155, 156).

Unless you have the required mechanical knowhow, tools, and an official Honda Shop Manual, sprocket changing should be done by your Honda dealer.

Higher Gearing (less driven sprocket teeth)

- increases top speed in each gear (provided the engine will pull the higher gearing)
- reduces frequency of shifting (wider gear ratios)
- reduces engine rpm at a given throttle setting or ground speed (which may allow better rear wheel traction on slippery or loose terrain)

However:

- the engine may not pull the higher gearing
- the spacing between gears may be too wide
- engine rpm may be too low

Lower Gearing (more rear sprocket teeth)

- decrease top speed in each gear
- increases frequency of shifting (narrower gear ratios)
- increases engine rpm at a given throttle setting or ground speed (which may provide more power-to-the-ground on good traction surfaces)

However:

- spacing between gears may be too narrow
- engine rpm may be too high

Some tracks may be watered heavily prior to the first race, then lightly or not at all during the day. This results in a track surface that is slippery during the first few races, then changes from good to great and back to good and possibly ends the day with a slick rock-hard consistency. Ideally, your gearing should be adjusted to suit all these conditions.

- Wet and slippery or sandy conditions: use a higher gear (less teeth) to keep engine rpm down, and avoid unwanted wheelspin. The engine may bog in certain corners so you’ll need to slip the clutch to compensate; downshifting may be too drastic a change in speed.
- Average conditions: use the standard sprocket.
- Hard (but not slippery) track conditions: use lower gearing (more teeth) to keep the engine rpm high where the engine produces the most power. This may require an extra upshift on certain sections or perhaps you can just rev it out a bit longer.

For tight tracks, consider lower gearing to avoid having to slip the clutch frequently. Repeated fanning or pulling of the clutch lever in a turn to raise engine min^{-1} (rpm) may eventually damage the clutch system.

A gearing change may help for riding in sand, where you want to keep the front end light so it can float from the peak of one sand whoop to the next. Generally, with higher gearing, it is easier to maintain that perfect attitude (maximum rear wheel traction and a light front end) because you remain in the powerband longer in each gear. The higher gearing allows you to steer more efficiently with throttle control and body English.

If you are riding a track with sections where you choose to over-rev the engine temporarily rather than shifting up, higher gearing might help.

Sometimes you have to sacrifice performance on one section of the track to gain a better overall time. Your goal is the fastest overall lap time, even if the cost is some sections where the gearing feels wrong.

If you decide to try a gearing change, have someone check your times with a stopwatch (before and after the change) to get an accurate appraisal of the change. “Seat-of-the-pants” feelings can’t be trusted. Eliminating wheelspin with a gearing change can make you feel like you’re going slower when, in reality, you’ve decreased your time by increasing your speed with better traction.

These gearing recommendations should be evaluated by considering your ability, your riding style, and the track.

Choosing the correct tyre tread pattern and rubber compound can affect your placing in competition. The tyres on your CRF offer a “happy medium” for the variety of soil conditions the majority of riders are likely to encounter.

Experienced competitors often switch to tyres developed for specific terrain conditions. If you do switch, stay with the factory recommended sizes. Other tyres may affect handling or acceleration.

Be aware that tyre sizes (width and aspect ratio) do vary from manufacturer to manufacturer or even among tyres made by the same manufacturer. Variations in tyres, especially the sidewall profile, can change the attitude of your CRF and its handling. Tyre variations that raise or lower the rear of your CRF have a more significant effect on handling than variations in front tyres which, generally, don’t vary as much. Often, you can see or feel the change in tyre size. Another way to check is to measure the rolling circumference of the old and new tyres. A higher profile tyre will have a larger rolling circumference.

If you do switch to tyres designed for special terrain use, remember they will be less acceptable in other circumstances. For example, an aggressive mud tyre will give excellent grip on wet, foamy terrain, but less impressive grip on a hard surface.

If you choose a tyre 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 tyre manufacturer representatives and dealers.

Some general recommendations for specific terrain follow:

Hard, Slick Soil

Use tyres 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 tyres tend to wear more quickly than standard tyres 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 tyre that is similar in construction to those needed for tacky soil and mud, but with a few more knobs.

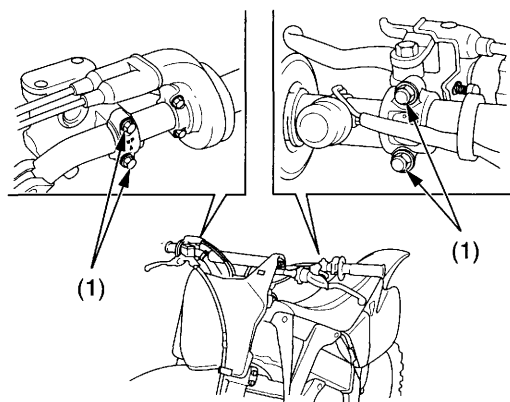
Personal Fit Adjustments

The following suggestions may make your ride both more comfortable and more responsive to your control input.

Control Positioning

- Position the control levers so that you can use them comfortably when seated and standing.
- Adjust the mounting bolt 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.

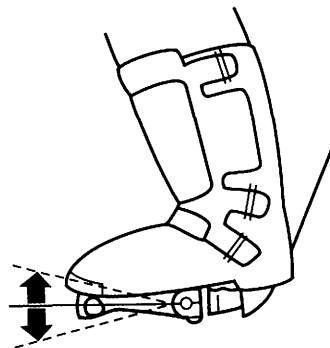
Apply Honda Thread Lock or an equivalent to the threads of these bolts prior to adjustment to help ensure the correct torque is retained. Tighten the top bolts first.



(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.

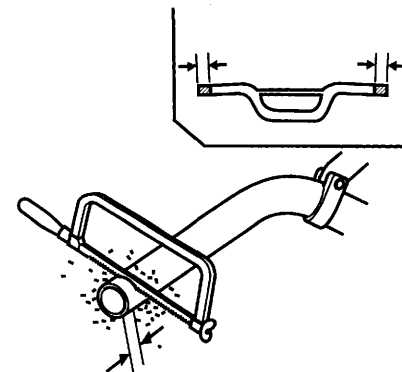
- Position the shift lever and rear brake pedal so they are close to your boot for rapid access, but not so close that either is depressed when sitting or standing comfortably on your CRF.



Handlebar Position, Width & Shape

- Position the handlebar so that both gripping the bar and operating the controls is comfortable while both seated and standing, while riding straight ahead and turning. Tighten the forward bolts first.
- The handlebar position may be moved forward either 3 mm (using optional handlebar lower holders) or 6 mm (by rotating the standard holders 180 degrees). Refer to the Shop Manual for installation instructions. Be sure to check control cable and wiring harness routing after the adjustment.

- Handlebar width can be trimmed with a hacksaw to better suit your particular shoulder width and riding preference. Think this through carefully and cut off just a small amount at a time from both sides equally. It is obviously much easier to make the handlebar narrower than it is to add material.



- Chamfer the edges to remove burrs and other irregularities or roughness after sawing the handlebar.
- An alternate handlebar shape, through varying rise or rearward sweep dimensions, will provide further adjustment to riding position and may better suit your particular body size or riding style. Each of the ergonomic dimensions of the machine were determined to suit the greatest possible number of riders based on an average size rider.

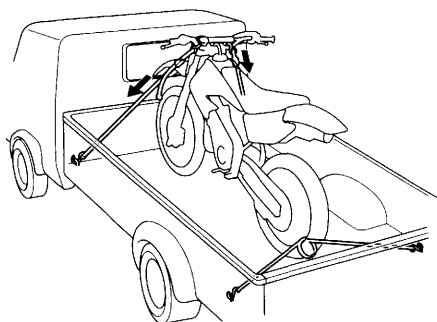
Here's helpful advice on how to transport and store your Honda, as well as three troubleshooting flow charts.

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Transporting Your Motorcycle

If you use a truck or motorcycle trailer to transport your Honda, we recommend that you follow these guidelines:

- Use a loading ramp.
- Make sure the fuel valve is off.
- 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 CRF, 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 your CRF. 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 CRF on its side. This can damage the motorcycle, and leaking petrol could be a hazard.

If you won't be riding for an extended period, such as during the winter, thoroughly inspect your Honda and correct any problem before storing it. That way, needed repairs won't be forgotten and it will be easier to get your CRF 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 CRF. If your CRF 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 37).
3. Change the transmission oil (page 40).
4. Drain the fuel tank and carburetor into an approved petrol container.
Turn the fuel valve OFF and loosen the carburetor drain screw. Drain petrol into an approved container. Retighten the drain screw.

⚠ WARNING

Petrol 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.

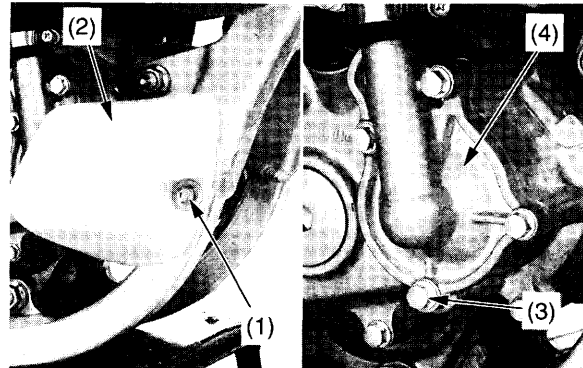
5. Remove the bolt (1) and right engine guard (2).

6. Remove the radiator cap and coolant drain bolt/sealing washer (3) at the water pump (4) to drain coolant.

After the coolant has been completely drained, reinstall the drain bolt with a new sealing washer and radiator cap.

Coolant drain bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)



- (1) bolt
(2) right engine guard
(3) coolant drain bolt/sealing washer
(4) water pump

7. Lubricate the drive chain.
8. Inflate the tyres to their recommended pressures.
9. Place your CRF on an optional workstand or equivalent to raise both tyres off the ground.
10. Stuff a rag into the muffler outlet. Then tie a plastic bag over the end of the muffler to prevent moisture from entering.
11. Store your CRF in an unheated area, free of dampness, away from sunlight, with a minimum of daily temperature variation.
12. Cover your CRF 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 CRF.
Change the engine and transmission 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 34).
4. Pour a fresh recommended coolant mixture (page 41) slowly into the radiator filler hole up to the filler neck.

Capacity:

1.12 ℓ (1.18 US qt, 0.99 Imp qt)

after disassembly

1.03 ℓ (1.09 US qt, 0.91 Imp qt)

after draining

Lean your CRF slightly right and left several times to bleed trapped air in the cooling system.

If the coolant level lowers, add coolant and repeat the above procedure.

Install the radiator cap securely.

5. Perform all maintenance checks (page 9).

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 CRF. 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, petrol, 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 centre. Call your local of public works or environmental services to find a recycling centre in your area and get instructions on how to dispose of non recyclable wastes.

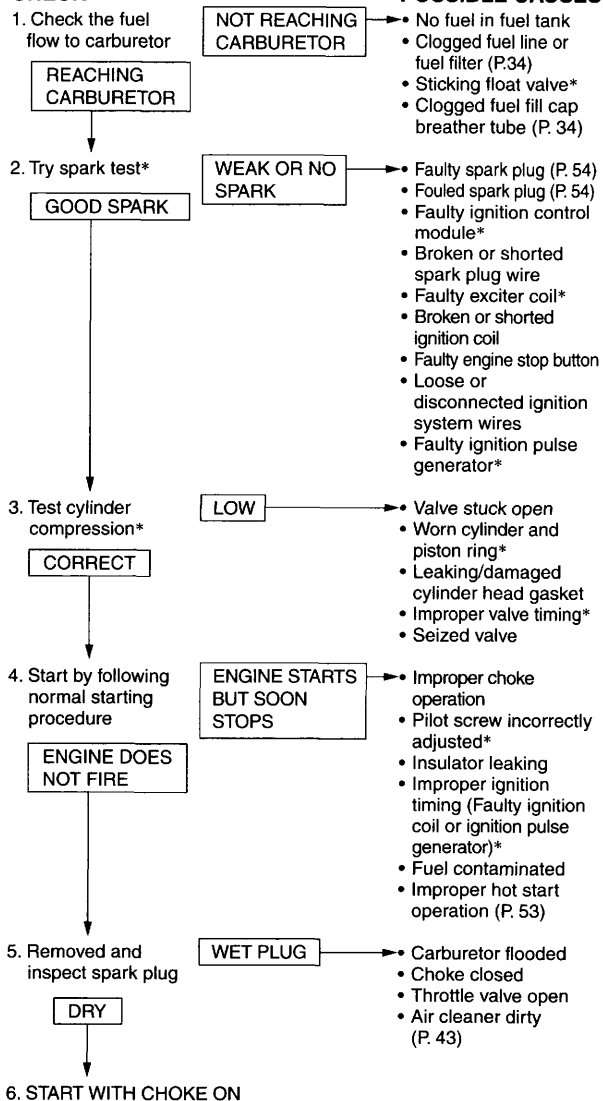
NOTICE

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 the Honda Shop Manual are followed by an asterisk (*).

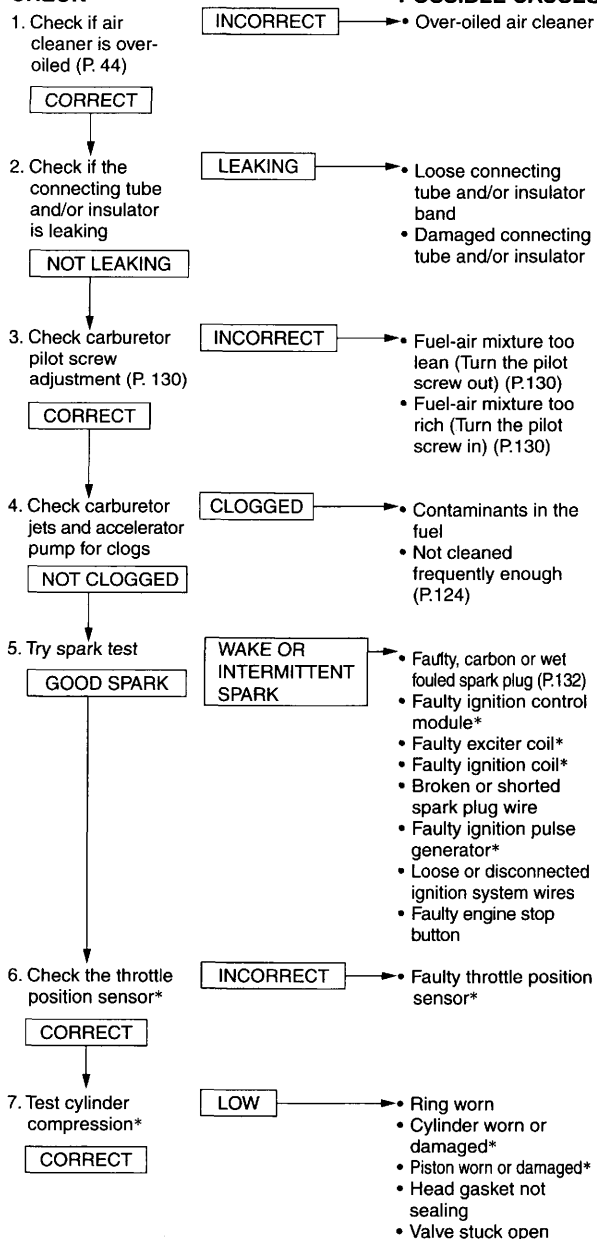
ENGINE DOES NOT START OR IS HARD TO START

CHECK



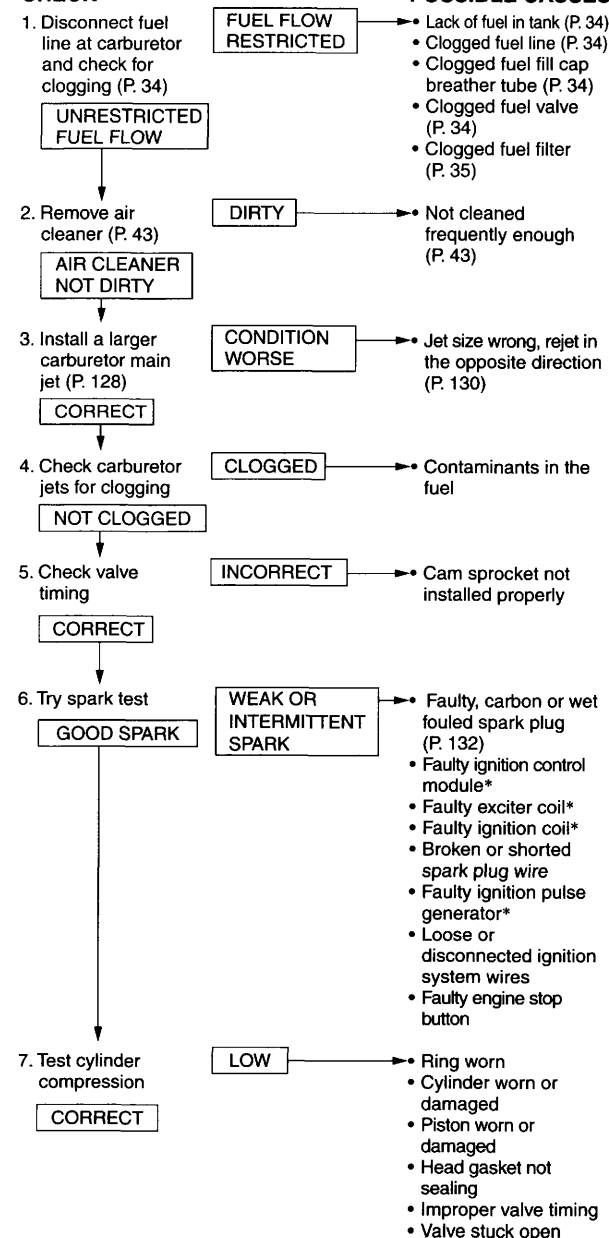
POOR PERFORMANCE AT LOW AND UNSTABLE IDLE SPEED

CHECK



POOR PERFORMANCE AT HIGH SPEED

CHECK



This section contains dimensions, capacities, and other technical data.

Vehicle Identification	146
Specifications	147
Torque Specifications	149
Petrol Containing Alcohol.....	152
Competition Logbook	153
Optional Parts List.....	155
Spare Parts & Equipment.....	157
Wiring Diagram.....	158

Vehicle Identification

Serial Numbers

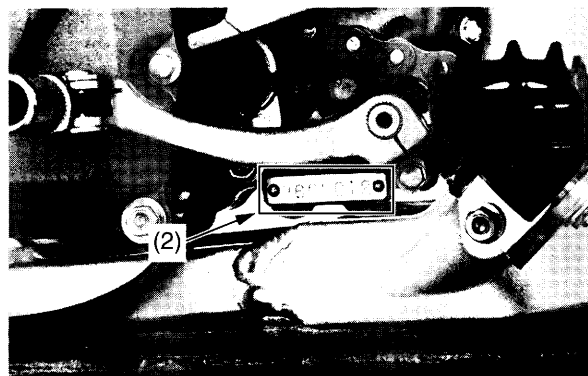
The VIN and engine serial number are required when you register your CRF. They may also be required when ordering replacement parts.

The VIN (vehicle identification number) (1) is stamped on the right side of the steering head.



(1) VIN

The engine number (2) is stamped on the left crankcase.



(2) engine number

Specifications (ED, DE, U Type)

Item	Metric	English
Dimension		
Overall length	2,189 mm	86.2 in
Overall width	825 mm	32.5 in
Overall height	1,262 mm	49.7 in
Wheelbase	1,489 mm	58.6 in
Seat height	955 mm	37.6 in
Footpeg height	446 mm	17.6 in
Ground clearance	339 mm	13.3 in
Frame		
Type	Twin tube	
F. suspension	Telescopic fork, travel 280 mm (11.0 in) stroke 315 mm (12.4 in)	
R. suspension	Pro-link, travel 320 mm (12.6 in)	
Tyre size, front (ED, DE Type)	80/100 – 21 M/C 51R MST	
	PIRELLI	MT32A
Tyre size, rear (ED, DE Type)	110/90 – 19 NHS	
	PIRELLI	MT32
Tyre size, front (U Type)	80/100 – 21 51M	
	DUNLOP	D742FA
Tyre size, rear (U Type)	110/90 – 19 62M	
	DUNLOP	D756
Tyre type	bias-ply, tube	
Tyre pressure, front (cold)	100 kPa (1.0 kgf/cm ² , 15 psi)	
Tyre pressure, rear (cold)	100 kPa (1.0 kgf/cm ² , 15 psi)	
F. brake, swept area	Single disc brake 334.5 cm ² (51.8 in ²)	
R. brake, swept area	Single disc brake 391.1 cm ² (60.6 in ²)	
Fuel recommendation	unleaded petrol, research octane number of 95 or higher	
Fuel tank capacity	7.2 ℓ	1.90 US gal,
		1.58 Imp gal
Caster angle	26°46'	
Trail length	111.4 mm	4.39 in
Fork oil capacity (except fork damper per leg) (ED, U Type)	406.5 cm ³	13.75 US oz
		14.31 Imp oz
Fork oil capacity (except fork damper per leg) (DE Type)	404 cm ³	13.7 US oz
		14.2 Imp oz

Item	Metric	English
Engine		
Type	Liquid cooled, 4-stroke	
Cylinder arrangement	Single 8° inclined from vertical	
Bore and stroke	96.0 x 62.1 mm	3.78 x 2.44 in
Displacement	449.4 cm ³	27.41 cu-in
Compression ratio	12.0 : 1	
Valve clearance (cold)	Intake: 0.16 ± 0.03 mm (0.006 ± 0.001 in) Exhaust: 0.28 ± 0.03 mm (0.011 ± 0.001 in)	
Engine oil capacity after draining	0.66 ℓ	0.70 US qt 0.58 Imp qt
after draining and oil filter change	0.69 ℓ	0.73 US qt 0.61 Imp qt
after disassembly	0.85 ℓ	0.90 US qt 0.75 Imp qt
Transmission oil capacity after draining	0.59 ℓ	0.62 US qt 0.52 Imp qt
after disassembly	0.67 ℓ	0.71 US qt 0.59 Imp qt
Carburetor		
Type	Piston valve	
Identification number	FCR09C	
Main jet (standard)	# 178	
Jet needle (standard)	NKAT	
Needle clip position (standard)	3rd groove	
Slow jet (standard)	# 42	
Pilot screw opening	1 1/4 turns out	
Float level	6.0 mm	0.24 in
Idle speed	1,700 ± 100 min ⁻¹ (rpm)	
Cooling system		
Cooling capacity after draining	1.03 ℓ	1.09 US qt 0.91 Imp qt
after disassembly	1.12 ℓ	1.18 US qt 0.99 Imp qt

Item	Metric	English
Drive train		
Clutch type	Wet, multi-plate type	
Transmission	5-speed, constant mesh	
Primary reduction	2.739	
Gear ratio I	1.800	
Gear ratio II	1.470	
Gear ratio III	1.235	
Gear ratio IV	1.050	
Gear ratio V	0.909	
Final reduction	3.692	
Gear shift pattern	Left foot-operated return system 1-N-2-3-4-5	
Electrical		
Ignition	ICM	
Starting system	Kickstarter	
Spark plug : Standard	NGK IFR8H11	
	DENSO VK24PRZ11	
For extended high speed riding	NGK IFR9H11	
	DENSO VK27PRZ11	
Spark plug gap	1.0 – 1.1 mm (0.039 – 0.043 in)	

Specifications (CM, IICM Type)

Item	Metric	English
Dimension		
Overall length	2,189 mm	86.2 in
Overall width	825 mm	32.5 in
Overall height	1,262 mm	49.7 in
Wheelbase	1,489 mm	58.6 in
Seat height	955 mm	37.6 in
Footpeg height	446 mm	17.6 in
Ground clearance	339 mm	13.3 in
Frame		
Type	Twin tube	
F. suspension	Telescopic fork, travel 280 mm (11.0 in) stroke 315 mm (12.4 in)	
R. suspension	Pro-link, travel 320 mm (12.6 in)	
Tyre size, front	80/100 – 21 51M	
	DUNLOP	D742FA
Tyre size, rear	110/90 – 19 62M	
	DUNLOP	D756
Tyre type	bias-ply, tube	
Tyre pressure, front (cold)	100 kPa (1.0 kgf/cm ² , 15 psi)	
Tyre pressure, rear (cold)	100 kPa (1.0 kgf/cm ² , 15 psi)	
F. brake, swept area	Single disc brake 334.5 cm ² (51.8 in ²)	
R. brake, swept area	Single disc brake 391.1 cm ² (60.6 in ²)	
Fuel recommendation	unleaded petrol, research octane number of 95 or higher	
Fuel tank capacity	7.2 ℓ	1.90 US gal, 1.58 Imp gal
Caster angle	26°46'	
Trail length	111.4 mm	4.39 in
Fork oil capacity (except fork damper per leg)	406.5 cm ³	13.75 US oz 14.31 Imp oz

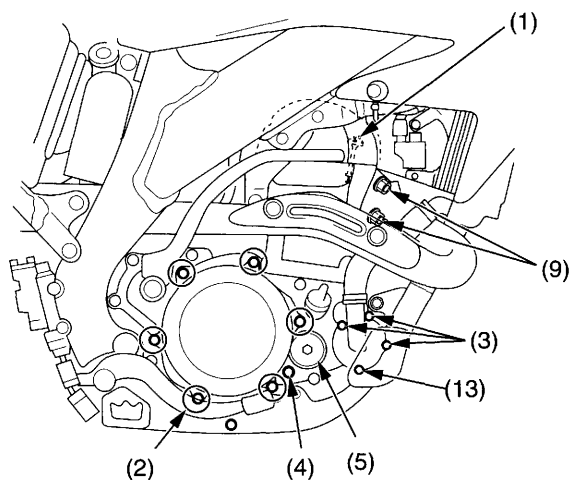
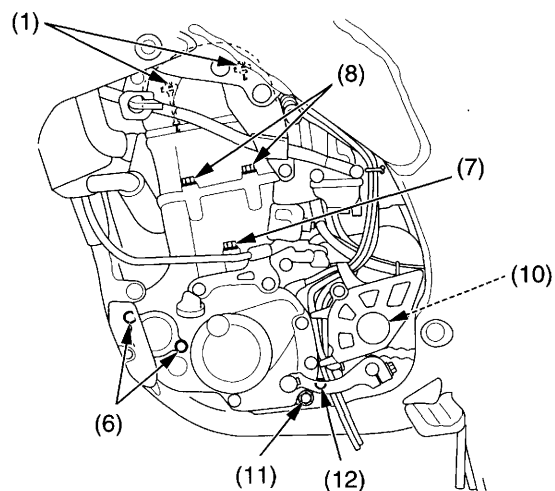
Item	Metric	English
Engine		
Type	Liquid cooled, 4-stroke	
Cylinder arrangement	Single 8° inclined from vertical	
Bore and stroke	96.0 x 62.1 mm	3.78 x 2.44 in
Displacement	449.4 cm ³	27.41 cu-in
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Transmission oil capacity after draining	0.59 ℓ	0.62 US qt 0.52 Imp qt
after disassembly	0.67 ℓ	0.71 US qt 0.59 Imp qt
Carburetor		
Type	Piston valve	
Identification number	FCR00G	
Main jet (standard)	# 178	
Jet needle (standard)	NJGR	
Needle clip position (standard)	3rd groove	
Slow jet (standard)	# 42	
Pilot screw opening	1 5/8 turns out	
Float level	6.0 mm	0.24 in
Idle speed	1,700 ± 100 min ⁻¹ (rpm)	
Cooling system		
Cooling capacity after draining	1.03 ℓ	1.09 US qt 0.91 Imp qt
after disassembly	1.12 ℓ	1.18 US qt 0.99 Imp qt

Item	Metric	English
Drive train		
Clutch type	Wet, multi-plate type	
Transmission	5-speed, constant mesh	
Primary reduction	2.739	
Gear ratio I	1.800	
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Gear ratio V	0.909	
Final reduction	3.692	
Gear shift pattern	Left foot-operated return system 1-N-2-3-4-5	
Electrical		
Ignition	ICM	
Starting system	Kickstarter	
Spark plug : Standard	NGK IFR8H11	
	DENSO VK24PRZ11	
For extended high speed riding	NGK IFR9H11	
	DENSO VK27PRZ11	
Spark plug gap	1.0 – 1.1 mm (0.039 – 0.043 in)	

Nuts, Bolts, Fasteners

Check and tighten nuts, bolts, and fasteners before every outing.

Engine



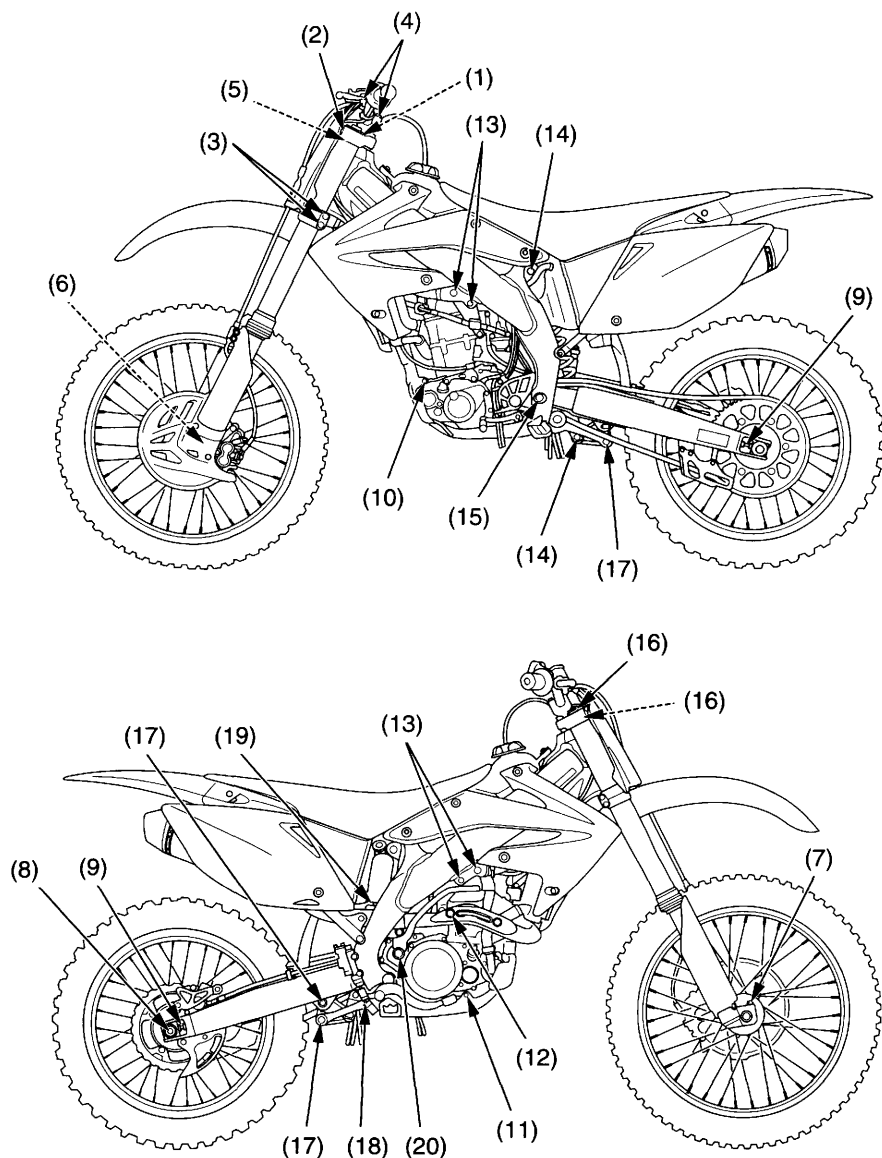
ENGINE

	Item	Torque			Remarks
		N•m	kgf•m	lbf•ft	
1	Cylinder head cover bolts	10	1.0	7	
2	Clutch cover bolts	10	1.0	7	
3	Water pump cover bolts	10	1.0	7	
4	Transmission oil check bolt	10	1.0	7	
5	Crankshaft hole cap	15	1.5	11	NOTE 1
6	Oil filter cover bolts	12	1.2	9	
7	Cylinder bolt	10	1.0	7	
8	Cylinder head bolts	10	1.0	7	
9	Exhaust pipe joint nuts	21	2.1	15	
10	Drive sprocket bolt	31	3.2	23	
11	Engine oil drain bolt	16	1.6	12	
12	Transmission oil drain bolt	16	1.6	12	
13	Coolant drain bolt	10	1.0	7	

NOTE: 1. Apply grease to the threads.

Torque Specifications

Frame

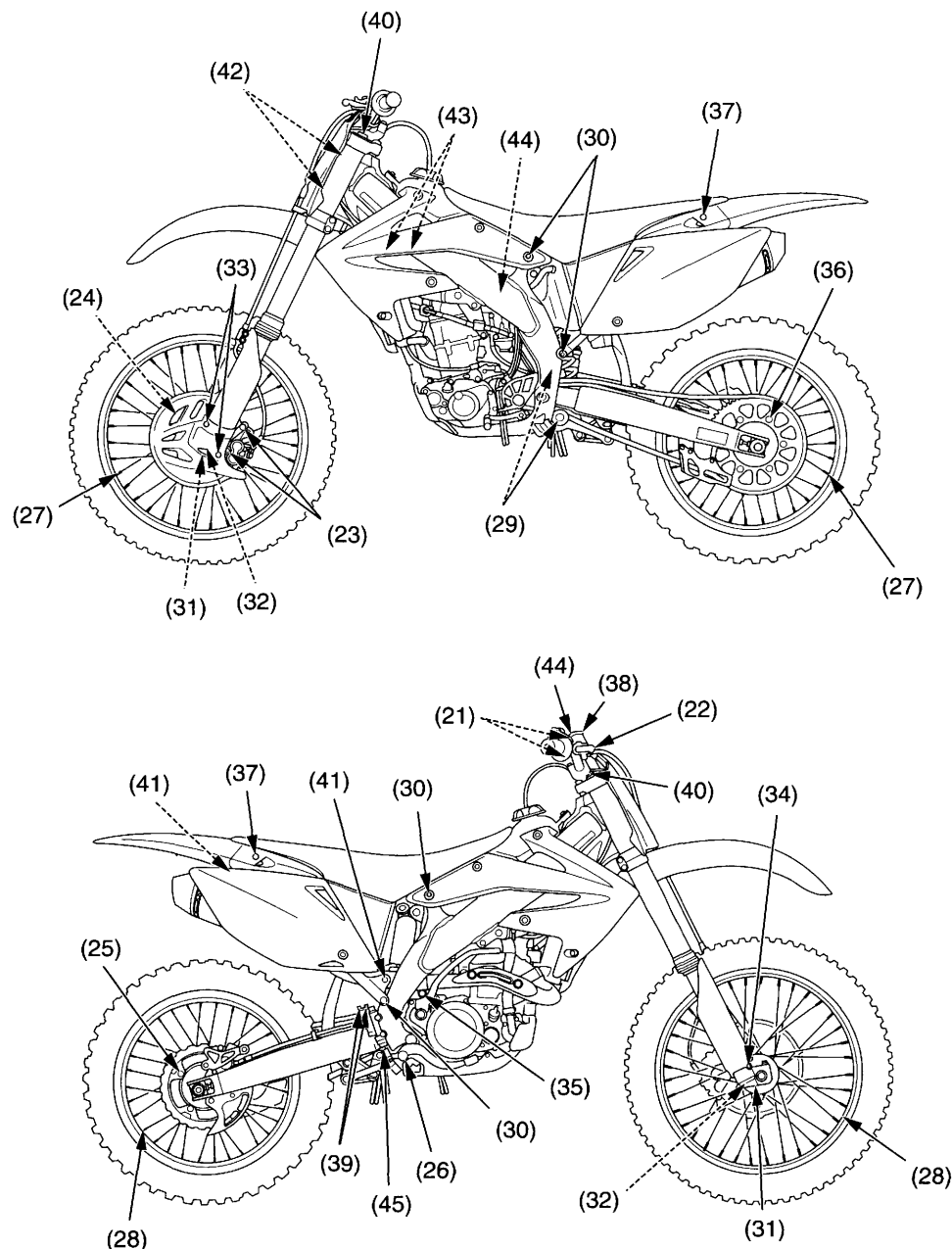


FRAME

	Item	Torque			Remarks
		N•m	kgf•m	lbf•ft	
1	Steering stem nut	108	11.0	80	
2	Fork bridge upper pinch bolts	22	2.2	16	
3	Fork bridge lower pinch bolts	20	2.0	15	
4	Handlebar upper holder bolts	22	2.2	16	
5	Handlebar lower holder nuts	44	4.5	32	
6	Front axle nut	88	9.0	65	
7	Axle pinch bolts	20	2.0	15	
8	Rear axle nut	128	13.1	94	NOTE 1
9	Chain adjuster lock nuts	27	2.8	20	NOTE 2
10	Front engine mounting nut	64	6.5	47	
11	Lower engine mounting nut	64	6.5	47	
12	Engine hanger nut	54	5.5	40	
13	Engine hanger plate bolts	26	2.7	19	
14	Shock absorber (upper)	44	4.5	32	NOTE 1
	(lower)	44	4.5	32	NOTE 1
15	Swingarm pivot nut	88	9.0	65	NOTE 1
16	Fork (fork damper)	34	3.5	25	
	(fork cap assembly)	30	3.1	22	
17	Rear shock arm nuts (swingarm side)	53	5.4	39	NOTE 1, 7
	(shock link side)	53	5.4	39	NOTE 1, 7
18	Rear shock link nuts (Frame side)	53	5.4	39	NOTE 1, 7
19	Shock spring lock nut	44	4.5	32	
20	Kickstarter arm bolt	38	3.9	28	

- NOTES: 1. U-nut.
 2. UBS nut.
 3. Apply oil to the threads and flange surface.
 4. Apply locking agent to the threads.
 5. SH bolt
 6. Alock bolt: replace with a new one
 7. Apply molybdenum oil to the threads and flange surface.

Frame



FRAME

Item	Torque			Remarks
	N•m	kgf•m	lbf•ft	
21 Front brake master cylinder holder bolts	9.9	1.0	7.3	
22 Brake hose bolts	34	3.5	25	
23 Front brake caliper mounting bolts	30	3.1	22	NOTE 6
24 Front brake disc nuts	16	1.6	12	NOTE 1
25 Rear brake disc nuts	16	1.6	12	NOTE 1
26 Brake pedal pivot bolt	36	3.7	27	NOTE 6
27 Spokes (front)	3.68	0.4	2.7	
(rear)	3.7	0.4	2.7	
28 Rim locks	12	1.2	9	
29 Drive chain roller (upper)	12	1.2	9	NOTE 5
(lower)	12	1.2	9	NOTE 1
30 Subframe mounting bolts (upper)	30	3.1	22	
(lower)	49	5.0	36	
31 Fork centre bolt	69	7.0	51	NOTE 4
32 Fork centre bolt lock nut	22	2.2	16	
33 Disc cover bolts	13	1.3	10	
34 Fork protector bolts	7	0.7	5.2	NOTE 6
35 Muffler clamp bolt	21	2.1	15	
36 Driven sprocket nuts	32	3.3	24	NOTE 1
37 Seat mounting bolts	26	2.7	19	
38 Front brake reservoir cap screws	1.0	0.1	0.7	
39 Rear brake reservoir cap bolts	1.0	0.1	0.7	
40 Fork air pressure release screw	1.2	0.1	0.9	
41 Muffler mounting (A) bolts	21	2.1	15	
(B)	21	2.1	15	
42 Steering damper mounting bolts	20	2.0	15	NOTE 6
43 Fuel joint mounting bolts	10	1.0	7	
44 Throttle cable adjuster lock nuts	4.0	0.4	3.0	
45 Rear master cylinder push rod lock nut	5.9	0.6	4.4	

NOTES: 1. U-nut.
2. UBS nut.
3. Apply oil to the threads and flange surface.
4. Apply a locking agent to the threads.
5. SH bolt
6. Alock bolt: replace with a new one

Petrol Containing Alcohol

If you decide to use a petrol containing alcohol (gasohol), be sure its octane rating is at least as high as that recommended above.

There are two types of gasohol: One contains ethanol, and the other contains methanol. Do not use gasohol that contains more than 10% ethanol. Do not use gasohol that contains methanol (methyl or wood alcohol) unless it also contains cosolvents and corrosion inhibitors for methanol. Never use petrol containing more than 5% methanol, even if it has cosolvents and corrosion inhibitors.

Engine performance problems resulting from the use of fuels that contain alcohol are not covered under the warranty. Honda cannot endorse the use of fuels containing methanol since evidence of their suitability is not yet complete.

Before buying fuel from an unfamiliar station, try to find out if the fuel contains alcohol. If it does, confirm the type and percentage of alcohol used. If you notice any undesirable operating symptoms while using a petrol that contains alcohol, or one that you think contains alcohol, switch to a petrol that you know does not contain alcohol.

Any serious competition 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, carburetor adjustments, gearing, and tyre 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 CRF, the accurate maintenance records in your logbook might be the deciding deal-maker for a potential buyer.

Consider using different colour pens or pencils to record important information on specific subjects. For example, record results in black, jetting changes in red, suspension/chassis settings in blue, and gearing selections in green. Colour 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
- carburetion changes
- suspension settings
- chassis adjustments tested and selected
- gearing
- tyre selection
- air pressure

Competition Records

- your placings
- thoughts to improve performance next time: both yours and your CRF'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 CRF.

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 six minutes represents one tenth of an hour).

Racing Records

Information worth recording for this section of your logbook may include:

- Your placing in each moto 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, transmission, and suspension oil changes
- Chain, sprocket, chain guide 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.

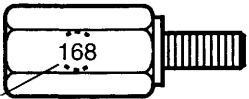
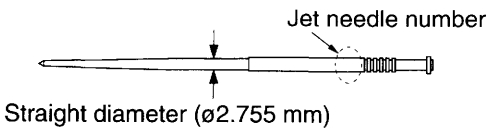
Competition Logbook

Date	Running Time	Location/Event	Comments (Jetting, Suspension Settings, Gearing, Chassis Adjustments, Maintenance Performed, etc.)

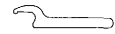

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






Optional Parts List (ED, DE, U Type)

These parts and tools may be ordered from your authorized Honda dealer.

CARBURETOR		Remarks
Main jet (Standard: #178)	#168 – #188 (in increments of 2 or 3)	 Size
Slow jet (Standard: #42)	#38 – #48 (in increments of 2 or 3)	
Jet Needles Standard needle: NKAT Straight diameter: $\varnothing 2.755$ mm <div style="text-align: center;">  </div>		
	Jet needle number (standard series)	Jet needle number (1/2 clip position leaner than standard series, leaner only at 1/8 to 3/4 throttle)
General flow characteristics Richer ↑ (at 1/16 to 1/4 throttle) ↓ Leaner	NKAR $\varnothing 2.755$ mm	NJFR $\varnothing 2.755$ mm
	NKAS $\varnothing 2.765$ mm	NJFS $\varnothing 2.765$ mm
	(standard needle) NKAT $\varnothing 2.775$ mm	NJFT $\varnothing 2.775$ mm
	NKAU $\varnothing 2.785$ mm	NJFU $\varnothing 2.785$ mm
	NKAV $\varnothing 2.795$ mm	NJFV $\varnothing 2.795$ mm
Leak jet (Standard: #55)	#45 – #65	

FRAME	Remarks
Driven sprocket Standard	< >: Drive chain links 48 Teeth, Aluminum. <114>
Optional	47 Teeth, Aluminum <114>
	49 Teeth, Aluminum <114>
Drive chain size/link	D.I.D 520 DMA2/120RB
Handlebar lower holder	3 mm offset
Optional	no offset

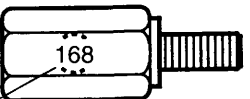
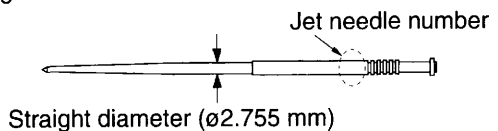
TOOLS	Remarks
Pin spanner A 	To adjust spring preload. (two spanners required)
Workstand 	For maintenance
Air gauge	For checking tyre air pressure

FRAME	Remarks
Shock spring Standard	5.50 kgf/mm (308.0 lbf/in)  or 
Optional Softer	5.30 kgf/mm (296.8 lbf/in) 
Stiffer	5.70 kgf/mm (319.2 lbf/in) 
	5.90 kgf/mm (330.4 lbf/in) 
Fork spring Standard	0.47 kgf/mm (26.32 lbf/in)  or 
Optional Softer	0.45 kgf/mm (25.20 lbf/in) 
Stiffer	0.49 kgf/mm (27.44 lbf/in) 

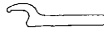

The standard fork spring and shock spring mounted on the motorcycle when it leaves the factory are not marked. Before replacing the springs, be sure to mark them so they can be distinguished from other optional springs.










Optional Parts List (CM, IICM Type)

These parts and tools may be ordered from your authorized Honda dealer.

CARBURETOR		Remarks
Main jet (Standard: #178)	#168 – #188 (in increments of 2 or 3)	 Size
Slow jet (Standard: #42)	#38 – #48 (in increments of 2 or 3)	
Jet Needles Standard needle: NJGR Straight diameter: Ø2.755 mm <div style="text-align: center;">  </div>		
	Jet needle number (standard series)	Jet needle number (1/2 clip position leaner than standard series, leaner only at 1/8 to 3/4 throttle)
General flow characteristics Richer ↑ Leaner ↓ (at 1/16 to 1/4 throttle)	NJGP Ø2.735 mm	NJYP Ø2.735 mm
	NJGQ Ø2.745 mm	NJYQ Ø2.745 mm
	(standard needle) NJGR Ø2.755 mm	NJYR Ø2.755 mm
	NJGS Ø2.765 mm	NJYS Ø2.765 mm
	NJGT Ø2.775 mm	NJYT Ø2.775 mm
Leak jet (Standard: #55)	#45 – #65	

FRAME	Remarks
Driven sprocket Standard	< >: Drive chain links 48 Teeth, Aluminum. <114>
Optional	47 Teeth, Aluminum <114> 49 Teeth, Aluminum <114>
Drive chain size/link	D.I.D 520 DMA2/120RB
Handlebar lower holder	3 mm offset
Optional	no offset

TOOLS	Remarks
Pin spanner A 	To adjust spring preload. (two spanners required)
Workstand 	For maintenance
Air gauge	For checking tyre air pressure

FRAME	Remarks
Shock spring Standard	5.50 kgf/mm (308.0 lbf/in)  No mark (factory products) or  Red paint (aftermarket parts)
Optional Softer	5.30 kgf/mm (296.8 lbf/in)  Blue paint
Stiffer	5.70 kgf/mm (319.2 lbf/in)  Pink paint CM Type only: 5.90 kgf/mm (330.4 lbf/in)  Silver paint
Fork spring Standard	0.47 kgf/mm (26.32 lbf/in)  No mark (factory products) or  5 scribe marks (aftermarket parts)
Optional Softer	0.45 kgf/mm (25.20 lbf/in)  3 scribe marks
Stiffer	0.49 kgf/mm (27.44 lbf/in)  4 scribe marks

The standard fork spring and shock spring mounted on the motorcycle when it leaves the factory are not marked. Before replacing the springs, be sure to mark them so they can be distinguished from other optional springs.

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)
optional carburetor jets/needles
chain & masterlinks
chain guide slider
chain guide
chain rollers
inner tubes (front & rear)
fenders
footpegs
number plate & side covers
handlebar
grips
levers (brake, clutch & hot start)
clutch lever handlebar mount
clutch cable
hot start cable
throttle assembly
throttle cable
shift lever
brake pedal
spokes (front & rear, each side)
sprockets (larger & smaller than standard, for gearing changes & collision damage replacement)
assorted nuts, bolts, washers, screws, cotter pins

Additional Spares

front brake master cylinder
rear brake assembly
wheels & tyres (front & rear, mounted)
clutch discs and plates
engine & transmission 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
tyre pressure gauge
tyre irons

Honda Special Tools

Any special tools for your CRF purchased from your Honda dealer.

• Tensioner stopper	070MG-0010100
• Lock Nut Wrench	07WMA-KZ30100
• Spoke Wrench	07JMA-MR60100
• Spoke Wrench	070MA-KZ30100

Chemical Products

Honda "4-STROKE MOTORCYCLE OIL" or equivalent
(Engine and Transmission Oil)
SAE 80 or 90 gear oil
Honda ULTRA CUSHION OIL SPECIAL 5W
DOT 4 Brake Fluid
Chain Lube
Honda Foam Air Filter Oil

Honda Dielectric Grease
Hand Grip Cement
Honda Thread Lock
Molybdenum disulfide grease (containing more than 3% molybdenum disulfide additive)
Honda White Lithium Grease
Multi-Purpose Grease
Rust-inhibiting Oil
Cable Lubricant
High quality ethylene glycol antifreeze containing corrosion protection inhibitors
Urea based multi-purpose grease designed for high temperature, high pressure performance (example: EXCELITE EP2 manufactured by KYODO YUSHI, Japan or Shell stamina EP2 or equivalent)

Other Products

pliers-safety wire
safety wire
mechanic's wire
duct tape
plastic tie-wraps
hose clamps
drop light
electrical tape
Scotch-Brite Hand Pad #7447 (maroon)
Teflon tape

Wiring Diagram

ENGINE STOP BUTTON

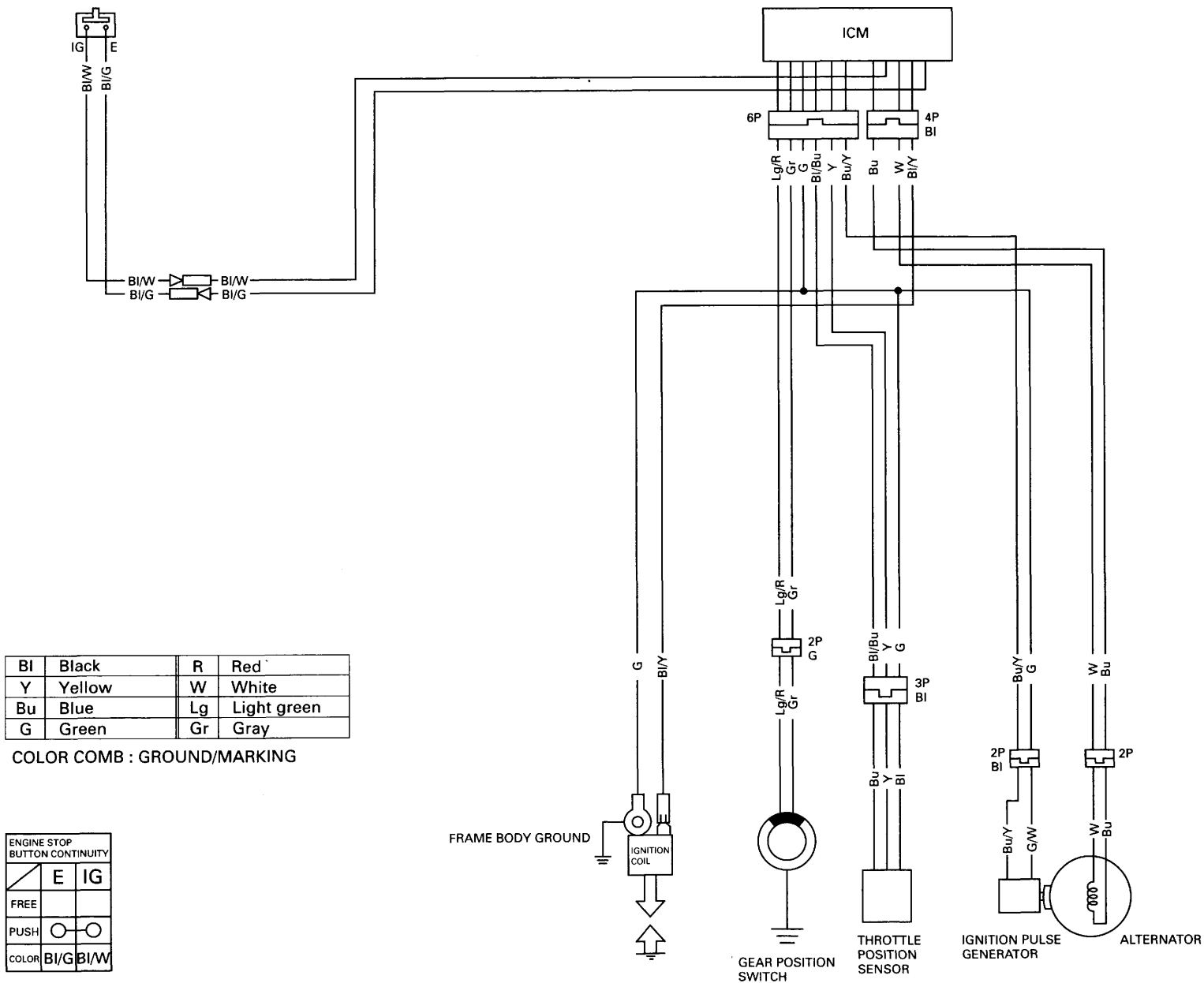


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