2003 Motorcycle Owner's Manual

Models : E440, C440, X440, S440

P/N : 951-5002274-03

Before you operate the vehicle. . . .

- **READ and UNDERSTAND this Owner's Manual.**
  It contains information important to your safety.
- **Learn the location and proper operation of all controls.**
- **Complete the Pre-Ride Inspection checklist.**
- **Wear appropriate protective gear - approved full faced helmet, eye protection, gloves, boots, long-sleeve shirt, and pants.**
  Consider purchasing specially designed protective off-road vehicle riding apparel.

IMPORTANT MANUAL INFORMATION

FAILURE TO FOLLOW THE WARNINGS CONTAINED IN THIS MANUAL CAN RESULT IN SERIOUS INJURY OR DEATH.

Information important to your safety is distinguished in this manual by the following notations: \

The safety alert symbol means.....
"ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED."

DANGER	Indicates that DEATH or severe injury WILL result if the instructions are not followed.
WARNING	Indicates a potential hazard that could result in serious injury or death.

CAUTION : A CAUTION indicates that special precautions must be taken to avoid damage to the machine.

NOTE: A NOTE provides helpful information intended to make maintenance easier or the instructions presented clearer.

When reading this manual, remember:

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

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Printed : 8/15/02

FOREWORD

This Owner's Manual has been written carefully to provide you with a good basic understanding of all the features, controls, proper operation, and maintenance of your vehicle. **It also will provide you with important safety information for you and anyone who operates it.**

This manual should be considered a permanent part of the vehicle and it should remain with the vehicle whenever it is resold or possession is transferred to another person. Please take the time necessary to read and understand this entire owner's manual.

IMPORTANT NOTICE

Some information in this manual may be outdated due to ongoing model improvements made after the date of publication. The Addenda section at the end of this manual includes any additional, replacement, or supplemental information for your vehicle that is available at the time of shipment.

You can download a Adobe PDF copy of this Owner's Manual as well as any applicable addenda, free of charge from our website. Go to: http://www.cannondale.com/motorsports/tech/manuals.html,

Anytime you have any question related to the controls, features, or operation and maintenance of your vehicle, please consult your Cannondale dealer. Or, call us at toll free at 1-800-MOTO-USA.

Limitations

All information, illustrations, and specifications in this manual are based on the latest product information available at the time of publication. Cannondale Corporation reserves the right to make changes at any time, without notice.

This vehicle has U.S. and International patents pending.

Comments

Send your comments or suggestions about this manual to: Technical Publications, Cannondale Corporation, 2 Corporate Drive, Bedford, PA, 15522. Or, E-mail us at: technical.publications@cannondale.com.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

GENERAL SAFETY PRECAUTIONS

⚠ DANGER

POTENTIAL HAZARD
Running the engine indoors
Breathing exhaust gases

WHAT CAN HAPPEN
Running the engine indoors will expose you to dangerous exhaust gases. Breathing carbon monoxide gas leads to poisoning, asphyxiation, and death. This will happen rapidly and without notice.

HOW TO AVOID THE HAZARD
Never operate the vehicle indoors even for brief periods of time.

⚠ WARNING

POTENTIAL HAZARD
Improper care when handling fuel

WHAT CAN HAPPEN
Fuel is highly flammable; spilling it can cause a fire or explosion.

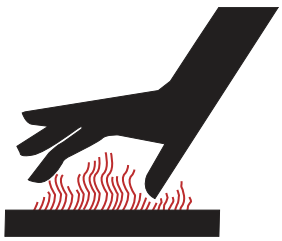
HOW TO AVOID THE HAZARD
Be sure the fuel cap is closed securely.
Work in a well-ventilated area which is free of sources that could ignite any spilled fuel accidentally (e.g. cigarettes, welders, torches, grinders, electric shop tools, etc.)

⚠ WARNING

POTENTIAL HAZARD
Hot components (e.g., engine, radiator, hoses, bulbs, exhaust, brakes)

WHAT CAN HAPPEN
The engine and other vehicle systems operate at extremely high temperatures. Contact can produce severe burns.

HOW TO AVOID THE HAZARD
Wait for the engine and vehicle systems to cool completely before starting any work. If the engine must be running, work carefully and avoid hot surfaces.

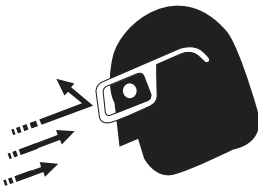


⚠ WARNING

POTENTIAL HAZARD
Blindness, eye injury

WHAT CAN HAPPEN
Anytime you work on the vehicle there is a potential that an accident involving a foreign object, vehicle component part, fluid, tool, or other maintenance related item can result in severe injury to your eyes. For example, when cleaning the oil filters, objects propelled by compressed air can strike your eyes and cause serious injury or blindness.

HOW TO AVOID THE HAZARD
Always wear safety glasses when working on the vehicle.



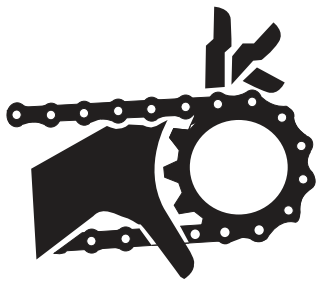
⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

⚠ WARNING

POTENTIAL HAZARD
Entanglement

WHAT CAN HAPPEN
Moving parts can catch your clothing, fingers or hand resulting in severe injury.

HOW TO AVOID THE HAZARD
Never perform maintenance procedures with the engine running unless otherwise directed in a procedure.



⚠ WARNING

POTENTIAL HAZARD
Fluids

WHAT CAN HAPPEN
The fluids (engine/transmission oils, brake fluid, coolant) in your vehicle are hazardous substances. Contact with your skin or eyes can result in serious injury or irritation.
If they are swallowed, severe injury or death can result.

HOW TO AVOID THE HAZARD
Wear hand and eye protection (rubber gloves and safety glasses or face shield) when working with vehicle fluids. If a fluid gets on your hands or clothing, wash it off immediately with soap and water. If swallowed seek immediate medical attention.
KEEP ALL VEHICLE FLUIDS AWAY FROM CHILDREN AND ANIMALS.

EXPERIENCED RIDERS ONLY

This vehicle is not for beginners.

All Cannondale motorsports products are designed for use by trained and experienced riders only. All are very high performance, competition sport machines and should only be operated by licensed competition riders in excellent physical condition, who are well-trained and experienced in the operation of high performance competition vehicles.

EXERCISE GOOD JUDGEMENT

There is always risk involved when riding a vehicle; however, making sure you and the vehicle are in the best condition possible will ensure a great riding experience. Use sound judgement when riding.

Never ride under the influence of alcohol, some over-the-counter medications (read the product label), or drugs. Doing so will greatly reduce your ability to properly operate this vehicle and could lead to an accident, injury, and/or death. If you are taking prescribed medications, consult your doctor before riding.

NO MODIFICATIONS

We recommend that you do not substitute parts, change or modify your vehicle. Such changes could seriously impair your vehicle's handling, stability, and braking, making it unsafe to ride and causing serious injury and/or vehicle damage.

NO PASSENGERS

Do not overload this vehicle or carry passengers. Doing so could seriously impair your vehicle's handling, stability, and braking, making it unsafe to ride which could result in damage to the vehicle or serious injury or death to the operator and/or passenger.

Printed : 8/15/02

INSPECTION OF ALUMINUM CHASSIS COMPONENTS

The aluminum chassis components of your vehicle have a finite, limited, useful life. The length of that life varies depending on the material used in their manufacture, the amount of use they are subjected to, and the care they receive while in service. Regular inspection by a Cannondale Motorsports Dealer is important.

- Frame - a main support structure for the engine, various components, and rider.

- Subframe - adds structural support.

- Swingarm - a suspension component

Use in competitive events, hard and aggressive riding, riding on severe terrain, riding in severe climates, and riding fast can dramatically shorten the life of the aluminum (frame) components. Any one and/or a combination of these conditions may result in an unpredictable failure.

We recommend that you carefully inspect your vehicle's chassis components for cracking, bending, deep scratches and/or other damage before every ride.

If you have crashed or rolled your vehicle, there could be damage hidden from your view. DO NOT ride a vehicle with any crack, even a small one. It must be carefully inspected by an authorized Cannondale Motorsports Dealer before it is operated again.

Riding a cracked frame could lead to complete frame failure. If you have any questions, contact your Cannondale dealer or call 1-800-MOTO-USA.

⚠ WARNING

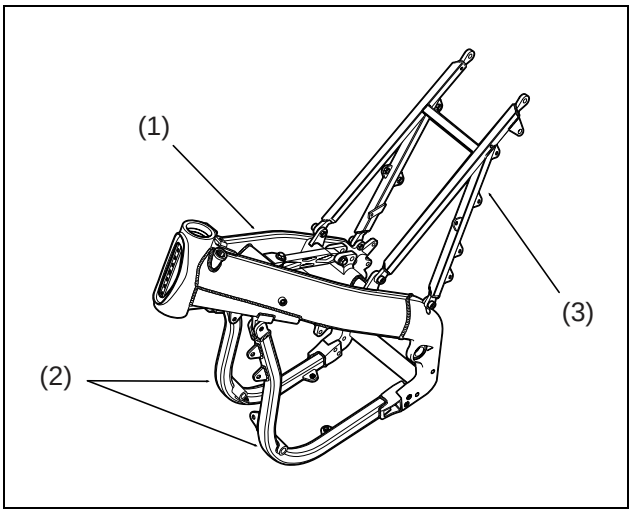
POTENTIAL HAZARD(S)
(1) Riding on a cracked or damaged frame.
(2) Attempting to fix a damaged frame.

WHAT CAN HAPPEN
(1) Riding on a cracked or damaged frame can lead to a complete frame failure.
(2) Aluminum frame (and components) are heat treated. Welding, drilling, or modifying the frame, subframe, or swingarm may weaken the component and result in complete failure, leading to a serious accident with subsequent injury or death.

HOW TO AVOID THE HAZARD
Inspect carefully before riding.
Don't ride on a cracked or damaged frame.
Don't try to repair the frame, subframe, swingarm, or other components.
Have your Cannondale dealer inspect the frame at every visit and at the 25 hour maintenance interval.
Call 1-800-MOTO-USA with any questions.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Inspect the frame (1), lower frame rails (2) and subframe (3) for cracks, deep scratches, or other damage. If any damage is found, contact an authorized Cannondale Motorsports Dealer for servicing.



1. Frame
2. Lower frame rails
3. Subframe

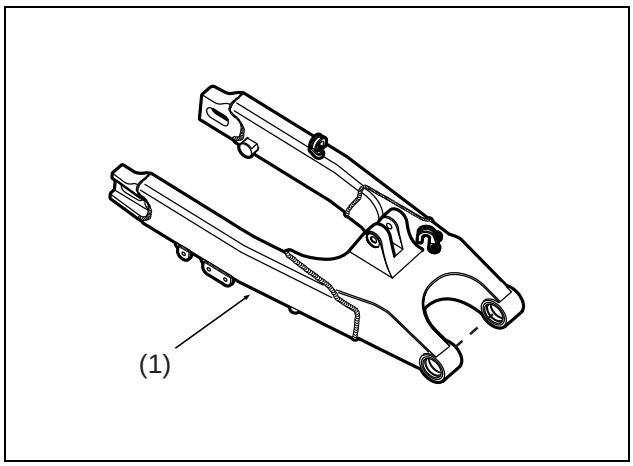
NOTE :

The frame and subframe are shown removed from the vehicle for clarity.

Inspect the swingarm for cracks, deep scratches, or other damage.

Inspect the weldments (individual welded components comprising the total swingarm) and fastener fixtures for any sign of cracking or damage.

Place the vehicle on a stand with the rear wheel suspended. The swingarm should move freely up and down with no play side to side. If any damage to the swingarm is detected, take corrective action before riding. Contact an authorized Cannondale Motorsports dealer for servicing.



1. Swingarm (shown removed for clarity)

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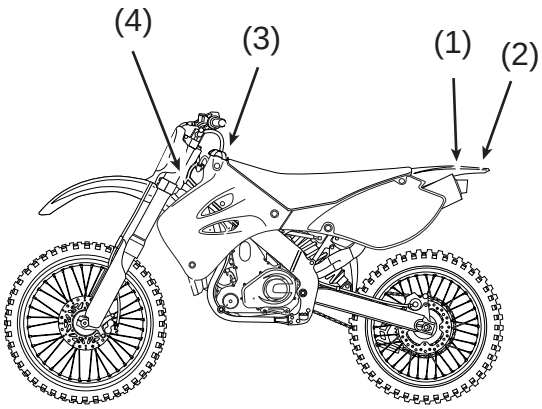
VEHICLE WARNING AND SPECIFICATION LABELS

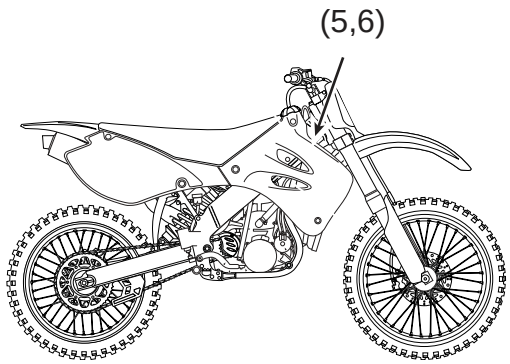
You and anyone else who operates your vehicle must read and understand all of the labels. They contain information for safe and proper operation.

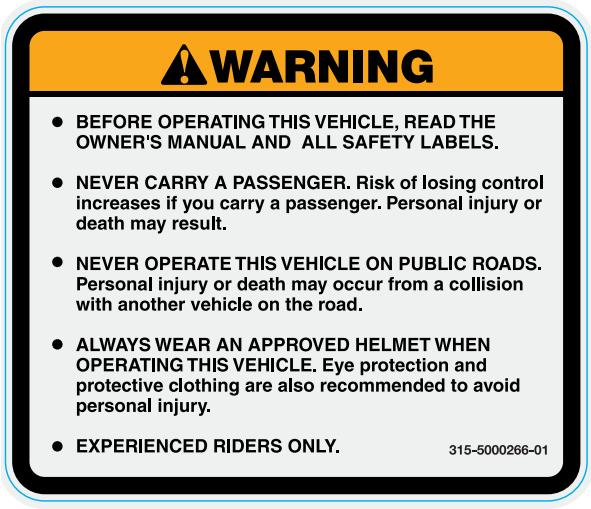
- Do not remove the labels for any reason.
- If any label is missing, damaged, worn, or becomes difficult to read, you can get free replacements from Cannondale.
  Contact us toll free at 1-800-MOTO-USA.
- Always replace labels in the proper location.

NOTE :

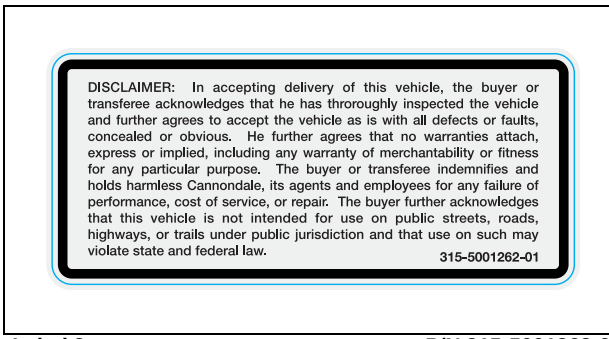
Part numbers are printed in the lower right corner of every label. The part numbers are also printed in this manual.



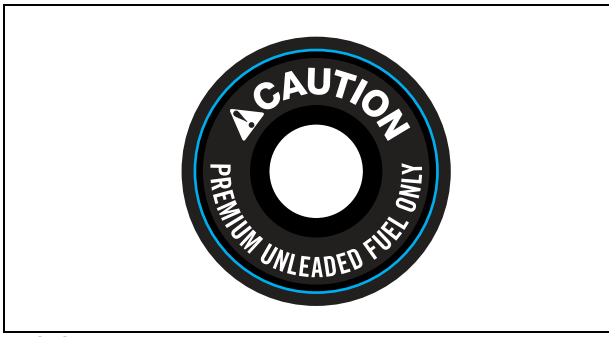




Label 1 **P/N 315-5000266-01**

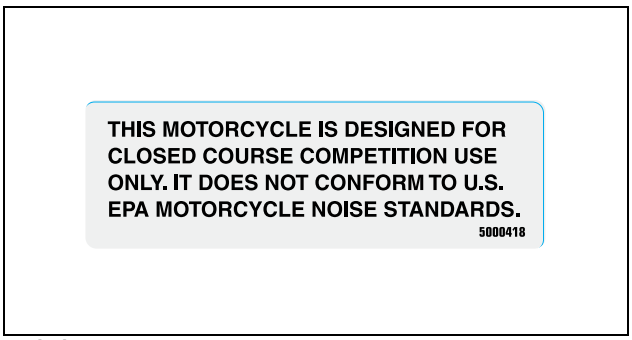


Label 2 **P/N 315-5001262-01**

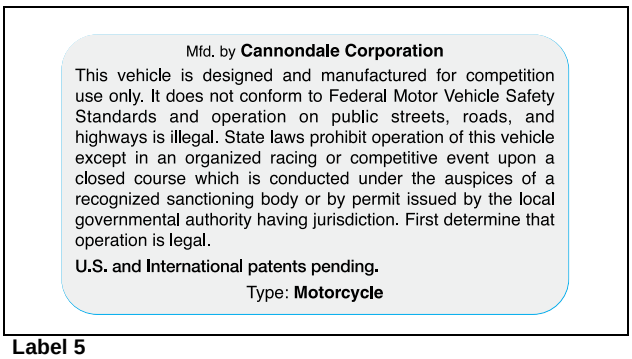


Label 3

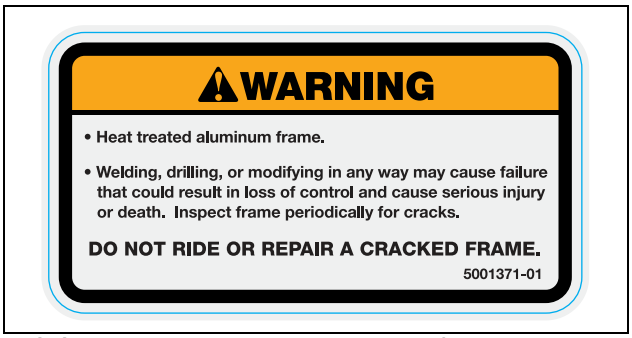
WARNING **Indicates a potential hazard that could result in serious injury or death.**



Label 4



Label 5



Label 6 **P/N 315-6000477-01**

VEHICLE IDENTIFICATION

The identification numbers found on your vehicle identify it from others of the same model type.

You may need the identification numbers when ordering replacement parts, service information, or to assist in theft investigation and recovery.

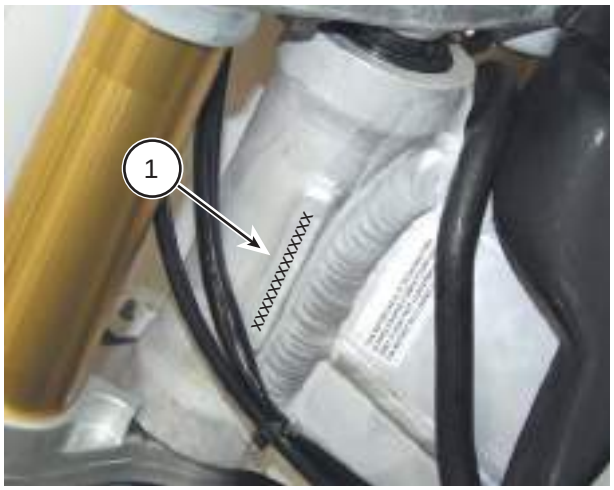
Record your vehicle identification numbers in the spaces provided. Keep a copy of the numbers in another location.

NOTE :

Your vehicle may differ from those shown in the illustrations in this manual.

VEHICLE IDENTIFICATION NUMBER (VIN)

The vehicle identification number (VIN) is located on the left side of the steering head.



1. Vehicle identification number

Record here

ENGINE SERIAL NUMBER

The engine serial number is etched/stamped into the rear area of the engine crankcase. The number also appears on a temporary, factory-applied, adhesive label in the same area.

1. Engine serial number

Record here

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

PARTS AND CONTROLS

This section contains information about the controls and component features of your vehicle.

NOTE :

This section may contain information about controls and features not present on your particular model.

The right and left sides of the vehicle are determined by the operator's left/right orientation while seated on the vehicle facing forward in the operating position.

IMPORTANT NOTICE

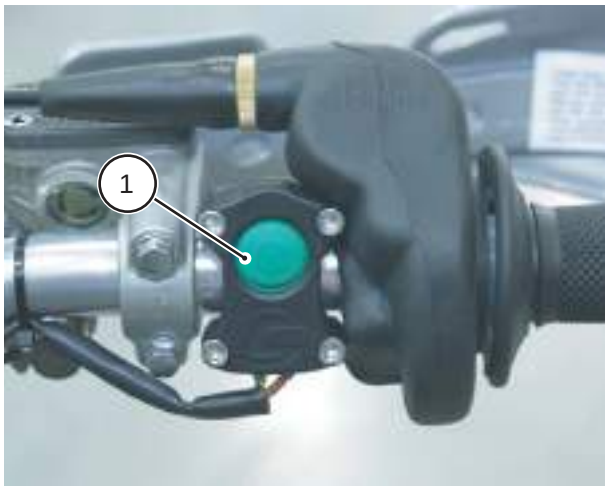
Your vehicle may be equipped with optional or special components (e.g., suspension, steering, or handlebar controls) depending on the model you purchased.

Consult the supplemental manufacturer's information about those components provided to you at the time of sale before operating or servicing the component or the related system.

You can obtain Adobe PDF copies of all owner's manuals at our website. Go to: http://www.cannondale.com/motorsports/tech/manuals.html,

Anytime you have any question related to the available manual supplements, controls, features, or operation and maintenance of your vehicle, please consult your Cannondale dealer. Or, call us at toll free at 1-800-MOTO-USA.

ENGINE START BUTTON



1. Engine start button

The engine start button is located on the right handlebar and is (GREEN) in color.

Press and release it without cranking over the engine to activate the engine management system circuits.

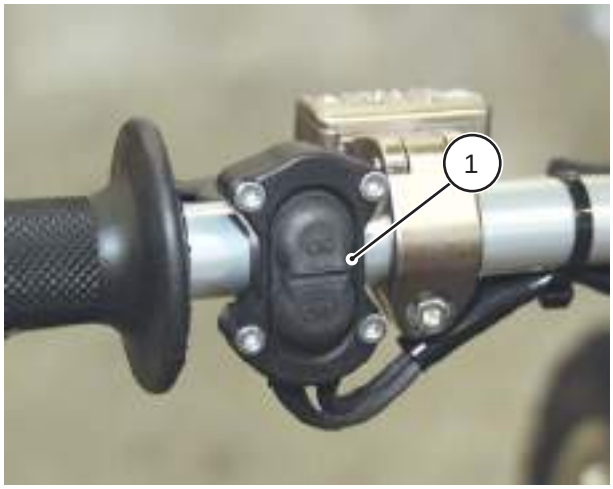
Press and hold it to activate the starter motor.

Be sure to read the Operation section of this manual for a detailed explanation of the best starting procedure.

NOTE :

When cranking the engine, hold the button for no more than 2-3 seconds at a time.

ENGINE ON/OFF SWITCH



1. ON/OFF switch

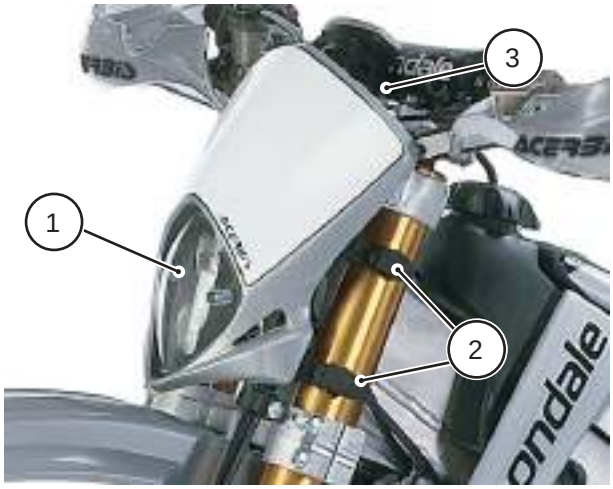
The engine ON/OFF siwtch is located on the left handlebar. It is a two position (ON and OFF) toggle switch.

Press “ON” to enable the engine management circuits.

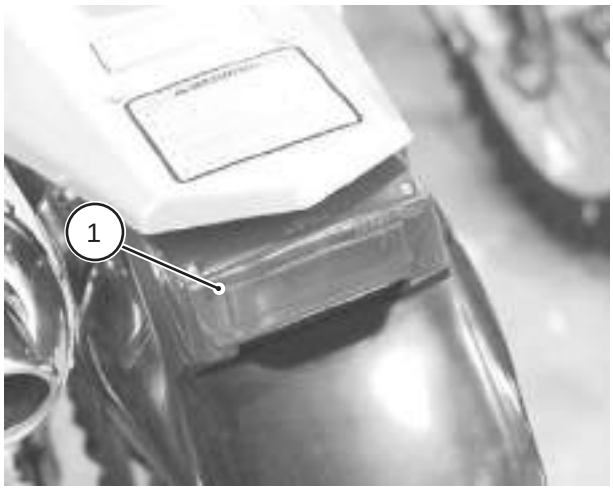
Press “OFF” to disable the engine management circuits to shut down a running engine normally (finished riding). Press ‘OFF’ to stop a running engine in the event of an emergency such as when the motorcycle overturns or throttle cable is stuck.

Test the switch before operating. Start the engine and press OFF; if the engine does not shut down immediately, do not ride the motorcycle; contact an Cannondale motorsports dealer and have the switch fixed.

HEADLIGHT AND TAILLIGHT (USA)



1. Headlight
2. Mounting straps (left fork)
3. Headlight/Taillight switch



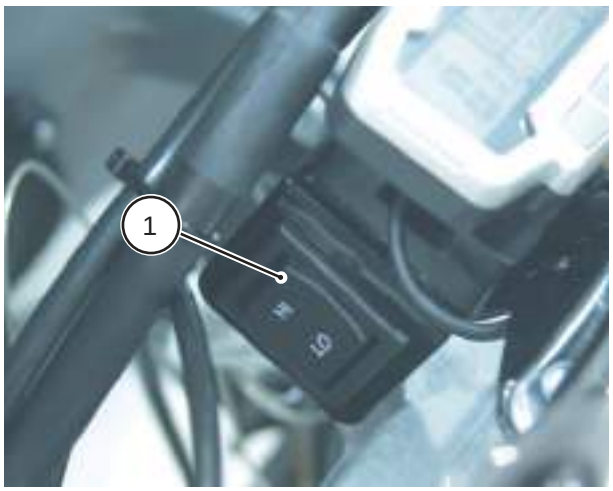
1. Taillight

The headlight and taillight on equipped vehicles are activated by the three position toggle switch mounted on the center of the handlebar. The taillight should turn on with the headlight when the switch is in either the HI or LO headlight switch position. When the switch is in the center position both lights should be off.

Make sure the headlight and taillight operate properly before starting out

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

If either headlight or taillight does not light, check to see if a fuse or bulb replacement is needed. .



1. Lighting switch

⚠ WARNING

POTENTIAL HAZARD
Removing your hands from the handlebar when operating

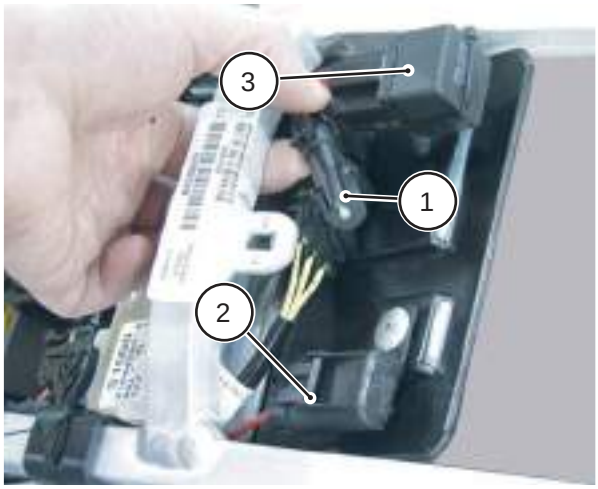
WHAT CAN HAPPEN
You can lose control of the vehicle and have a serious accident.

HOW TO AVOID THE HAZARD
Select HI or LO intensity before moving off to ride. Do not remove your hands from the handlebar to toggle the switch while the vehicle is moving. You could lose control and have an accident.

NOTE :
Switch the lights off before attempting to start the engine.

Be sure to return the switch to the center position when the lighting is not required.

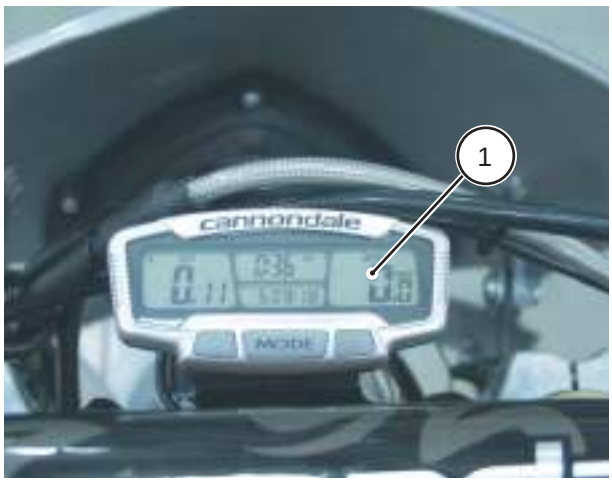
LIGHTING OPTION



1. Optional lighting tap (non-fused)
2. Main fuse
3. Engine Management System power relay

Your vehicle may have optional lighting power takeoff connector. This connector can be used to install approved lighting systems. The connection for optional lighting is located under the seat near the main fuse and engine management system relay. Do not improvise; contact your Cannondale Motorsports dealer to install the optional lighting system.

TRIP COMPUTER



1. Trip computer

A trip computer is located in the center of the handlebar.

Printed : 8/15/02

Consult the Manufacturer's Instruction Manual for the unit features and operating instructions.

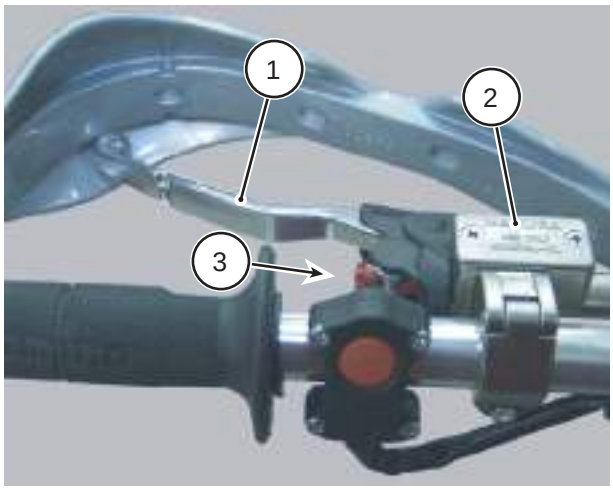
⚠ WARNING

POTENTIAL HAZARD
Removing your hands from the handlebar when operating

WHAT CAN HAPPEN
You can lose control of the vehicle and have a serious accident.

HOW TO AVOID THE HAZARD
Make adjustments and settings before moving off to ride.
Always stop the vehicle on level ground before operating (programming/setting) the computer.

CLUTCH LEVER



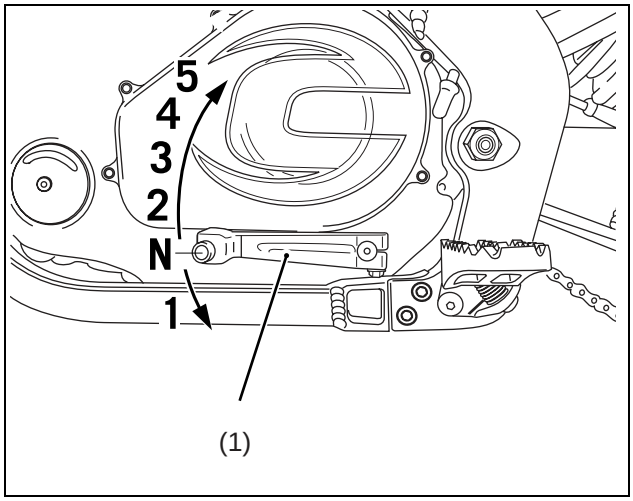
1. Clutch lever
2. Clutch reservoir
3. Lever position adjuster

The clutch lever is located on the left side of the handlebar.

Pull in the clutch lever (quickly) to disengage the clutch, and release the lever (slowly) to engage the clutch.

The lever position can be adjusted so that the lever is closer or further from the grip to suit for individual hand sizes. To adjust the lever position, see the Maintenance and Adjustment section of this manual.

SHIFT LEVER



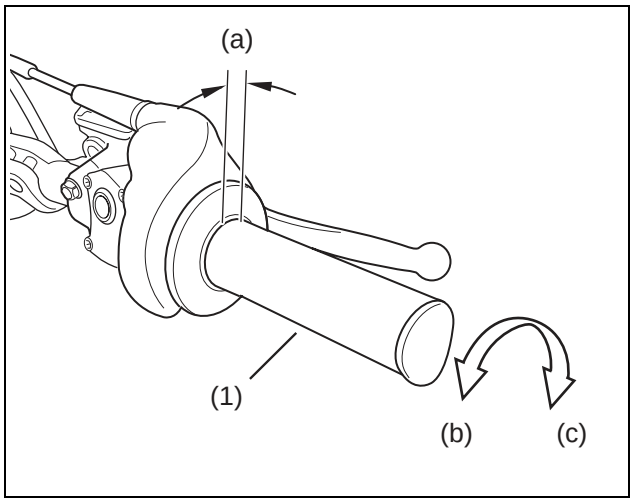
1. Shift lever

The shift lever is located on the left side of the engine just in front of the left footpeg.

The transmission has five gears, "one down, four up." Neutral is located between first and second gears.

THROTTLE GRIP

Throttle freeplay: 1/8 - 5/16 in (3 - 8 mm)



1. Throttle grip

a. Freeplay
b. Open throttle (accelerate)
c. Close throttle (decelerate)

The throttle lever is located on the right handlebar and controls acceleration and deceleration of the engine.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

To accelerate the engine, rotate the grip towards you.

To decelerate the engine, turn the grip away from you. When released the grip should spring back to the idle position automatically.

Do the following before every ride:

Check the freeplay. Make sure the specified freeplay is available in all handlebar positions. Adjust the freeplay if necessary.

With the engine off, rotate the throttle from smaller to larger openings and release the throttle. It should close automatically to the idle position when release at all positions and handlebar positions. It should operat freely (e.g., without binding, dragging, or sticking) and return to the closed position automatically in all steering positions.

⚠ WARNING

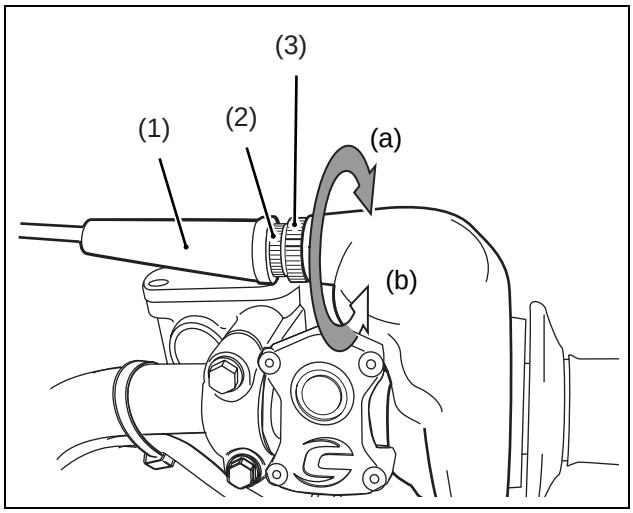
POTENTIAL HAZARD(S)
(1) Stuck or damaged throttle
(2) Incorrect freeplay

WHAT CAN HAPPEN
(1) The throttle must return to the closed position automatically when you release it. If it sticks, you can lose the ability to accelerate and decelerate the engine which could result in an accident where you could be seriously injured or killed.
(2) The throttle freeplay must be maintained as specified, otherwise the engine speed could increase when the handlebars are turned or when the throttle is slightly grasped. Either situation could result in an unexpected acceleration of the engine where you could be seriously injured or killed.

HOW TO AVOID THE HAZARD
(1) Test the operation of the throttle before each ride. Make sure it operates smoothly (with no sticking or binding) in all steering positions. It should return automatically to the closed position when released.
(2) Make sure the throttle freeplay is adjusted as specified.
(1 & 2) If the throttle malfunctions or you can not adjust the throttle to the specified freeplay, do not ride the vehicle. Contact an authorized Cannondale Motorsports Dealer for servicing.

Adjusting the throttle freeplay

1. To adjust the freeplay, slide boot back to expose lock ring and adjuster.
2. Loosen the lock ring, and turn the adjuster until the specified freeplay is reached.
3. Tighten the lock ring securely, when finished, and return the boot.



1. Long rubber boot
2. Cable adjuster
3. Lock ring

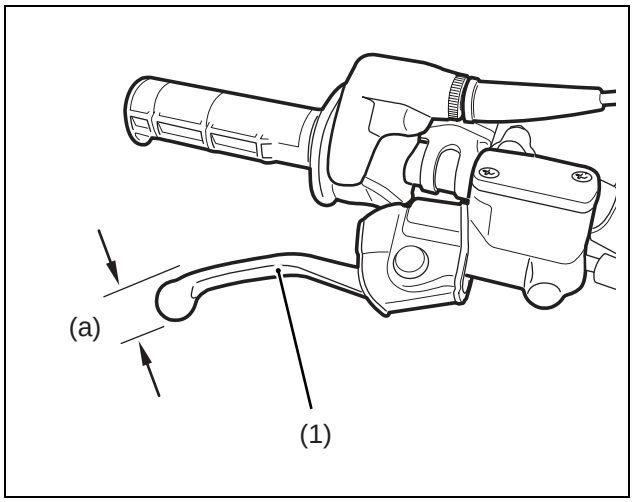
a. Decrease freeplay
b. Increase freeplay

NOTE :

If the throttle can not be adjusted further and the freeplay is still out of specification, consult an authorized Cannondale Motorsports Dealer.

FRONT BRAKE LEVER

Front brake lever freeplay:
0.12 - 0.8 in (3 - 20 mm)



1. Front brake lever
2. Freeplay

The front brake lever is located on the right handlebar. Pull it against the grip to apply the front brakes.

Always make sure the brakes (front and rear) on your vehicle operate properly before riding.

Measure the freeplay before you ride. Adjust the freeplay if it is out of specification.

The position of the brake lever on the handlebar can be adjusted so that control is comfortably positioned to the operator's preference.

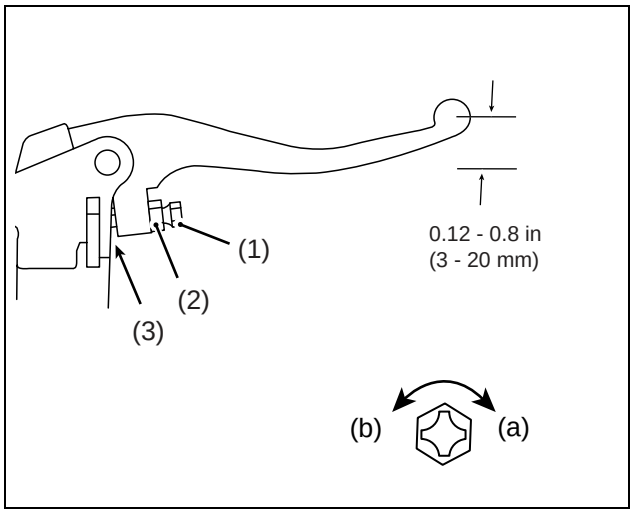
Adjusting the front brake lever freeplay

Freeplay is the free travel distance required before hydraulic pressure forces the brake pads to press against the brake discs. The minimum freeplay is required so that the lever can move as the rider shifts hand position without resulting in pressure (as detected in resistance in the lever) causing the brake pads to press against the brake discs prematurely.

To measure the freeplay, roll the vehicle back and forthwhile squeezing the lever lightly to detect the fluid pressure point. The pressure point is indicated when the brake pads start to press against the brake disc applying braking force. Measure the distance the lever moved at the end of the lever.

CAUTION :

Make sure the minimum freeplay of .12 in (3 mm) is available. Incorrect freeplay can result in unintended pressure application in brake system. The brake system can over overheat damaging the pads or discs.



1. Locknut
2. Adjuster

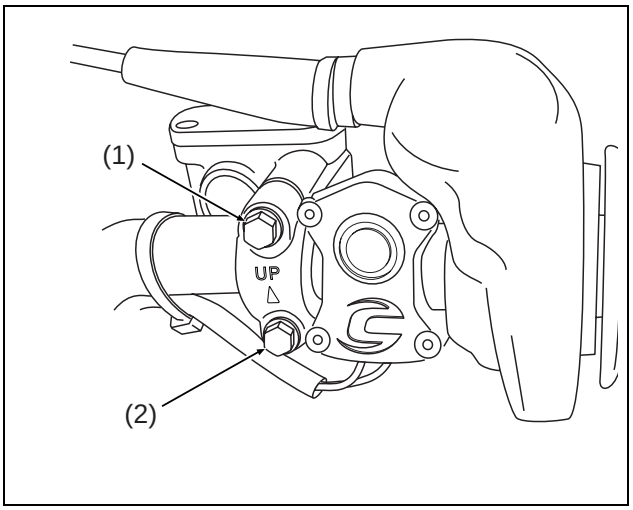
a. Decrease freeplay
b. Increase freeplay

1. To adjust, loosen the the locknut.
2. Turning the adjustment screw.
3. Tighten the locknut to 4.3 lbf•ft (5.8 N•m).

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Adjusting the front brake lever position

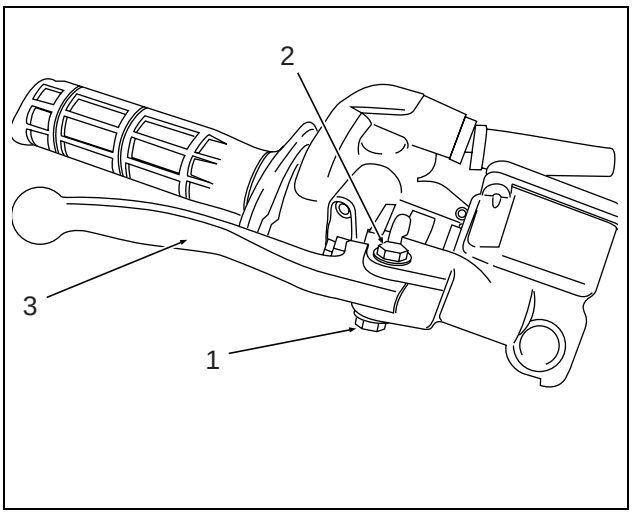
To adjust the front brake lever position on the handlebar, loosen the clamp bolts and rotate the brake lever to the desired position. Tighten the bolts to 5.0 lbf•ft (6.8 N•m) when finished. Tighten the upper bolt to the specified torque, then tighten the lower bolt.



1. Upper bolt
2. Lower bolt

Front brake lever lubrication

1. Place the vehicle on a stand.
2. Remove the rubber cover from the brake lever.
3. Remove the nut (1), pivot bolt (2), and brake lever (3).



1. Nut
2. Pivot bolt
3. Brake lever

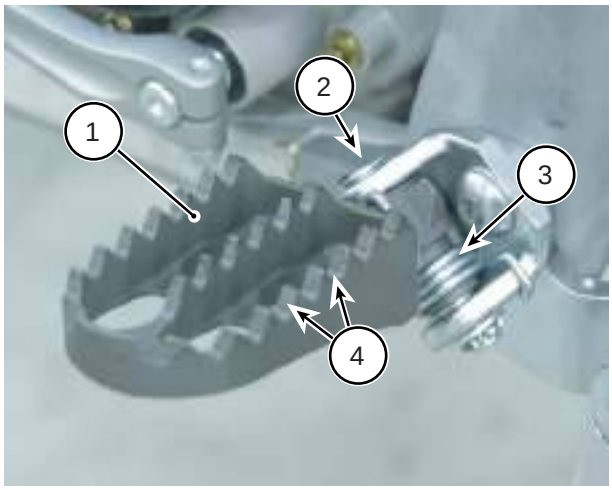
4. Spray all the parts with a water-displacement chemical, wipe them off, and dry them thoroughly.
5. Install the brake lever, and apply a light coat of high quality waterproof grease onto the pivot bolt.

NOTE :

Only apply a light coat of grease so it does not attract a lot of dirt and debris.

6. Install the pivot bolt and tighten the nut securely.
7. Install the rubber boot over the brake lever.

FOOTPEGS



1. Footpeg (left)
2. Pivot
3. Spring
4. Teeth

The right and left footpegs on your vehicle should be fastened securely and free of any collected mud or dirt. The footpegs should move freely (up and down on the pivot) and not bind - springing back when released.

NOTE :

After cleaning, lubricate the footpeg pivot points with clean engine oil. Move the pegs up and down to work the lubricant in.
Don't use grease; grease will catch and collect dirt and small particles which will damage the pivot point. Make sure the teeth are in good condition

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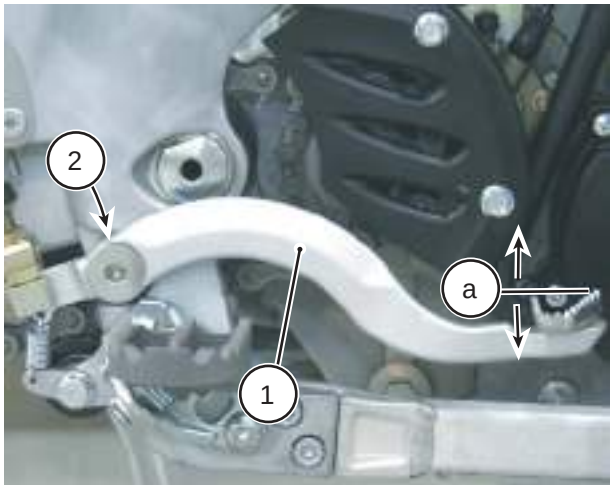
REAR BRAKE PEDAL



1. Rear brake pedal
2. Pivot
a. Pedal height

The rear brake pedal is located on the right side of the vehicle.

Press it firmly with your foot to apply the rear brake. Test to make sure it is operating correctly before you ride. When pressed, braking force should be applied to the rear brake disc. Braking force will increase the more you press down on the pedal.

The rear brake pedal height can be adjusted for comfort. To adjust it, see the Maintenance and Adjustment section of this manual.

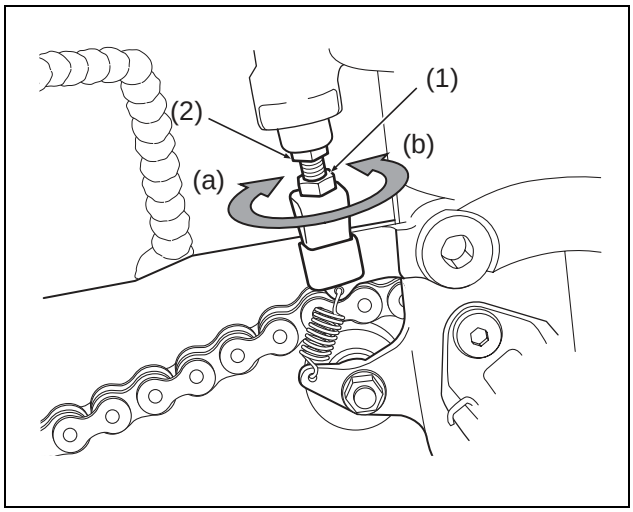
NOTE :

After cleaning, be sure to lubricate the pedal pivot point with clean engine oil. It is not necessary to remove the bolt, simply apply a few drops of oil to the bolt and work the pedal up and down.

Adjusting the rear brake pedal height

1. Loosen the locknut on the master cylinder push-rod. Turn the hex on top of the pushrod until the brake pedal is at the correct height.

   Turning the hex in direction (a) will lower the brake pedal and turning the hex in direction (b) will raise the pedal.



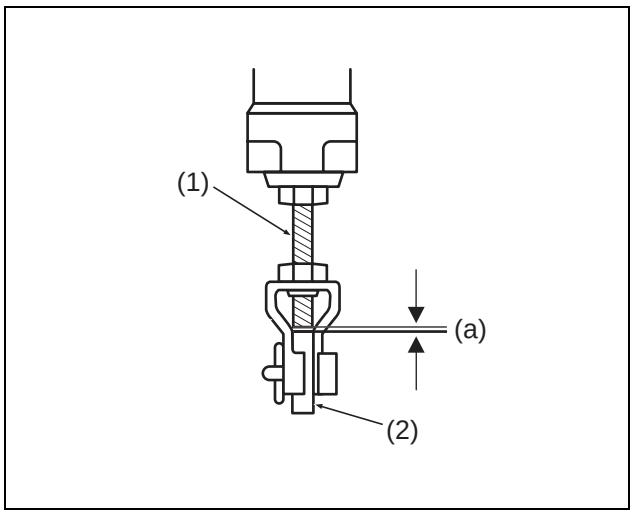
1. Locknut
2. Hex
a. Lowers the brake pedal
b. Raises the brake pedal

2. Tighten the locknut to 13.0 lbf•ft (17.6 N•m)

CAUTION :

When adjusting the brake pedal, make sure that clearance (a) between the lower end of the pushrod (1) and the brake pedal (2) is within specification.

When raising the brake pedal, do not allow the lower end of the pushrod thread to enter into the brake pedal joint.



1. Pushrod
2. Brake pedal
a. Clearance 0.04 in (1mm)

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

SIDE STAND (OR) KICKSTAND

The side stand or kickstand (on equipped vehicles) can be used to support the vehicle on firm level ground when not in use (with the engine off). Both are designed to only support the weight of the vehicle..

⚠ WARNING

POTENTIAL HAZARD(S)
Sitting or leaning on the vehicle with the kickstand or side stand.

WHAT CAN HAPPEN
The side stand and kickstand are designed to support only the weight of the vehicle. If you sit or lean on the vehicle, the additional weight could cause the vehicle to fall over. You can be severely injured.

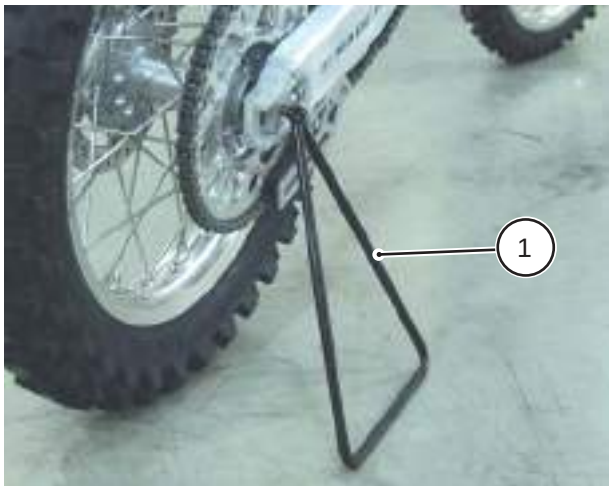
HOW TO AVOID THE HAZARD
Never sit or lean on a vehicle with the kickstand or side stand in use; it could fall over unexpectedly.
Place the vehicle on a work stand when performing maintenance.

NOTE :

After cleaning the vehicle, apply some clean engine oil to the kickstand pivot point, and fold the stand up and down to work in the oil.

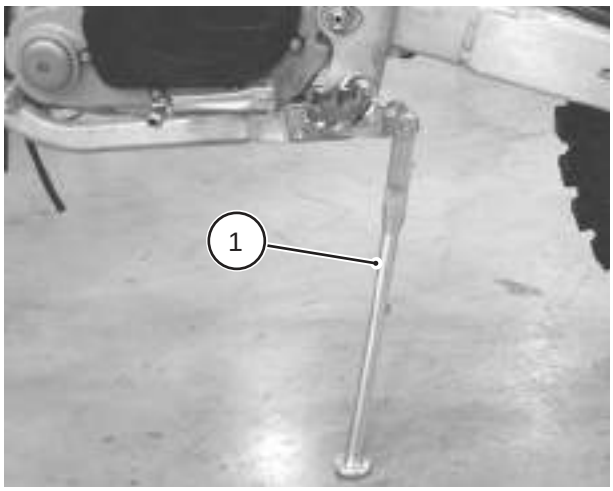
SIde stand

1. To use the side stand, position the vehicle on firm level ground.
2. Hold the vehicle upright and insert the side stand completely into the hole in the rear axle shaft on the right side of the vehicle.
3. Tilt the vehicle toward the stand allowing the weight of the vehicle to rest on the stand.



1. Side stand

Kick stand



1. Kick stand

This photo shows the kickstand in the operating position. See a close-up of the area indicated in the next photo.

⚠ WARNING

POTENTIAL HAZARD(S)
Riding with the side stand attached or the kickstand down.

WHAT CAN HAPPEN
Can lose control of the vehicle unexpectedly. You can be severly injured or killed in an accident.

HOW TO AVOID THE HAZARD
Remove the side stand; lift the kickstand to operating position before riding.

1. To use the kick stand, position the vehicle on firm level ground.
2. Fold the kickstand down until it is fully extended, and rest the weight of the motorcycle on it.

CAUTION :

Turn the handlebar so that FRONT WHEEL is pointing to the LEFT when the KICK STAND is folded down; this shifts more of the weight toward the stand reducing the potential of the vehicle to tip on its right side if bumped.

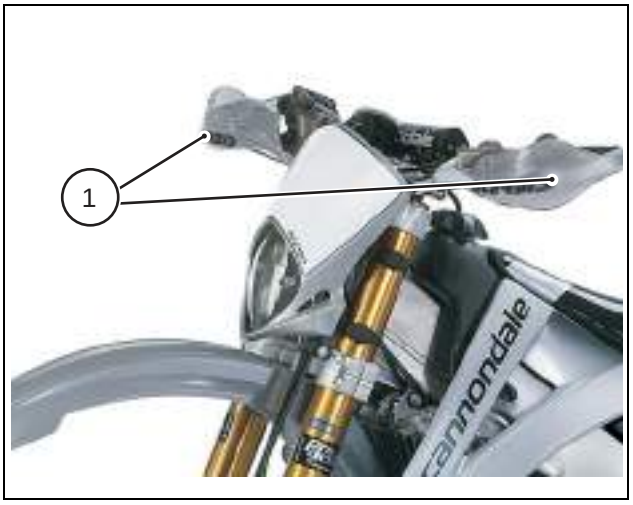
Folding the kickstand up

Before riding, make sure the kickstand is folded up as far as possible and is firmly attached (not wobbling) on the mount before every ride..

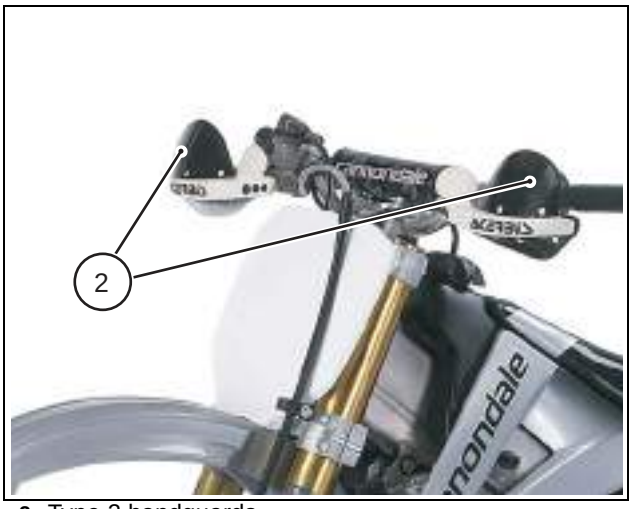
The “YES” photo shows a kickstand that is folded up completely (the correct operating position). Notice that there is no gap (1) present between the kickstand leg and the plate.
The “NO” photo shows a folded kickstand “hanging.” Notice that gap between the leg and the plate. The kickstand may be damaged (e.g., bad spring, bent leg or plate). This condition must be corrected before riding the vehicle.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

HANDGUARDS



1. Type 1 handguards



2. Type 2 handguards

The handguards are located on the right and left sides of the handlebar directly in front of the handle grips. These guards are designed to only offer limited hand protection.

Make sure the handguards are in good condition and fastened securely before riding. The handguards should not interfere with operation of the vehicle controls. Tighten the mounting harware securely.

⚠ WARNING

POTENTIAL HAZARD(S)
(1) Interference with the vehicle controls
(2) Crushed, mangled, or injured hands

WHAT CAN HAPPEN
(1) If a handguard is loose or damaged, it can interfere with the controls possibly preventing your hands from operating the controls as required.
(2) The hand guards (TYPE 1 and TYPE 2) provide limited protection against trail hazards [e.g., wind deflection, small branches, "roost" (the dirt and debris thrown backward from a leading vehicle)]. The guards WILL NOT protect you (your hands) from injury in a crash.
In either case above (1,2), you can be severely injured or killed.

HOW TO AVOID THE HAZARD
(1 & 2) The handguards should be inspected before every ride to ensure that they are mounted securely and will not interfere with the vehicle controls. If they are damaged or loose, take corrective action.
If you have any questions about the conditions or intended use of the handguards, contact your Cannondale Motorsports Dealer for assistance.

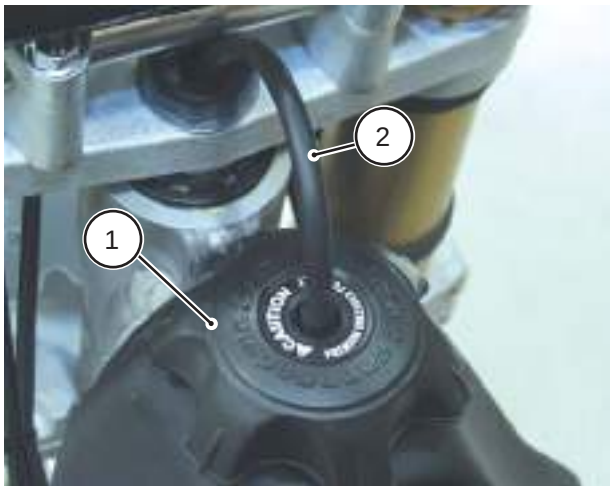
Printed : 8/15/02

FUEL TANK CAP

Remove the fuel cap to fuel the motorcycle. You should fill the vehicle with the specified gasoline before each ride. See the Fluids section of this manual.

To open: Turn the cap counter-clockwise.

To close: Reinstall the fuel cap and turn it clockwise until it is secured.



1. Fuel cap
2. Breather (vent) hose

BRAKE FLUID

Brake fluid: Use only DOT 4 brake fluid.

⚠ WARNING

POTENTIAL HAZARD
Mixing brake fluid

WHAT CAN HAPPEN
Mixing fluid types and brands can damage the brake system. Once unsealed, a container of brake fluid can begin to absorb moisture from the atmosphere. If used in the brake system, the moisture will reduce braking force. A Low brake fluid can allow air to enter the system and this will reduce braking power.
YOU CAN BE SEVERELY INJURED OR KILLED IN AN ACCIDENT IF YOU LOSE YOUR BRAKES.

HOW TO AVOID THE HAZARD
Don't mix brake fluids.
Don't use fluid from opened containers. Have the system drained and refilled by an authorized Cannondale Motorsports dealer if you suspect fluids have been mixed accidentally.
Check the fluid level before riding the vehicle.

CAUTION :

To help prevent fluid contamination, clean the area surrounding the both brake system reservoirs before removing the covers.
Avoid spilling brake fluid on painted, plastic, or rubber parts; damage will result. Place a shop towel or rag over these parts when servicing the brake system. Wipe up any spills immediately.

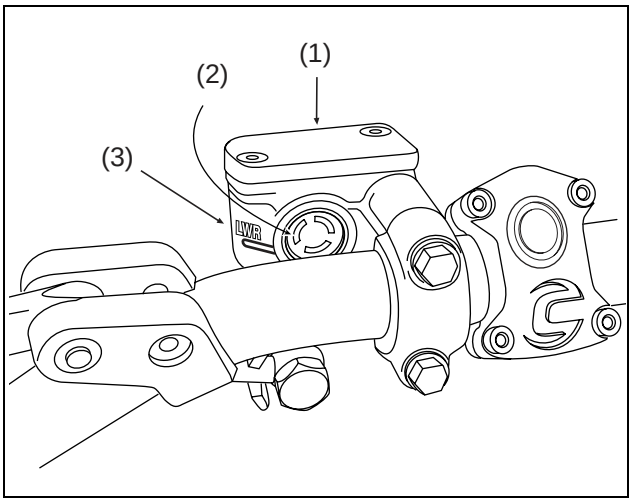
NOTE :

Position the vehicle on a level surface and level the handlebars.
After filling fluid, check the entire system for leaks, and test for the proper operation of the braking

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

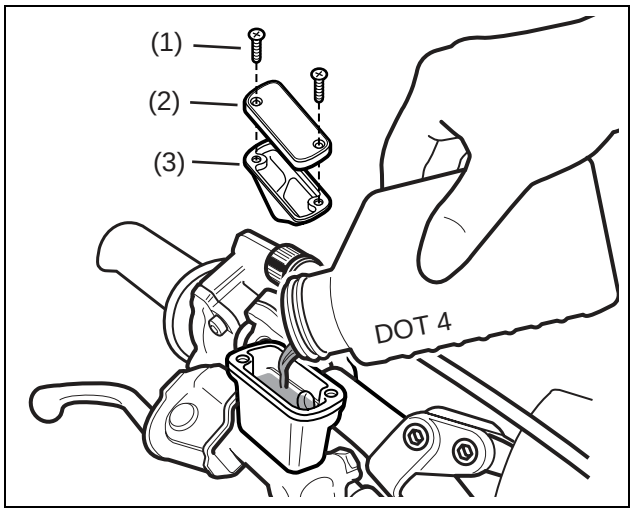
system before riding. Test with the engine off by rolling the vehicle forward and back while apply the brakes. Then, also test the brakes at slow riding speeds.

Checking the front brake fluid level



1. Front brake master cylinder
2. Site window
3. 'LWR' mark

1. To check the front system, level the top of the master cylinder (mounted on the right handlebar).
2. Inspect the fluid level through the site glass. If the fluid level is below the 'LWR' mark, add the specified brake fluid until the fluid is at the top of the window.
3. To add fluid, make sure the area around the master cylinder is clean to prevent contamination which can lead to a loss of braking force. Remove the screws, cover and diaphragm from the master cylinder.
4. Pour DOT#4 brake fluid, from a sealed container, until the fluid level rises to the top of the site window and no higher. If you fill above the window, the fluid will overflow when the diaphragm and cover are re-installed..

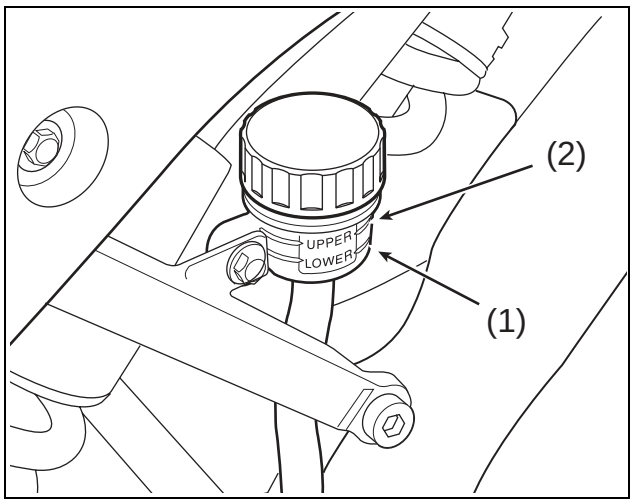


1. Front brake master cylinder cover screws
2. Front brake master cylinder cover
3. Diaphragm

5. Reinstall the front brake master cylinder diaphragm and cover. Tighten front master cylinder cover screws to the specified torque. Tighten to 1.4 lbf•ft (1.9 N•m)
6. Pour DOT 4 brake fluid from a sealed container until it reaches the 'UPPER' mark.
7. Reinstall the diaphragm, insert, and cap. Tighten the cap securely.

Checking the rear brake fluid level

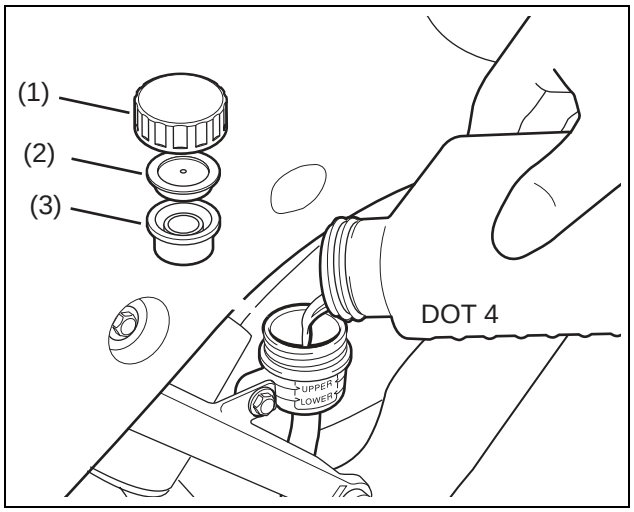
1. To check the rear system, level the rear brake master cylinder reservoir. The fluid level should be above the 'LOWER' mark.



1. 'LOWER' mark
2. 'UPPER' mark

2. If the fluid level is below the 'UPPER' mark, clean the cap and surrounding area thoroughly before opening.
3. Remove the cap and pour DOT 4 brake fluid until

it reaches the ‘UPPER’ mark.



1. Reservoir cap
2. Diaphragm plate
3. Diaphragm

NOTE :

Do not fill the brake master cylinder above the ‘UPPER’ mark or the fluid will overflow when the diaphragm is installed.

4. Install reservoir diaphragm, diaphragm plate, and cap.

COOLANT

Coolant: Use distilled water and [ethylene glycol (containing corrosion inhibitors for aluminum engines and radiators)]

Mixture ratio: 1:1 (Consult coolant manufacturer’s labeling to achieve coolant performance for your operating climate.

⚠ WARNING

POTENTIAL HAZARD
Removing the radiator cap while the engine is hot

WHAT CAN HAPPEN
Can be burned severely by hot coolant sprayed out at high pressure

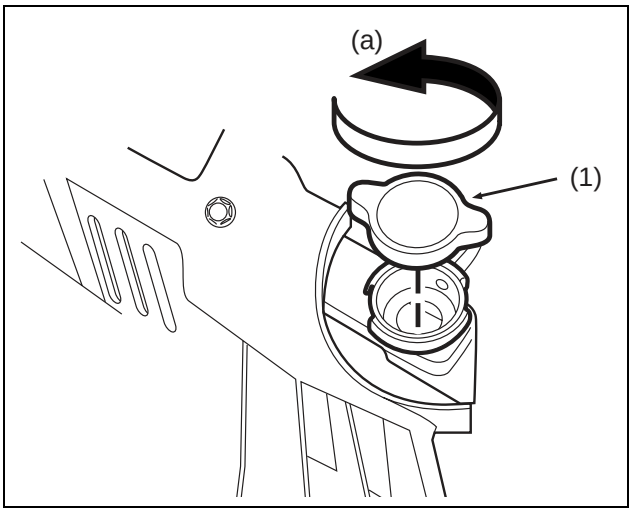
HOW TO AVOID THE HAZARD
Wait for the engine to cool completely before removing the bottle cap. Place a thick towel over the cap; turn slowly to relieve residual pressure.

Checking the coolant level

1. With the engine cold, place a thick towel over the radiator cap. Slowly turn the cap in direction (a) to the first detent and allow any residual pressure to escape.
2. When all pressure has escaped, press down on the cap and keep turning it until it can be

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

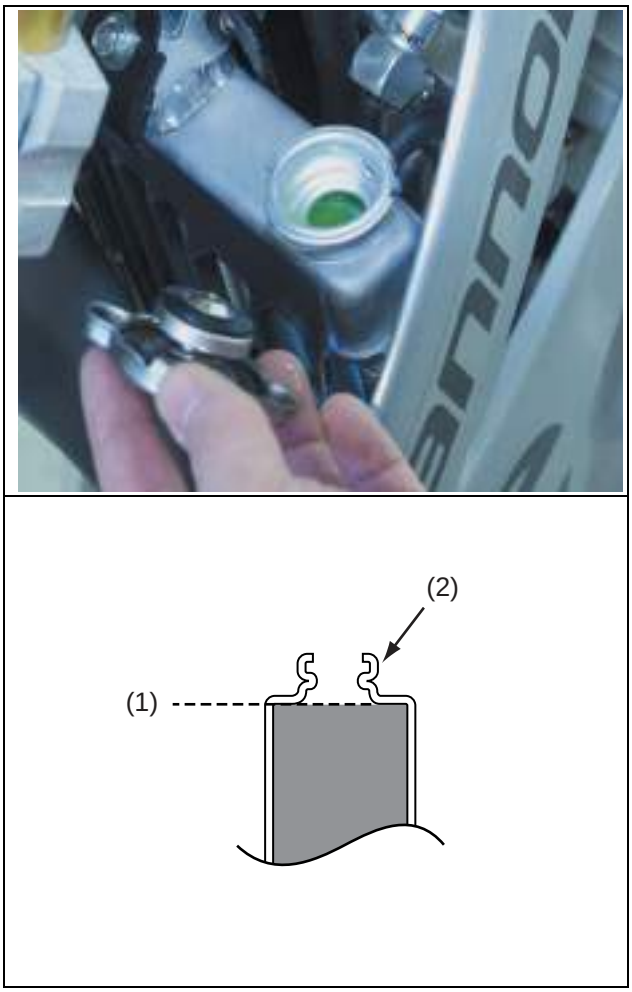
removed.



1. Radiator cap

a. Loosening direction

3. The coolant level should be at the bottom of the filler neck.



1. Coolant level

2. Filler neck

4. Reinstall the radiator cap.
5. Check the entire cooling system for leaks. If the coolant level drops after adding and no leaks are found, contact an authorized Cannondale Motorsports Dealer for servicing.

ENGINE OIL

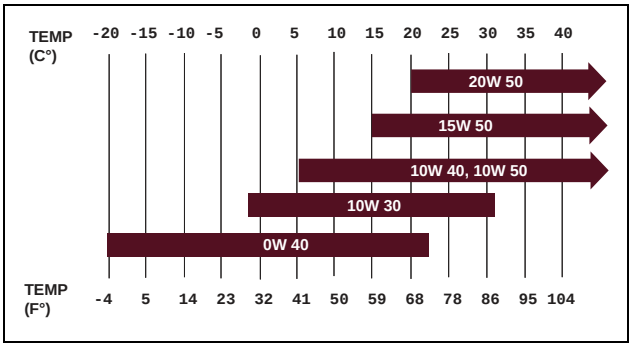
Recommended viscosity: SAE 10W-40 (synthetic or semi synthetic)

Classification: Use only high-detergent, premium quality motor oils with the American Petroleum Institute (API) service classification SF or SG type displayed on the container.

Capacity (dry fill): 1500cc (1.6 US qt.)

NOTE :

Other viscosities can be used when the average temperature range is within the indicated range.

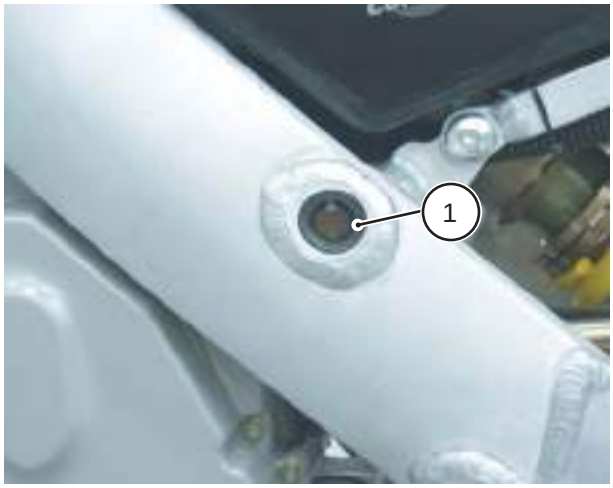


CAUTION :

A low oil level can result in severe engine damage.
Be sure to change the oil and clean/replace the filter(s) in accordance with the maintenance schedule and more frequently when operating under extreme conditions.

Checking the engine oil level

1. Position the vehicle upright on a work stand outdoors - NOT INDOORS. Refer to "General Safety Precautions" starting on page 5.
2. Start the engine, and warm it up to normal operating temperature 158°F (70°C). Allow the engine to idle for several seconds after operating temperature is reached and shut the engine off. Wait a few minutes for the oil to settle.
3. Inspect oil level in the inspection window on the left frame spar. The oil level should be visible in the window.



1. Inspection window (left frame spar)

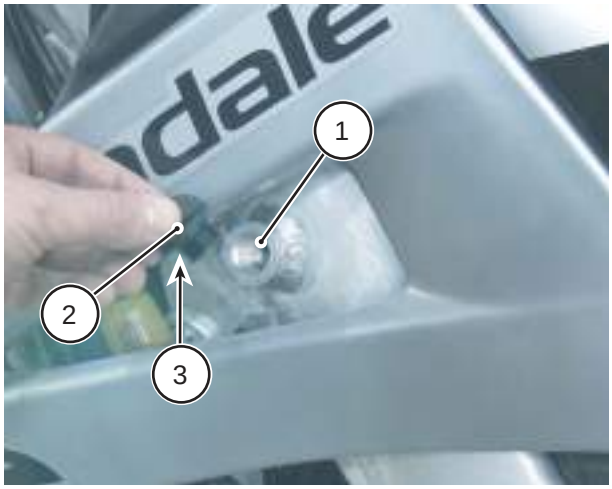
This photo is a close up of the inspection window showing the oil inside the spar. The oil level is OK when you can see the level.

If the level is low (cannot see oil in the window), add a sufficient amount of oil to raise it to the correct level. Add at the filler hole using a clean funnel.

If you see that the level is too high, drain some out using the left spar drain bolt until the oil level

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

is visible through the window.



1. Engine oil filler hole
2. Cap
3. O-ring

CAUTION :

Use a clean funnel.

Changing engine oil and cleaning the filters

NOTE :

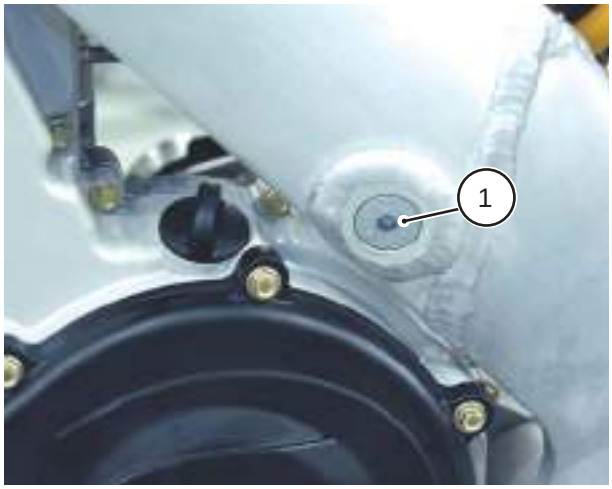
Your vehicle has two engine oil filters. One filter is located within the engine oil pressure pump housing on the left (front) side of the engine. The other filter is located at the left rear of the crankcase inside the crankcase inlet fitting. We highly recommend cleaning (or replacing) both as directed.

Replace the paper engine oil filter every time you change the oil. Clean the inlet fitting as directed.

Remove the spar engine oil filler cap (left spar) when draining.

When refilling engine oil, add slowly and recheck level frequently so as not to over fill the system.

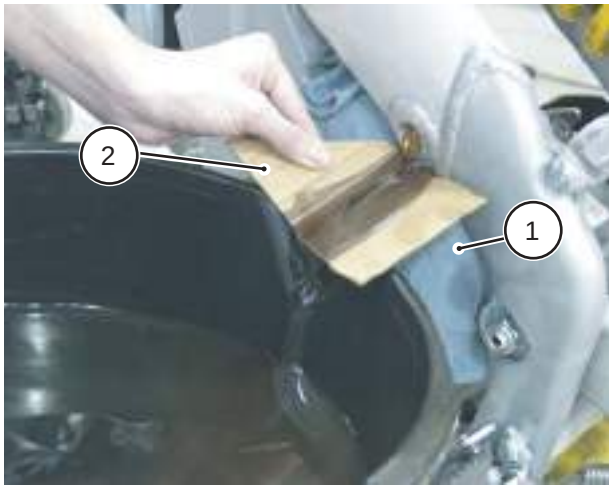
1. Position the vehicle upright on a work stand outdoors - NOT INDOORS. Refer to "General Safety Precautions" starting on page 5.
2. Start engine and allow to run briefly to warm the engine oil. Then, turn the engine off.
3. Remove the left spar drain bolt and drain the contents into an oil pan.



1. Left spar drain bolt

NOTE :

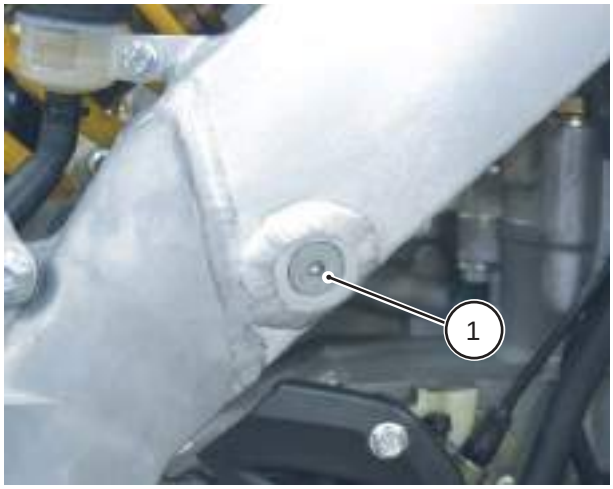
Position a clean shop towel behind a folded piece of thin cardboard to channel or direct the flow of oil from the spar drain bolts into your oil pan.



1. Shop towel
2. Folded cardboard

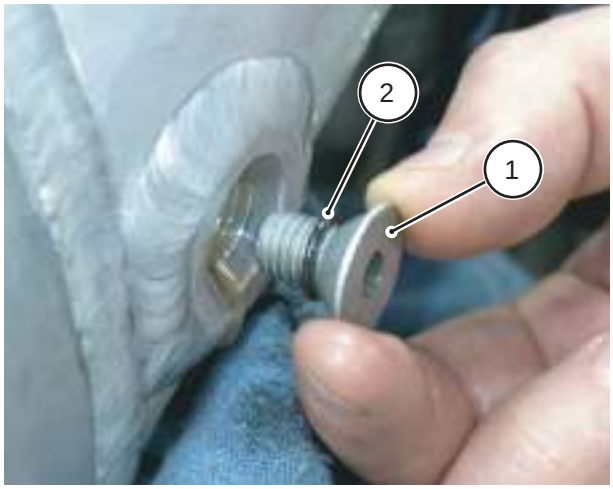
4. When the spar flow is reduced, have an assistant hold the handlebars and slightly tilt the vehicle toward the oil pan to drain any remaining oil.

5. Drain the right spar in the same way.



1. Right spar drain

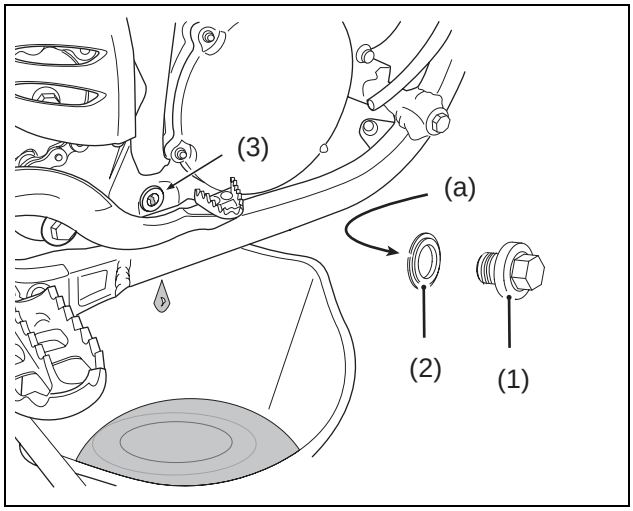
6. For both the left and right spar bolt, inspect the spar bolt O-ring.



1. Spar drain bolt
2. O-ring

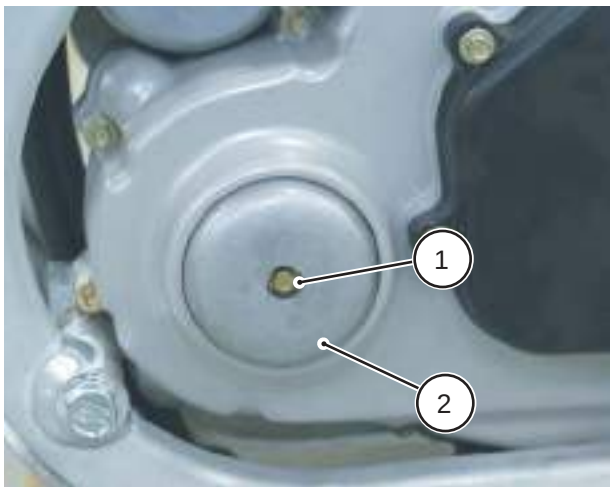
Replace the O-ring with a new one if you find any tears, rips, or if it is distorted in shape. Make sure the bolt threads are clean. Apply some clean engine oil to the threads and O-ring and reinstall. Tighten the spar drain bolt(s) to 15.0 lbf•ft (20.3 N•m).

7. Remove the engine oil crankcase drain bolt and sealing washer and allow the oil to drain into your oil pan.



1. Bolt
2. Sealing washer
3. Crankcase drain hole
a. Sealing washer (flat side)

8. Apply some anti-seize compound to the threads of the drain bolt. Install the sealing washer onto the bolt so that the flat side faces the crankcase and install the bolt and washer into the crankcase. Tighten the bolt to 6.0 lbf•ft (8.1 N•m).
9. Position your oil pan under the engine oil filter cover and remove the bolt and the filter cover.



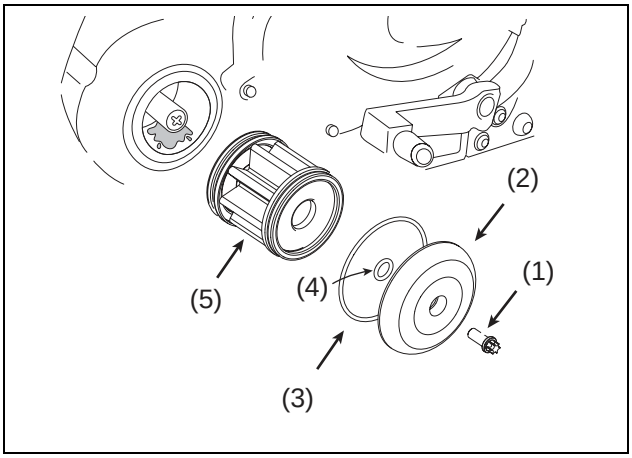
1. Bolt
2. Cover

NOTE :

Be sure to note the two O-rings in the cover when you remove it.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

10. Remove the filter from the housing and discard it.

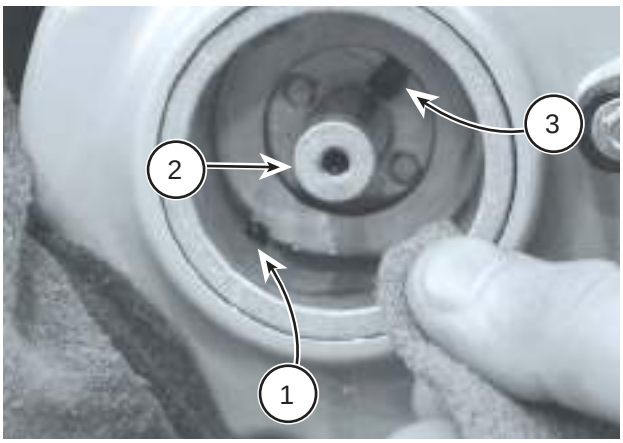


1. Bolt
2. Cover
3. Large O-ring
4. Small O-ring
5. Filter (w/seals)

11. Clean the filter housing and cover with a clean shop towel to remove any accumulated sediment/debris. When you are cleaning, avoid displacing the contaminants into the areas noted in the photo. Also, be sure to clean the cover (O-ring) mating surfaces.

CAUTION :

Do not use any type of tool (e.g., screw driver, putty knife) to clean the O-ring mating surfaces; damage to mating surface will result in oil leakage.



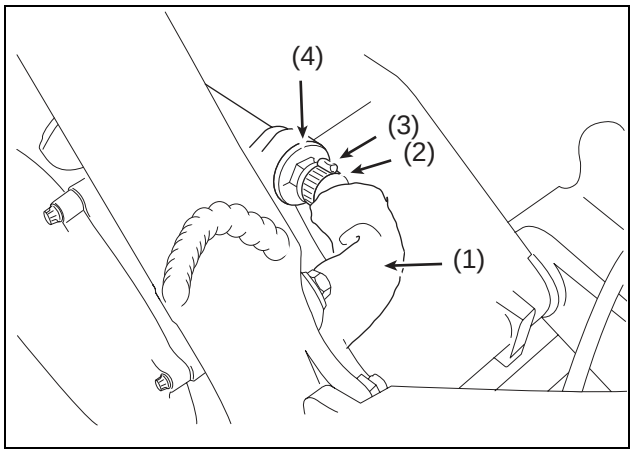
1. Oil inlet (from spar inlet filter)
2. Oil outlet (to starter clutch assembly)
3. Oil (outlet (to crankshaft/cylinder head)

12. Install a new filter.
13. Apply a light coat of O-ring lubricant to the large and small cover O-rings and insert them back into the cover.
14. Install the cover and bolt; tighten to 3.3 lbf•ft (4.5 N•m).

CAUTION :

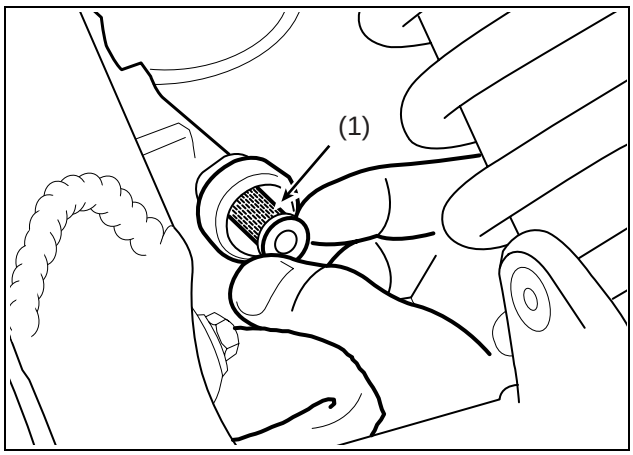
If engine oil seeps or a leak develop at the cover, you may need to replace the cover O-rings or inspect the cover and housing mating surfaces for damage. Trying to stop a leak by over-tightening the cover bolt; will result in thread damage and a more costly repair.

15. Move to the rear of the engine on the left side and slide the shielding back to expose the left spar return hose and clamp.
16. Release the hose clamp and remove the hose from the engine oil inlet fitting. Have a rag handy to capture any residual engine oil that may be in the hose.



1. Heat shield
2. Return hose
3. Hose clamp
4. Inlet fitting

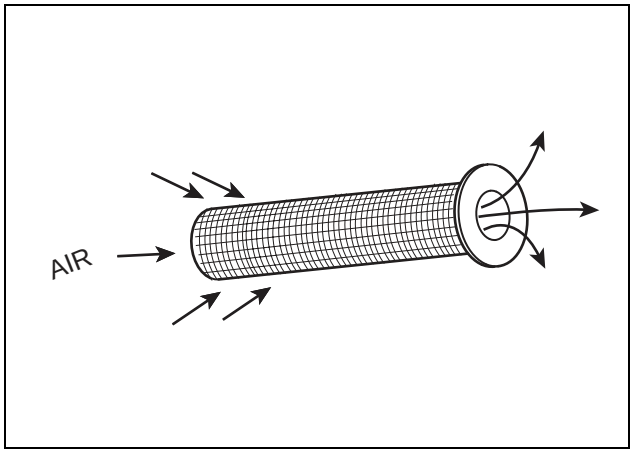
17. Remove the inlet fitting and filter screen.



1. Filter

18. Clean the filter with compressed air. Inspect the filter for cracks, tears or other damage.

Replace it with a new one if damage if found.

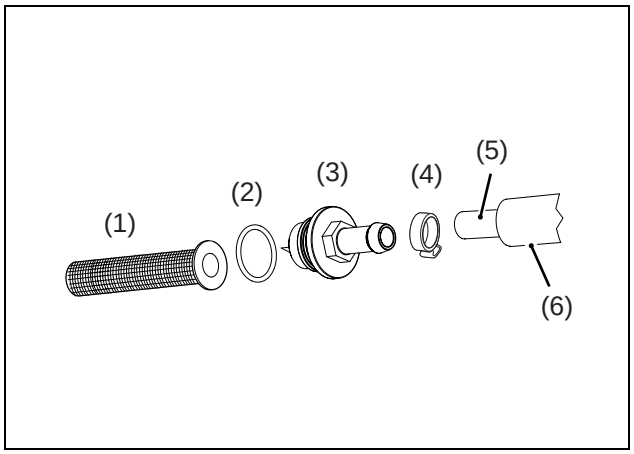


19. Insert the cleaned filter back into the hole.

NOTE :

Inspect the O-ring. Replace if damaged. Lubricate with clean engine oil before installing fitting.

20. Apply anti-seize lubricant to the fitting threads and apply some clean engine oil to the fitting O-ring.
21. Install the inlet fitting. Tighten to 3.3 lbf•ft (4.5 N•m).



1. Filter
2. Fitting O-ring
3. Inlet fitting
4. Hose clamp
5. Oil return hose (from frame spar)
6. Hose heat shielding

22. Reattach the inlet hose and clamp onto the fitting and tighten the hose clamp securely. Re-position the heat shielding.
23. Add 1 US quart of the specified engine oil at the spar filler hole using a clean funnel.

This is less than the total engine oil capacity, but sufficient to help prevent over filling. Wait a few minutes for the added engine oil to flow throughout the frame spars.

You will need to reinstall the filler cap, start the engine and run it briefly. Turn the engine off, wait for the oil to settle, and check the level in the window.

Regulate the engine oil level as required.

HYDRAULIC CLUTCH FLUID

Check the hydraulic clutch oil level after every 10 hours of operation.

Bleed the system if the level feels weak or spongy.

Hydraulic clutch fluid: Use only SAE 10 mineral oil

CAUTION :

Never substitute brake fluid for SAE 10 mineral hydraulic oil. Brake fluid will swell the internal seal resulting in severe damage.

Checking the oil level of the hydraulic clutch

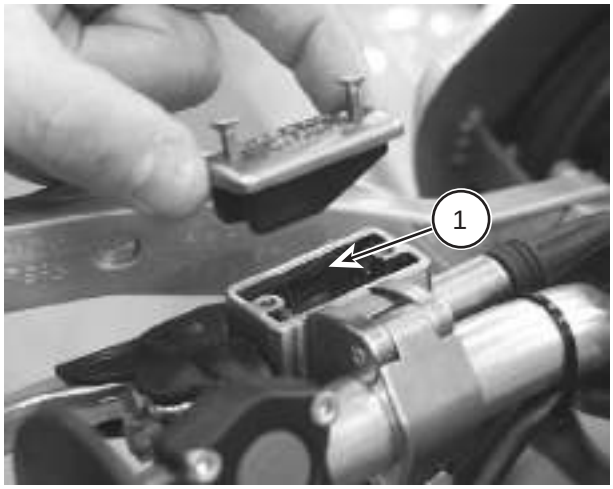
CAUTION :

Make sure the area surrounding the master cylinder is clean before removing the cover.

1. Position the handlebar so that the top of the master cylinder is level.
2. Remove the cover screws, cover, and rubber boot. The oil level should be 4mm below the

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

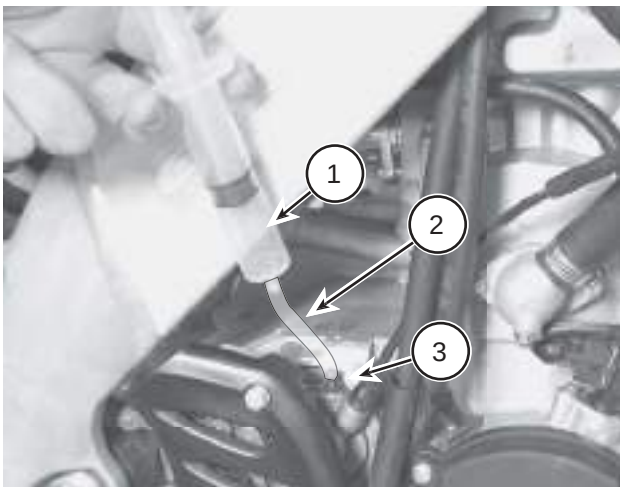
upper edge.



1. Correct oil level

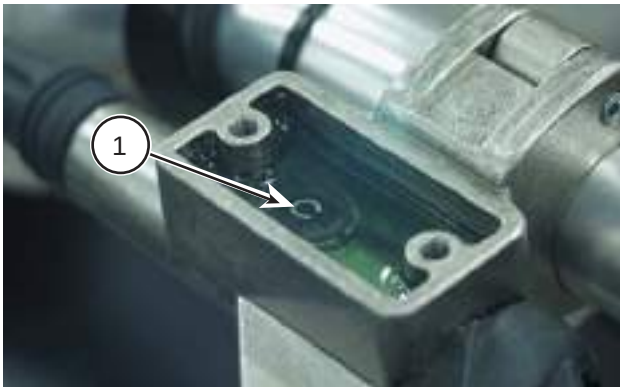
Bleeding air from the hydraulic clutch

1. To bleed, level the handlebars and remove the master cylinder cover and slave cylinder bleed bolt cap.
2. Attach a clean syringe filled with SAE 10 (mineral hydraulic oil) to the bleeder bolt at the slave cylinder. Make sure there is no air trapped in the hose or syringe.



1. Syringe
2. Tube
3. Bleeder bolt

3. Loosen the bleeder bolt and slowly compress the syringe until only oil - (no air bubbles) is discharged at the bore of the master cylinder. Make sure the oil does not overflow out of the master cylinder.



1. Bore

CAUTION :

After bleeding, make sure the fluid level in the master cylinder is correct. Oil level should be 4 mm below the upper edge.

4. Tighten the bleed bolt, remove the syringe, and replace the cap.

Setting the clutch release collar

The clutch release collar only requires adjustment if replacement clutch plates or springs are installed.

NOTE :

A special "clutch release collar" holding tool is available. Right angle circlip pliers of the correct size can be used.

CAUTION :

The oil level is below the cover edge, but clean the area surrounding the clutch cover to prevent contamination of the transmission oil.

5. To set the release collar, start by checking the fluid level in the master cylinder. Add the specified fluid and/or bleed the air from the system if necessary.
6. Make a pencil reference mark on the shift lever and shift shaft to ease reinstallation of the shift lever later. Then, remove the shift lever bolt, and remove the shift lever.
7. Remove the clutch cover bolts, and remove the

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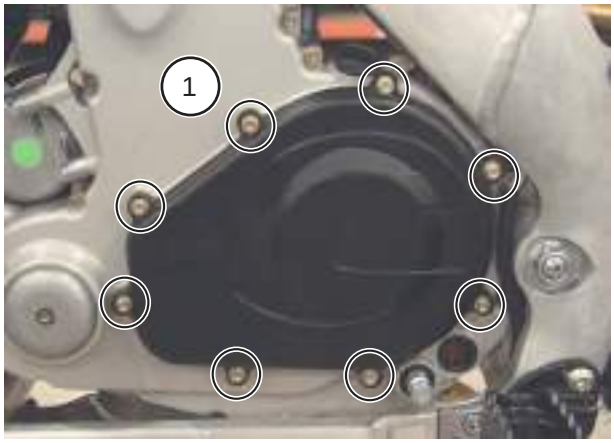
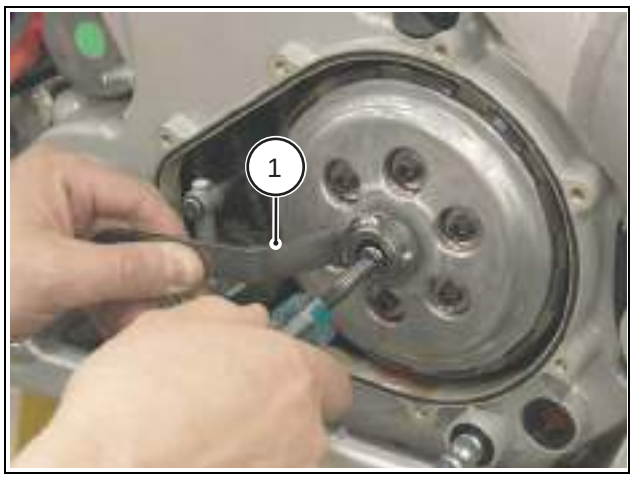
clutch cover.



1. Cover bolts

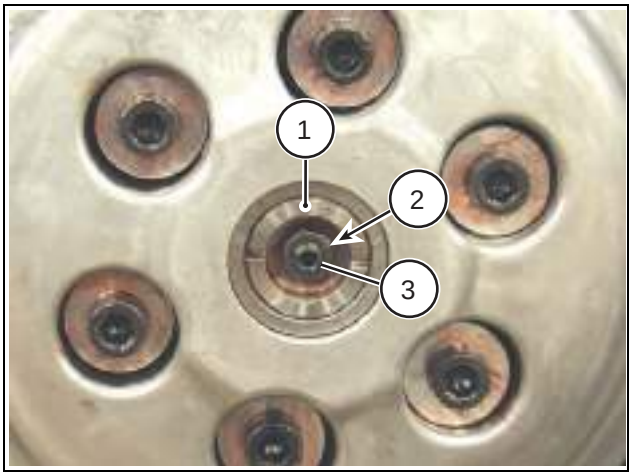
8. Use the holding tool to hold the release collar and loosen the 8 mm locknut.



1. Holding tool

9. Turn the locknut counterclockwise all the way but do not remove it. Hold the release collar with the tool and use a 2.5 mm allen to turn the adjuster locknut (clockwise) until it lightly bottoms. Then, back the adjuster out (counterclockwise) three full turns.

10. Tighten the adjuster locknut to 3.3lbf•ft (4.5 N•m).



1. Release collar
2. Locknut
3. Adjuster

11. Inspect the clutch cover seal for any rips, tears, or other damage. Replace it with a new one if it is damaged.
12. Install the seal, cover and cover bolts. Tighten the bolts to 3.3lbf•ft (4.5 N•m).
13. Position the shift lever as removed and install the pinch bolt. Tighten to 5.0 lbf•ft (6.8 N•m).

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

FUEL

Recommended Fuel: Premium unleaded gasoline

Anti-Knock Index: 93 or higher

Replacement fuel filter: FRAM G4164 or equivalent

Filter rating: 35 micron

⚠ WARNING

POTENTIAL HAZARD
Improper care when handling fuel.

WHAT CAN HAPPEN
Fuel is highly flammable. Spilling it can cause a fire or explosion.

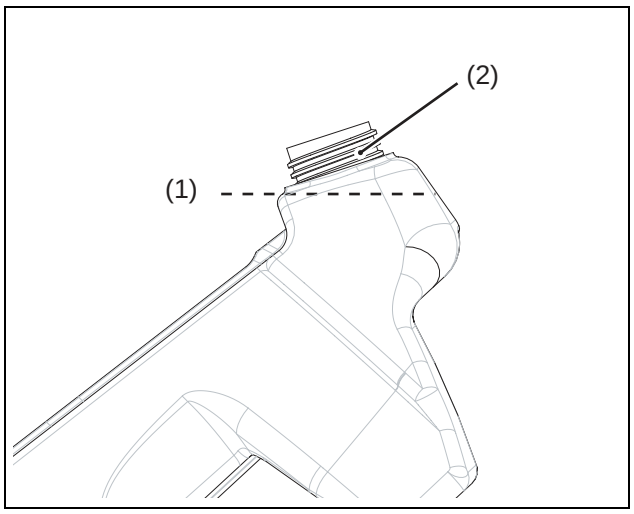
HOW TO AVOID THE HAZARD
Always tighten the fuel cap securely.
Work in a well-ventilated area free of cigarettes, welders, torches, grinders, electric shop tools, or sources that could ignite any spilled fuel accidentally.

CAUTION :

If engine "knocking" or pinging occurs, use a different brand of gasoline or one with a higher octane rating. Never experiment with other fuels.
Do not use race gas, fuel additives, injector cleaners, or octane boosters. These can severely damage the fuel system, sensors, fuel quick-connect O-rings, tank, hoses, etc.).

Adding fuel

1. Make sure the vehicle engine is completely cool.
2. Remove the fuel cap, and fill the tank with fuel until it reaches the bottom of the filler neck.



1. Fuel level
2. Filler neck

⚠ WARNING

POTENTIAL HAZARD
Overfilling the fuel tank

WHAT CAN HAPPEN
Fuel expands due to heat (e.g., engine, sun). An overfilled tank may overflow and spill fuel resulting in a fire or explosion. You can be seriously injured or killed.

HOW TO AVOID THE HAZARD
Stop adding fuel when the correct level is reached.

3. Tighten the fuel cap securely and make sure the breather hose is undamaged and routed cor-

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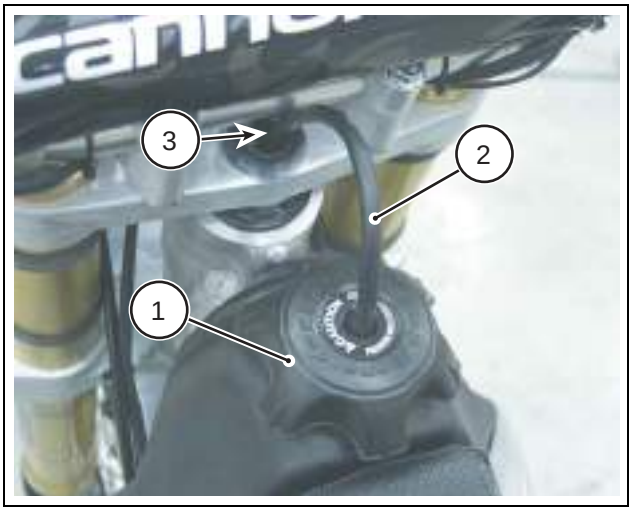
rectly.



1. Cap
2. Breather (vent) hose
3. Steering stem hole

4. Replace the cap and tighten it securely. Reattach the breather hose, without any kinks or bends, to the cap and steering stem hole.

Replacing the fuel filter

Replacement interval: Every 5 hours of operation

Replacement fuel filter: FRAM G4164 or equivalent

Filter rating: 35 micron

NOTE :

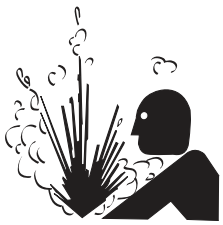
Accumulation of dirt in the fuel filter will restrict fuel flow. Proper fuel flow and pressure is critical to the reliability of the fuel injection system and level of vehicle performance. Be sure to replace the fuel filter after every 5 hours of operation.
We recommend that you keep a few extra filters handy so that frequent replacement is hassle free.

⚠ WARNING

POTENTIAL HAZARD
Improper care when handling fuel.

WHAT CAN HAPPEN
Fuel is highly flammable. Spilling it can cause a fire or explosion.

HOW TO AVOID THE HAZARD
Always tighten the fuel cap securely.
Work in a well-ventilated area free of cigarettes, welders, torches, grinders, electric shop tools, or sources that could ignite any spilled fuel accidentally.



1. Make sure the engine and exhaust system are completely cool.
2. Remove the seat, and remove the left radiator shroud.
3. Press in the quick-connect locking tab, and remove the tank outlet fitting and hose from the tank.
4. Hold the filter in a clean shop towel and loosen

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

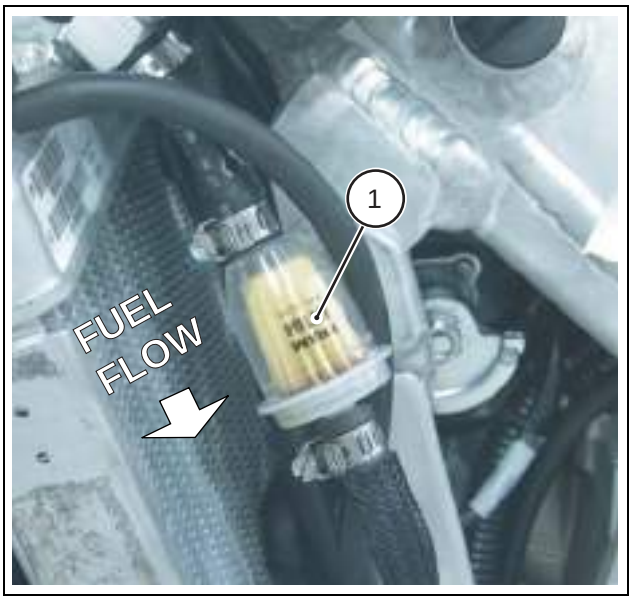
the filter hose clamps allowing fuel in the hose to be absorbed by the towel.

5. Remove the old filter.
6. Reinstall a new, replacement filter making sure to observe the flow indicator on the filter body.

CAUTION :

Replace the filter with the specified type.
Do not operate with the fuel filter removed.

7. Tighten the hose clamps securely.



1. Fuel filter

8. Inspect the external quick connect fitting O-rings. Replace them with new ones if you find any swelling, tears, rips or other damage.

   Coat O-rings with O-ring lubricant or clean engine oil and reinstall into the tank fitting.
9. Make sure you press in the tab on the tank fitting before inserting the hose end or you can tear the O-rings.
10. Reinstall the radiator shroud and seat.
11. Check the system for any leakage before operating.

TRANSMISSION OIL

Recommended viscosity: SAE 80W or 85W

Capacity (dry fill): 600cc (0.85 US qt.)

CAUTION :

Maintain correct oil level.
Change oil and clean the filter in accordance with the maintenance schedule.

NOTE :

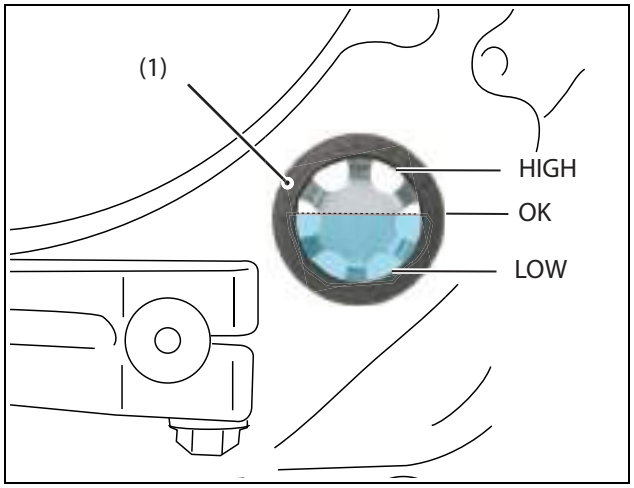
Check the oil level when the engine is cold.

Checking the transmission oil level

1. Place the motorcycle upright on a work stand.
2. Inspect the oil level in the inspection window.

   The level should be visible in the window.

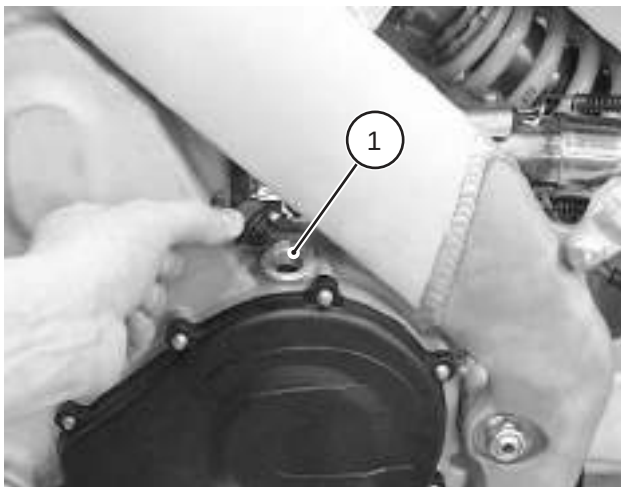
   Maintain the oil level between the “LOW” and “HIGH” as indicated.



1. Transmission oil window

CAUTION :

To add, remove the cap and pour the specified transmission oil at the filler hole to raise it to the correct level in the window. Clean around cap before removing it.
Use a clean funnel.

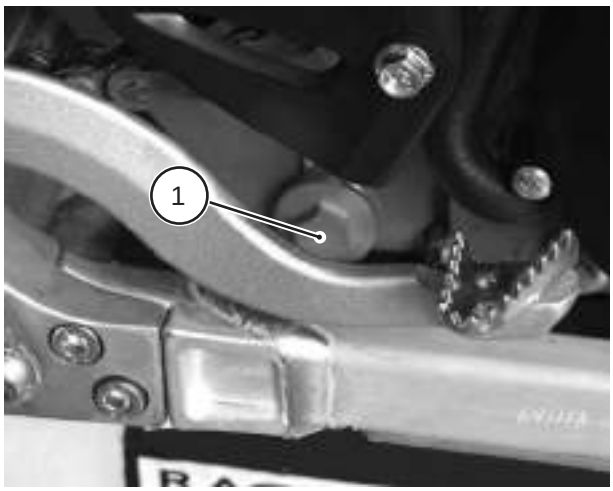


1. Filler cap (w/O-ring)
2. Hole

3. Wait a few minutes for the oil to settle and recheck the level. Replace the cap securely.

Changing the transmission oil

1. Place the motorcycle upright on a work stand.
2. Remove the transmission drain bolt and allow the oil to drain into your oil pan. Lean the vehicle slightly to the right to ensure all oil has drained.

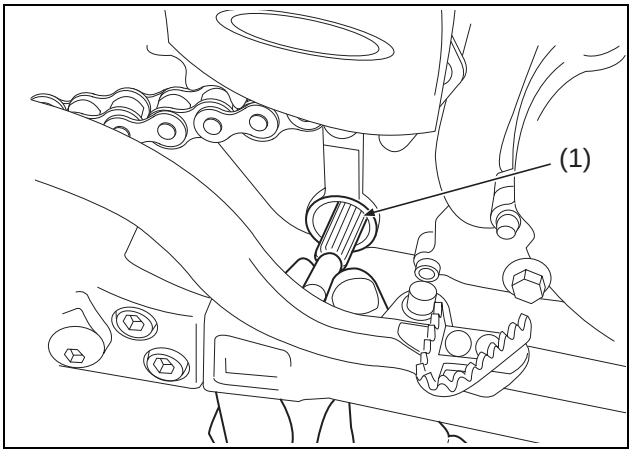


1. Transmission drain bolt & filter

3. The filter may not come out with the drain bolt.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Be sure to remove it from within the drain hole.

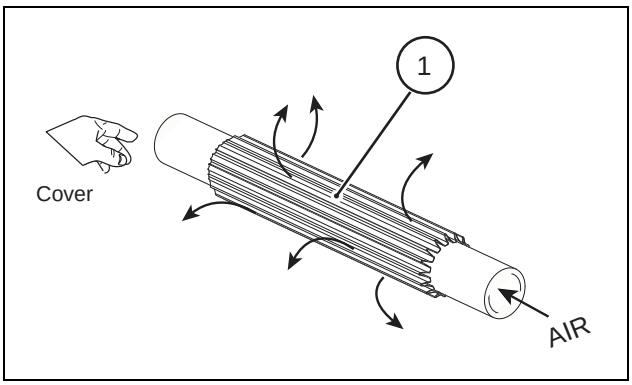


1. Transmission oil filter

4. Clean the filter and inspect for damage (cracks holes, splitting, tears) Replace if damaged.

NOTE :

Use compressed air in small bursts directed to the inside of the filter so contaminants and particles in the filter folds are forced out.



5. Position the filter in the drain hole. Apply anti-seize thread lubricant to bolt threads. Inspect the sealing washer and install onto the bolt so the flat side faces the crankcase. Insert the end filter into the drain bolt hole and slowly thread the drain bolt into the crankcase. The other end of the filter screen should locate in the hole in the transmission cartridge plate easily. If the drain bolt is difficult to turn, back it off and turn slowly until the filter end finally locates.

CAUTION :

The drain bolt should turn easily with your finger tips until the washer seats against the crankcase. If forced, damage to the filter can result .

1. Filter
2. Sealing washer
3. Drain bolt
a. Flat side

6. Tighten the drain bolt to 8.1 N•m (6.0 lbf•ft).
7. Add the specified transmission oil at the filler cap until the oil level rises to just below the top of the inspection window. Pour slowly and allow time for the oil to flow throughout the case cavity.
8. Then, run the engine briefly (1-2 minutes) to circulate newly added oil and recheck the level. Add more if necessary.

PRE-RIDE INSPECTION

Perform a pre-ride inspection of your motorcycle before every ride. \

⚠ WARNING

POTENTIAL HAZARD
Failure to inspect the vehicle before operating.

WHAT CAN HAPPEN
Increases the possibility of equipment failure resulting in an accident.

HOW TO AVOID THE HAZARD
Always inspect this vehicle before you operate it.
Always follow the inspection and maintenance procedures found in this Owner's Manual.
Have your vehicle serviced by an authorized Cannondale Motorsports Dealer after every 25 hours of operation.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Pre-Ride Inspection Checklist

ITEM	CHECK
Apparel	Condition of (helmet, eye protection, boots, gloves, long-sleeved shirt and long pants).
Brakes	Check proper operation, fluid levels, front lever and rear pedal freeplay, leaks. Fill with DOT4 brake fluid if necessary. Check front and rear pads and discs.
Chassis (frame)	Inspect the frame, subframe, and swingarm for bending, cracks, or other damage. Don't ride if damage is found.
Clutch	Check for proper operation.
Coolant	Check coolant level. Fill with coolant if necessary.
Drive	Clean and lubricate the drive chain. Check drive chain slack and condition, sprockets, swingarm buffer, rollers, and guide block.
Engine	Check oil level. Fill with engine oil if necessary
Fuel	Fill with fuel. Check for leaks or damage to the fuel system.
Throttle	Check the throttle freeplay, make sure it operates properly in all handlebar positions. Closes completely when released.
Transmission	Check oil level. Fill with transmission oil if necessary
Wheels/Tires	Check the wheel rims for damage, Check/regulate the tire pressure and condition.
Suspension	Check the fork and rear shock compression and rebound damping settings. Check the fasteners for tightness and re-torque if necessary. Inspect for damage and excessive wear.
Steering	Make sure that the handlebars turn freely: no binding of the cables/hoses throughout the full steering range (stop to stop).
Handguards	Make sure the handguards are mounted securely and that they do not interfere with the vehicle controls. Fasten the mounting harware securely.
Panels, Bolts/Fasteners	Make sure all panels are fastened securely; check fasteners for tightness.
Lights (if applicable)	Check for proper operation of all vehicle lighting.

OPERATION

⚠ WARNING

POTENTIAL HAZARD
Operating the vehicle without being familiar with all the controls

WHAT CAN HAPPEN
Losing control of the vehicle which can cause an accident where you can be severely injured or killed.

HOW TO AVOID THE HAZARD
Read this manual carefully, and fully understand its contents before operating the vehicle.
If you don't understand something, ask a Cannondale Motorsports Dealer.

Starting the engine

CAUTION :

Observe the BREAK-IN routine section in this manual before you operate for the first time.

1. Perform the Pre-Ride Inspection checklist in this manual. See page 40.
2. Position the vehicle on level ground outside - NOT INDOORS.
3. Shift the transmission into neutral.
4. Press engine ON/OFF toggle switch to "ON." Pull-in the clutch lever and press the start button to start the engine.

NOTE :

Do not open the throttle while operating the starter motor. This will make starting very difficult and possibly foul the spark plug.

Do not crank the engine more than 3 seconds on each attempt.

If the engine fails to start, release the button and wait briefly before the next attempt. Retry.

5. When the engine starts, slowly release the clutch lever.
6. Allow the engine to idle until it reaches operating temperature 158 F° (70°C) before you begin riding.

NOTE :

This vehicle is equipped with an automatic Idle Air Control Valve (IACV) which opens and closes and idle air bypass port in the throttle body. When starting a cold engine, engine rpm will be higher and slowly reduce as the valve reacts to the increasing engine temperature.

STARTING A WARM ENGINE

When starting an engine after it has reached operating temperature, DO NOT open the throttle while operating the starter motor. This will make starting very difficult and possibly foul the spark plug.

JUMP STARTING

If the battery voltage is low in your vehicle, you can perform a jump start using an auxiliary battery or wall unit. A positive (+) battery terminal is accessible on the back of the battery plate.

CAUTION :

You SHOULD NOT use this terminal for charging the battery.

Do not charge the battery while it is installed in the vehicle.

Jump starting should only be attempted when an undamaged battery suffers a temporary drain and you are no longer able to start the engine with it. Jump starting enables you to start the engine quickly and then use the vehicles' charging circuits to charge the battery to its full capacity. If you do jump start, make sure the charging system has adequate time to

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

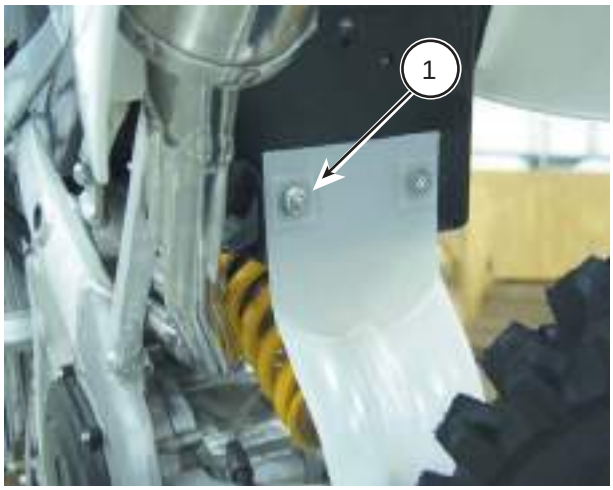
re-charge the battery before shutting the vehicle off. It not, remove the battery and place it on a battery charger.

⚠ WARNING

POTENTIAL HAZARD
Electrical short-circuit or electrical fire

WHAT CAN HAPPEN
You can short the battery to ground with a tool and the vehicle frame. This can cause an electrical fire. You can be burned severely or be injured by the sparks themselves.

HOW TO AVOID THE HAZARD
Make sure the jumper cable is attached to the terminal securely. Have an assistant hold the clamp while turning over the engine.
When performing maintenance, cover this terminal with electrical tape to prevent an accidental short to ground. (i.e., touching the terminal with a tool that is grounded to the frame, subframe, swingarm or exhaust system)



2. 12V+ - Battery jump start terminal

SHIFTING GEARS

⚠ WARNING

POTENTIAL HAZARD
Down shifting to a lower gear at high speeds.

WHAT CAN HAPPEN
Tires can lose traction resulting in a loss of vehicle control. You can be severely injured or killed.

HOW TO AVOID THE HAZARD
Reduce speed gradually when down shifting. Never down shift into a lower gear when travelling at high speeds.
Use a combination of the front and rear brakes and down shift one gear position at a time when slowing the vehicle from higher speeds.

CAUTION :

When shifting gears, press the shift lever firmly to make sure the gear engagement is complete. Careless shifting can result in incomplete gear engagement and can cause the transmission to jump out of gear. This can severely damage the engine.

1. To engage from NEUTRAL into first gear, pull in the clutch lever and push down on the shift lever.
2. Release the shift lever.
3. Open the throttle a little and slowly let out the clutch lever.
4. To shift into a higher gear, pull in the clutch lever, push the shift lever up to the next gear, release the shift lever, then release the clutch lever.
5. To shift into a lower gear, pull in the clutch lever, push down on the shift lever and release - then release the clutch lever.

Printed : 8/15/02

BRAKING

⚠ WARNING

POTENTIAL HAZARD(S)
(1) Sudden or uneven brake application
(2) Wet brake system (e.g. discs, pads)

WHAT CAN HAPPEN
(1) If you apply the brakes too quickly or suddenly, the wheels may slide or skid causing you to lose control resulting in an accident where you could be seriously injured or killed.
(2) Wet brakes do not provide the stopping power needed and therefore are extremely dangerous.

HOW TO AVOID THE HAZARD
(1) Apply the front and rear brakes evenly and gradually. Always consider the surface of the terrain you are riding on and how it will affect your braking ability. Concentrate on applying both brakes as hard as possible without skidding. Shift down or fully disengage the clutch as necessary to keep the engine from stalling.
(2) In wet conditions test the brake operation frequently. When riding in wet conditions, ride the vehicle at slow speeds and apply the brakes several times until they are dry and at full power. Before riding the vehicle make sure the brakes and controls (e.g., brake lever, brake pedal, clutch lever, engine stop switch, and throttle) operate properly.

1. To brake, close the throttle completely with the clutch engaged (except when shifting gears) so the engine will help slow down the vehicle.
2. Apply the front and rear brakes evenly.

POST RIDE CHECKS

1. After every ride, clean the motorcycle thoroughly and allow it to dry, and then inspect the entire vehicle for damage or loose fasteners.
2. Repair or tighten any damaged or loose components, and lubricate the vehicle.
3. If the vehicle is damaged, and you are unable to address the problem right away, put a piece of tape over the START button and attach a note describing the problem to the handlebar. This is a recommended step toward preventing operation of the vehicle until it is serviced properly.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

BREAK-IN

The break-in period is critical to the long term life and reliability of the engine.

CAUTION :

Avoid high engine rpm and/or lugging the engine during the break-in period. Shift gears as required to best match travelling speeds and loads.
Avoid full-throttle starts and rapid acceleration.
Do not hold the throttle grip in one position for more than a few seconds. It is better to roll the throttle on and off and ride on flat terrain.
Avoid riding up steep hills and in sand because this produces greater engine loads, possibly damaging engine components.

1. Before starting the engine, fill the fuel tank with the specified fuel.
2. Perform the Pre-Ride Inspection checklist in this manual. See page 40.
3. Start the engine and allow it to warm up to operating temperature 158 F° (70 C°).
4. Check the idle speed, proper operation of all vehicle controls.
5. Operate the vehicle as follows:
   Ride normally for 10-minutes using no more than a 1/2 throttle opening. Shut the engine off and wait for the engine to cool completely.
6. Repeat the previous step.
7. Ride for three 15-minute segments using no more than 3/4 throttle, again, allowing the engine to cool completely between rides.
8. After riding the vehicle, clean it thoroughly and allow it to dry. Then inspect the entire vehicle for damage or loose fasteners. Repair or tighten any damaged or loose components and lubricate the vehicle.
9. If the vehicle is damaged, it is recommended that you put tape over the start button to remind you to not start the vehicle. Also, attach a piece of paper to the handlebar with the problem written on it.
10. Complete the Break-In service column found in the Maintenance Schedule of this Owner's Manual.

IMPORTANT NOTICE

This manual has been carefully written. We have done our best to provide you with special notations and procedures so that anyone with moderate mechanical skills and abilities should be able to complete the instructions as described.

This manual DOES NOT include every DANGER, WARNING, CAUTION that can affect your safety!

Before you attempt to perform any procedure described in this section, make sure you read the “General Safety Precautions” on page 5. Keep these points in mind whenever you operate or service the vehicle.

You are responsible for your safety when operating or servicing the machine.

Make sure you read and understand the entire procedure before performing any work.

If you doubt your skills and ability to complete a procedure as described, have the service performed by your Cannondale Dealer.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

MAINTENANCE SCHEDULE

The following maintenance schedule is intended as a general guide only. Where and how you ride will affect how often and what items are serviced on your vehicle. Weather conditions, terrain (e.g. sand, dirt, dusty, wet, etc.), and your riding style all influence how often a maintenance item should be performed. For example, if you ride in sandy conditions, the time (interval) between servicing the drive chain, sprockets and other drive components will be shortened since sand is very abrasive and will act to wear them more quickly. If you have questions about establishing a maintenance schedule appropriate to you riding style and conditions, contact your Cannondale dealer.

Perform the Pre-Ride Inspection before every ride and at scheduled maintenance periods.

NOTE
1. Service more frequently if operating in dusty, sandy, or snowy areas.
2. Service more frequently if operating in wet or muddy conditions.
3. Replace every 2 years

D - Cannondale dealer
O - Owner

SYSTEM		ITEM TO CHECK	NOTE	EVERY BREAK-IN	EVERY RACE	EVERY 5Hrs	EVERY 25Hrs	EVERY 100Hrs
GENERAL		WARNING LABELS (condition, readable)	EVERY RIDE					
	••	Inspect aluminum frame components for damage		O	O		D	
	•	Adjust the idle speed					D	
	•	Tighten all nuts, bolts, and fasteners to the specified torque		O	O	O	D	i
		Check to make sure seat is fastened securely. Inspect for damage.		O	O			
AIR		Clean and re-oil the air filter	1	O	O	O		
BRAKES	•	Check the brake fluid levels. Check the system (hoses, caliper, fittings) for leaks	3	O	O		D	
	••	Check the front and rear brake pad and disc thickness(s)	1,2	O	O		D	
COOLANT		Check the coolant level. Check for coolant leakage	3	O	O		I	
	•	Replace the coolant	EVERY YEAR					
DRIVE		Clean and lubricate the drive chain. Check the drive chain (slack, stretch, buffer, guide block, sprockets (condition/tightness), guards)	1,2	O	O		D	
ELECTRICAL		Check spark plug condition. Check the gap.					D	
		Check for proper operation of all electrical switches	1, 2	O	O		D	
		Check the lighting (headlight, taillight) for proper operation/ beam direction		O	O		D	
ENGINE		Check the engine oil level		O	O			
		Change the engine oil and clean the filters		O	O	O		
	•	Change the transmission oil and clean the filter		O	O	O		
		Valve clearance						D
EXHAUST	•	Clean spark arrester, repack silencer					D	
FUEL	•	Check the fuel hoses, tank, quick connects for damage or leakage.		O	O	O	D	
		Replace the fuel filter		**EVERY 5 HOURS**				
	•	Check and the throttle freeplay, proper operation		O	O			
STEERING	•••	Check the steering damper mounting Grease the pivots Check the damper settings	1,2	O	O		D	
	•••	Check wear, lubricate the tie rod ends	1,2	O	O			

• Cannondale dealer service suggested. Servicing owners should have the proper tools, service data, and be mechanically qualified.
•• Operational safety involved, The service should be performed by a Cannondale dealer.
••• Lithium soap base grease

NOTE
1. Service more frequently if operating in dusty, sandy, or snowy areas.
2. Service more frequently if operating in wet or muddy conditions.
3. Replace every 2 years

D - Cannondale dealer
O - Owner

SYSTEM		ITEM TO CHECK	NOTE	EVERY BREAK-IN	EVERY RACE	EVERY 5Hrs	EVERY 25Hrs	EVERY 100Hrs
SUSPENSION	•	Check the front and rear suspension settings		O	O		D	
	•••	Lubricate the A-arm pivots	1,2	O	O			
	••	Inspect the ball joints	1,2	O	O	O		
		Check the swingarm bearings	1,2	O	O	O		
TRANSMISSION		Check the transmission oil level		O	O			
		Change the transmission oil and clean the filter		O	O	O		
WHEELS & TIRES	••	Check the wheels (rims, bearings, cotter pins)		O	O		D	
	••	Check the tires (cold pressure, wear)		O	O		D	

• Cannondale dealer service suggested. Servicing owners should have the proper tools, service data, and be mechanically qualified.
•• Operational safety involved, The service should be performed by a Cannondale dealer.
••• Lithium soap base grease

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

SEAT

Seat removal

1. Position the vehicle upright on a work stand so there is no danger of it falling over while you work.
2. Press down slightly on the rear of the seat with one hand while pulling up on the quick release lever with a finger of the other hand. The quick release lever is located on the rear left side of the seat, look for “QUICK RELEASE” at the rear of the seat.

When the latch is released from the catch on the subframe, the rear of the seat should rise slightly

3. Slide the seat towards the rear of the vehicle and off the retaining tab and receivers on the gas tank.

4. Examine the receivers (slots) on the bottom of the seat pan. Make sure they are in good condition. If damage is found, replace the seat with a new one.

Seat installation

1. To install the seat, align the retaining tabs on the fuel tank with the receivers on the underside of the seat.

2. Slide the seat into place.
3. Lift/hold up on the release lever, and push the rear of the seat down and release the lever. You should hear the lever “snap” or “click” onto the latch on the subframe.
4. Test to confirm that the seat is latched properly

by lifting the rear of the seat up with your fingers.

5. Test similarly at the front of the seat.

⚠ WARNING

POTENTIAL HAZARD
Unsecured, or damaged seat

WHAT CAN HAPPEN
If you install the seat incorrectly (not latched, bolted or secured) or if the seat is damaged, it can shift or come off while you are riding causing you to lose control. You could be seriously injured or killed in an accident.

HOW TO AVOID THE HAZARD
Make sure the seat is fastened securely and that it is in good condition. After installing the seat, pull the front and rear of the seat upwards to make sure it is latched and locked into position.
If the seat is loose or unlatched, correct the situation before riding.
Contact your Cannondale Dealer for a replacement seat if damaged.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

AIR FILTER

Cleaning the air filter and re-oiling the air filter

CAUTION :

Clean the area surrounding the air filter before removing it to lessen the chance of contaminating the airbox with foreign objects, water, dirt or other debris.

Do not operate with the air filter removed.

Use only high-quality foam air filter specific oils. Consult your authorized Cannondale Motorsports Dealer for available oil brands.

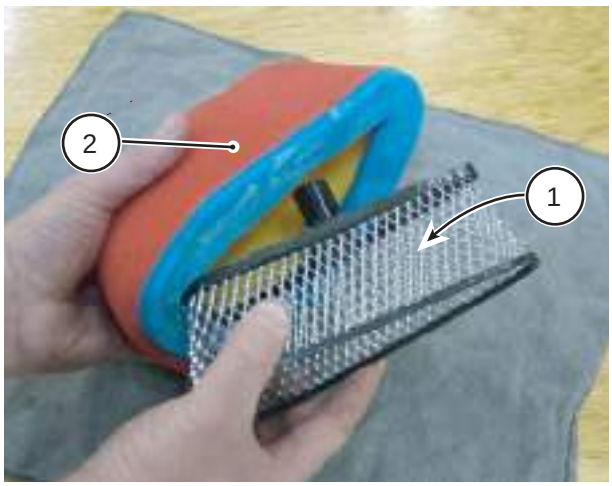
The air filter must be completely dry before applying the air filter oil. A "dry" filter provides no protection.

Make sure the airbox filter fits properly so there are no gaps around the mating surfaces. Use a high-quality, water-proof grease on the filter where it contacts the airbox to help guard against unfiltered air entering the system.

1. To clean the filter, remove the seat.
2. Release the retaining clip and remove the filter from the airbox. Use your thumb to push down on the clip and use the index finger of your other hand to guide the clip end off the airbox catch.

3. Do not attempt to remove the clip entirely; its not necessary. Simply, move the clip to one side and remove the filter from the airbox.

4. Place a clean shop towel over the airbox opening.
5. Separate the foam element from the screen.



1. Screen
2. Foam element

6. Clean both with non-flammable (high-flash point) solvent and rinse both with warm water. Squeeze the foam to remove water. Allow both to air dry completely. Inspect both for damage (e.g. cracking, tears, holes, etc.)

⚠ WARNING

POTENTIAL HAZARD
Cleaning the air filter with gasoline or low flash point solvents.

Printed : 8/15/02

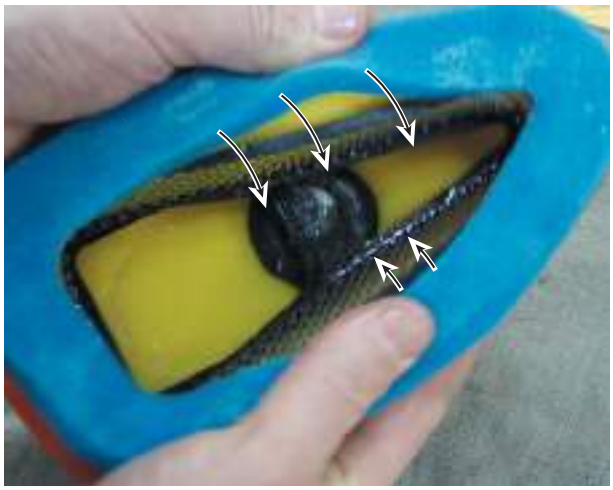
WHAT CAN HAPPEN

Gasoline or other low flash point solvents are extremely flammable under certain conditions. A fire or explosion can cause severe injury or death.

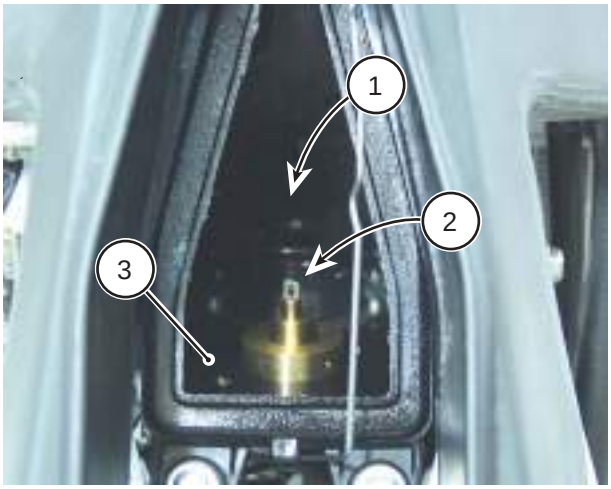
HOW TO AVOID THE HAZARD

Use a non-flammable (high-flash point) solvent to clean the air filter elements.

7. Coat the foam evenly with high quality foam air-filter oil. Squeeze the element a few times to ensure complete coverage inside and out.
8. Recombine the foam and screen. When recombining, make sure the foam completely covers the screen so that the mating surface of the airbox meets the foam and no part of the screen element.



9. Carefully wipe the interior of airbox with a lint-free, clean, shop towel. Avoid the tip of the air temperature sensor. Also, be sure to note the small brass air pressure port fitting. A hose is attached to this fitting on the other side of the airbox. The hose and this fitting should be unobstructed so that the ECU senses the correct air pressure within the airbox. Faulty readings will affect engine operation.



1. Air funnel
2. Air temperature sensor tip
3. Air pressure hose fitting

10. Apply a generous layer of high quality waterproof grease to the flange of the air filter and position the filter onto the airbox.
11. Install the air filter retaining clip.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

BRAKES

Testing the brakes

For safe vehicle operation, it is critical to have the brake system performing at its best. Regular inspection of the brake components and brake fluid level should become a habit prior to riding the vehicle.

1. Squeeze the front brake lever and test for proper braking. The lever should feel firm and proportional force should be applied to the discs preventing the vehicle from rolling. If the brake lever feels spongy or weak, and/or the vehicle is not prevented from rolling have the brakes inspected by a Cannondale Motorsports Dealer.
2. Check for fluid leaks. Inspect the entire length of the hoses paying close attention to the banjo bolts, calipers, and master cylinders.
3. Check the rear brake pedal for proper operation by pressing it with your foot. You should feel firm resistance when braking. As with the front brakes, force applied to the pedal should apply force to the rear disc preventing the vehicle from rolling. If the rear brake operates improperly have a Cannondale Motorsports Dealer inspect the system.
4. Inspect the rear brake pads for wear.
5. Test both brake systems at slow speed. Make sure that both systems function properly and that there is proper braking force always available.
6. When riding in wet conditions or after exiting a water crossing, apply the brake lightly a few times so that the heat of friction will dry the pads and discs. If water remains on the system, you will not have adequate braking power when needed.

Front brake pads inspection

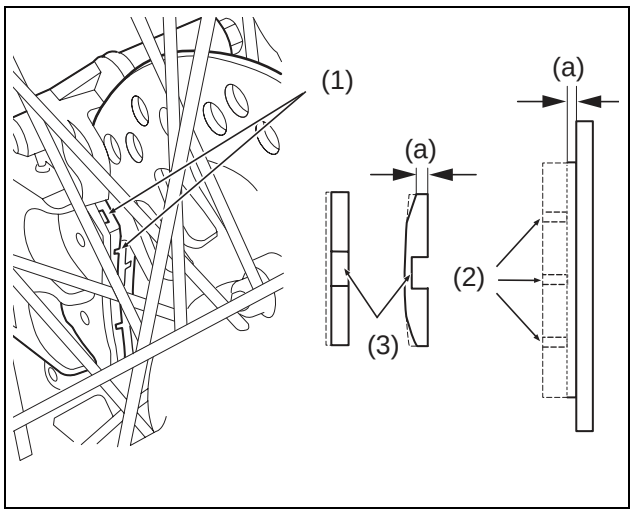
⚠ WARNING

POTENTIAL HAZARD
Worn out brake pads

WHAT CAN HAPPEN
Can damage the brake disc adversely affecting brake performance and possibly causing an accident.

HOW TO AVOID THE HAZARD
Never ride the vehicle with worn or damaged brake pads. Have worn pads replaced with new ones by a Cannondale Motorsports Dealer.

Each brake pad has wear indicator marks (1) and grooves (3). If either brake pad is worn to the minimum thickness indicator (2) or beyond the minimum thickness (a), the brake pads need to be replaced with a new set. The rear brake pad minimum thickness is 0.04 inches (1.0 mm). Contact an authorized Cannondale Motorsports dealer for replacement.

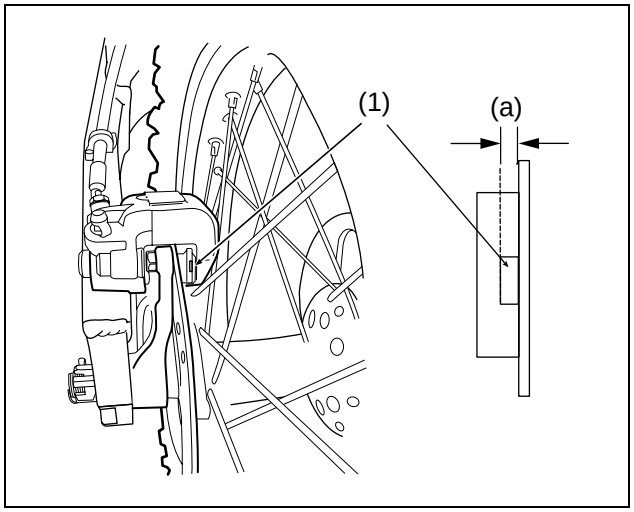


1. Wear indicator marks
2. Minimum thickness indicator
3. Wear indicator grooves
a. Minimum thickness

Rear brake pads inspection

Each brake pad has wear indicator grooves (1). If either brake pad is worn to the minimum thickness indicator (2) (or beyond the minimum thickness (a)),

the brake pads need to be replaced with new ones as a set. Contact an authorized Cannondale Motorsports dealer for replacement.



1. Wear indicator

a. Minimum thickness

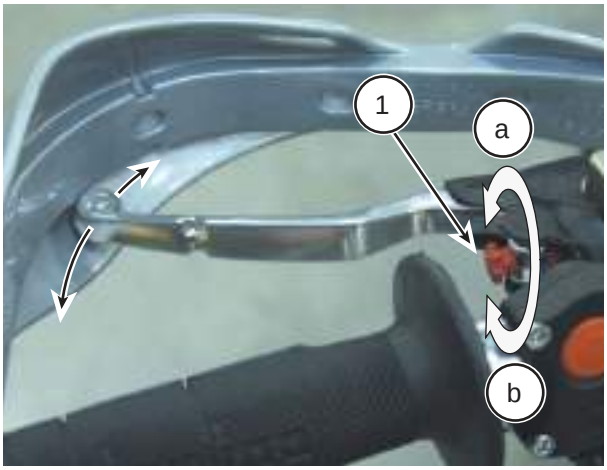
CLUTCH

Adjusting the clutch lever position

CAUTION :

The adjusting screw can be turned within certain limits. Do not use excessive force when turning the screw.

1. To adjust the lever position, turn the adjusting screw clockwise to reduce the distance between the lever and the handle grip; turn the adjusting screw counterclockwise to increase the distance between the clutch lever and handle grip.



1. Adjusting screw

a. Increases distance

b. Reduces distance

DRIVE

Cleaning and lubricating the drive chain

Clean and lubricate the drive chain before every ride, after washing the vehicle, after operating in wet or dusty conditions, and before measuring chain slack.

⚠ WARNING

POTENTIAL HAZARD
A "dry" drive chain

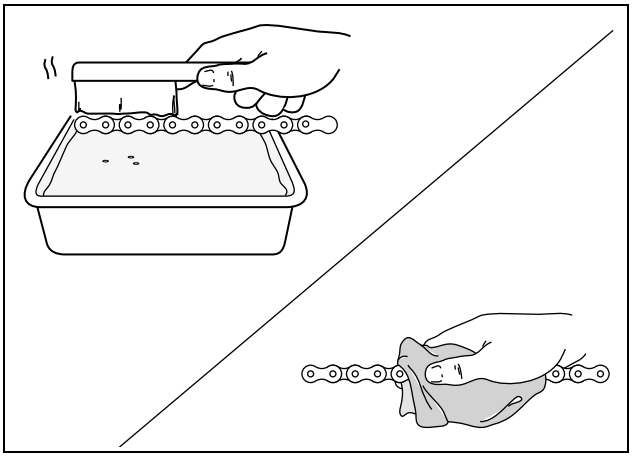
WHAT CAN HAPPEN
A dirty and/or "dry" (unlubricated) drive chain can quickly wear out and possibly fail or contribute to unsafe conditions, damage the brake disc adversely affecting brake performance and possibly causing an accident.

HOW TO AVOID THE HAZARD
Clean and lubricate the drive chain before every ride.

1. To clean the chain, lightly brush away heavy soils with a small soft bristle (nylon) brush. Do not scrub the chain; the O-rings can be damaged. Use a mild dish washing detergent and water

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

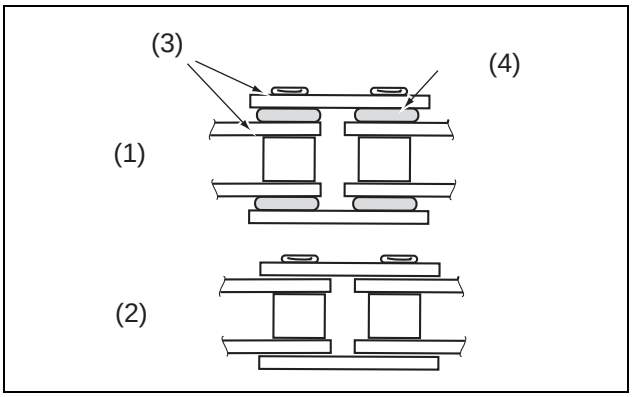
solution. Do not forcefully scrub the chain. Wipe



the chain dry with a clean shop towel.

CAUTION :

Never use steam, a high pressure washer, or wire brushes to clean the drive chain. Damage to the O-rings and sealed lubrication will result, causing premature drive chain failure.
Never use gasoline or other inappropriate solvents to clean the chain.

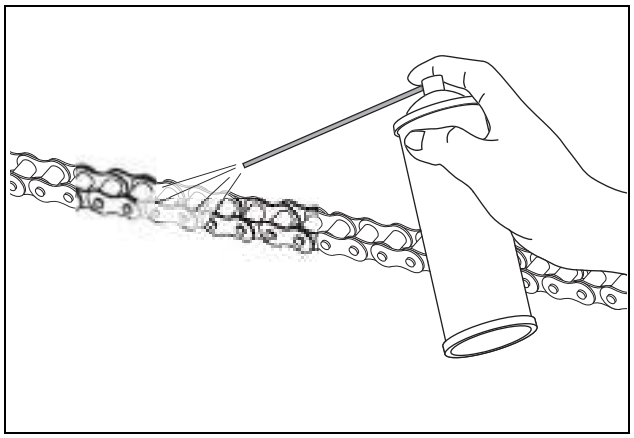


1. O-ring chain
2. Non-O-ring chain)
3. Chain plates
4. O-ring

2. Thoroughly lubricate the drive chain with the specified lubricant. Saturate each chain joint so that the lubricant penetrates the joint, chain plates, and rollers.

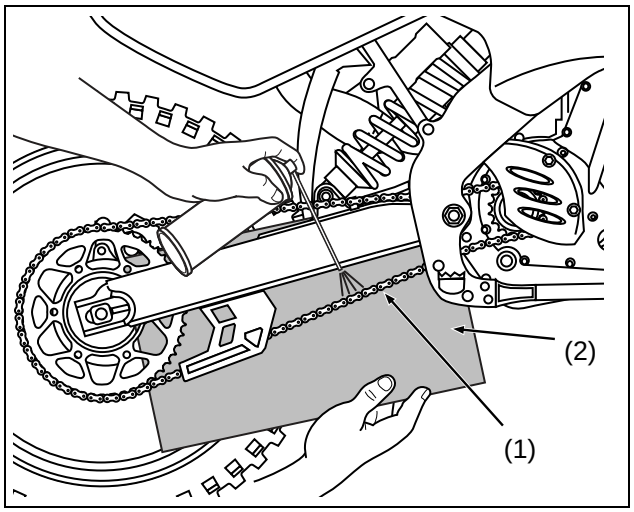
Recommended lubricant (O-ring type): Use special O-ring chain lubricant

Recommended lubricant (Non O-ring): Use SAE 80 or 90 gear oil



NOTE :

Make sure the chain has dried completely before applying the lubricant.
Place a piece of cardboard (2) between the drive chain (1) and vehicle to catch any over-spray.



1. Clean drive chain
2. Cardboard

Checking the drive chain slack:

Chain slack: 2.2 - 2.4 in (55 - 60 mm)

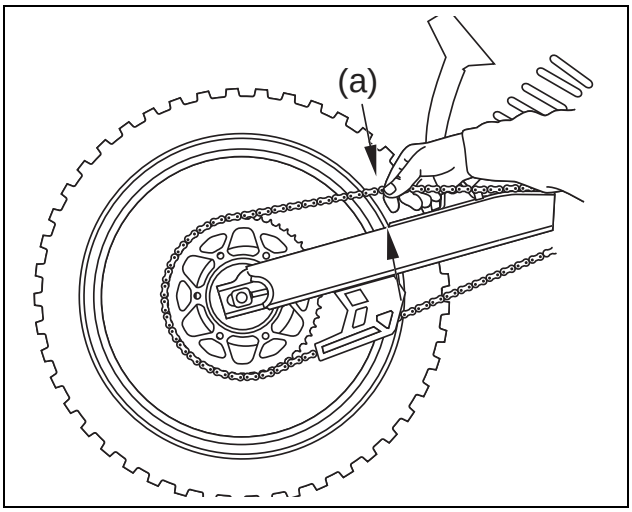
⚠ WARNING

POTENTIAL HAZARDS
A drive chain that is too tight or too loose.

WHAT CAN HAPPEN
A drive chain that is too tight can stretch and break, overload the engine and other vital parts. A drive chain that is too loose can skip or jump off the sprockets causing an accident. In either case, you can lose control of the vehicle and be severely injured or killed.

HOW TO AVOID THE HAZARD
Check the drive chain slack before every ride.
Make sure adequate vertical deflection at the chain's tightest point in the suspension travel is maintained.

1. Clean and lubricate the drive chain.
2. Place the vehicle on a stand so the rear wheel is off the ground.
3. Measure the slack (a) at the end of the swingarm buffer. Measure from the top of the swingarm to the bottom of the chain. To ensure a tight spot in the chain does not result in an inaccurate reading, rotate take multiple readings by rotating the chain and measuring multiple links over the same spot. All readings should be within the specified limit. Adjust the chain slack if it is out of specification..



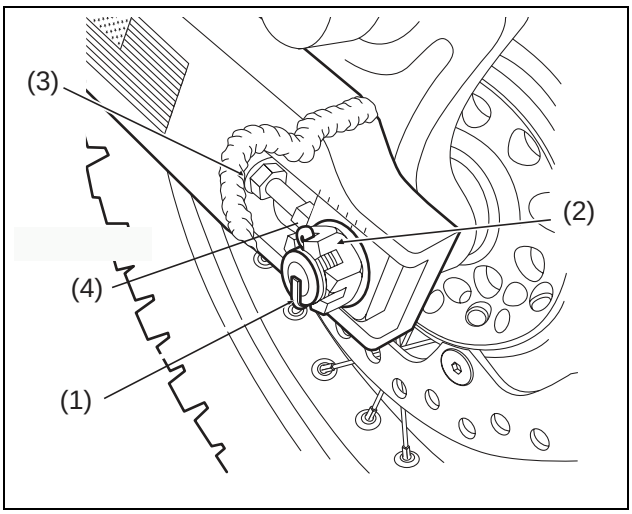
a. Drive chain slack

1. If the slack is out of specification, adjust it.

Adjusting the drive chain slack

NOTE :
If the chain slack can not be adjusted within specification, the chain or sprockets may be damaged. Have them replaced by a Cannondale Motorsports Dealer.

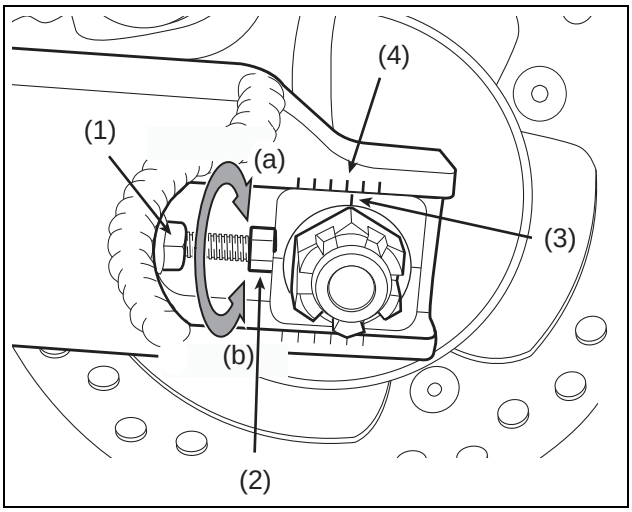
1. To adjust the chain slack, remove the rear wheel axle nut cotter pin and discard it.
2. Loosen the rear wheel axle nut (2) and the adjuster bolt locknuts (3).



1. Cotter pin
2. Rear axle nut
3. Locknut
4. Adjuster bolt

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

3. Increase or decrease slack by turning the adjusted equally on both sides of the swingarm.



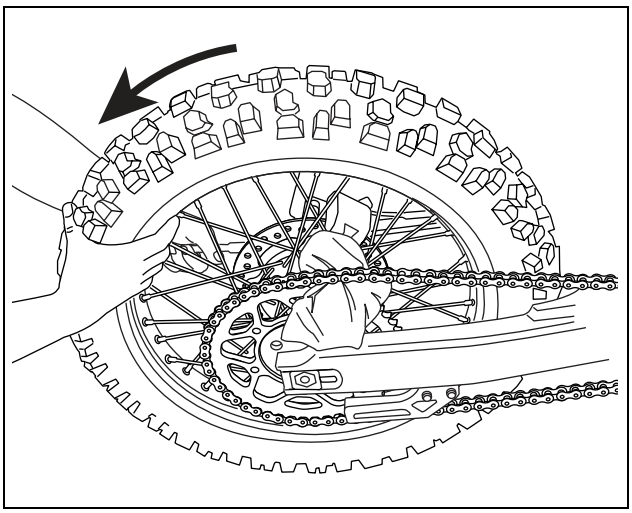
1. Adjuster locknut
2. Adjuster
3. Alignment marks
4. Swingarm marks
a. Increase slack
b. Decrease slack

CAUTION :

The alignment marks on the adjuster blocks and the marks on the swingarm must be adjusted so they are in the same position on each side of the swingarm.

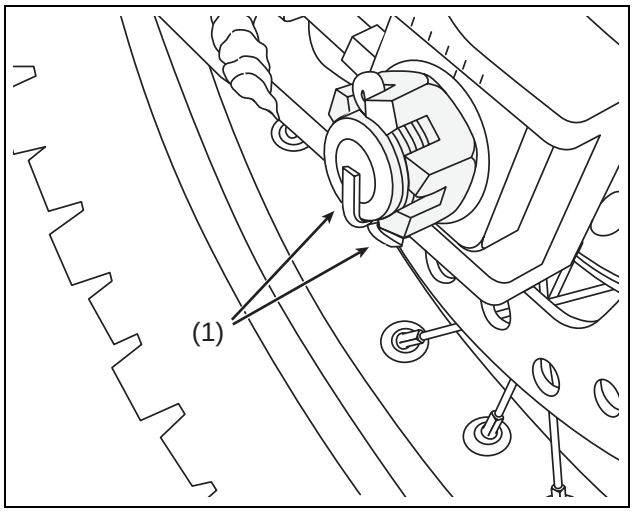
Make sure the drive chain is straight and in-line with the sprockets

4. Place a rag between the drive chain and rear sprocket and rotate the wheel backward to draw the adjuster blocks against the adjusters equally.



Tighten the rear wheel axle nut to 72.0 lbf•ft (98.0 N•m).

5. Install a new cotter pin and properly bend the tabs around the axle nut.



1. Cotter pin tabs

⚠ WARNING

POTENTIAL HAZARD
Reusing a cotter pin.

WHAT CAN HAPPEN
The cotter pin can break allowing the rear wheel axle nut to come loose. This could cause a loss of control resulting in serious injury or death.

HOW TO AVOID THE HAZARD
NEVER re-use a cotter pin. Always replace cotter pins with new ones.

6. Tighten the drive chain adjuster locknuts securely.
7. Measure the drive chain slack again. Correct if necessary.
8. Take the vehicle off the stand, roll it forward and backward a few times and apply the rear brake. Make sure the rear brake operates properly. The rear wheel rotates properly and the brake disc is

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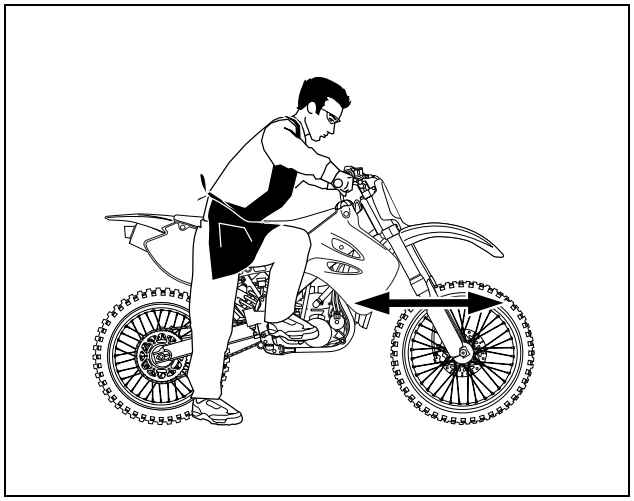
not rubbing against the brake pads.

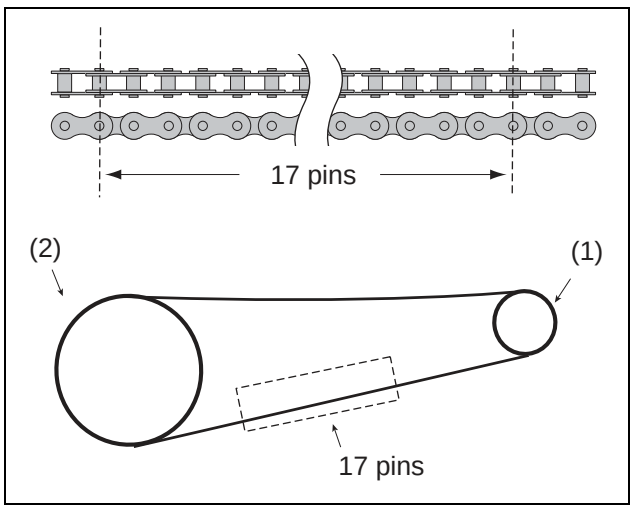


Drive chain stretch inspection

Measure a section of the drive chain while it is tensioned between the sprockets to determine whether it is worn beyond the service limit.

1. Shift the transmission into gear.
2. Turn the wheel forward until the lower section of chain is pulled taut. With the chain taut and all links straight (not kinked), measure a span of 17 pins from pin center to pin center. If the distance exceeds the service limit, replace the chain.

Chain length (service limit): 10.20 (259.0 mm)



1. Countershaft sprocket
2. Rear sprocket
a. 17 pins

Master link clip inspection

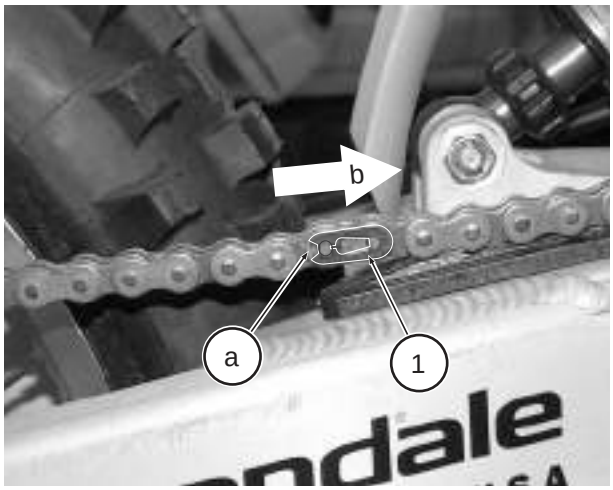
The open end of the masterlink clip must face the opposite direction of the chain rotation.

⚠ WARNING

POTENTIAL HAZARD
Chain coming off unexpectedly

WHAT CAN HAPPEN
If the master link clip is installed incorrectly it can be dislodged allowing the chain to break during operation. This will cause you to lose control. You can be seriously injured or killed.

HOW TO AVOID THE HAZARD
Anytime the drive chain is serviced make sure the drive chain clip is completely installed in its groove and the open end of the clip faces opposite the chain rotation. Make sure the master link clip is completely installed in its groove.



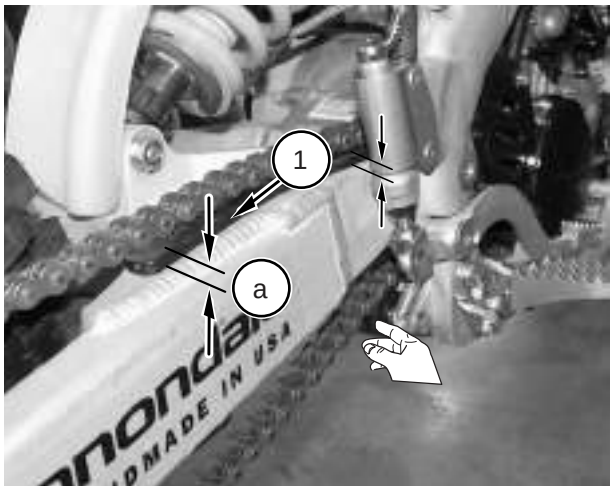
1. Clip
a. Open end
b. Direction of chain rotation

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Inspecting the swingarm chain buffer

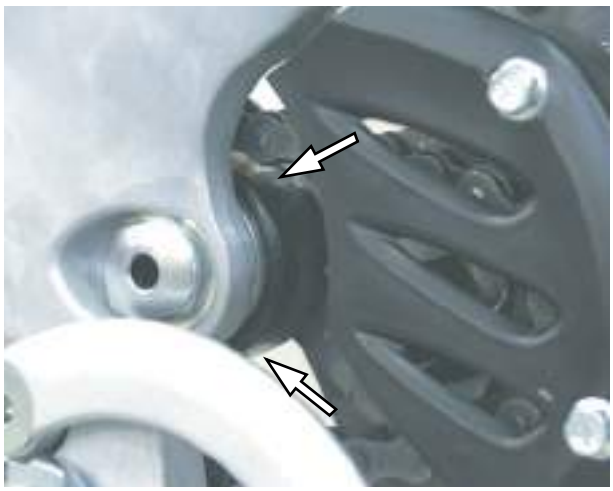
Standard thickness: 9/32 in (7.0 mm)
Minimum thickness: 1/8 in (3.0 mm)

Measure the buffer thickness (a) at many points of the upper and lower sides of the buffer. Wear may be distributed unevenly across the buffer, so examine it closely. Pay special attention to the area nearest the pivot shaft. Replace if it is out of specification or shows deep grooves or uneven wear.



1. Swingarm buffer

a. Thickness



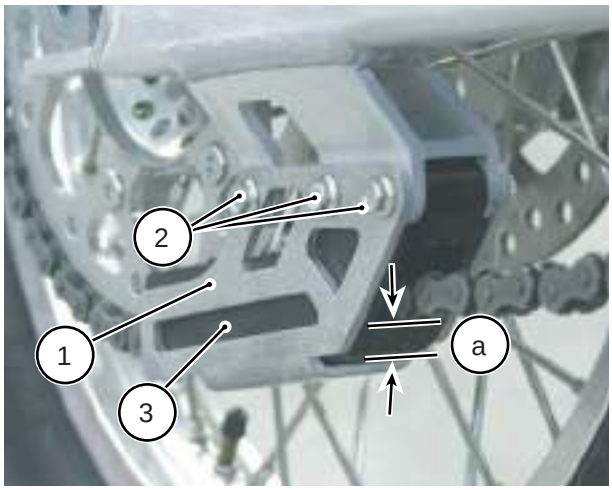
This photo shows the area near the pivot shaft to inspect closely.

1. To replace the buffer, place the vehicle on a work stand so there is no danger of it falling over while you work.
2. Remove the buffer mounting bolts.
3. Remove the and the old buffer. Make sure you clean the buffer mounting screws with contact cleaner and apply Loctite #242 agent before installing the new buffer.
4. Install the new buffer and tighten screws to 7.0 lbf•in (2.0 N•m).

Inspecting the drive chain guide block

Standard thickness: 0.5 inches (12 mm)
Minimum thickness: 0.1 inches (3 mm)

1. Measure the guide block thickness (a). Replace with a new block if wear exceed service limits.
2. Inspect the drive chain guide and guide block for cracks, wear, and/or any other damage. Replace if any damage is found.



1. Drive chain guide
2. Bolts
3. Drive chain guide block

a. Minimum thickness

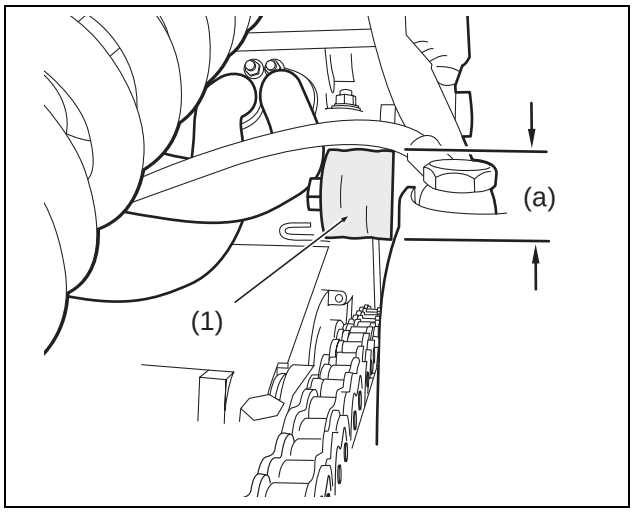
3. Check the drive chain guide bolts and tighten to 9.0 lbf•ft (12.2 N•m)

Inspecting the drive chain rollers

Standard O.D.: 1 3/8 in (35.2 mm)
Minimum O.D.: 1 1/4 in (32 mm)

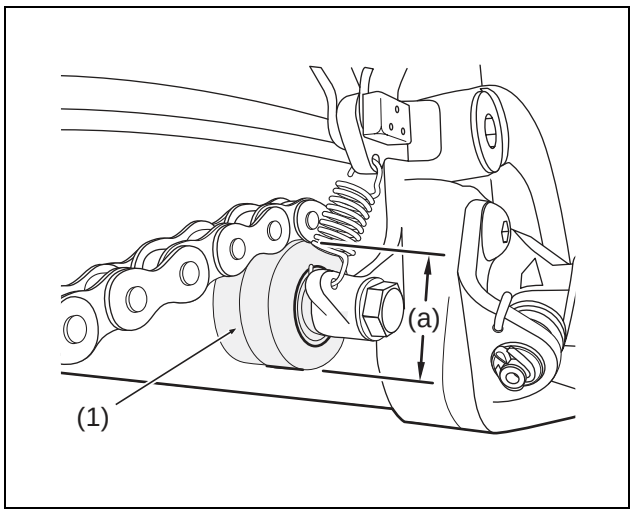
1. Rotate the upper and lower drive chain rollers. The rollers should rotate smoothly.
2. Measure the outside diameter of the upper and

lower rollers. Replace if out of specification.



1. Upper drive chain roller

a. Outside diameter



1. Lower drive chain roller

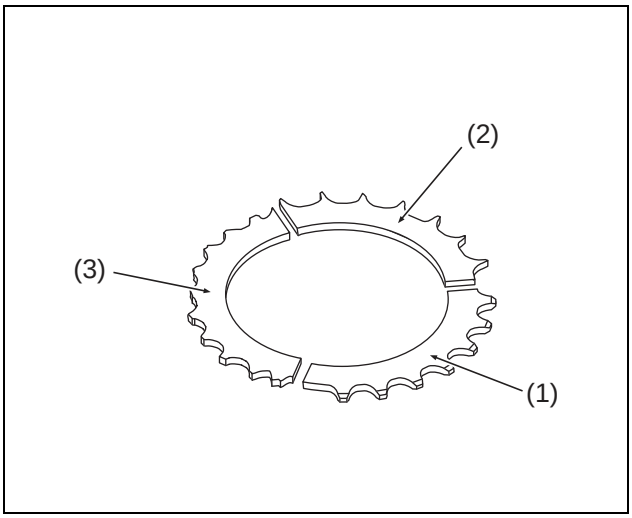
a. Outside diameter

Sprocket inspection

NOTE :

Replace both the sprockets and drive chain as a set

Inspect the sprockets for cracks, chipped or broken teeth, excessive wear, and/or any other damage. Check the countershaft sprocket nut and tighten if necessary.



1. Normal teeth
2. Worn teeth
3. Damaged teeth

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

ENGINE MANAGEMENT SYSTEM

Engine operation is supported by an Engine Management System (EMS) which controls both ignition and fuel delivery. The system consists of three types of electrical components: an Engine Control Module (ECM), sensors, and actuators.

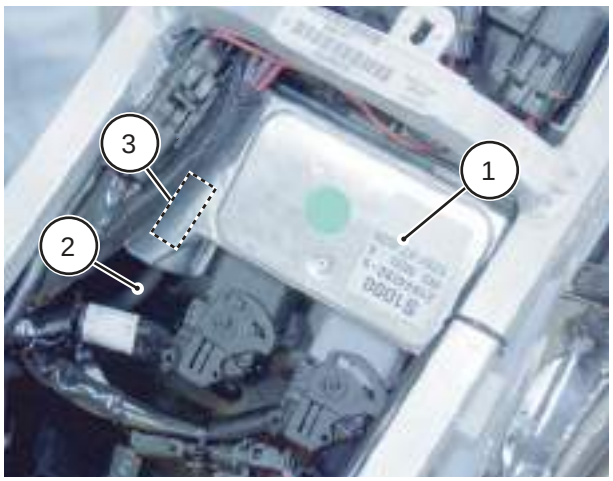
The engine control unit (ECU or ECM) precisely calculates ignition timing and fuel delivery for all engine speeds and loads (based on the currently installed calibration file and its mapping). The ECU is an extremely reliable component and should be the last component checked in the event there is a problem with the fuel injection system.

The sensors of the system collect engine operating information and transmit it to the ECU.

Actuators are devices like the fuel injectors, fuel pump, fuel pressure regulator, spark plug coil, and relays.

MC1000 Engine Control Module (Unit) - (ECM or ECU)

The ECM is located on the battery box within the subframe..



Components have been removed for this photo.

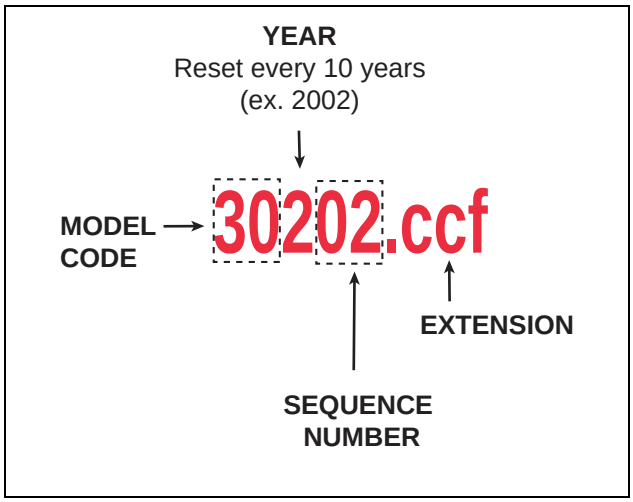
1. Engine Control Module (ECM)
2. Air pressure sensor hose (from airbox and fuel pressure regulator)

The ECM (also known as ECU) is the brain of the fuel injection system. This brain calculates fuel delivery and ignition timing based on information gathered from vehicle sensors and the calibration file loaded at the factory.

Engine calibration file

Your vehicle was loaded with a calibration file (Numeric Cal ID) when it left the factory. This file is specific to your vehicle's VIN number. You may be able to benefit from subsequently released calibration files when they are developed, however, always consult with your dealer before attempting to install any calibration file.

All authorized engine calibration files are maintained on our website at: http://www.cannondale.com/motorsports/tech/maps/.

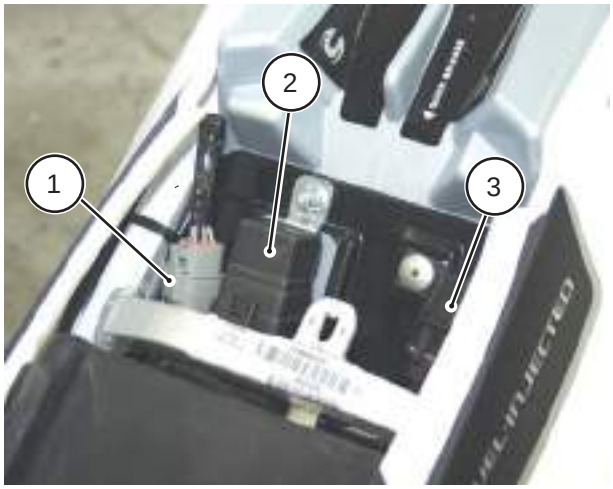


Diagnostic connector

The diagnostic connector is located under the seat.

Engine Management System diagnostics can be performed using the Cannondale Diagnostic Tool. The tool is a combination of a specially developed Windows- based software program and a data cable used to connect your PC or pocket PC computer to

your vehicle. With the tool, you can read fault codes, install engine calibration files, set vehicle rpm, and monitor engine operating parameters.



1. Diagnostic connector
2. ECU power relay
3. Main fuse

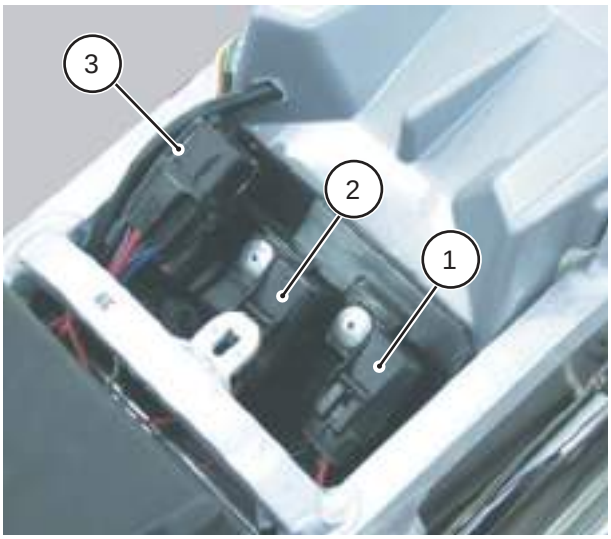
ELECTRICAL

Replacing the fuses

Main fuse (rating): 10A

Lighting fuse (rating): 10A

Fuses are located under the seat.



1. Main fuse
2. Lighting fuse
3. EMS power relay

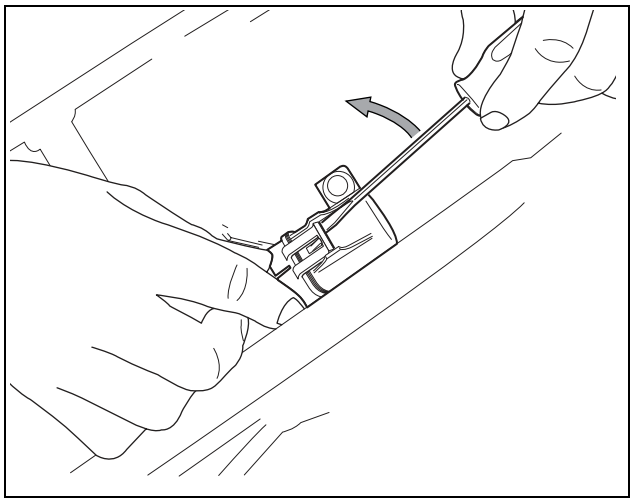
⚠ WARNING

POTENTIAL HAZARD
Using an improper fuse.

WHAT CAN HAPPEN
An improper fuse can cause damage to the electrical system which could lead to a fire.

HOW TO AVOID THE HAZARD
Only use a replacement fuse of the specified rating. Never use other materials in place of the fuse. Always turn OFF the ignition switch when checking or replacing the fuse. Otherwise, a short circuit may occur.
Check the condition of the wiring harness and connectors before replacing a blown fuse.

1. To replace a fuse, remove the seat. See seat removal in this manual.
2. Use a thin blade screwdriver to lift up on the latch.



1. Fuse socket
2. Latch
3. Fuse housing

3. Pull the bottom of the fuse socket toward the front of the vehicle.

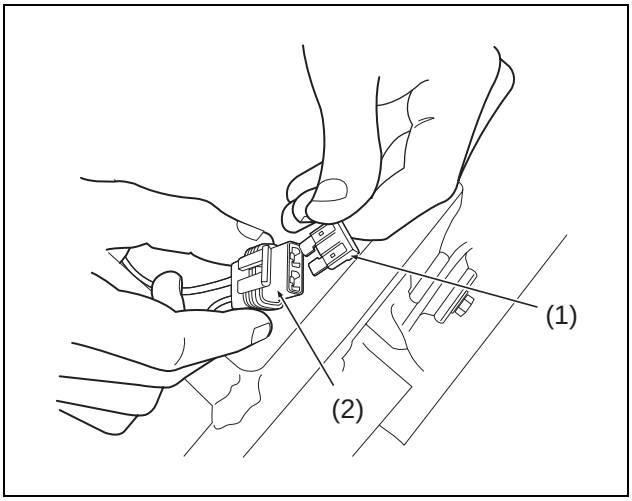
CAUTION :

Do not pull on the wires.

4. Remove the fuse, and install the specified

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

replacement fuse.



1. Fuse
2. Holder

Battery

Your vehicle has a sealed type battery. Perform only routine charging maintenance when it becomes discharged from over utilization or when removed for vehicle storage. Clean terminals and apply dielectric grease when dirt or corrosion is observed. The battery capacity in your vehicle has been sized for maximum performance and minimal weight. Repeated starting without running the engine long enough to replenish the battery will result in a discharged battery with insufficient power to restart the engine.

CAUTION :

Remove the battery from the vehicle when charging.
Don't charge above the maximum charging rate (2 amps). Never allow a battery to stand in a discharged condition.

⚠ WARNING

POTENTIAL HAZARD
Chemical burns or explosion

WHAT CAN HAPPEN
Batteries produce explosive gas and contain corrosive fluid. If you fail to handle the battery carefully, ignited gases can cause an explosion, and spilled fluids can cause severe eye or skin injury.

HOW TO AVOID THE HAZARD
Do not remove the battery cap strip.
Wear safety glasses or a face shield when handling the battery.
Keep sources of ignition away from the battery (e.g. cigarettes, flames, or sparks).
KEEP OUT OF REACH OF CHILDREN

Battery maintenance

If your vehicle will be in storage for more than a month, remove the battery and place it in a cool, dark, dry location that is free from sources of ignition. Cover the terminals with electrical tape to prevent accidental short circuit.

Recharge the battery before reinstallation and during vehicle storage. Consult your Cannondale Motorsports dealer for more information.

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Spark plug

Spark plug: NGK CR9EK
Spark plug gap: 0.024 - 0.028 in (0.6 - 0.7 mm)
Tightening torque: 10.0 lbf•ft (14.0 N•m)

CAUTION :

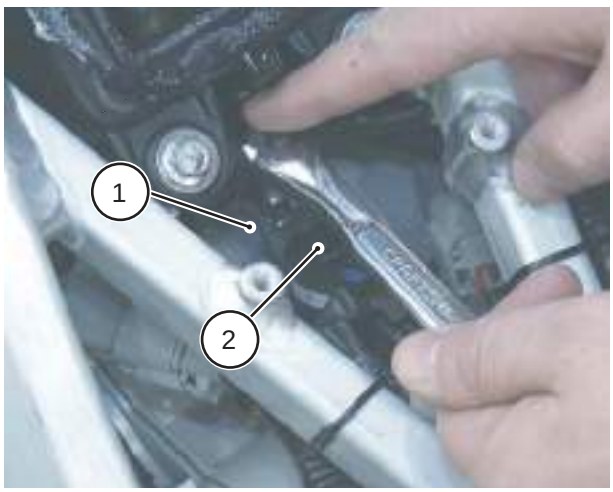
Clean the top of the engine and surrounding area with compressed air before removing the coil and spark plug as a step toward preventing dirt and other contaminants from entering the engine.

Only install the spark plug into a cool engine.

Always use the specified spark plug with the proper gap.

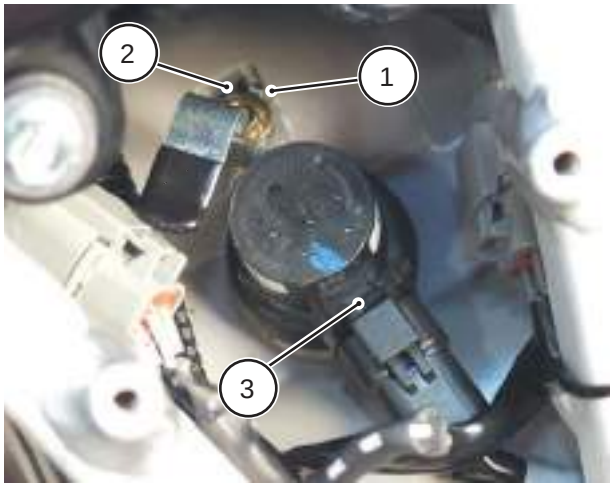
Torque the plug as specified. An overly-tight or cross-threaded spark plug will damage the threads in the spark plug hole.

1. Remove the seat.
2. Carefully clean the area surrounding the coil with compressed air.
3. Remove the air filter and the fuel tank.
4. Use a 3/8” drive socket with a 2” deep 6mm socket to loosen the coil retaining clip bolt just enough so that the clip can be lifted and turned to the side with the bolt still installed in the crankcase cover. Space is tight here so avoid removing the bolt.



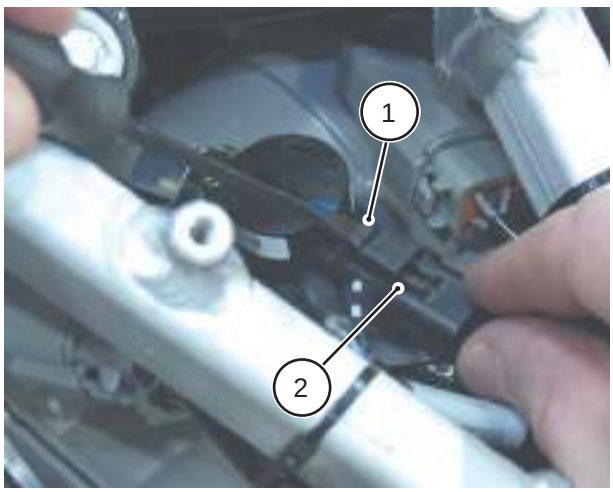
1. Bolt
2. Clip

5. Cut the cable tie securing the connector latch.



1. Clip tang
2. Crankcase cover hole
3. Zip tie

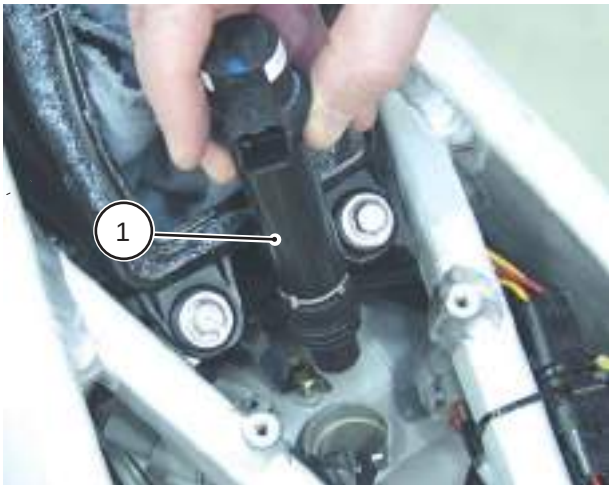
6. Use a thin flat blade screwdriver to lift the latch up slightly, and remove the harness connector from the coil.



1. Latch
2. Connector

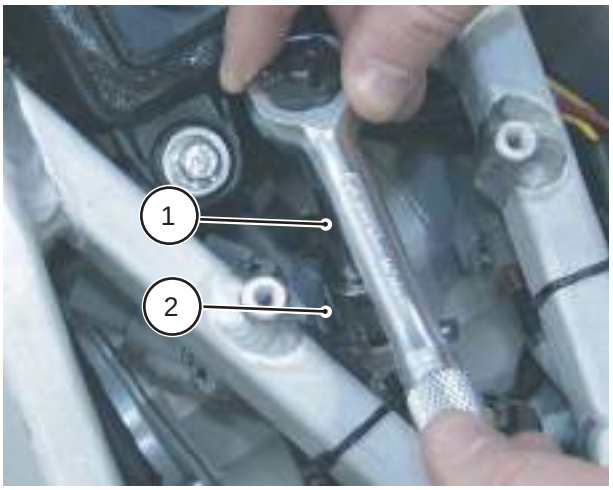
⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

7. Lift out the coil.



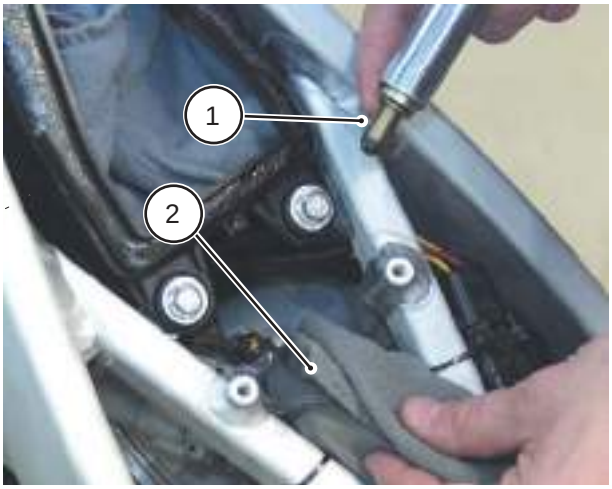
1. Coil

8. Use a 5/8” spark plug socket and an extension to loosen and remove the spark plug. In the photo below, we used a 3/8” drive with a 6” long 5/8” spark plug socket on a 2 1/2” extension.



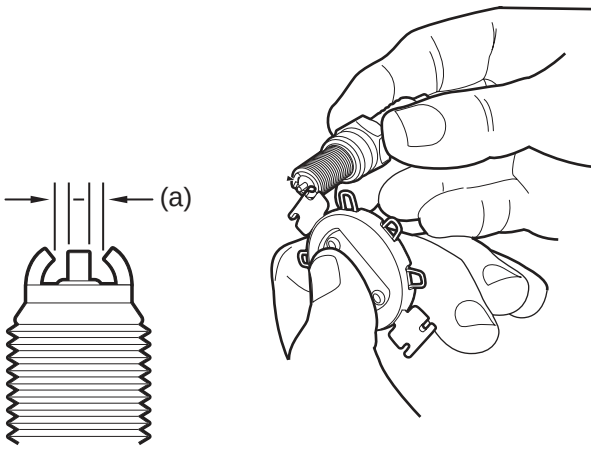
1. 2 1/2” long extension
2. 6” long 5/8” spark plug socket

9. Lift out the spark plug and cover the cylinder head hole with a clean rag.



1. Spark plug
2. Hole

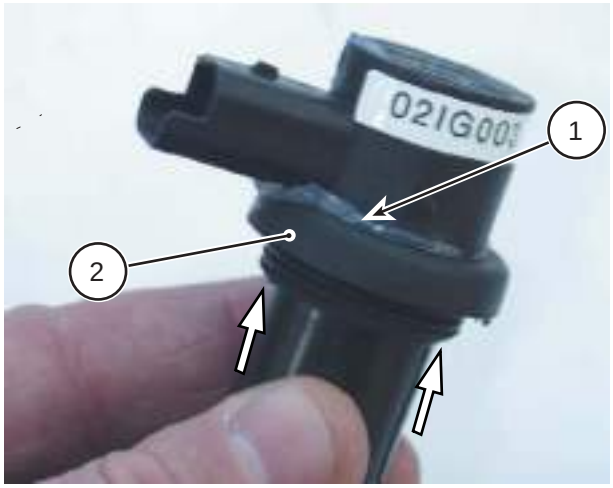
10. Inspect the spark plug gap.
11. The spark plug gap (a) must be measured and set with a wire gauge or feeler gauge. If the gap is out of specification, adjust it. If the spark plug utilizes multiple ground electrodes, measure each gap.



a. Spark plug gap

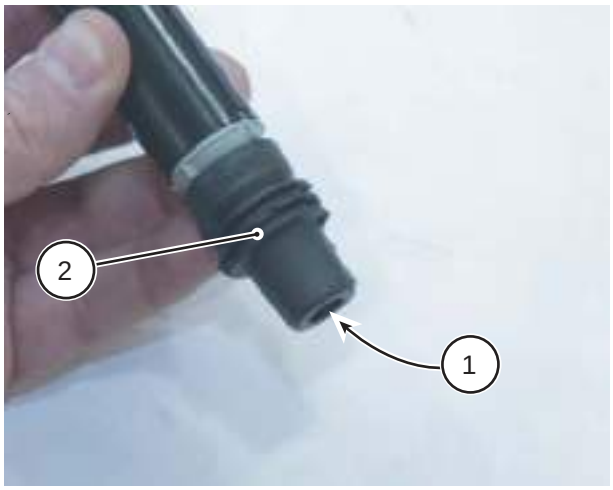
12. Lightly coat the plug threads with a suitable anti-seize compound; this will allow for easier spark plug removal in the future.
13. Install the plug (sealing washer installed) into the cylinder head and tighten to 10.0 lbf•ft (14.0 N•m)
14. Inspect the coil for any signs of damage.
15. Remove any old silicone sealant from the coil seal.
16. Slide the seal onto the coil. Before the seal reaches the top, apply a thin bead of silicone

sealant to the inside edges.



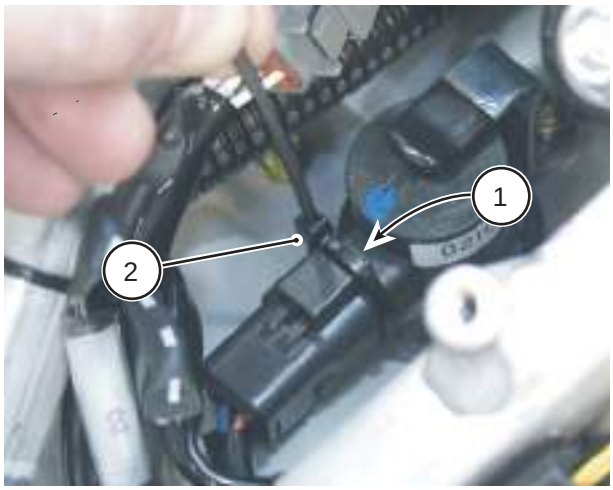
1. Coil
2. Seal

17. Apply a pea-size drop of dielectric grease to the coil tip and apply some clean engine oil to the tip seal.



1. Tip
2. Tip seal

18. Insert the coil into the cylinder head and onto the spark plug.
19. Install the retaining clip over the coil head. Make sure the tang on the clip locates in the crankcase cover hole properly. Tighten the bolt to 3.3 lbf•ft (4.5 N•m)
20. Reconnect the coil harness connector. Slide it onto the coil making sure it latches. Install a zip tie over the latch. See photo below.



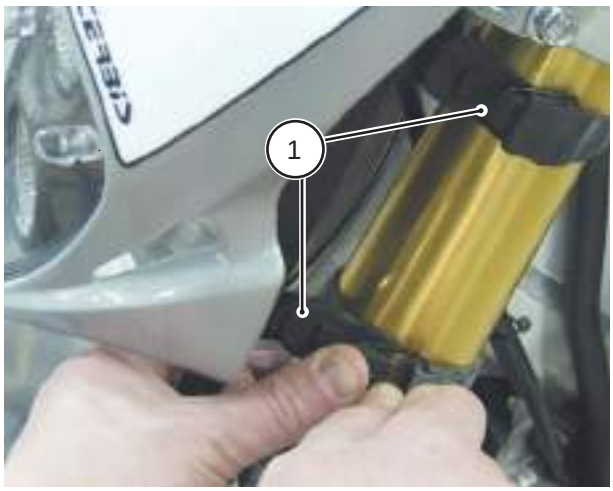
1. Latch
2. Zip tie

21. Reinstall removed components.

Headlight bulb replacement

Consult the Model Specifications section of this manual for the replacement bulb type.

1. Remove the main fuse.
2. Remove the straps from the left fork leg, and notice the brake line and odometer sensor routing. When reassembling, make sure the routed lines are on the inside of the headlight bracketing.



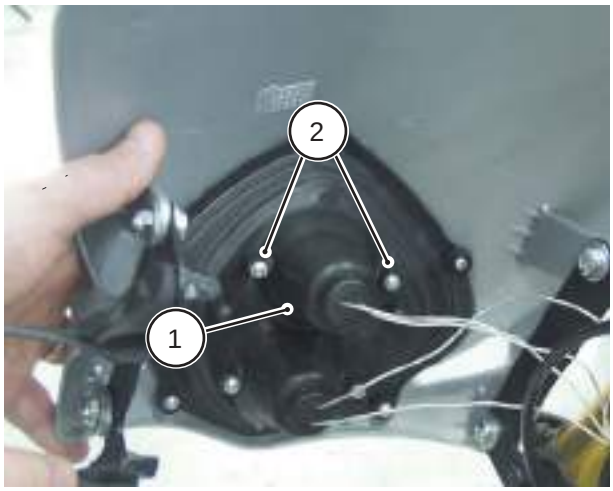
1. Strap

3. Tilt the headlight out slightly and remove the housing screws and the bulb housing from the headlight body. The headlight has two lamps; the process is identical for both.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

NOTE :

Note the fit and form of the housing as you remove it. Later, install the housing as removed or a gap between it and the headlight body may result. A gap will allow water and debris to enter the inside of the headlight causing damage.



1. Housing
2. Screws (upper bulb)

4. Remove the bulb unit from the socket, and install a replacement bulb.

5. Re-strap the headlight to the fork leg making sure the strap catches are connected properly.
6. Test the headlight for proper operation.

NOTE :

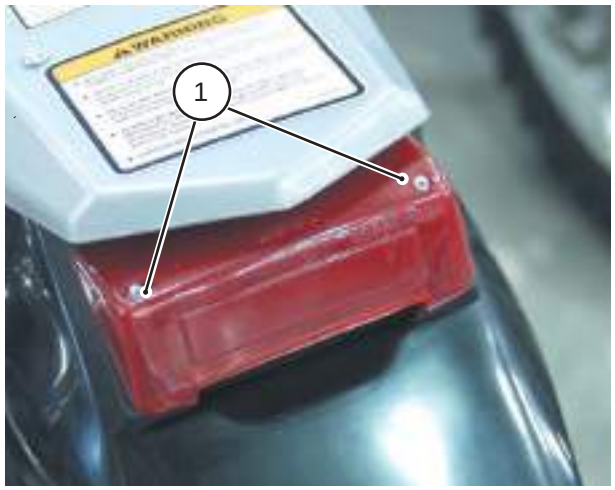
You may elect to examine the overall headlight mounting at this point. The entire headlight can be positioned slightly higher or slightly lower on the two fork legs. The position of the straps on the fork legs will change the beam height. Positioning the straps evenly on both fork legs will produce good results with regard to beam/tilt position.

The bracket is also slotted to allow for up/down movement.

Taillight bulb replacement

Consult the Model Specifications section of this manual for the replacement bulb type.

1. Remove the main fuse.
2. Remove the lens screws.



1. Lens screws

3. Remove the bulb holder from the supports.

4. Inspect the inside of the bulb socket for any sign

of damage and take corrective action.

5. Reposition the bulb holder onto the supports and reinstall the lens.
6. Test the taillight for proper operation.

EXHAUST

The exhaust system has the two main functions: transferring combustion gases away from the rider, and reducing engine noise levels. You should not attempt to remove or modify the exhaust system in any way.

⚠ WARNING

POTENTIAL HAZARD
Malfunctioning exhaust system

WHAT CAN HAPPEN
A damaged, loose, or cracked exhaust system is dangerous to the operator and/or can severely damage the engine if the conditions remain uncorrected.

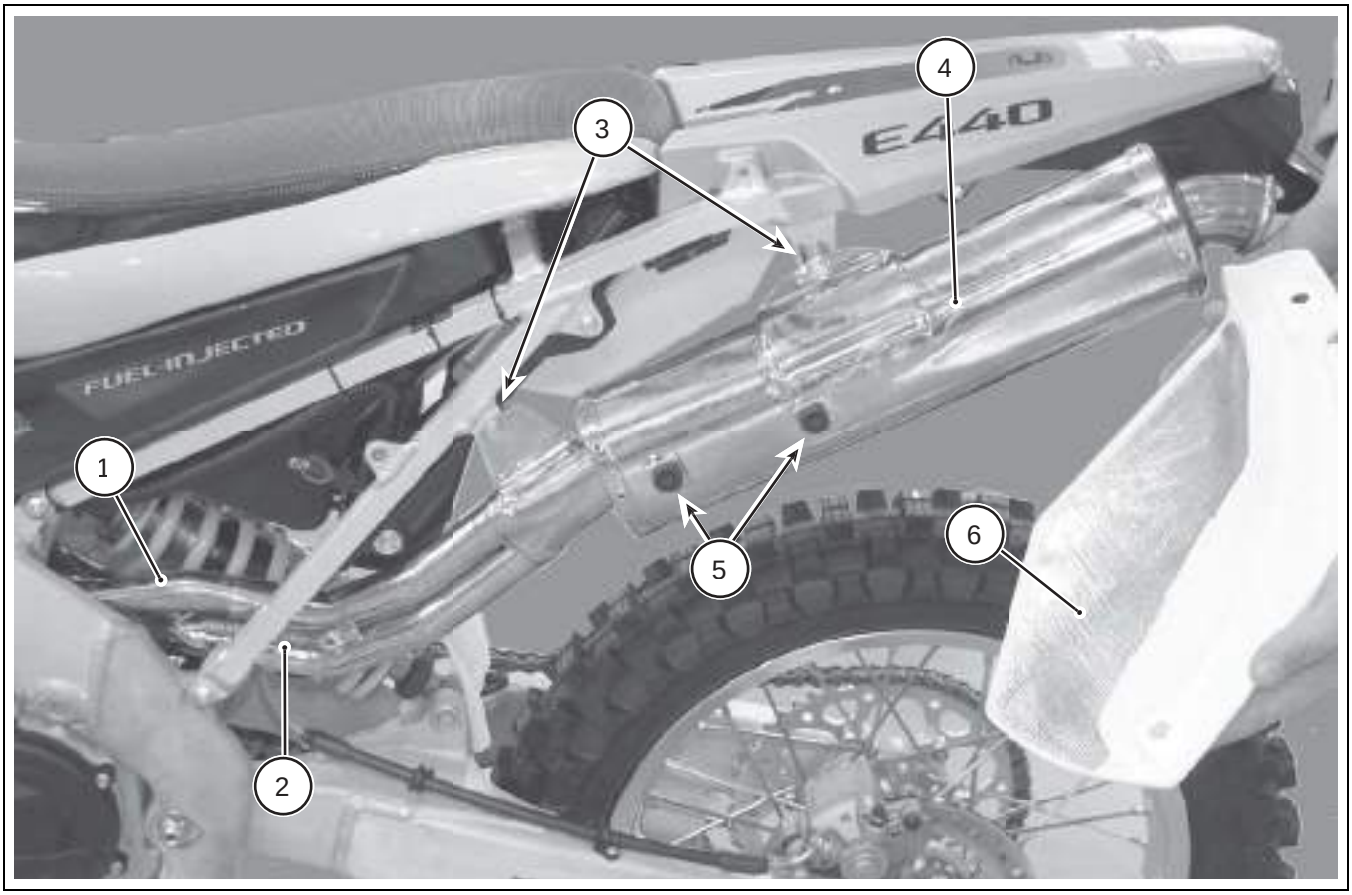
HOW TO AVOID THE HAZARD
Visually inspect the exhaust system before every ride to make sure it is in good condition, fastened securely, and operating properly.
Have your Cannondale Motorsports Dealer inspect and service the exhaust system after every 25 hours of operation.

The silencing media should be replaced with at least an E rated fiberglass packing every 25 hours or when the exhaust is notably louder. Do not allow water to enter the silencer and saturate the media. Only replace the stainless wool media if it is damaged.

Failure to maintain the fiberglass media will cause the vehicle to lose power and shorten the life of your exhaust system. Outlet restriction causes excessive heat to buildup in the muffler which will cause the system to overheat.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

The spark arrestor should be removed after every 50 hours of operation to be cleaned and inspected for damage. Replace the screen if punctures or splits are observed.



In the photo above, the side panel is shown removed for clarity.

1. Exhaust header
2. Spring
3. Silencer mounting bolts
4. Silencer
5. Grommets
6. Heat shielding

FUEL

Removing the fuel tank

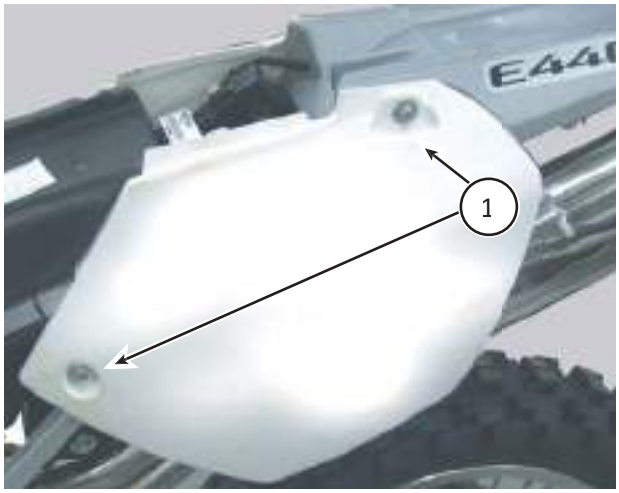
⚠ WARNING

POTENTIAL HAZARD
Fuel fire or explosion

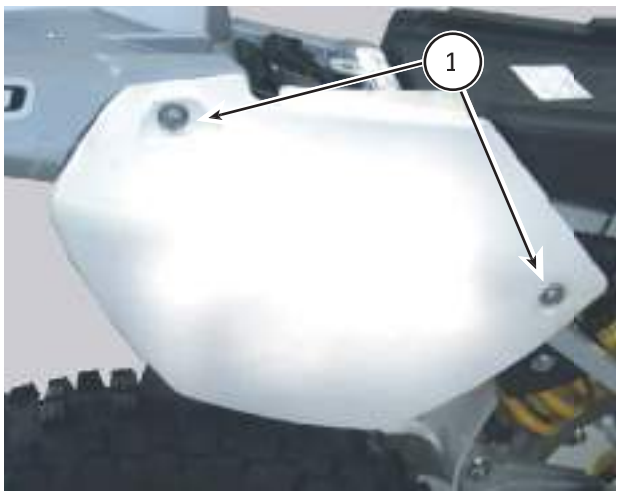
WHAT CAN HAPPEN
The fuel tank on your vehicle has been designed to be removed without having to drain the fuel from it. However, gasoline is extremely flammable and can explode under certain conditions. A tank with fuel in it can be heavy to handle. If you drop it or fuel spills from the tank, the risk of fire or explosion is increased. You can be seriously injured or killed in a fuel accident.

HOW TO AVOID THE HAZARD
A filled tank is heavy, so be sure you can safely lift and handle the tank before you attempt to remove the tank from the vehicle.
Make sure the work area is free of things that can ignite fuel. (e.g., sparks, flame, welders, cigarettes, torches, etc.).
Make sure the fuel cap is tightened securely.
Wipe up any spilled gasoline quickly.
Position the bottom of the fuel tank on a level surface away from the work area.

1. Make sure the engine is cold.
2. Position the vehicle upright on a stand.
3. Make sure the fuel cap is tightened securely.
4. Remove the seat.
5. Remove the left and right side number panels.



1. Left number panel bolts

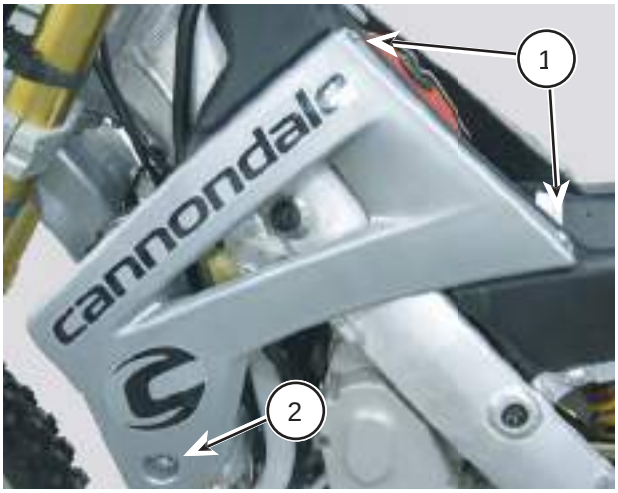


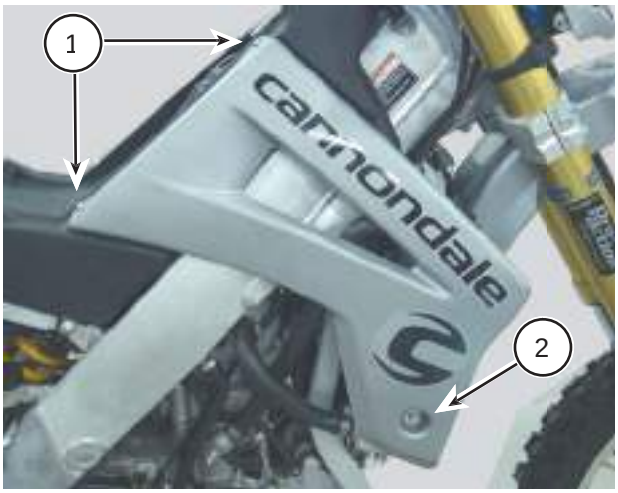
1. Right number panel bolts

6. Remove remove the left (below top) and right

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

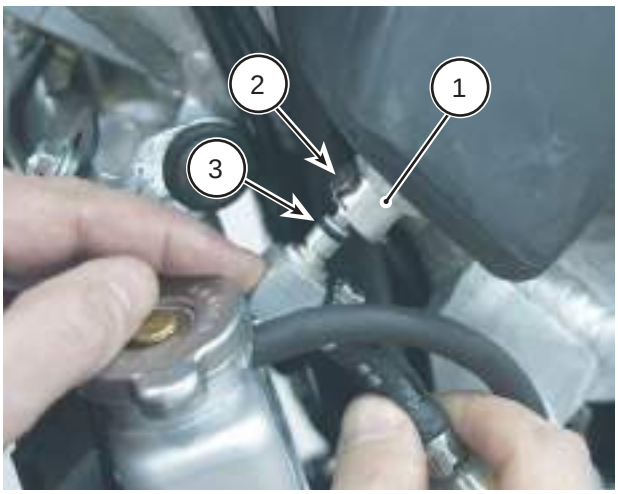
(below bottom) radiator shrouds.





1. Screws
2. Bolt

7. Press in the tabs on the fuel tank fittings, and remove the inlet and outlet hoses from the tank.



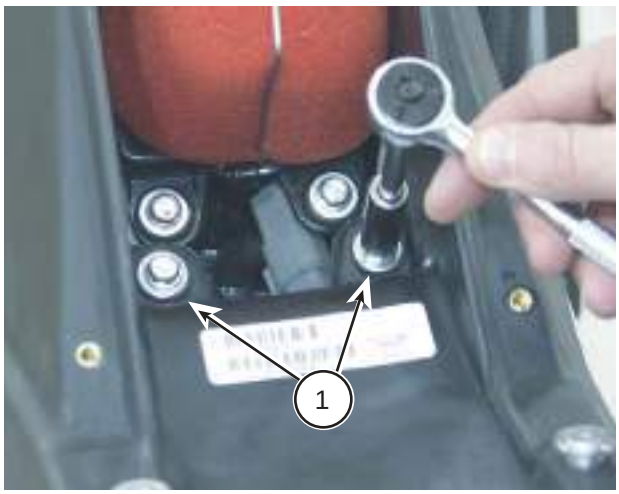
1. Outlet tank fitting (left side of tank)
2. Tab
3. O-ring

Return tank fitting (right side of tank)

CAUTION :

Later, when re-installing the tank, remember to inspect and coat the O-rings with clean engine oil. Be sure to press in the tabs before reinserting.

8. Remove the fuel tank mounting bolts.



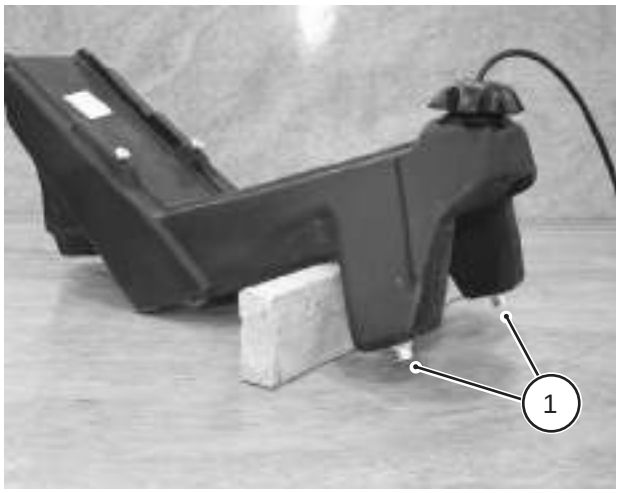
1. Tank mounting bolts

9. Lift the tank out from the frame and position the

tank on a level surface away from the work area.

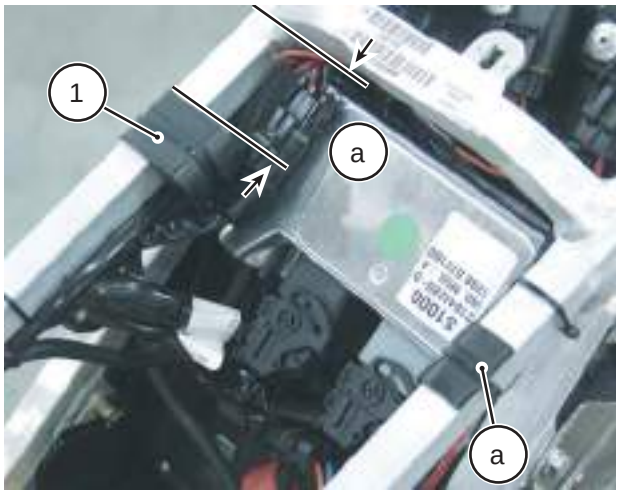
CAUTION :

Don't allow the weight of the tank to rest on the fittings. Damage to the tank will result. Position the tank on a suitable support. We used an ordinary 2x4 for the photo below.



1. Fittings

1. To install the tank, start by making sure that the tank subframe buffers are in place. Then, position the tank into the vehicle.



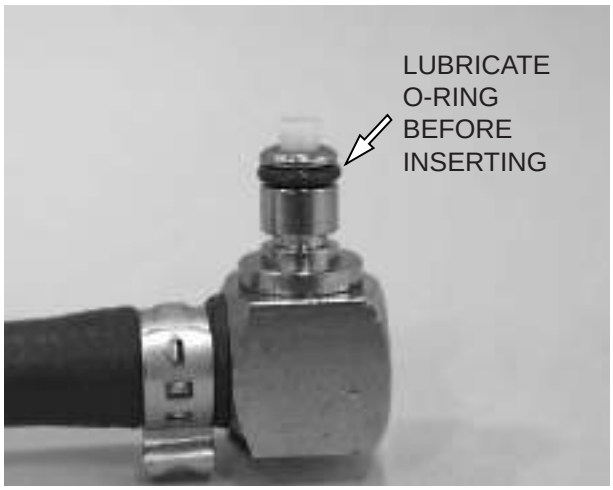
1. Larger buffer
2. Smaller buffer
a. Distance (appx 2")

2. Make sure the tank rests in the frame without interference. The edge of the tank should meet the main frame in the area indicated in the photo with minimal force applied. In the following photo the weight of the technicians hand is enough to obtain the proper fit. What you don't want to do is draw the tank into the frame using the mounting bolts as this will cause damage to the fuel tank or other vehicle systems.

3. Install the tank mounting bolts and tighten to 5.0 lbf•ft (6.8 N•m)
4. Reinstall the outlet (left side) and return (right side) fuel hoses into the tank. When reinstalling the quick connect fittings, be sure to press the fit-

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

ting tabs in first. Then inspect the O-rings for any damage (e.g., swelling, distortion, tears, rips, etc.) and replace if necessary. Apply a light coat of clean engine oil to the O-rings, and insert the hoses into the tank until the fittings lock. The fitting should make an audible click when locked properly.



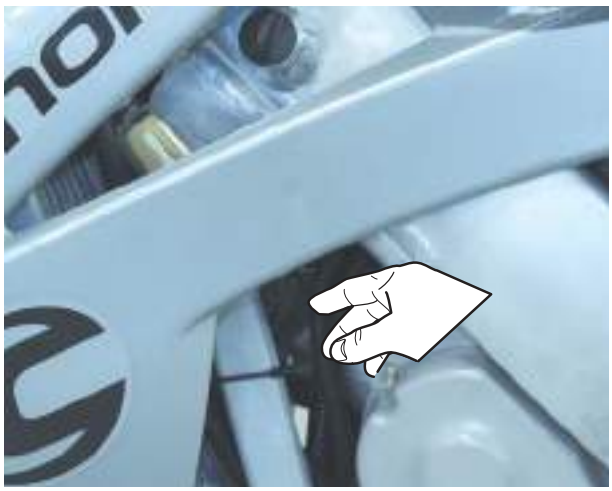
5. Reinstall removed components. See page 96.

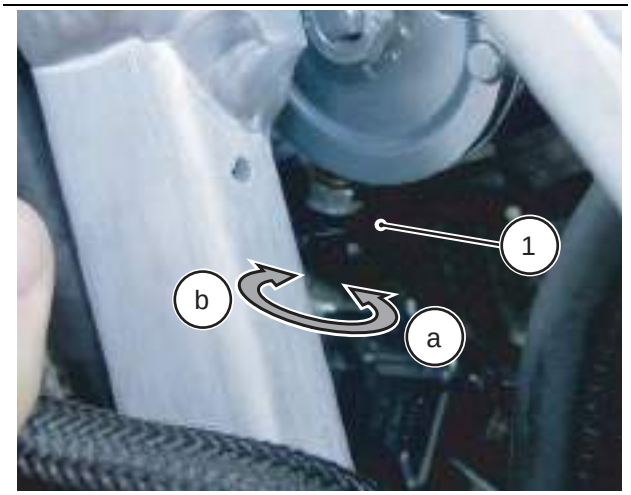
Idle speed adjustment

Idle speed: 2100 - 2,200 r/min

A special software diagnostic tool is required to accurately read (display) the engine rpm. For this reason, we strongly recommend that this procedure be left to a Cannondale Service Technician.

Attempting to adjust the idle “by ear” is not recommended.





1. Idle adjuster
a. Increase rpm
b. Decrease rpm

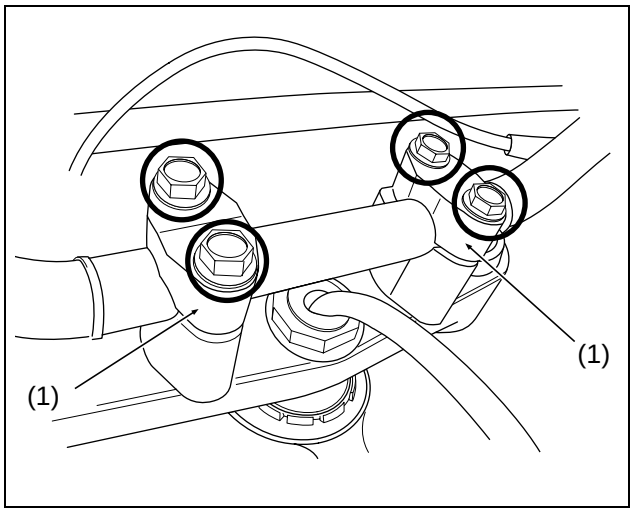
The idle speed adjustment screw is located on the throttle body and is accessible from the left side of the vehicle.

STEERING

Adjusting the handlebar position

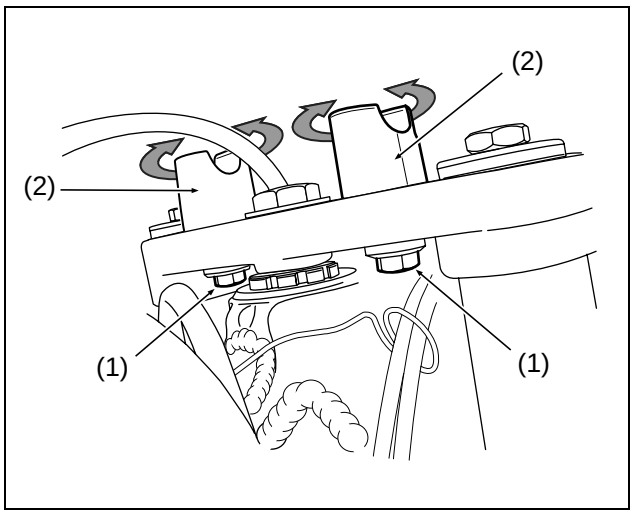
The handlebar position can be adjusted rearward from the factory-set position by removing the lower handlebar clamps and rotating them 180°.

1. Place the vehicle on a work, and cover the gas tank with a clean rag.
2. Remove the handlebar pad.
3. Remove the bolts from each upper handlebar clamp (1). Then, remove the upper handlebar clamps and lay the handlebar on top of the front number plate.



1. Upper handlebar clamp

4. Loosen the bolt (1) from each lower handlebar clamp (2). Rotate the lower handlebar clamp 180° and tighten the bolts to the specified torque



1. Bolts
2. Lower handlebar clamps

5. Place the handlebar onto the lower handlebar clamps, Install the upper handlebar clamps, and tighten the bolts to the specified torque.

   Tighten the upper handlebar clamp bolts to 17.0 lbf•ft (23.0 N•m).
   Tighten the lower handlebar clamps to 60.0 lbf•ft (81.0 N•m)

⚠ WARNING

POTENTIAL HAZARD
Handlebar clamp bolts not tightened to their specified torque.

WHAT CAN HAPPEN
Handlebar may move or come off during operation. Failure to follow these warnings can lead to an accident resulting in severe injury or death.

HOW TO AVOID THE HAZARD
The lower handlebar clamps must be positioned evenly so there is the same amount of space between both the front and rear. And, they must be tightened to the specified torque.

NOTE :

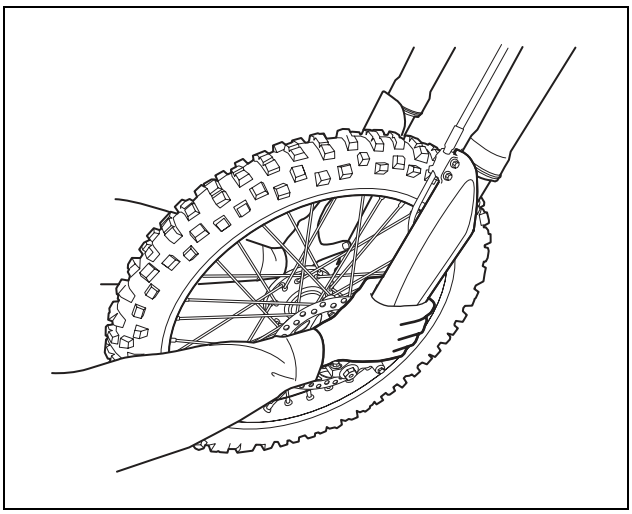
Tighten the front bolts to the specified torque first. Then, tighten the rear bolts to the final torque. This creates a pinching action, instead of a squeezing action, that is produced if the front and rear bolts are tightened uniformly.

6. After installing the handlebar, sit on the vehicle, apply the front brake, and push down on the front end a few times to check if the handlebar moves.
7. Also, turn the handlebar from lock-to-lock to check for looseness or binding.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Steering headbearing inspection

1. Place the vehicle on a stand so that the front wheel is off the ground.
2. Hold the bottom of the forks with your hand, and inspect for any front to back or side to side play. If play is detected, don't ride the vehicle. Have the steering stem slotted nut checked for tightness, orthe headset bearings inspected for wear or damage by an authorized Cannondale Motorsports Dealer.



SUSPENSION

IMPORTANT NOTICE

Your vehicle may have been shipped with supplemental suspension adjustment and service information from the manufacturer. Any information should have been delivered to you by your dealer at the time of sale. Please consult the supplements before attempting to adjust or service any suspension component on your vehicle. If you have any questions or are unsure what supplemental information is available for your vehicle, please consult your Cannondale Motorsports Dealer. Or call us at toll free at 1-800-MOTO-USA.

ADJUSTMENT

The suspension components (front fork and rear shock) on your Cannondale vehicle are fully adjustable.

Adjustment to the suspension is gained by changing to internal settings and external adjusters. The factory set-up which is a combination of both should be a good match for any rider of average weight, skill, and ability. You may choose to change the factory production settings for ones that better suit your own skills and riding style.

Internal settings

The internal settings (valving, oil volume, spring rates) can be changed, but we strongly recommend that if you elect to make any internal changes that the service be performed by experienced suspension professionals.

External adjustments

Both the front forks and rear shock can be adjusted externally by selecting a range of positions in the compression damping and rebound damping adjusters. But, before you adjust the front or rear shock, be sure to consult the Model Specifications section of this manual for the suspension components installed on your model and the applicable settings and service limits.

Before making any adjustment described on the following pages, be sure to read the basic description of compression and rebound damping and the explanation of how to use the adjusters to prevent damage and assure hassle free adjustment.

- Click position "0" (zero) is when the adjuster is fully closed (i.e., fully seated). At this setting the adjuster is set at maximum dampening. You

should start from O every time you adjust.

- When counting clicks (making an adjustment), slowly turn the adjuster counter clockwise until the total setting is reached.
- Make adjustments in 1 click increments and test ride after each change.
- When you think you have made an improvement, go back to what you started with and double check to be sure an improvement was made. Also, pay attention to changes in conditions (e.g., tires, air temperature).
- If you become confused or lose track of the current adjustment setting, return to the standard setting and start over.

NOTE :

The initial suspension impression (or "feel") could be harsh or stiff, this will change after about 1 hour of use. Therefore, do not change the initial suspension settings until after the vehicle has been ridden for 1 hour.

Suspension servicing

⚠ WARNING

POTENTIAL HAZARD
Worn or damaged suspension components

WHAT CAN HAPPEN
Suspension components are directly "safety-related." You can be severely injured or killed if you operate the vehicle with worn or damaged suspension components.

HOW TO AVOID THE HAZARD
Inspect and maintain the suspension systems (front/rear) on your vehicle as described in this Owner's Manual before every ride. If you observe any damage, have it inspected and repaired before riding your vehicle. Contact an authorized Cannondale motorsports dealer.
Have the suspension system serviced in accordance with the maintenance schedule in this Owner's Manual.
Never attempt to disassemble or perform service to the internal settings of either the front or rear suspension systems. Only a qualified service technician with considerable experience should perform any suspension service.

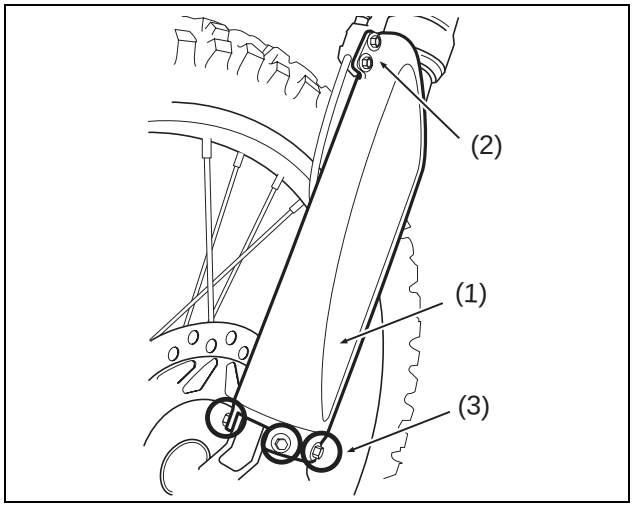
⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Front suspension

1. Fork
2. Protector
3. Rebound damping adjuster
4. Air bleed screw
5. Wear ring
6. Seal (wipers)
7. Compression damping adjuster

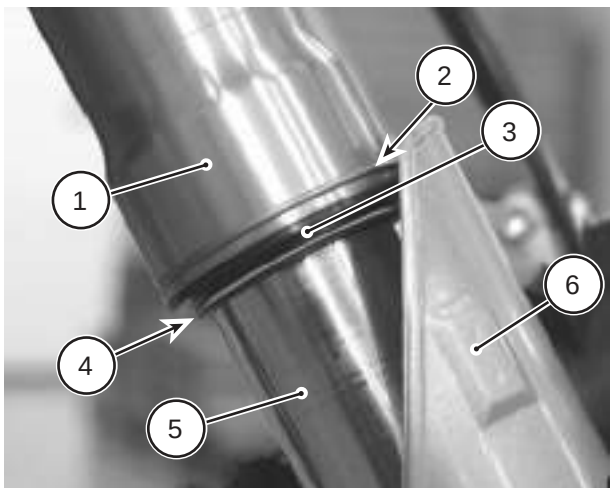
Front suspension inspection

1. Make sure the fork leg protectors are clean, (not packed with mud or dirt) fastened securely, and undamaged.



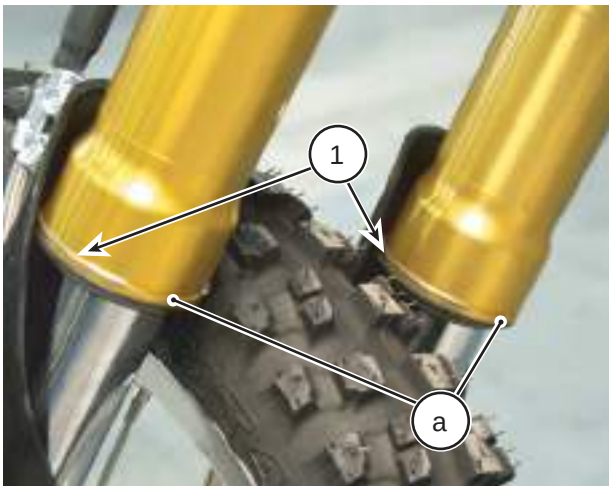
1. Fork protector
2. Brake line clamp bolts
3. Mounting bolts

2. Make sure the fork seals are in good condition and clean. Have leaking fork seals replaced before you ride the vehicle. Replacement involves fork disassembly and should not be attempted by anyone other than a trained suspension professional; contact your Cannondale Motorsports Dealer for information on servicing the suspension components on your vehicle.

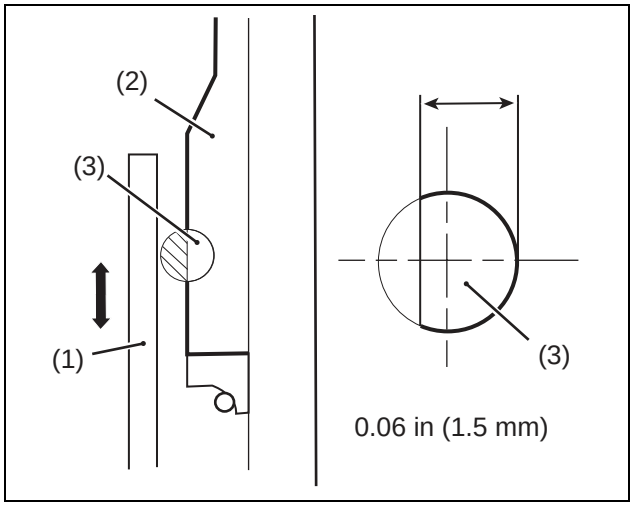


1. Outer tube
2. Wear ring
3. Seal
4. Seal spring
5. Inner tube
6. Protector

3. Inspect the wear rings. Replace the ring if it is damaged or flat with the outer tube surface. Position the gap in the wear ring rearward. If the wear rings are worn beyond specification, incorrectly positioned, or damaged, the outer tube of the fork will be worn.



1. Wear ring
a. Gap



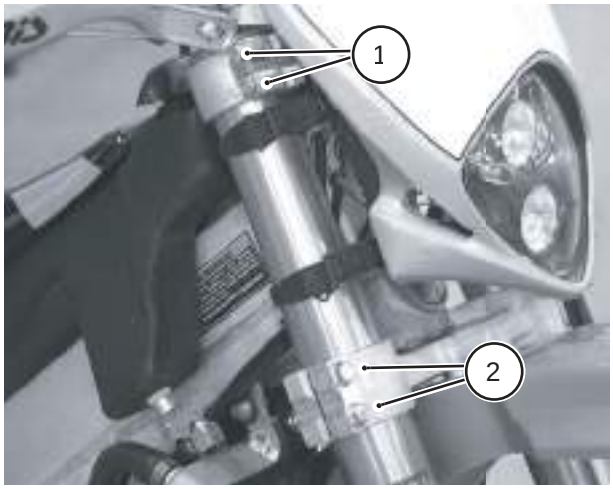
1. Guard
2. Outer tube
3. Wear ring

4. Check the entire fork for signs of oil leakage, especially the area around and below the fork seals for fork fluid. If there is any indication of damage or leaks, consult an authorized Cannondale Motorsports Dealer.
5. Make sure the upper and lower triple clamp pinch bolts are tightened to the specified torque.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

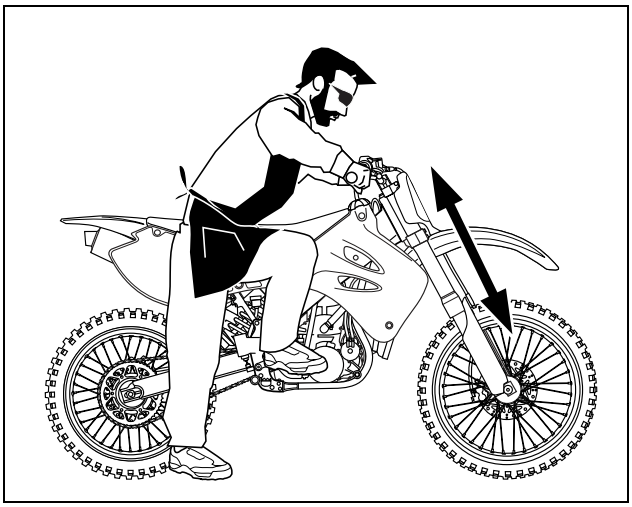
CAUTION :

Observe the torque specification found in the Torque Table in this manual. The forks can be severely damaged if you over tighten them in the clamps.



1. Upper triple clamp bolts
2. Lower triple clamp bolts

6. Inspect bolts and nuts for tightness.
7. Apply a thin film of the specified lubricant to the inner tube. Take the vehicle off the stand, apply the front brake, and push down on the handlebar several times. This will spread the grease evenly over the fork tubes and allow you to check for smooth movement and proper fork leg operation. Use Ohlins green grease - #148-01.



Front ride height & static sag

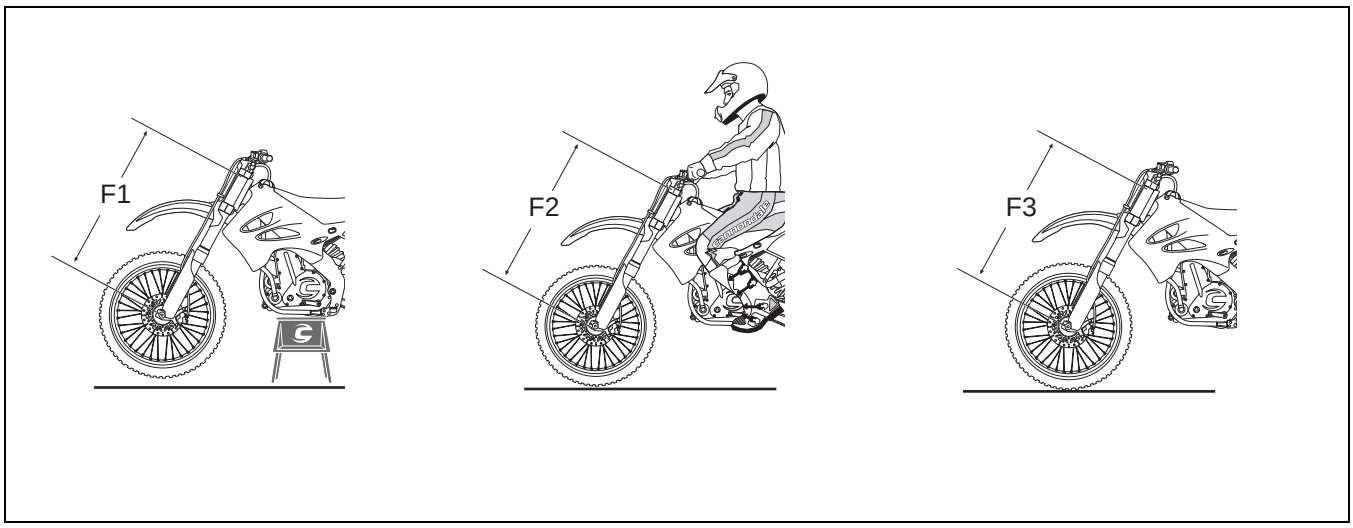
The ride height and static sag specifications for your vehicle can be found in the Model Specification section of this manual.

Make sure the vehicle ride height and static sag dimensions are as specified before performing compression or rebound adjustments.

When measuring the illustrated dimensions, measure from the center of the axle nut to a point on the upper triple clamp. Use the same measurement points each time.

If the ride height or static sag is out of specification, springs with a different spring rate will have to be installed in the forks. Optional springs are available for your vehicle, but you should not attempt to install them yourself. Consult your Cannondale Motorsports Dealer for spring and installation service.

1. Place the vehicle on a stand so that the front wheel is off the ground and the forks are fully extended. Measure the unloaded measurement (F1).
2. Take the vehicle off the stand. With rider in full gear, seated on the vehicle with feet on the footpegs, repeat the measurement. Have one assistant hold the bike upright and have another do the measuring. Bounce your weight up and down a few times to overcome any “stiction” in the suspension, and find the best reference point. Record the value (F2). This is the front ride height.
3. With the vehicle on the ground, held in the upright position and fully unloaded, repeat the measurement. Record the value (F3). This is the front static sag.



⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Fork Rebound damping adjustment

CAUTION :

Adjust both forks to the same setting.

Rebound damping affects how quickly the fork "rebounds" or returns to the fully extended position after compression.

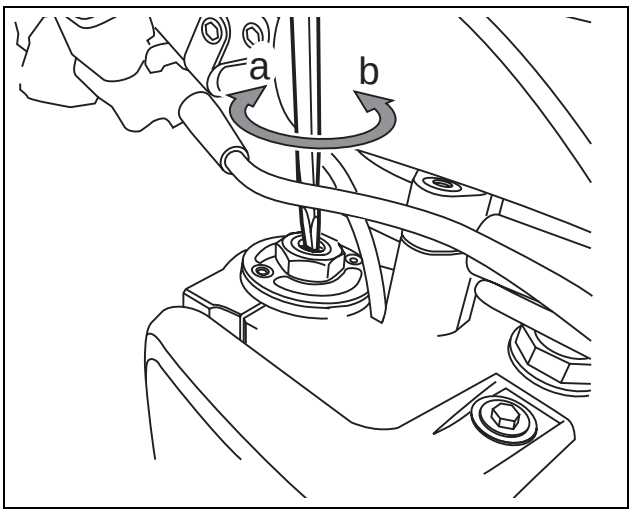
A rebound damping adjuster is located at the top of each fork. The adjuster has 35 positions. Each position can be identified by an audible "click" heard when turning the adjustment screw. There are 8 clicks in each full revolution of the adjusting screw.

1. To set rebound damping to the standard setting, turn the adjustment screw clockwise until it will no longer turn. When the screw stops, this is the harder position "0".

CAUTION :

Do not force the adjuster past the stop point.

2. Turn the adjuster counter clockwise counting each "click" until the specified standard setting for your vehicle is achieved. Consult the Model Specification section in this owner's manual.



1. Rebound adjuster

Fork Compression damping adjustment

CAUTION :

Adjust both forks to the same setting.

Compression damping affects how quickly the fork compresses.

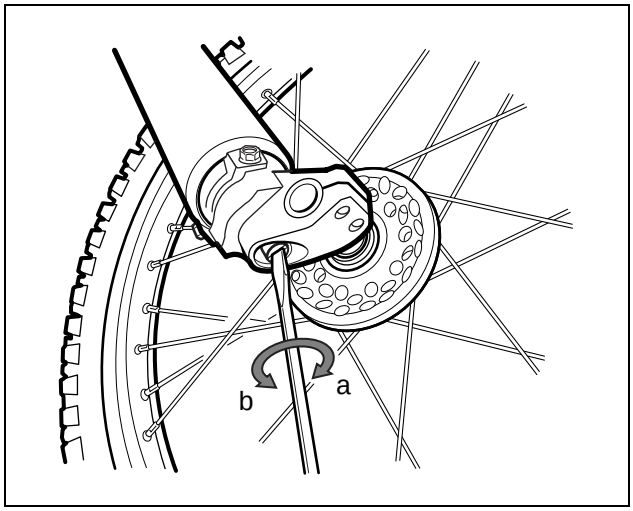
A compression damping adjuster is located at the bottom of each fork. The adjuster has 27 positions. Each position can be identified by an audible "click" heard when turning the adjustment screw. There are 8 clicks in each full revolution of the adjustment screw.

1. To set rebound damping to the standard setting, turn the adjustment screw clockwise until it will no longer turn. When the screw stops, this is the harder position "0".

CAUTION :

Do not force the adjuster past the stop point.

2. Turn the adjuster counter clockwise counting each "click" until the specified standard setting for your vehicle is achieved. Consult the Model Specification section in this owner's manual.



1. Compression adjuster

Cleaning the forks

Clean the forks after every ride.

CAUTION :

Pressure or steam washing will severely damage the fork legs on your vehicle - resist the temptation!

The forks, although quite sturdy, have delicate internal components that must stay clean and free of contaminants. You can force water, dirt and other contaminants inside the fork tube where damage will surely result.

1. Remove and mud or dirt from the guards.
2. Gently clean the fork externally with a light/mild water/detergent solution.
3. Rinse the forks with clean water from an ordinary garden hose.
4. Dry the fork with a clean shop towel and spray with an all-purpose oil (WD-40).
5. Check externally for leaks and damage (e.g.,

nicks, dent).

6. After inspecting the fork legs, apply a small amount of Ohlins #148-01 grease to the inner tube.

Bleeding air pressure

NOTE :

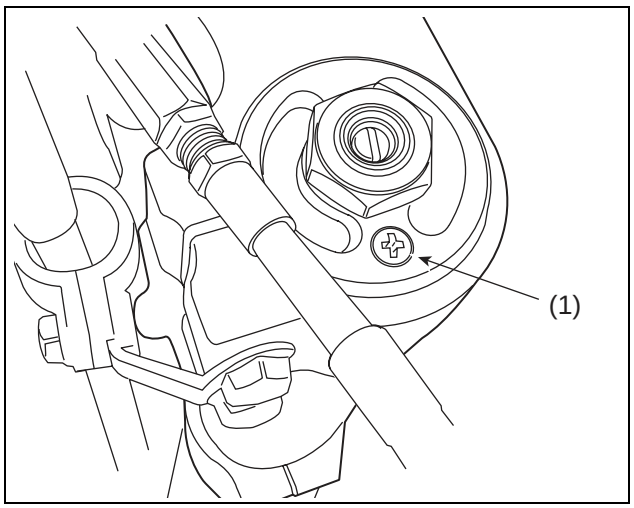
Air pressure can build inside the forks through the up and down action of the forks during a moto, or through changes in elevation (atmospheric pressure) during a ride. Release the air pressure in the fork legs. This pressure will affect the fork action making the fork legs stiffer or softer. Make sure the air pressure is bled regularly.

1. Place the vehicle on a stand with the front wheel off the ground and forks fully extended.

CAUTION :

Clean the area surrounding the screw to prevent oil contamination. The smallest amount of dirt can severely damage the forks.

2. Remove the bleed screw located at the top of the fork leg and allow any accumulated air to escape.



1. Bleed screw

3. Inspect the bleed screw O-ring for damage. If damage is found, replace it.
4. Reinstall the bleed screw. Do not over tighten the screw.

CAUTION :

Do not over-tighten.

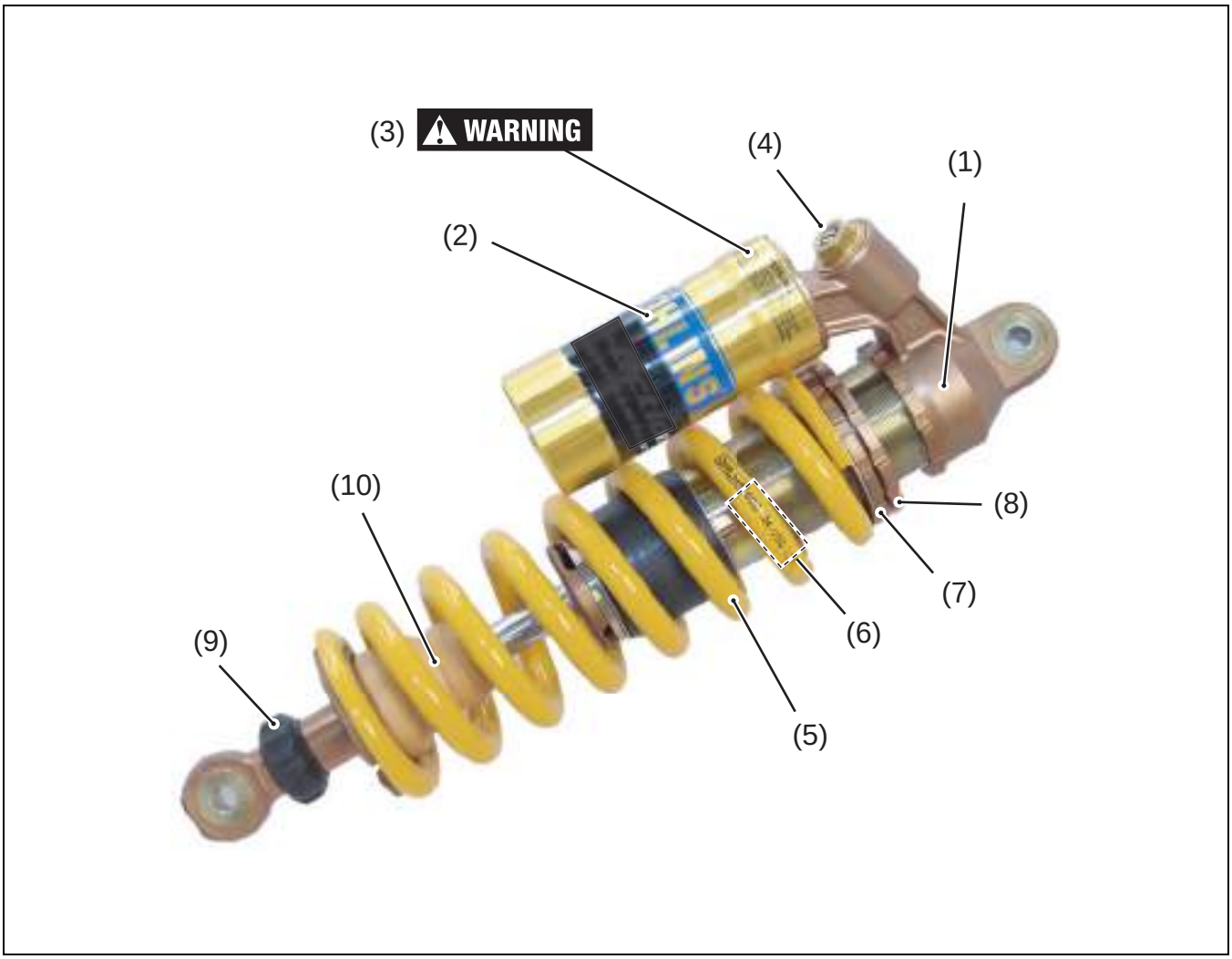
Professional Service (Every 25 hours)

We recommend that the fork legs on your vehicle undergo a comprehensive service program every 25 hours. At this interval, the oil should be changed and all internal and external components should be inspected and replaced new if required.

Do not attempt this service yourself. Contact an authorized Cannondale Motorsports dealer.

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Rear suspension



NOTE :

Component shown removed for clarity

1. Body
2. Reservoir
3. Nitrogen gas hazard warning
4. Compression damping adjuster
5. Spring
6. Spring ID (Type, rate)
7. Adjuster nut
8. Lock ring
9. Rebound damping adjuster
10. Bump stop

Rear ride height & static sag

The ride height and static sag specifications for your vehicle can be found in the Model Specification section of this manual.

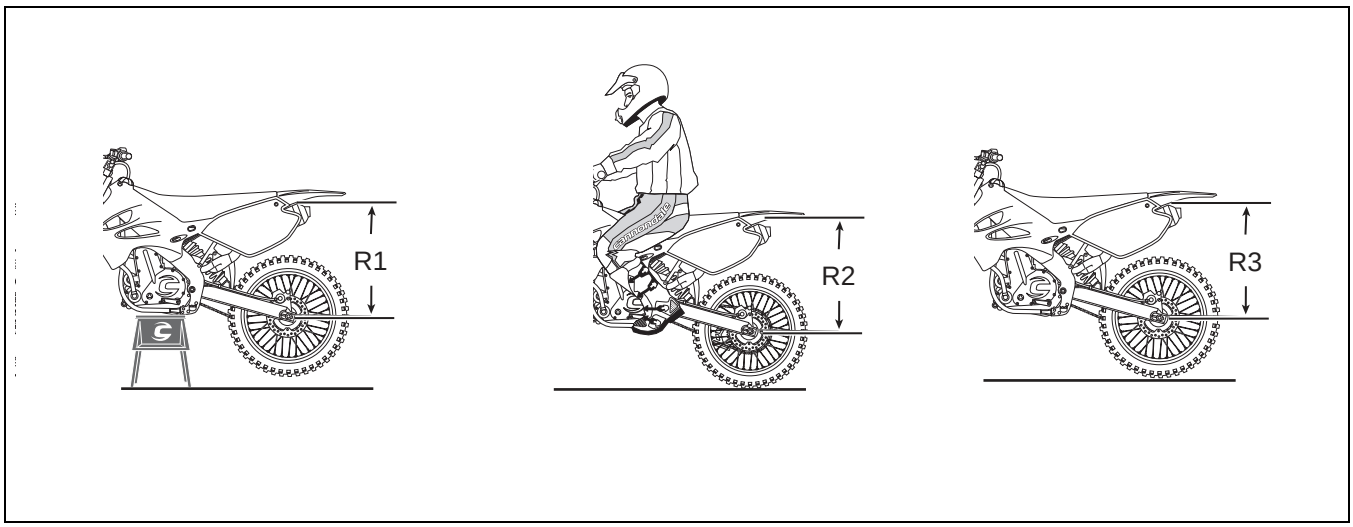
Make sure the vehicle ride height and static sag dimensions are as specified before performing compression or rebound adjustments.

When measuring the illustrated dimensions, measure from the center of the wheel axle to a point on the subframe. Remove the number panel, if required, to make the measurement easier.

Adjustments to the spring preload change the rear ride height. When adjusting the preload to achieve a certain ride height, make sure that both the ride height and static sag specifications are adjusted within the specified limits. The static sag measurement (R3) is directly influenced by changes in the ride height.

If either the ride height or static sag is out of specification, a spring with a different spring rate will have to be installed onto the rear shock. Optional springs are available for your vehicle, but you should not attempt to install them yourself. Consult your Cannondale Motorsports Dealer for spring and installation service.

1. Place the vehicle on a stand so that the rear wheel is off the ground and the swingarm is fully extended. Measure the unloaded measurement (R1).
2. Take the vehicle off the stand. With rider in full gear seated on the vehicle with feet on the footpegs, repeat the measurement. Have one assistant hold the bike upright and have another do the measuring. Bounce your weight up and down a few times to overcome any “stiction” in the suspension and find the best reference point. Record the value (R2). This is the rear ride height.
3. With the vehicle on the ground, held in the upright position, repeat the measurement. Record the value (R3). This is the rear static sag.



⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

Adjusting the rear spring preload

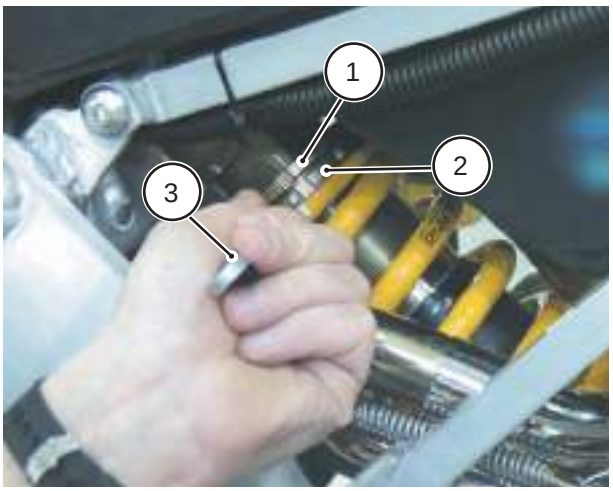
The following rear shock spring service specifications can be found in the Model Specifications section in this manual: (Free length, Installed length (minimum preload), minimum installed length (maximum preload)). Be sure to observe these service limits when adjusting the spring.

CAUTION :

Check ride height and static sag after adjustment.

Make sure you re-tighten the lock ring securely when finished.

4. Loosen the lock ring.
5. Make a reference mark on the adjuster nut and spring.



1. Lock ring
2. Adjuster nut
3. Spanner wrench

NOTE :

Turning the adjuster nut one full revolution will produce ± 1mm change in spring length.

6. Using a spanner wrench, turn the adjuster nut to increase (clockwise) or decrease (counter clockwise) the preload to maintain the specified ride height.

NOTE :

Increasing the preload increases the ride height. Decreasing the preload decreases the ride height.

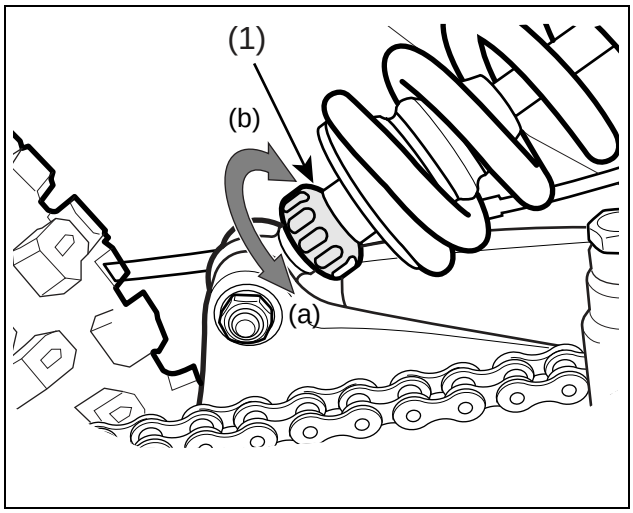
7. Tighten the lock ring when completed.

Rear shock rebound damping adjustment

Rebound damping affects how quickly the shock "rebounds" or returns to the fully extended position after compression.

A rebound damping adjuster is located at the bottom of the shock. The adjuster has 42 positions. Each position can be identified by an audible "click" heard when turning the adjuster. There are 20 clicks in each full revolution of the adjuster.

1. To set rebound damping to the standard setting, turn the adjuster fully clockwise (b) until no clicks are heard or felt.



1. Rebound adjuster
a. More damping "stiffer" (counter clockwise)
b. Less Damping "softer" (clockwise)

2. Turn the adjuster counter clockwise (a) until the first "hard" click is heard. This is setting "one" and the first in the count. Continue turning the adjuster counter clockwise and count the clicks until you reach the total specified standard setting. Consult the Model Specification section in this Owner's Manual.

Rear shock compression damping

Compression damping affects how quickly the shock compresses.

Check the Model Specification section of this Owner's Manual for the rear shock type and adjustment before adjusting the rear shock settings.

1. Adjustment (for both high speed and low speed compression damping) is located at the top of the shock at the reservoir.

   To set compression damping to the standard setting, turn the adjustment screw clockwise until it will no longer turn. When the screw stops, this is the harder position "0".

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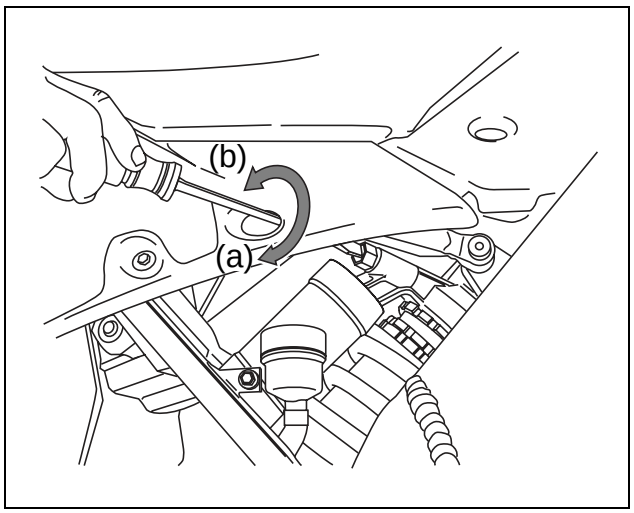
CAUTION :

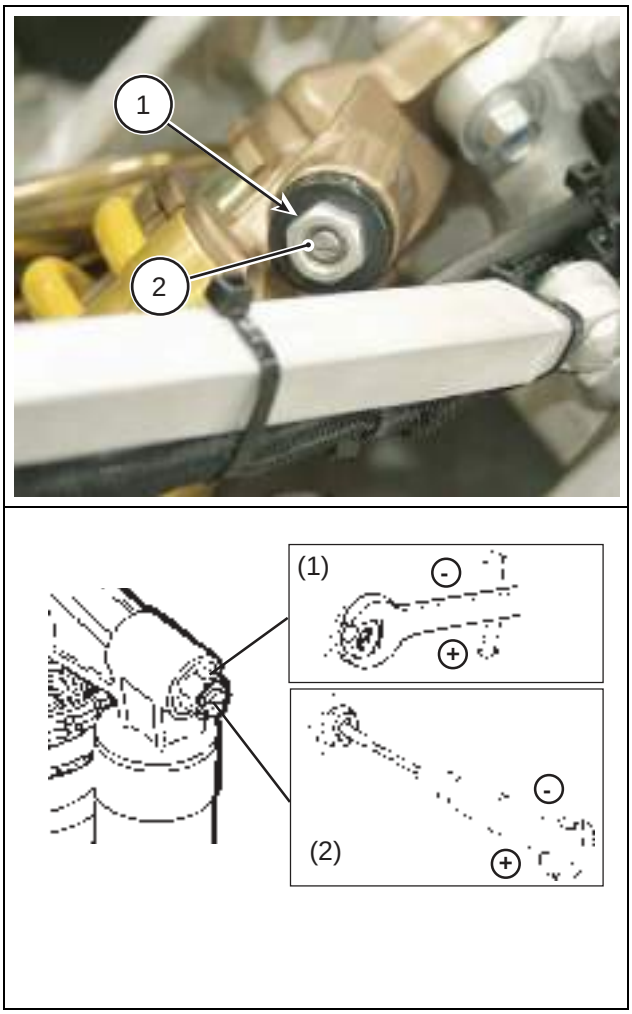
Do not force the adjuster past the stop point.

2. Turn the adjuster counter clockwise counting each “click” until the specified standard setting for your vehicle is achieved. Consult the Model Specification section in this Owner’s Manual.



1. Compression adjuster

a. More damping (stiffer)
b. Less damping (softer)



1. High speed adjuster
2. Low speed adjuster

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TIRES

The following tire service specifications for your vehicle can be found in the Model Specifications section in this manual: (front tire size, rear tire size, front/rear cold tire pressure). Be sure to observe the specifications and service limits for your vehicle.

⚠ WARNING

POTENTIAL HAZARD
(1) Uneven or improper tire pressure
(2) Improper tires

WHAT CAN HAPPEN
(1 & 2) Tire characteristics influence the handling and stability of this vehicle. Use of tire types/sizes other than specified (front/rear) in this Owner's Manual or improper tire pressures can adversely affect the handling and stability (operation) of this vehicle increasing your risk of an accident.

HOW TO AVOID THE HAZARD
(1) Maintain proper pressures in each of the tire.
Set pressures when tires are cold.
Maintain equal pressure in both tires.
(2) Always use the type and size tires specified in this manual.

Checking the cold tire pressure

The air pressure within the tires affects the vehicle handling and stability. Check the air pressure and maintain the recommended tire pressure in each tire before every ride.

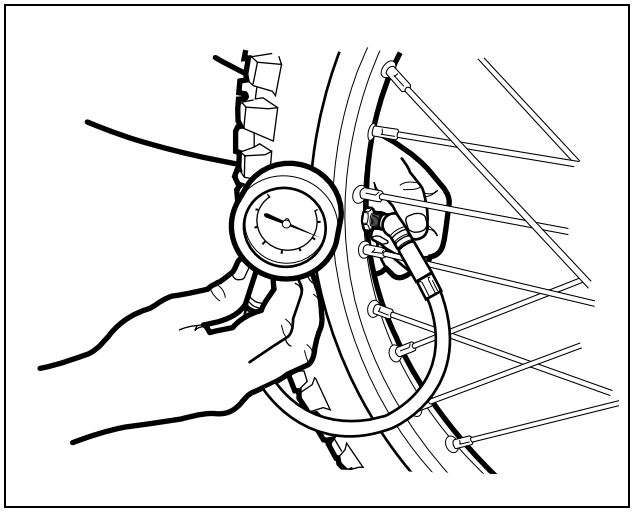
NOTE :

Tire pressure below the minimum specification could cause the tire to dislodge from the rim under severe riding conditions.

Insufficient tire pressure will result in:

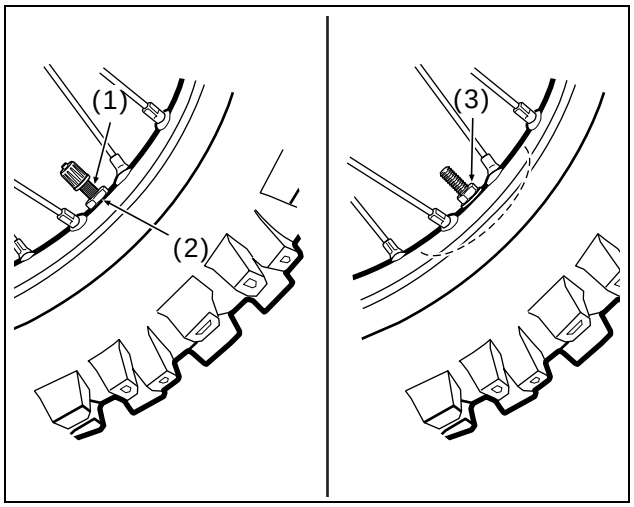
- Poor handling and may cause the vehicle to "wander."
- Rapid tire wear.
- Increases fuel consumption,
- Decrease performance
- Less control.

1. Take two tire pressure measurements of each tire using a good quality tire pressure gauge while the tires are cool. Use the second reading.



2. Regulate the pressure in each tire to meet tire pressure specifications for your vehicle.
3. Add air in small amounts and re-check often to help avoid over-inflating. Unusual air loss might be attributed to damaged tires or rims.
4. Check the physical condition of each tire. Make sure there is adequate tread. If the tire is torn, punctured, or damaged, have it replaced with a new one.
5. Check the valve stem for cracks or other damage. If damage is found, replace with a new inner tube. A tilted tire valve stem indicates that the tire has slipped out of position and must be remounted properly.
6. Make sure the tire valve locknut is secure and the rimlock nut is tightened to 9.0 lbf-ft (12.2

N•m)



1. Vale stem
2. Locknut
3. Rimlock nut

NOTE :

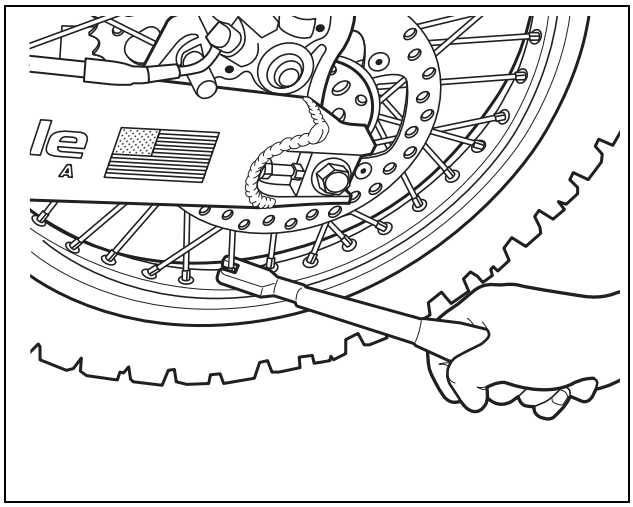
If the tire or inner tube needs to be replaced or remounted, contact an authorized Cannondale Dealer for servicing.

WHEELS

Checking the spoke tension

Check the spoke tension on your vehicle often. Correct spoke tension is very important to wheel stability and safe operation.

1. Check each spoke with a spoke nipple wrench.
2. Tighten so that all spokes have the same tension. Tighten to 3.3 lbf-ft (4.5 N•m)



1.

Removing the front wheel

NOTE :

Avoid sqeezing the front brake lever with the front wheel removed; the brake cylinders will extend making wheel reinstallation more difficult.

Anytime the front wheel is removed, take the opportunity to check the condition of the wheel bearings and dust seals.

1. Place the motorcycle on a work stand, so that the front wheel is off the ground.
2. Loosen the left pinch bolts.
3. Loosen and remove the front wheel axle nut, and

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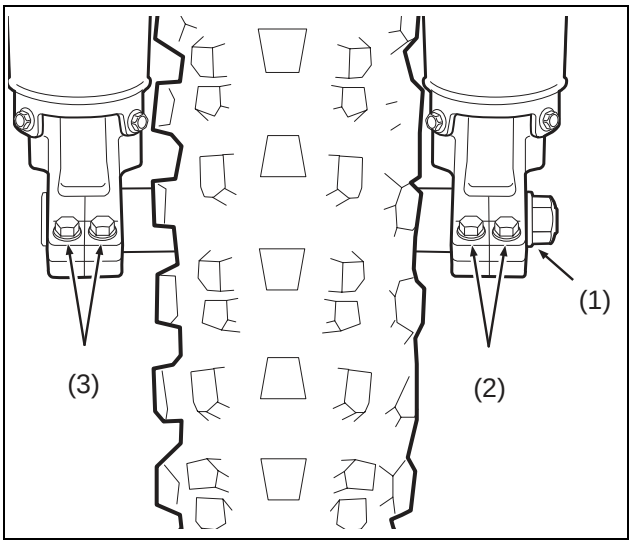
loosen the right pinch bolts.



1. Axle nut
2. Left pinch bolts
3. Right pinch bolts

4. Hold the top of the front wheel firmly to support its weight. Pull out the axle from the right side, and remove the wheel from between the fork legs.

⚠ WARNING

POTENTIAL HAZARD
Hand or finger injury

WHAT CAN HAPPEN
The front wheel is heavy. If the wheel drops unexpectedly, or you lose your grip while removing it, your hands or fingers can be injured, especially if they are caught between the fork legs or brake caliper.

HOW TO AVOID THE HAZARD
Use extra care when removing the front wheel.
Support the weight of the wheel from the top. Avoid holding the wheel at the sides (spokes) when removing the axle.

CAUTION :

Do not apply the front brake with the wheel removed; the pad will be forced shut making reinstallation difficult.

Installing the front wheel

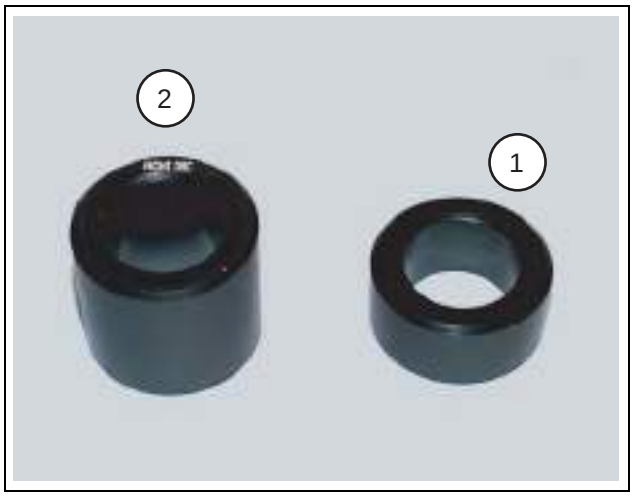
CAUTION :

Follow the installation steps provided. Incorrect wheel installation can result in severe damage (e.g., binding during fork travel) to the fork legs.

NOTE :

The right and left sides of the motorcycle are determined when the rider is sitting on the motorcycle, facing forward (e.g., the brake pedal is on the right side of the motorcycle).

1. Place the motorcycle on a work stand.
2. Clean the front wheel axle and the inside of the axle holders (forks) with contact cleaner. Thoroughly dry them with a rag, and apply a light coat of high-quality water-proof grease to the wheel axle.
3. Apply a light coat of high-quality water-proof grease to the dust seal lips.
4. Make sure both spacers are clean and install the wheel spacers into the wheel. The left wheel spacer is the larger one and should be installed on the brake disc side with the "FRONT DISC" mark facing out.



1. Right side wheel spacer
2. Left side wheel spacer

5. Position the front wheel between the fork legs, and install the axle from the right side.
6. Install the front wheel axle nut and tighten to 14.0 lbf•ft (19.0 N•m)
7. Tighten the left axle pinch bolts (brake caliper side) to 14.0 lbf•ft (19.0 N•m)
8. Take the motorcycle off the stand.
   Squeeze and hold the brake lever, and compress the front forks several times.
9. Tighten the right front wheel axle pinch bolts to

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the specified torque.

10. Spin the front wheel a few times to make sure that it rotates smoothly and the brake disc is not rubbing against the brake pads. Then, take the motorcycle off the stand, roll it forward and backward a few times, apply the front brake, and make sure it operates properly.

Removing the rear wheel

CAUTION :

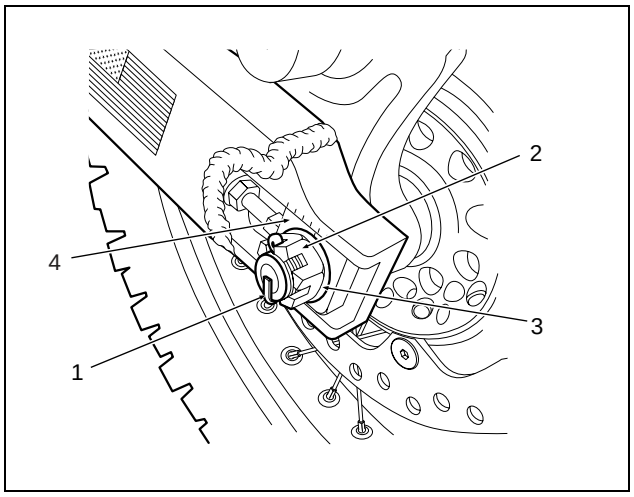
Do not damage the brake disc or brake pads when removing the rear wheel.

Be sure to rest the drive chain on the swingarm so it does not hang on the ground.

NOTE :

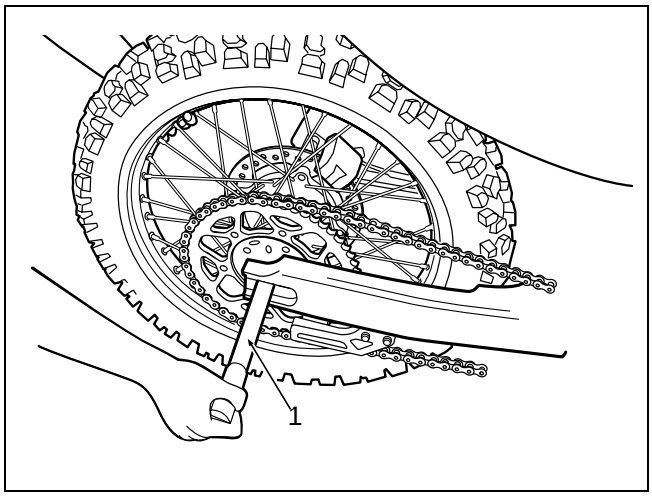
Record the adjuster block position before removing the rear wheel to ease remounting later.

1. Place the motorcycle on a stand so the rear wheel is off the ground.
2. Straighten the cotter pin and remove it using pliers.
3. Remove the rear wheel axle nut.
4. Remove the washer and adjuster block.



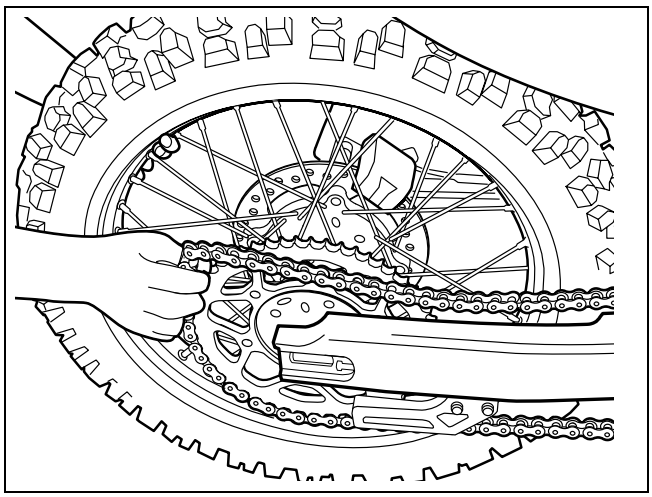
1. Cotter pin
2. Rear wheel axle nut
3. Washer
4. Adjuster block

5. While holding the rear wheel, remove the wheel axle (1).



1. Wheel axle

6. Push the rear wheel forward until the drive chain can be taken off the rear sprocket.



7. Pull the rear wheel out from between the swingarm.

Installing the rear wheel

CAUTION :

Do not damage the brake disc or brake pads when installing the rear wheel.

The "REAR DISC" mark on the left wheel spacer must face out.

The right wheel spacer is the larger one and should be installed on the sprocket side with the smaller side facing in toward the wheel.

Make sure the axle dust caps are in good

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condition.

Make sure both adjuster blocks are in the same position on each side of the swingarm.

1. Place motorcycle on a workstand.
2. Clean the wheel axle and the inside of the axle cutouts in the swingarm with contact cleaner.
3. Dry the wheel axle and swingarm using a clean shop towel and apply a light coat of high-quality, waterproof grease, to the axle.
4. Remove the left and right wheel spacers, and clean them with contact cleaner.
5. Dry the spacers with a rag, apply a light coat of waterproof grease, and install them into the wheel.
6. Place the rear wheel between the swingarm so the brake disc fits between the brake pads, and the rear sprocket fits between the drive chain guide.
7. Push the rear wheel forward and install the drive chain onto the rear sprocket.
8. Install the rear wheel axle from the right side of the swingarm.

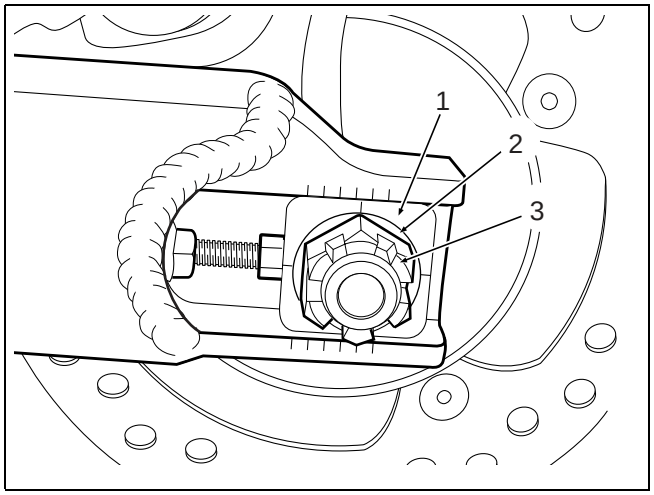
⚠ WARNING

POTENTIAL HAZARD
Pinched/crushed fingers or injured hands.

WHAT CAN HAPPEN
The rear wheel is heavy and can easily crush your fingers if they are caught between any part of the wheel and swingarm.

HOW TO AVOID THE HAZARD
Do not attempt to line up the wheel with your fingers. Failure to follow this warning can lead to serious personal injury.

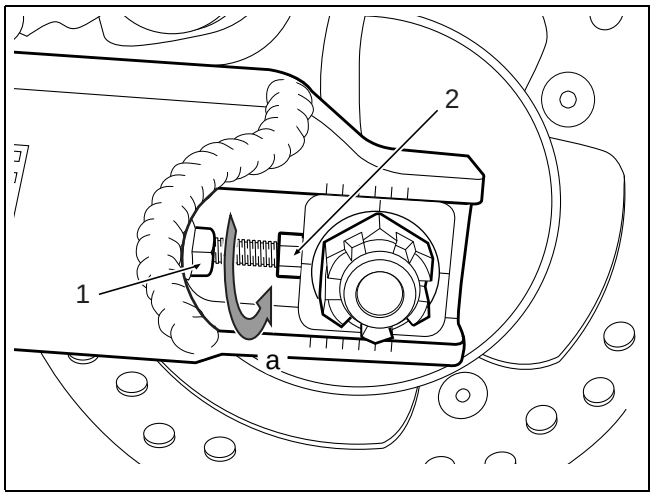
9. Install the adjuster block, washer, and finger-tighten the rear wheel axle nut (3).



1. Adjuster block
2. Washer
3. Axle nut

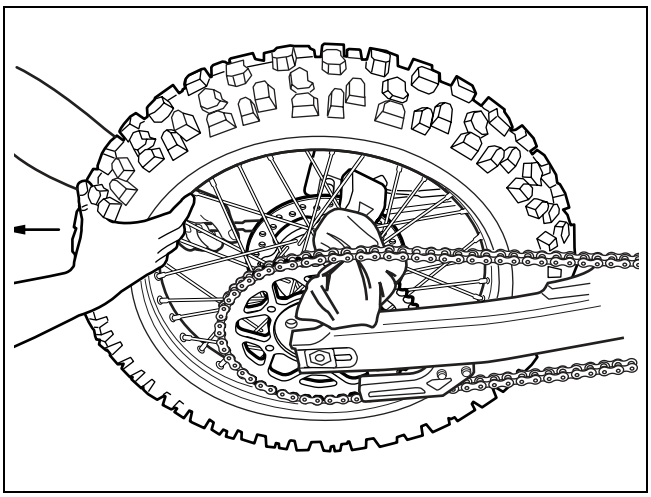
10. Loosen the locknuts, and turn the adjuster bolts in direction (a) until they touch the adjuster blocks.

11. Tighten the drive chain adjuster locknuts securely.



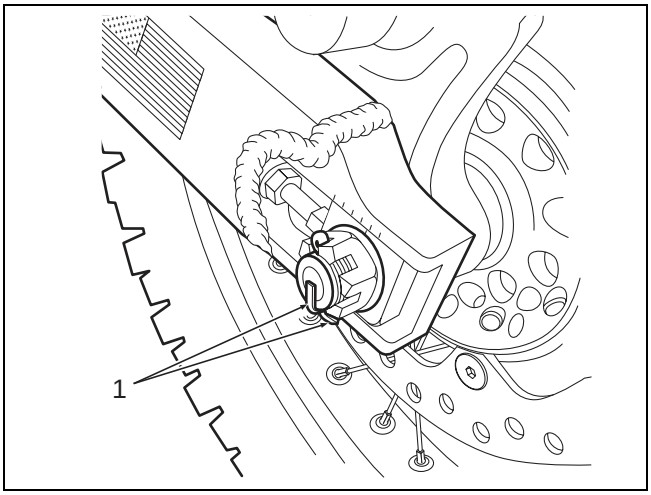
1. Locknut
2. Adjuster bolt
a. Tighten

12. Place a rag between the drive chain and rear sprocket. Pull the rear wheel back, and tighten the rear wheel axle nut to 72.0 lbf•ft (98.0 N•m).



13. Check the rear wheel alignment.

14. Install a new cotter pin, and properly bend the tabs around the axle nut.



1. Tabs

15. Measure the drive chain freeplay and adjust if necessary.

16. Spin the rear wheel a few times to make sure that it rotates smoothly and that the brake disc is not rubbing against the brake pads. Then, take the motorcycle off the stand, roll it forward and backward a few times, apply the rear brake, and make sure it operates properly.

Checking the rear end for excessive play

Before every ride, check the rear end for worn or loose swingarm bearings.

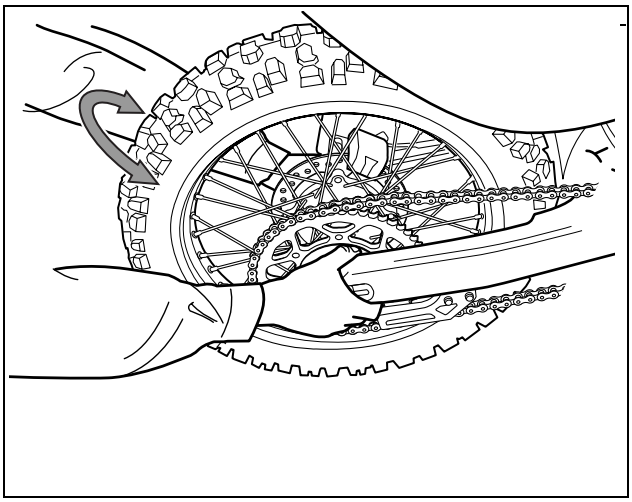
⚠ WARNING

POTENTIAL HAZARD
Riding this vehicle with worn or loose swingarm bearings

WHAT CAN HAPPEN
You can lose control of the vehicle resulting in serious injury or death.

HOW TO AVOID THE HAZARD
Always check the condition of the swingarm bearings before each ride.

1. Place the vehicle on a stand so that the rear wheel is off the ground.
2. Hold each side of the swingarm, and try to move it from side-to-side. If any freeplay is felt, contact an authorized Cannondale Motorsports Dealer for servicing.



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CLEANING

Regular cleaning helps to maintain the appearance and contributes to the overall performance of the vehicle by keeping it free of damaging dirt, soils, and grime.

- When cleaning, avoid harsh detergents and chemical solvents. Use mild solutions of ordinary dish soaps and clean water.
- The advertising claims of “power” cleaning products are no substitute for careful and deliberate attention when cleaning the vehicle.
- Rinse with plenty of clean water to remove any detergent residue.

CAUTION :

Don’t use high-pressure (e.g., coin-operated car washes) or portable steam power washers to clean the vehicle. The excessive water pressure will force dirt, water, and other contaminants into important electrical connectors and devices, bearings, engine seals, and wheel bearings, promoting rust and corrosion. Severe damage can result. Use an ordinary garden hose and only enough water pressure to do the job.

Be sure to thoroughly dry your vehicle after washing it. This will prevent corrosion and premature wear of components (e.g., switches, airbox, wheel bearings).

Do not use compressed air to dry the vehicle. Compressed air can force water or other contaminants into bearings and the electrical system leading to severe damage and component failure.

Do not get detergent onto the brake discs or pads. The detergent may cause the brake discs to glaze and ruin the brake pads.

Do not wax or lubricate the brake discs. Braking power will be reduced which may result in an accident.

⚠ WARNING

POTENTIAL HAZARD(S)
(1) Slick or slippery seat
(2) Wet brake system

WHAT CAN HAPPEN
(1) Some types of cleaners can leave the seat extremely slippery. A rider can slide unexpectedly and lose the ability to control the vehicle.
(2) Braking performance is reduced when the brake system is wet.

HOW TO AVOID THE HAZARD
(1) Use ordinary mild solutions of soap and rinse clean. Wipe the cleaned seat down with the clean rag. Consult a Authorized Cannondale Dealer for products available to clean your vehicle.
(2) Before riding normally, ride and very slow speed and repeatedly apply the brakes; friction generated heat will dry the brake system and normal braking force should return. If it doesn’t don’t ride the vehicle; contact an authorized Cannondale motorsports dealer.

Before you start cleaning the vehicle take the following precautions:

- Make sure the vehicle is completely cool before cleaning it.
- Thoroughly dry the vehicle after washing it.
- Cover the rear muffler opening, brake lever and pedals, electrical switches, clutch lever, throttle with plastic bags securd with strong rubber bands.
- Make sure all filler and check caps are tightened securely.

After washing:

- Remove all plastics bags.
- Lubricate the front brake lever and rear brake pedal with clean engine oil.
- Test the brakes before operation. Wet brake discs and pads reduce braking efficiency.
- Start the engine and allow to run for 5 minutes.

1. Remove the generator cover.
2. Remove any debris with a clean rag. Use contact

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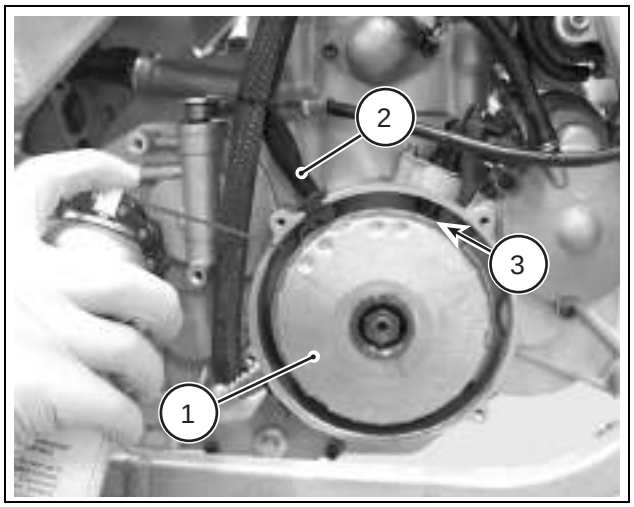
cleaner to displace any hidden water residue.



1. Flywheel
2. Generator lead (to wiring harness)
3. Crankshaft position sensor (tip)

3. Reinstall the generator cover making sure that the cover gasket is properly installed onto the cover and tighten the cover bolts securely.

STORAGE

When the vehicle will not be operated for an extended period of time (e.g., winter months, 45 days or more), it is necessary to perform certain procedures to guard against deterioration and to make sure it is in perfect running condition when the riding season begins.

NOTE :

Make any necessary repairs before storing the vehicle. If you don't have the opportunity to service before storage, write down all needed repairs on a tag and attach the tag to the handlebar to remind you lof the service required ater.

1. Thoroughly clean and dry the vehicle.
2. Lubricate the drive chain.
3. Change the engine and transmission oils and clean the filters to prevent moisture and acids in the old oil from contaminating the bearing surfaces during the storage period.
4. Carefully inspect the vehicle and perform all necessary repairs.
5. Either drain the fuel tank completely or fill it with fresh fuel. If you drain the fuel tank, drain it into an approved gasoline container. If you fill the tank, add a good quality fuel stabilizer directly to the tank. Fuel stabilizer can be purchased at most automotive parts or large department stores. Make sure you follow the directions on the product label.
6. Remove the air filter, and thoroughly clean the area surrounding the airbox.
7. Start the engine. With the engine idling, spray (for 10 - 20 seconds) a high-quality engine fogging oil into the airbox funnel inside the airbox.
8. Shut off the engine and allow to cool.
9. Clean, re-oil, and install the air filter.
10. Drain the cooling system, and refill it with new coolant.
11. Stuff a clean shop towel into the silencer outlet. Next, n cover the outlet with a clean plastic bag and hold the plastic bag in place with a rubber band to prevent moisture from entering.
12. Remove the battery and store it in a clean, dry areawhere it will not be exposed to direct sunlight. Select a cool, dry place away from heat, humidity, dust and dirt to store the vehicle.
13. Cover the vehicle.

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Removing from storage

1. Uncover the vehicle. Clean and dry it.
2. Install the fully-charged battery.
3. Remove the rag and plastic bag from the silencer.
4. Drain the gasoline into an approved fuel container and recycle or dispose of the fuel at an EPA-approved center.
5. Lubricate the vehicle.
6. Perform all maintenance and pre-ride checks.
7. Start the engine, and enjoy!

TIGHTENING TORQUES

Item	lbf•ft	N•m	kgf•m
Side panel mounting bolts	5.0	6.8	0.69
Rear fender mounting bolt	5.0	6.8	0.69
Engine oil spar drain bolts (left/ right)	15.0	20.3	2.07
Engine oil drain bolt (crankcase)	6.0	8.1	0.83
Engine oil filter cover bolt	3.3	4.5	0.47
Engine frame rail mounting bolts (upper/lower)	20.0	27.1	2.77
Engine mounting bolt (center)	35.0	47.5	4.84
Spark plug	10.0	14.0	1.42
Battery terminal nuts			
Transmission oil check bolt	5.0	6.8	0.69
Transmission oil drain bolt	6.0	8.1	0.83
Transmission shift lever pinch bolt	5.0	6.8	0.7
Exhaust header nuts	4.2	5.7	0.6
Silencer mounting bolts	15.0	20.3	2.1
Coolant bleed bolt	3.3	4.5	0.47
Banjo bolt (brake)	14.0	19.0	1.9
Brake caliper mounting bolts (front/rear)	14.0	19.0	1.9
Front brake disc mounting bolts	7.0	9.5	0.97
Front brake master cylinder mounting bolt	5.0	6.8	0.7
Front brake master cylinder cover screws	1.4	1.9	0.2
Front brake lever pivot (bolt/nut)	5.0	6.8	0.7
Front brake lever adjuster locknut	4.3	5.8	0.6
Rear brake disc mounting bolt	12.0	16.3	1.66
Rear brake pedal mounting bolt	15.0	20.3	2.1
Rear brake pedal adjusting locknut	13.0	17.6	1.8
Radiator shroud mounting bolt (to radiator)	5.0	6.8	0.7
Radiator shroud mounting screws (to tank)			
Fuel tank mounting bolts	5.0	6.8	0.7
Side number panels mounting bolts	5.0	6.8	0.7

Item	lbf•ft	N•m	kgf•m
Clutch release collar adjuster locknut	3.3	4.5	0.47
Clutch pressure plate bolts	3.3	4.5	0.47
Clutch cover bolts	3.3	4.5	0.47
Clutch lever mounting bolts	5.0	6.8	0.7
Rear sprocket mounting nuts	35.0	47.5	4.84
Countershaft sprocket nut	29.5	40.0	4.1
Countershaft sprocket guard mounting bolts	5.0	6.8	0.69
Chain roller mounting bolts	15.0	20.3	2.07
Rear sprocket mounting bolts	26.0	35.3	3.59
Chain guide bolts	5.0	6.8	0.69
Swingarm buffer mounting bolts	1.4	0.2	0.2
Upper/lower rear shock strut bolts	25.0	34.0	3.47
Swingarm pivot nut	55.0	74.6	7.6
Steering head filter bolt	5.0	6.8	0.7
Triple clamp bolts (lower)	14.0	19.0	1.94
Triple clamp bolts (upper)	17.0	23.0	2.35
Steering stem slotted nut (stage 1)	9.0	12.2	1.24
Steering stem slotted nut (stage 2)	4.0	5.4	0.55
Steering stem nut	72.0	98.0	10.0
Handlebar clamp bolts	20.0	27.1	2.77
Handlebar mounting bolts	25.0	34.0	3.47
Rear shock mounting bolts (upper/lower)	40.0	54.2	5.53
Wheel, front axle nut	14.0	19.0	1.9
Rear wheel axle nut	72.0	97.6	9.95
Wheel, front axle pinch bolts	14.0	19.0	1.9
Wheel, spoke nipple, front/rear	3.3	4.5	0.46
Wheel rimlock nut	9.0	12.2	1.24
Fuel tank mounting bolt	5.0	6.8	0.7
Subframe mounting bolt	20.0	27.1	2.77

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MAINTENANCE RECORD

It is important to keep accurate records of maintenance service. This data is vital for referencing previous work or knowing what type of tuning was performed under certain conditions.

DATE	SERVICE	REMARKS

SPECIFICATIONS

NOTE :

The specifications are subject to change for product improvement without notice.

Model	X440	C440	E440	S440
Engine	4 - stroke single			
Bore and stroke	95 mm x 61 mm			
Compression ratio	12.5: 1			
Displacement	432 cc			
Engine Management System	MC 1000, EFI, 11,600 rpm soft rev limiter			
Cooling system	Liquid cooled			
Ignition system	Constant - energy inductive coil			
Starting system	Electric start			
Lubrication system	Dry sump			
Compression release	Automatic			
Transmission	5-speed cassette			
Final drive	520 non o-ring chain	520 O-ring chain		
Primary reduction ratio	3.071 (86/28)			
1st	2,000 (30/15)			
2nd	1.588 (27/17)			
3rd	1.316 (25/19)			
4th	1.095 (23/21)			
5th	0.833 (20/24)			
Frame	Aluminum twin spar perimeter			
Wheelbase	58.5 in (148.6 cm)			58.25 in (148.0 cm))
Seat height	38.0 in (96.5 cm)			34.5 in (87.6 cm)
Ground clearance, unloaded	14.2 in (36.1 cm)			9.2 in (23.4 cm)
Dry weight (approx)	242 lbs (110 kg)	245 lbs (111 kg)	249 lbs (113 kg)	254 lbs (115.2 kg)
Maximum load				
Steering head angle	27.5 degrees			
Air filter	wet foam type			
Front brake	240mm disc, Nissin 2-piston caliper			320mm disc, 4-piston caliper
Rear brake	220mm disc, Nissin dual piston caliper			
Clutch type	Wet, multi-disc			
Clutch plates	10 metal, 9- friction			
Fuel	Premium unleaded (Anti-Knock Index 93 or higher)			
Fuel filter	FRAM G4164 or equivalent (35 micron rating)			
Fuel system	Electronic fuel injection			
Valve train	DOHC, four-valve			

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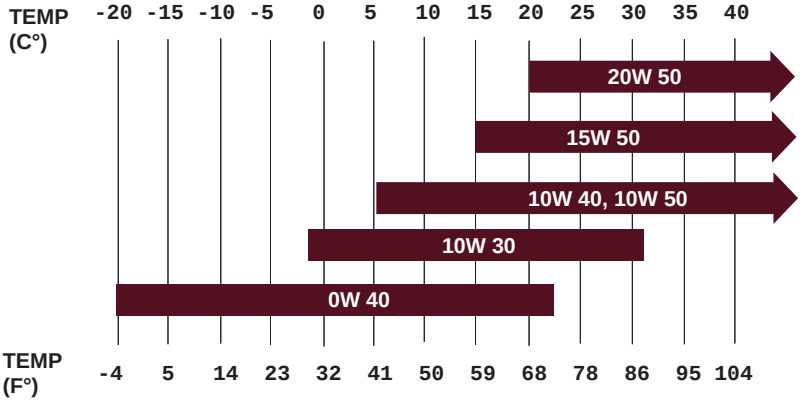
SERVICE

Model	X440	C440	E440	S440
Engine oil Recommended viscosity: 10W40 Classification: Use only high-detergent, premium quality synthetic motor oils with the American Petroleum Institute (API) service classification SF or SG type displayed on the container. Other viscosities can be used when the average temperature range is within the indicated range.	 Be sure to change the engine oil and clean/replace the filters in accordance with the vehicle maintenance schedule. Service more frequently when operating under severe conditions.			
Engine oil quantity (dry fill)	1500cc (1.7 US qt.)			
Transmission oil	80W or 85W (Do not use hypoid gear oils)			
Transmission oil quantity (dry fill)	600 cc (0.85 US qt.)			
Coolant	1:1 water/anti-freeze [ethylene glycol (containing corrosion inhibitors for aluminum engines and radiators)]			
Front tire	80/100-21			120/70-17
Rear tire	110/100-19	120/100-18		160/60-17
Recommended cold tire pressure (front/ rear)	14 psi			
Main fuse	10 A			
Lighting fuse			10A	
Headlight			35 watt	
Taillight			5 watt	
Battery	YUASA, YTX5L-BS maintenance-free			
Fuel tank capacity	2.0 US gal (7.6 L)	2.6 US gal (9.8 L)		2.0 US gal (7.6 L)
Throttle freeplay	1/8 - 5/16 in (3 - 8 mm)			
Brake fluid	DOT 4 (sealed container)			
Clutch oil (hydraulic)	SAE 10 mineral hydraulic oil			
Drive chain slack	2.2 - 2.4 inches (55 - 60 mm)			
Engine idle speed	2100 - 2200 r/min			
Spark plug, standard	(NGK) CR9EK			
Spark plug gap	0.024 - 0.028 in (0.6 - 0.7 mm)			
Crankshaft position sensor gap	0.02 - 0.04 inches (0.5 - 1.0 mm)			
Valve clearance	IN .006 - .008 in (0.15 -0.20 mm) EX .013 - .015 in (0.33 - 0.38)			
Fuel	Premium unleaded (Anti-Knock Index 93 or higher)			
Fuel filter	FRAM G4164 or equivalent (35 micron rating)			

SUSPENSION SETTINGS

Model		X440	C440	E440	S440
Front Fork	Manufacturer/Type	Ohlins/46USD			
	Standard compression damping (clicks)	14	14	14	15
	Standard rebound damping (clicks)	14	14	14	16
	Oil level Adjustment range (90-130mm)	90 mm			80 mm
	Spring free length	467 mm (service limit 460 mm).			
	Spring rate standard	4.7 N•m			
	(optional)	4.3 N•m			
		4.5 N•m			
		4.9 N•m			
	Recommended oil	SAE 5W, Öhlins High Performance Front Fork Fluid No. 5			
	Ride height	50 ± 10 mm			
	Static sag	30 ± 10 mm			
Rear Shock	Manufacturer/Type	Ohlins/#46PRXQ			Ohlins/#46PRCQ
	Standard compression damping	HI - 2.5 turns			15 clicks
		LO - 15 clicks			
	Standard rebound damping clicks	22	20 mm		17
	Spring pre-load	5 mm	9 mm		4.5 mm
	Ride height	3.7 - 4.0 in (95 - 100 mm)			
	Static sag	1.0 - 1.2 in (25 - 30 mm)			

⚠ WARNING **Indicates a potential hazard that could result in serious injury or death.**

ADDENDA

This section is reserved for updates, supplements, and revisions. Pages are left blank intentionally.

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