

Service manual

EC
2002

125 200 250 300



Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.

WARNING!

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

IMPORTANT

Off-road motorcycle riding is a wonderful sport, and we hope you will enjoy it to the fullest.

NOTE

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

However, if improperly conducted, the sport has the potential to cause environmental problems as well as conflicts with other people. Responsible use of your off-road motorcycle will ensure that these problems and conflicts do not occur.

TO PROTECT THE FUTURE OF YOUR SPORT, MAKE SURE YOU USE YOUR BIKE LEGALLY, SHOW CONCERN FOR THE ENVIRONMENT, AND RESPECT THE RIGHTS OF OTHER PEOPLE.

The logo consists of the letters 'GB' in a bold, sans-serif font, enclosed within a white circle. This circle is centered on a solid black vertical rectangular background.

Foreword

Congratulations for choosing this GAS GAS, which has been developed through GAS GAS, to produce a light weight, high performance machine with superb handling and stability for racing and sporting use.

Your new GAS GAS is a highly tuned production racer for participation in racing events. As with any mechanical device, proper care and maintenance are important for trouble-free operation and top performance. This guide is written to enable you to keep your GAS GAS properly tuned and adjusted.

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

GAS GAS Motos, S.A.

October 2001



TABLE OF CONTENTS

General information	167	Front Fork (suspension)	203
Location of parts	168	Rear Suspension	209
Side Stand	170	Weels	211
Gasoline	170	Tightening bolts and nuts	213
Starting the engine	172	Torque specifications	215
Shifting the transmission	173	Washing	216
Stopping the engine	174	Lubrication	217
Break-in (run-in) period	174	Troubleshooting	219
Maintenance and adjustment	176	Carburetor tuning	222
Periodic maintenance	177	Standard carburetor settings	227
Transmission oil	178	Suspension Tuning	227
Cooling System	179	Race Preparation	234
Spark Plug	184	Storage Preparation	236
Electronic ignition (timing)	185	Multifunction	237
Air Filter	186		
Throttle Cable	189		
Carburetor	190		
Clutch	191		
Exhaust System	191		
Drive Chain	193		
Chain Guides	195		
Handlebar	197		
Brakes	198		
Steering	201		

SPECIFICATIONS

Dimensions

Overall length	2135 mm
Overall width	810 mm
Overall height	1260 mm
Wheel base	1475 mm
Ground clearance	340 mm
Fuel tank capacity	9,5 Litre (2.5 gallons u.s.)
Height seat	940 mm

Engine

2 cycle, single cylinder, crank case induction, liquid cooled

Engine 125 c.c.	
Bore and stroke	54 x 54,5 mm
Displacement in cubic centimeters	124 c.c.
Engine 200 c.c.	
Bore and stroke	62,5 x 65 mm
Displacement in cubic centimeters	199,4 c.c.
Engine 250 c.c.	
Bore and stroke	66,4 x 72 mm
Displacement in cubic centimeters	249,3 c.c.
Engine 300 c.c.	
Bore and stroke	72x72 mm
Displacement	294,7 c.c.
Type	
Carburetor	KEIHIN PWK 38
Lubrication system	Fuel premix (ratio) (50:1)(2%)
Starting system	Kick start pedal
Ignition system	CDI system
Ignition timing	1 mm BTDC
Spark plug	NGK BR8EG



Transmission

Transmission type		6 speed
Clutch type		Multidisc in oil bath, hydraulic actuation.
Driving system		Chain
Gear ratio		1st 2.071(29/14) 2nd 1.625(26/16) 3rd 1.333(24/18) 4th 1.100(22/20) 5th 0.913(21/23) 6th 0.791(19/24)
Primary reduction ratio		2.85(57/20)
Final reduction ratio		3.615(47/13)
Overall drive ratio		8.149 (6th gear)
Transmission oil	Capacity	1000 c.c.
	Type	10W30

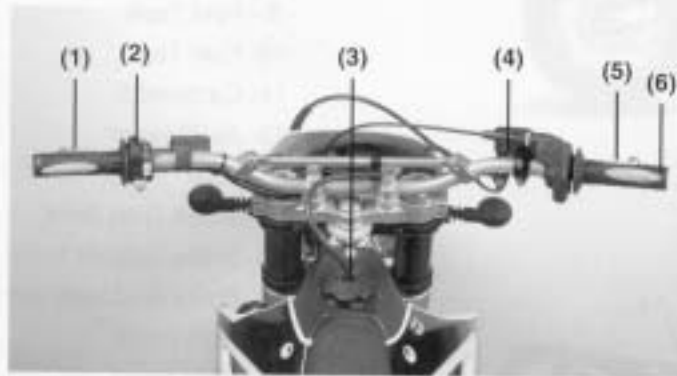
Chassis

Type		Chromolly tubular semi double cradle
Tires	Front	80/100 x 21
	Rear	120/90 x 18
Suspension:	Front	Upside-down telescopic ø 43mm WP fork. Upside-down telescopic ø 45mm Marzocchi fork.
	Rear	Progressive system with single shock, multi adjustable, ÖHLINS.
Suspension stroke	Front	282 mm
	Rear	320 mm
Front fork oil (each)		MARZOCCHI SAE 7.5 / WP: SAE 5
Front fork oil level		Marzocchi 100 mm (compressed with spring removed) WP: 120 mm (compressed with spring removed)
Brakes		
Type	Front, Rear	Disc brake
Effective disc diameter	Front	260 mm
	Rear	220 mm

(Specifications are subject to change without notice and are not applicable in some countries).

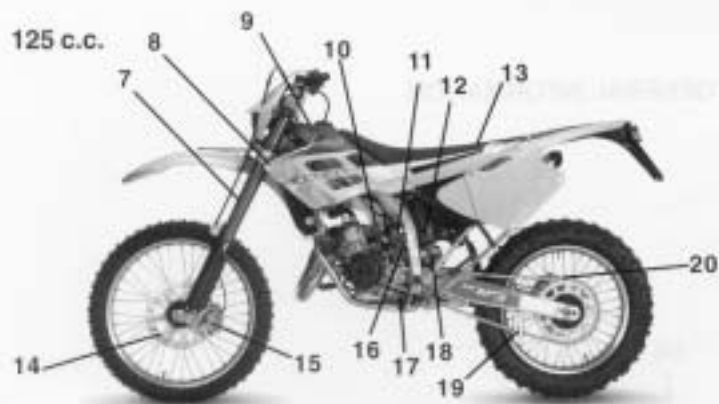
GENERAL INFORMATION

Location of Components GAS GAS 250 c.c. Enducross:

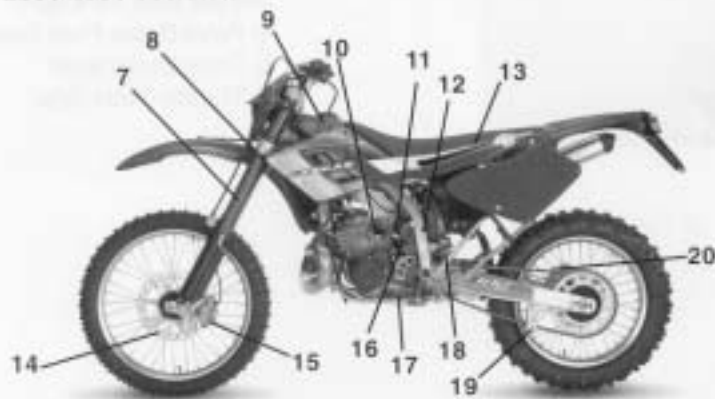


- 1- Clutch lever
- 2- Engine Stop Button
- 3- Fuel Tank Fill Cap
- 4- Front Brake Fluid Reservoir
- 5- Front Brake lever
- 6- Throttle Twist-Grip

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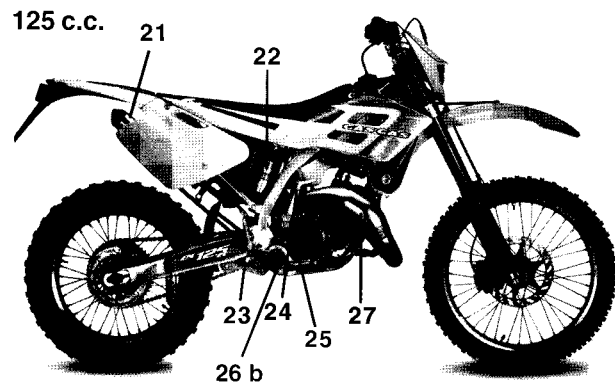


200 / 250 / 300 c.c.

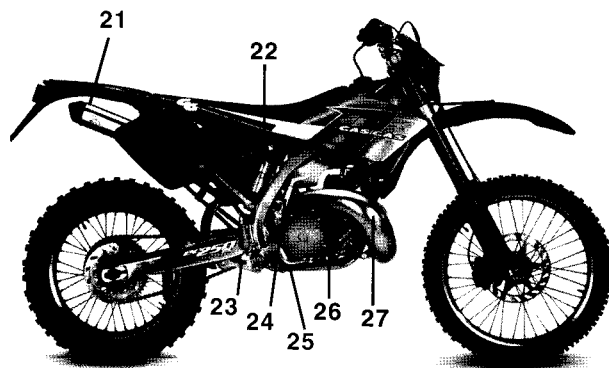


- 7 - Front Suspension
- 8 - Radiator
- 9 - Fuel Tank
- 10 - Fuel Tap
- 11 - Carburetor
- 12 - Air Cleaner
- 13 - Seat
- 14 - Brake Disc, front
- 15 - Brake Caliper, front
- 16 - Brake fluid reservoir, rear
- 17 - Shift pedal
- 18 - Rear shock absorber
- 19 - Chain Guide
- 20 - Drive chain

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200 / 250 / 300 c.c.



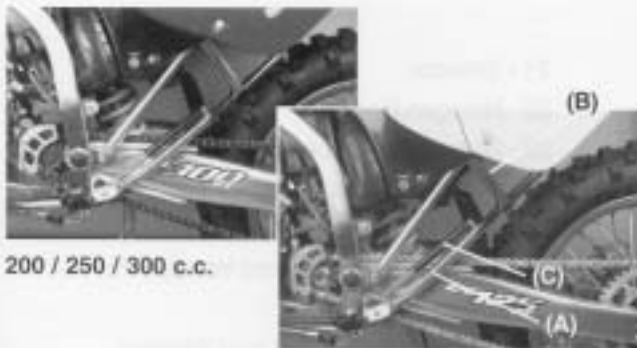
- 21 - Silencer
- 22 - Nitrogen Reservoir
- 23 - Rear Suspension Linkage
- 24 - Kick Start Pedal
- 25 - Rear Brake Pedal
- 26 - Transmission Oil Level Window
(200 / 250 / 300 c.c.)
- 26 b - Transmission Oil Level Window
(125 c.c.)
- 27 - Exhaust Expansion Chamber



SIDE STAND

To operate the side stand:

Release the security strap (B), the sidestand is held in the down position by the weight of the motorcycle. This sidestand automatically retracts when the motorcycle is placed in the upright position.



200 / 250 / 300 c.c.

125 c.c.

(A). Side Stand
(C). Security strap

(C). Sidestand spring

NOTE

Do not start the engine or ride the motorcycle when the side stand is down. Always engage the security strap (B) before operation of the motorcycle.

FUEL (GASOLINE)

The GAS GAS enducross has a 2-stroke engine that requires a gasoline-oil mixture

Fuel Tank Capacity	
ENDUCROSS 250CC	10.6 L (2.5 GAL U.S.)



(A). Fuel cap

(B). Fuel vent hose.

Recommended Fuel

Use premium gasoline with an octane rating equal to or higher than that shown on the table.

Position the vent hose clip in a position which prevents spillage on the steering bearings and the clock.

Recommended Fuel

Use premium gasoline with an octane rating equal to or higher than that shown in the table.

OCTANE RATING METHOD	MINIUM RATING
Antiknock Index (RON+MON) 2	90
Research Octane No. (RON)	95

NOTE:

If "knocking" or "pinging" occurs, try a different brand of gasoline or higher octane grade.

WARNING!

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

Engine Oil Mixing

Oil must be mixed with the gasoline to lubricate the piston, cylinder, crankshaft, bearings, and connecting rod bearings.

Recommended Oil:
- OIL 2T SINTETIC

NOTE:

If recommended oil is not available, use only synthetic oil designed for use in racing 2 cycle engines.

Proporción of gasoline and oil mixture (premix ratio)
50 parts gasoline to 1 part oil).

CAUTION!

Do not mix vegetable and mineral based oils. Too much oil will cause excessive smoking and spark plug fouling. Too little oil will cause engine damage or premature wear.

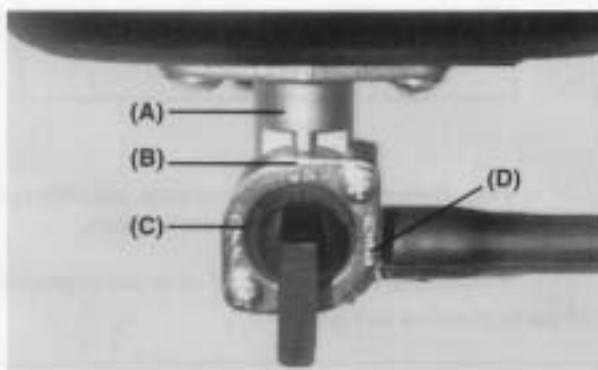
To make an gasoline-oil mixture, pour oil and half of the gasoline into a container first and stir the mixture thoroughly. Then add the rest of the gasoline and stir the mixture well.

NOTE

At low temperature, oil will not easily mix with gasoline. Take time to ensure a well-blended mixture.

The lubricative quality of this mixture deteriorates rapidly; use a fresh mixture for each day of operation.

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A. Fuel Tap (petcock)
 C.OFF position
 B. ON position
 D. Reserve position



A. Kick Start Pedal

. Even after the engine starts, keep the choke knob pulled up. Until the engine is thoroughly warmed up.

NOTE

.When the engine is already warm or on hot days, open the throttle part way instead of using the choke knob.
 .If the engine is flooded, kick with the throttle fully open
 .If the clutch lever is pulled, the motorcycle can be started while in any gear.



A. Choke Button
 If the engine is cold, pull up the choke knob.

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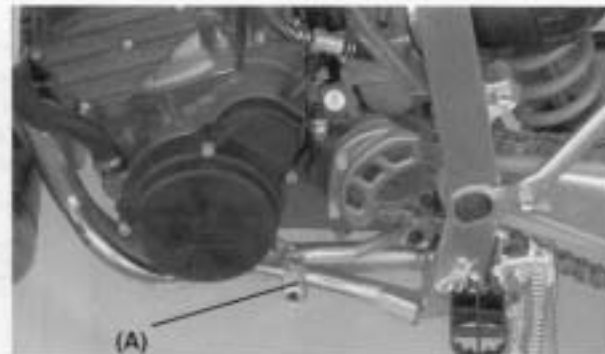
Shifting Gears

The transmission is a 6 speed, return shift type with neutral halfway between 1st and 2nd gears. A "return shift" means that to go back to first gear from a higher gear, you must shift back through the gears one by one. The same is true when upshifting: each gear must be engaged before the next higher gear may be selected.

To engage first gear from neutral, pull in the clutch lever and push down on the shift pedal, gently release the clutch lever, then release the shift pedal.

To shift to the next higher gear; pull in the clutch lever, lift the shift pedal with your toe, gently release the clutch lever, and then release the shift pedal.

To shift to the next lower gear; disengage the clutch, push the shift pedal down as far as it will go, engage the clutch gently, and then release the shift pedal.



A. Shift Pedal

Stopping the Motorcycle

For maximum deceleration, close the throttle and apply both front and rear brakes. Disengage the clutch as the motorcycle comes to a stop. Independent use of the front or rear brake may be advantageous under certain conditions. Downshift progressively as speed is reduced to ensure good engine response when you want to accelerate.

CAUTION

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

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Stopping the Engine

- Shift the transmission into neutral.
- After racing the engine slightly, close the throttle completely and push the engine stop button.



A. Engine Stop Button

- Turn the fuel tap to the OFF (Stop) position.

Break-in

To obtain the proper operating clearances in the engine and transmission that are necessary for smooth engine performance and reliability, a brief hour or 20 km of operation, run the engine at low and moderate rpm.

NOTE

The slow riding necessary during the break-in period may cause carbon to build up on the spark plug and foul it. If inspection of the spark plug shows this to be the case, replace the standard spark plug with a hotter spark plug for the duration of the break-in period

Spark Plug	
Standard Plug	Hotter Plug
NGK BR8EG	

1. Start the engine and let it run at idle until the engine is thoroughly warmed up.
2. Stop and let the engine cool completely.
3. Start the engine and ride for **10** minutes at moderate speed - **NEVER ACCELERATE HARD.**
4. Stop and let the engine cool completely. Be sure to check and adjust chain slack and spoke tightness and make a general inspection.
5. Start the engine and ride for **20** minutes at moderate speed. - **NEVER ACCELERATE HARD.**
6. Stop and let the engine cool completely. Check and adjust as step 4. Then drain the coolant, remove the cylinder head, cylinder and piston, and inspect these parts.

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Piston

A piston scored at the piston skirt could lower engine performance or damage the cylinder wall. Such scores, if any, must be smoothed with #400 to # 600 emery cloth.

Cylinder

Decarbon the exhaust ports and the upper part of the cylinder, taking care not to damage the cylinder wall. Scores on the cylinder wall should be smoothed with # 400 to #600 emery cloth.

Cylinder Head

Remove the carbon inside the combustion chamber.

7. Install the parts removed.

8. Fill the radiator up to the bottom of the radiator filler, bleed the air from the cooling system.

9. Start the engine and ride for **30** minutes at moderate speed - **NEVER ACCELERATE HARD.**

10. Stop and let the engine cool completely, check and adjust.

(4).

11. After the break-in procedure has been properly carried out, the motorcycle is ready for regular operation. However, since recklessly high r/min (rpm) will lead to engine trouble, take care to use the necessary skill and technique in operating the motorcycle.

NOTE

.After break-in, install a new standard spark plug, and change the transmission oil.

For your reference:

To keep optimum engine performance, replace the piston rings with new ones after break-in.

The logo consists of the letters 'GB' in a bold, sans-serif font, enclosed within a white circle. This circle is centered on a solid black rectangular background.

MAINTENANCE AND ADJUSTMENT

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

OPERATION

Clutch (adjust)(*)(X).....
 Clutch and friction plates (Check)(*)(X).....
 Throttle cable-(Adjust)
 Spark plug-(Clean,gap)
 Air cleaner element (Clean).....
 Air cleaner element (Replace).....
 Carburetor (inspect, adjust)
 Transmission oil (Change).....
 Piston and piston ring (Clean, check)(*)(X).....
 Cylinder head, cylinder and exhaust valves(*).....
 Muffler (Clean)(X).....
 Silencer packing (Change)(X).....
 Small end bearing (Check)(*)(X).....
 Kick pedal and shift pedal (Clean).....
 Exhaust pipe O-ring (replace)
 Engine Bearings Check)(X).....
 Coolant (Check)(X).....
 Radiator hoses, connections (Check)(X).....
 Brake adjustment (Check))(X)
 Brake wear (Check)(X)

FREQUENCY

Each race
 Every 3 races
 Each race
 Each race
 Each race
 Damaged
 Each race
 Every 3 races
 Every 3 races
 Every 3 races
 Each race
 Every 10 races
 Every 3 races. (Replace every 10 races)
 Each race
 Every 3 races
 Every 10 races
 Every 3 races(Replace, add, adjust or torque if necessary).
 Each race
 Every 3 races
 Every 5 races

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OPERATION

Brake fluid level (check)(X).....	Every 3 races
Brake fluid (change)(*).....	Every 2 years
Brake master cylinder cup and dust seal (replace)(*).....	Every 2 years
Brake caliper piston seal and dust seal (replace)(*).....	Every 2 years
Brake hose and pipe (replace)(*).....	Every 4 years
Spoke tightness and rim runout (check)(X).....	Each race
Drive chain (adjust)(X).....	Each race
Drive chain (lubricate).....	Each race
Drivechain wear (check)(X).....	Every 5 races
Chain slider and and guide)(replace).....	Every 5 races
Front Fork (inspect/clean)(X).....	Damaged
Front fork oil (change)	Every year
Nuts, bolts, fasteners (check)(X).....	Every 5 races
Fuel hose (replace).....	Every 7 races
Fuel system (clean)(*).....	Every 10 races
Steering play (check)(X).....	Every race
Rear sprocket (check).....	Every 5 races
General lubrication (perform).....	Every 10 races
Wheel bearing (check)(X).....	Every 5 races
Swing arm and Uni-trak linkage pivots(check)(X).....	Every 5 races
Swing arm and Uni-trak linkage pivots (grease).....	Every 5 races
Rear shock oil (check).....	Every 2 races

FREQUENCY

(*) : Consult the maintenance manual
(X): Replace, substitute, tighten as necessary

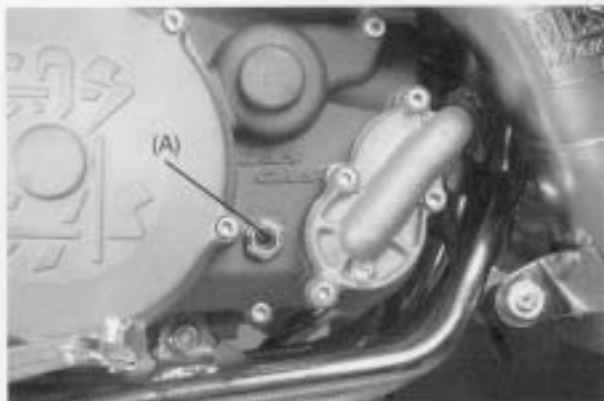


Transmission Oil

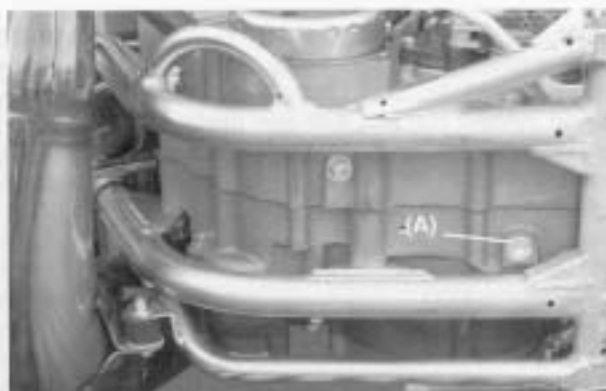
For the transmission and clutch to function properly, maintain the oil level at the proper level. Change the oil periodically. Oil at an insufficient level deteriorates and contaminates rapidly. This accelerates wear and promotes premature failures.

Oil Level

Stand the motorcycle upright and level allow a few minutes for the oil to settle. Observe the oil level at the window (A) on the lower right side of the engine case. The maximum and minimum level of oil is this window.



(A). Oil level window (sight glass)



(A). Oil drain plug

Transmission oil type

Viscosity: SAE 10W30

Capacity: 1000 c.c

Oil Change

- The transmission oil should be changed periodically to assure long engine life.
- Warm the engine to suspend the sediment, liquify the impurities, and facilitate removal.

- Stop the engine, and place an oil pan beneath the engine.
- Remove the drain plug and position the vehicle so that it is perpendicular to the ground to allow all the oil to drain out.



200 / 250 / 300 c.c.

(A). Fill Plug

125 c.c.

- Install the drain plug with its gasket, tightening it to 20-Nm.
- Remove the oil filler opening plug, and pour in 1000 c.c. of fresh transmission oil.
- Check the oil level, after kicking the kick pedal 3 or 4 times.
- Install the oil filler opening plug.

Cooling System

Radiator Hoses

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

Radiator

Check the radiator fins for obstruction by insects or mud. Clean off any obstructions with a stream of low-pressure water.

CAUTION

Using high-pressure water, as from a car wash facility, could damage the radiator fins and impair the radiator's effectiveness.

Do not obstruct or deflect airflow through the radiator by installing unauthorized accessories in front of the radiator. Interference with the radiator airflow can lead to overheating and consequent engine damage.

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Coolant

Coolant absorbs excessive heat from the engine and transfers it to the air at the radiator. If the coolant level becomes low, the engine overheats and may suffer severe damage. Check the coolant level each day before riding the motorcycle. Replenish coolant if the level is low.

WARNING!

To avoid burns, do not remove the radiator cap or try to change the coolant when the engine is still hot. Wait until it cools down.

Coolant information

To protect the cooling system aluminum parts (engine and radiator) from rust and corrosion, the use for corrosion and rust inhibitor chemicals in the coolant is essential. If coolant containing corrosion and rust inhibitor chemicals is not used, over a period of time, the cooling system accumulates rust and scale in the water jacket and radiator. This will clog coolant passages, and reduce the efficiency of the cooling system.

CAUTION

Use of incorrect coolant solutions will cause severe engine and cooling system damage. Use coolant containing corrosion inhibitors made specifically for aluminum engines and radiators in accordance with the instructions of the manufacturer.

WARNING!

Coolant chemicals are harmful to the human body. Follow coolant manufacturer warnings and coolant handling instructions.

Soft or distilled water must be used with the inhibitor chemicals and the antifreeze (see below for antifreeze) in the cooling system.

CAUTION

if hard water is used in the system, it causes scale accumulation in the water passages, and considerably reduces the efficiency of the cooling system.

If the lowest ambient temperature encountered falls below the freezing point of water, protect the cooling system against engine and radiator freeze-up. Use a permanent type of anti-freeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminium engines and radiators) in the cooling system. For the coolant mixture ratio under extreme conditions, choose the mixture ratio listed on the container for the lowest ambient temperature.

CAUTION

Permanent types of antifreeze on the market have anticorrosion and anti-rust properties. When it is diluted excessively, it loses its antifreeze and anticorrosion properties. Dilute a permanent type of antifreeze in accordance with the instructions of manufacturer.

NOTE

A permanent type of antifreeze is installed in the cooling system when shipped. It is colored green, contains a 50% solution of ethylene glycol, and has a freezing point of -35° C. (-32° F)(USA).

Coolant Level

- Situate the motorcycle so that it is perpendicular to the ground.
- Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop and wait there for a few seconds. Then push and turn it further in the same direction and remove the cap.



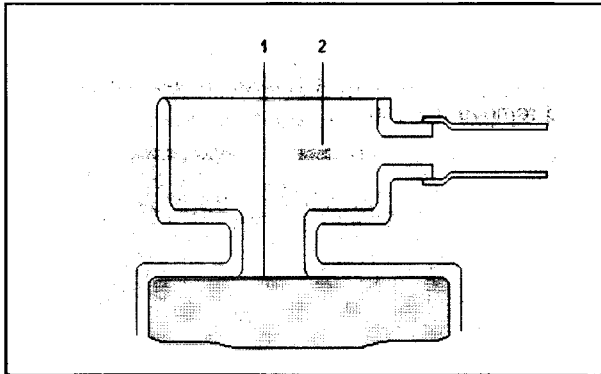
(A). Radiator Cap

- Check the coolant level in the radiator. The coolant level should be to the bottom of the radiator filler neck. (see illustration).

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NOTE

Check the level when the engine is cold.



(1).Coolant Level (2).Breather Hose

.If the coolant level is low, add the correct amount of coolant through the filler opening.

Recommended coolant:

. Permanent type of antifreeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiators).

Water and coolant mixture ratio:

1:1 (Water 50%, Coolant 50%)

Total Amount: 1.1 L.

Coolant Change

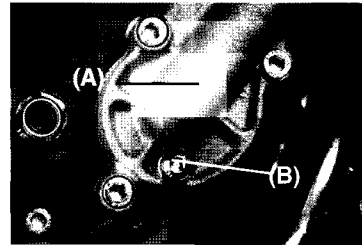
The coolant should be changed periodically to ensure long engine life.

.Wait for the engine to cool completely

.Situate the motorcycle so that it is perpendicular to the ground.

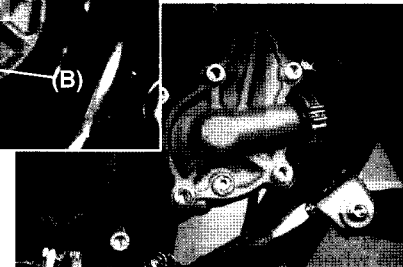
.Remove the radiator cap.

.Place a container under the coolant drain plug, and drain the coolant from the radiator and engine by removing the drain plug at the bottom of the water pump cover. Immediately wipe or wash off any coolant that spills on the frame, engine, or wheels.



200 / 250 / 300 c.c.

125 c.c.



(A). Water Pump Cover
(B). Drain Plug

WARNING!

Coolant on tires will make them slippery and can cause an accident and injury.

.Visually inspect the old coolant. If whitish cotton-like wafts are observed, aluminum parts in the cooling system are corroded. If the coolant is brown, iron or steel parts are rusting. In either case, flush the cooling system.

.Check the cooling system for damage, loose joints, or leaks.

-Install the water pump cover drain plug and cylinder drain plug with the specified torques shown in the table. Always replace the gasket with a new one, if it damaged.

**Drain Plug Tightening Torque
Water Pump Cover Plug: 9 Nm. (6FT.LBS).**

- . Fill the radiator up to the bottom of the radiator filler neck with coolant, and install the radiator cap.
- . Check the cooling system for leaks.
- . Start the engine, warm up the engine thoroughly, then stop the engine.
- . Check the coolant level after the engine cools down. Add coolant up to the bottom of the radiator filler neck.



Spark Plug

The standard spark plug is shown in the table. Spark plug should have a specified gap, and be tightened to 27 N-m. (20FT.LBS).

Standard Spark Plug

NGK BR8EG 0.7-0.8 mm.

The spark plug should be taken out periodically to check its gap and ceramic insulator. If the plug is oily or has carbon build up on it, clean it (preferably with a sandblaster) and then clean off any abrasive particles. The plug may also be cleaned using a high flash-point solvent and a wire brush or other suitable tool. Measure the gap with a wire-type thickness gauge, and adjust the gap, if incorrect, by bending the outer electrode. If the spark plug electrodes are corroded or damaged, or if insulator is cracked, replace the plug.

To find out whether the right temperature plug is being used, pull it out and examine the ceramic insulator around the center electrode. If the ceramic is light brown, the spark plug is correctly matched to engine temperature. If the ceramic is burned whit, the plug should be replaced with the next colder plug. If the ceramic is black, the plug should be replaced with the next hotter plug.

NOTE

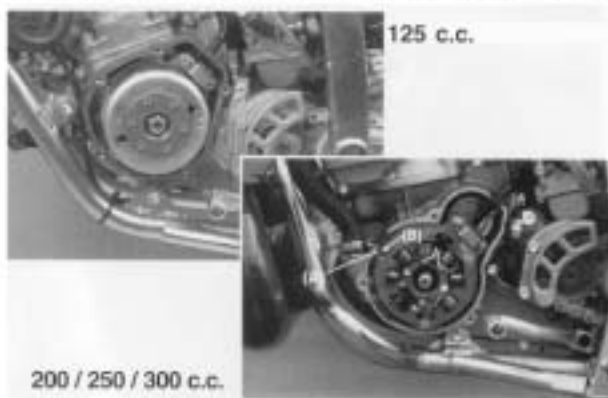
If the engine performance drops, replace the spark plug first to regain performance.

Ignition Timing

Because a capacitor discharge ignition (CDI) system is used on this motorcycle, the ignition timing should never require adjustment unless the magneto stator is incorrectly installed during engine reassembly. However, if there is any doubt as to the timing, inspect and adjust, if necessary, as follows:

Ignition Timing Adjustment

- . Remove the magneto cover.
- . Check to see if the center mark of the three marks on the magneto stator is aligned with the mark on the crankcase.



(A). Timing Mark

(B). Timing Mark (Stator Plate)

- . If the marks are not aligned, loosen the magneto stator screws and turn the magneto stator.
- . Tighten the screws securely.
- . Install the magneto cover.

The ignition timing can be adjusted for different power and to suit the rider's preference and ability.

- . Remove the magneto cover.
- . Loosen the stator screws.
- . Adjust the timing by shifting the stator position within the three lines.

NOTE

For the best engine performance, it is very important to adjust the ignition timing within the adjustable range just explained.

- . Tighten the stator screws securely.
- . Install the magneto cover.
- . Test ride the motorcycle and readjust the ignition timing if necessary.



Air Cleaner

A clogged air cleaner restricts the engine's air intake, increasing fuel consumption, reducing engine power, and causing spark plug fouling.

WARNING!

A clogged air cleaner may allow dirt and dust to enter the carburetor and stick the throttle open. This could cause an accident.

CAUTION

A clogged air cleaner may allow dirt and dust to enter the engine causing excessive wear and possible engine damage.

Inspect the element, without fail, before and after each racing or practice session. Clean it if necessary.

Element Removal

Remove the filter cover

Remove the wing bolt, and pull out the element.



(A). Wing Bolt (B). Element

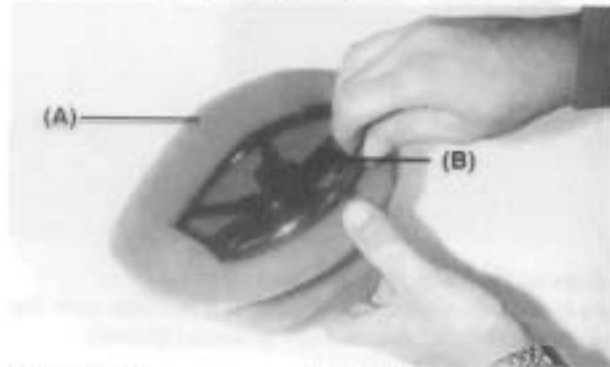
Element Cleaning

Check inside the inlet track and carburetor for dirt. If dirt is present, clean the intake tract and carburetor thoroughly. You may also need to replace the air cleaner element and seal the air cleaner housing and inlet tract.

Stuff a clean, lint-free towel into the carburetor so no dirt is allowed to enter the carburetor.

Wipe out the inside of the air cleaner housing with a clean damp towel.

Take the element off the frame.



(A). Air filter

(B). Support cage

CAUTION

Do not spin the filter on its cage. It is possible to tear or damage the filter.

Clean the element in a bath of a filter cleaning fluid using a soft bristle brush. Squeeze it dry in a clean towel. Do not wring the element or blow it dry; the element can be damaged.



GB

WARNING!

Clean the element in a well-ventilated area, and take care that there are no sparks or flame anywhere near the working area; this includes any appliance with a pilot light. Do not use gasoline or a low flash-point solvent to clean the element. A fire or explosion could result.

Inspect the element for damage such as tears, hardening, or shrinkage. If damaged, replace it or it will allow dirt into the carburetor.

WARNING!

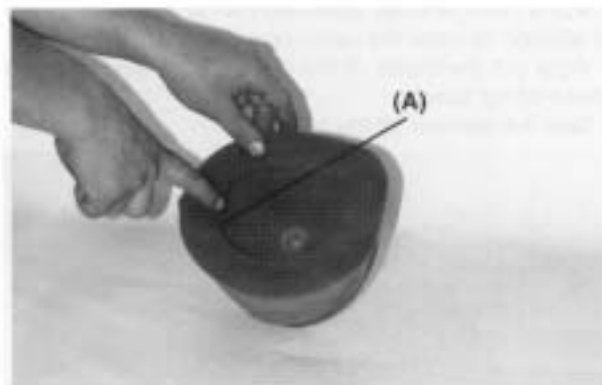
If dirt enters the carburetor the throttle could stick and cause an accident or injury.

CAUTION

If dirt ingests into the engine, excessive engine wear and possibly engine damage will occur.

After cleaning, saturate the element with a high-quality foam-air-filter oil, squeeze out the excess oil, then wrap it in a clean rag and squeeze it as dry as possible. Be careful not to tear the element.

Apply grease to all connections and screw hole in the air cleaner housing and intake tract.



Remove the towel from the carburetor.

Install the element in the machine, and make sure the sealing surface of the element is seated properly.

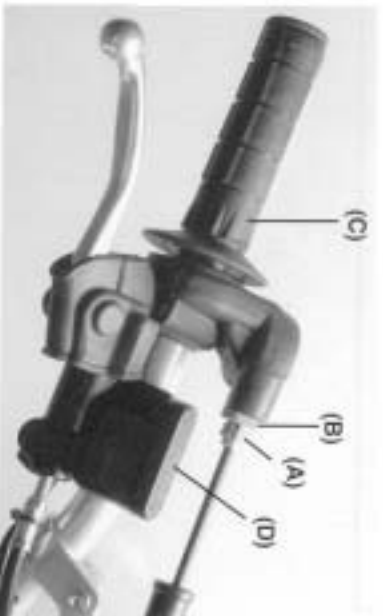
Install the seat.

Throttle Cable

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

• Check that the throttle grip has 2-3 mm of play and turns smoothly.

• If the play is incorrect, loosen the locknut on the upper end of the throttle cable, and turn the adjuster to obtain the correct amount of play. Tighten the locknut.



(A). Adjuster
(C). Throttle grip

(B). Locknut

• If the free play cannot be set by adjusting the upper cable adjuster, pull the rubber boot off of the carburetor top. Make the necessary free play adjustment at the lower cable adjuster, tighten the locknut, and reinstall the rubber boot.

Carburetor

Idling Adjustment

Idling adjustment is carried out using the air screw and idle adjusting screw.

- . First turn in the air screw until it seats lightly, and back it out 1 1/2 turns.
- . After thoroughly warming up the engine, turn the idle adjusting screw to obtain the desired idle speed. If no idle is preferred, turn out the screw until the engine stops.



(A). Air mixture screw
(B). Idle speed adjustment screw.

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

WARNING!

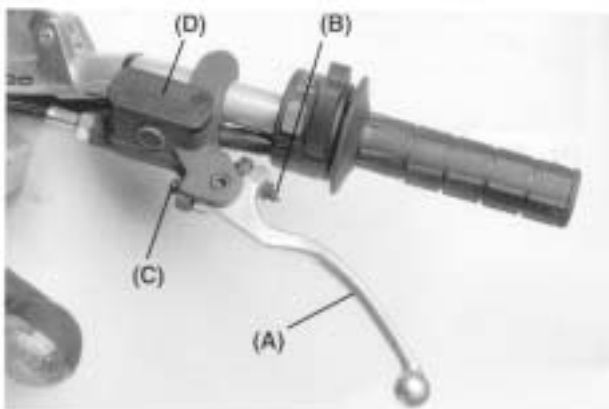
Operation with a damaged cable could result in an unsafe riding condition.

Clutch

Proper clutch lever play between the clutch lever and the clutch lever holder is 2-3 mm.

When there is too much lever play, first try adjusting the clutch lever.

Loosen the knurled locknut, turn the adjuster to obtain the proper amount of lever play, and tighten the locknut.



- (A). Clutch Lever
- (B). Knurled Locknut
- (C). Adjuster
- (D). Hydraulic fluid tank

Exhaust System

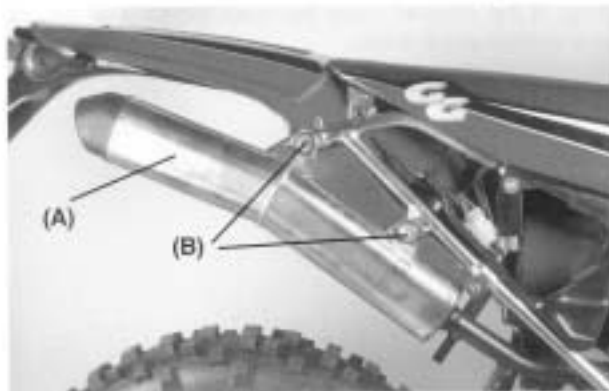
The muffler and silencer reduce exhaust noise and conduct the exhaust gases back away from the rider.

If the muffler is badly damaged, dented, cracked or rusted, replace it with a new one. Replace the silencer packing. If the exhaust noise becomes too loud or the engine performance drops.



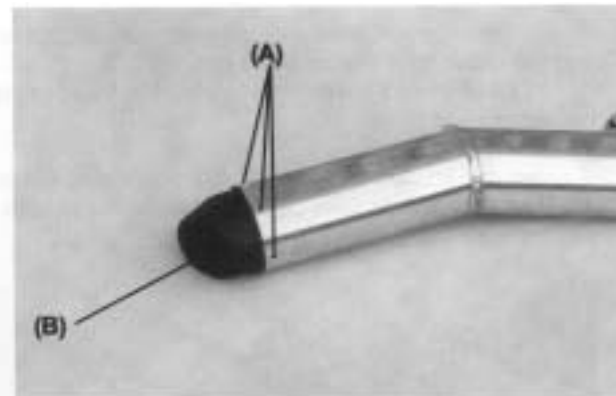
Silencer Packing Change

.Remove the right side cover.
 .Remove the silencer mounting bolts and pull the silencer off toward the rear.



(A). Silencer
 (B). Mounting bolts

.Remove the inner pipe mounting rivots, and pull out the inner pipe.
 .Pull off the old silencer packing, and install the new silencer packing.
 .Install the inner pipe into the silencer.
 .Install the silencer and right side cover.



(A). Rivots
 (B). Inner Pipe

Drive Chain

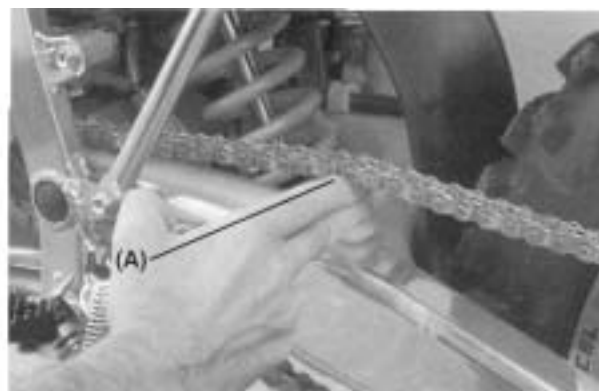
The drive chain must be checked, adjusted, and lubricated in accordance with the Periodic Maintenance table. If the chain becomes badly worn or maladjusted either too loose or too tight the chain could jump off the sprockets or break.

WARNING!

A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control.

Slack Inspection

The space between the chain and the swing arm at the rear of the chain slider should be 30-50 mm. Rotate the rear wheel to find the place where the chain is tightest (because it wears unevenly). Adjust the drive chain if it has too much or too little slack.

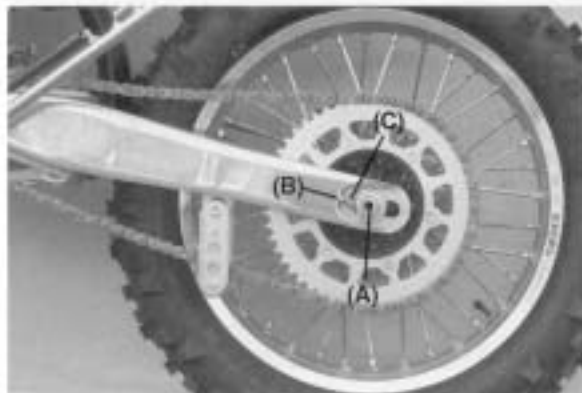


(A), 30 - 50 mm

In addition to checking the slack, rotate the rear wheel to inspect the drive chain and sprockets for damaged rollers, loose pin and links, unevenly or excessively worn teeth, and damaged teeth.

Slack Adjustment

- . Loosen the rear axle nut and both chain adjuster locknuts.
- . Turn the nuts on the chain adjusting bolts evenly until the drive chain has 30-50 mm. of space between the chain and the swing arm. To keep the chain and wheel aligned, the notch on the left chain adjuster should align with the same swing arm mark that the on the right chain adjuster aligns with.



(A). Axle (B). Adjusting nut
(C). Adjustment bolt

GB

NOTE

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

WARNING!

Misalignment of the wheel will result in abnormal wear and may result in an unsafe riding condition.

- .Tighten the axle nut to 98 N-m. (70ft-lbs).
- .Tighten both chain adjuster locknuts.
- .Rotate the wheel, measure the chain slack again at the tightest position, and readjust if necessary.

WARNING!

If the axle nut is not securely tightened an unsafe riding condition may result.

NOTE

In wet and muddy conditions, mud sticks to the chain and sprockets resulting in an overly tight chain, and the chain may break. To prevent this, adjust the chain to 30-50 mm. of space between the chain and swing arm whenever necessary.

Drive Chain, Chain Guide, Chain Slider, and Sprockets Wear Inspection.

When the chain has worn so much that it is more than 2% longer than when new, it is no longer safe for use and should be replaced. Whenever the chain is replaced, inspect both the engine and rear sprockets, and replace them if necessary. Worn sprockets will cause a new chain to wear quickly.

NOTE

For maximum stretch resistance and safety, a genuine part must be used for replacement.

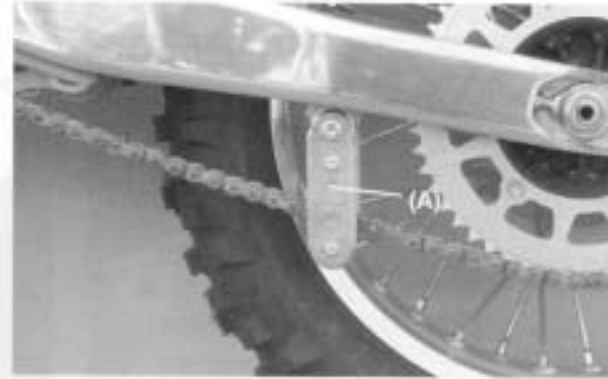
To minimize any chance of the master link coming apart, the master link clip must be installed with the closed end of the «U» points in the direction of chain rotation.



(A). Clip
(B). Direction of Chain Rotation

Chain Guide Wear

Visually inspect the drive chain guide. If the guide is worn excessively or damaged, replace it.

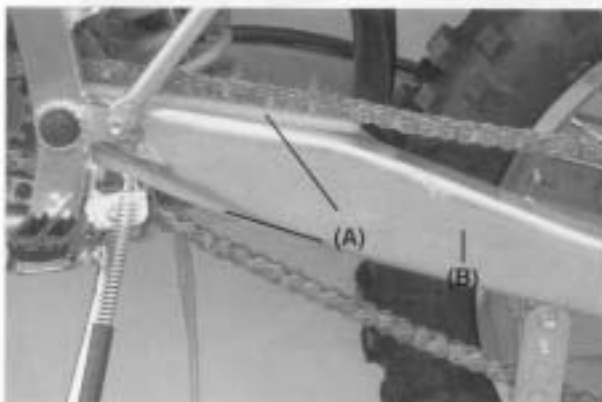


(A). Chain Guide



Chain Slider Wear

Visually inspect the upper and lower chain sliders.



(A). Chain Slider

(B). Swing Arm

Sprocket Wear

Visually inspect the sprocket teeth. If they are worn or damaged, replace the sprockets.

Lubrication

Lubrication is necessary after riding through rain or in the mud, or any time that the chain appears dry. A heavy oil is preferred to a lighter oil because it will stay on the chain longer and provide better lubrication.

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



(A). Apply oil

GB

Handlebar

To suit various riding positions, the handlebar position can be adjusted front to rear.

Handlebar Position Adjustment

.Loosen the handlebar holder nuts, turn about the handlebar holder, and tighten the nuts securely.



(A). Handlebar Clamps

. The proper position of the clamp base is with the offset facing to the rear (see illustration)



(A). Handlebar Clamp

(B). Bolts

. Tighten the clamp bolts, front first and then the rear, to 25 Nm of torque (18 ft.lbs). If the handlebar clamp is correctly installed, there will be an even gap at the front and rear after tightening.

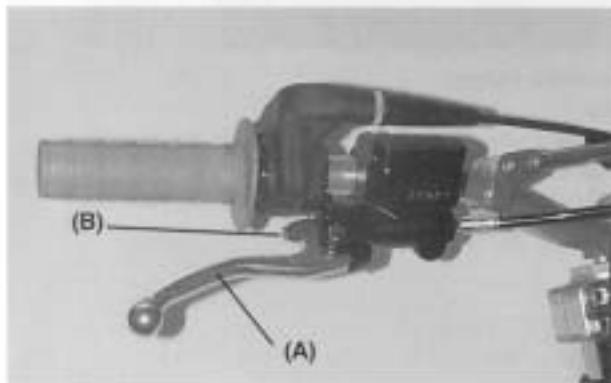
GB

Brakes

Disc and disc pad wear is automatically compensated for and has no effect on the brake lever or pedal action. So there are no parts that require adjustment on the brakes except brake lever play and brake pedal position.

Front Brake Lever Play

Adjust the front brake lever to suit you. To adjust the brake lever play, loosen the locknut and turn the adjuster to either side. After adjustment, tighten the locknut securely. Then check the brake for good braking power and no brake drag.

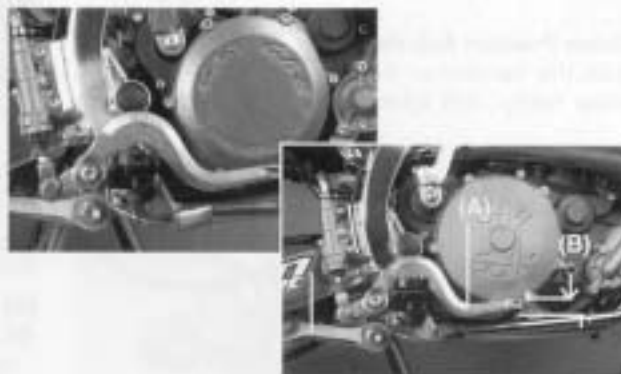


(A). Brake Lever

(B). Adjuster

Rear Brake Pedal Position

When the brake pedal is in rest position, there should be a play of 10 mm. If not, adjust the pedal position.



(A). Rear Brake Pedal

(B). 10 mm of play



(A). Adjusting Bolt (B). Locknut

. Adjust the brake pedal play

The brake pedal has 10-20 mm of play when the pedal is pushed down lightly by hand.

- . To adjust the pedal play, loosen the locknut and turn the adjuster.
- . After adjustment, tighten the locknut securely.



(A). Master Cylinder (B). Piston
(C). Push rod (D). Rear Brake pedal
(E). Lock nut

. Check the brake for good braking power and no brake drag.

WARNING

If the brake lever or pedal feels mushy when it is applied, there might be air in the brake lines or the brake may be defective. Since it is dangerous to operate the motorcycle under such conditions, have the brake checked immediately.

Disc Brake Fluid

In accordance with the Periodic Maintenance Chart, inspect the brake fluid level in the reservoir and change the brake fluid. The brake fluid should also be changed if it becomes contaminated with dirt or water.

Disc Brake Fluid

Use **D.O.T.3** or **D.O.T.4**.

NOTE

Brake fluid of D.O.T.4 is installed in the brake system when shipped.

Fluid Level Inspection

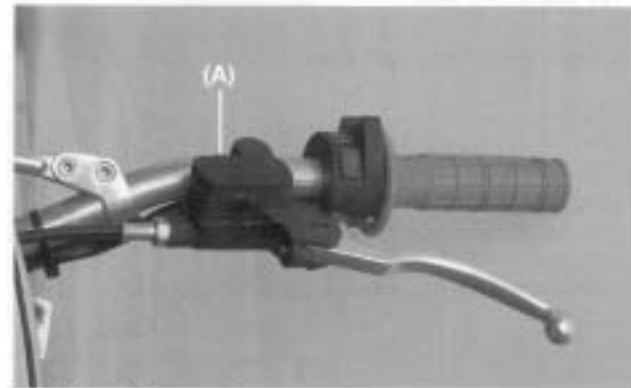
The front and rear reservoirs must be kept more than half full with brake fluid. If the amount of brake fluid is insufficient, add brake fluid.

CAUTION

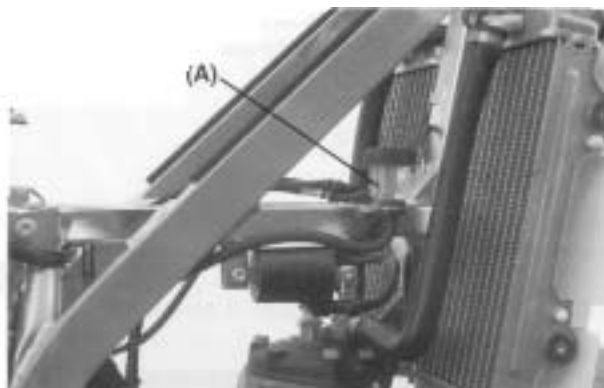
Do not spill brake fluid onto any painted surface. Do not use fluid from a container that has been left open or that has been unsealed for a long time. Check for fluid leakage around the fittings. Check for brake hose damage.

WARNING!

Do not mix two brands of fluid. Change the brake fluid in the brake line completely if the brake fluid must be refilled with a type other than the brake fluid already in the reservoirs.



(A). Front Reservoir



(A). Brake reservoir.



Brake Wear Inspection

In accordance with the Periodic Maintenance Chart, inspect the brakes for wear. For each front and rear disc brake caliper, if the thickness of either pad is less than 1 mm, replace both pads in the caliper as a set. Pad replacement should be done by an authorized **GAS** dealer.

Steering

The steering should always be kept adjusted so that the handlebar will turn freely but have no excessive play.

To check the steering adjustment, using a stand under the frame, raise the wheel off the ground. Push the handlebar lightly to either side; if it continues moving under its own momentum, the steering is not too tight. Squatting in front of the motorcycle, grasp the lower ends of the front fork at the axle, and push and pull the bottom end of the front fork back and forth; if play is felt, the steering is too loose.

GB

If the steering needs adjustment:

- . Using the stand under the frame, stabilize the motorcycle.
- . Place a stand or block under the engine to raise the front wheel off the ground.
- . Remove the handlebar.



GB

- (A). Stem Head Nut**
- (B). Top triple clamp**
- (C). Upper Clamp Bolts**

- . Loosen the front fork upper clamp bolts, and remove the steering head nut and washer, and take off the steering stem head.
- . Turn the steering stem locknut with the stem nut wrench to obtain the proper adjustment.
- . Install the stem head.

- . Tighten the steering stem head nut, and front fork upper or lower clamp bolts to the specified torque.

Tightening Torque

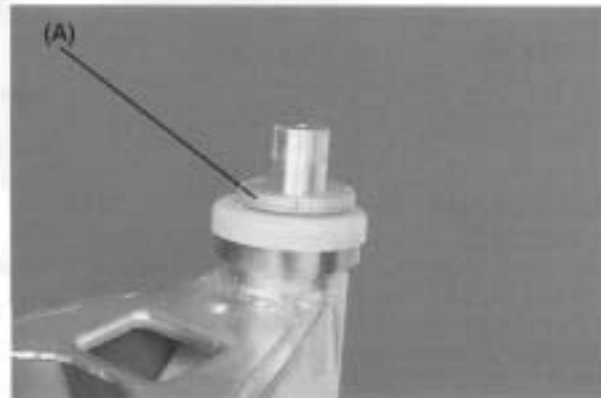
Stem Head Nut: 44 N-m (4.5 Kg-m)(33 ft. lbs)

Fork Clamp Bolts:

Upper : 22 N-m (2.25 Kg-m) (16 ft.lbs)

Lower : 20 N-m (2.25 Kg-m)(15 ft-lbs)

- . Check the steering again, and readjust if necessary.
- . Install the removed parts.



(A). Stem Locknut

Front Fork

The front fork should always be adjusted for the rider's weight and track conditions by using one or more of the following methods.

Air pressure: Air pressure acts as a progressive spring and affects the entire range of fork travel. The air pressure in the fork increases as the fork heats up, so the fork action on your GAS GAS will get stiffer as the race progresses. Because of this, we don't recommend using air pressure for additional springing. Your GAS GAS forks are designed to work without adding any air.

Rebound dampening adjustment: This adjustment affects how quickly the rebound. The fork rebound dampening adjuster has 16 clicks. The seated position (fully clockwise until the adjuster stops) is full hard. From the point 6 - 8 clicks counterclockwise is the standard setting, and 16 clicks counterclockwise is full soft.

Compression dampening adjustment: This adjustment affects how quickly the compression. The fork compression dampening adjuster has 16 clicks. The seated position (full clockwise until the adjuster stops) is full hard. From 6-8 clicks counterclockwise is the standard setting, and 16 clicks counterclockwise is full soft.

Oil level adjustment: The effects of higher or lower fork oil level are only felt during the final 100 mm of fork travel. A higher oil level will make the fork rebound more slowly.

Fork springs: Optional springs are available that are softer and stiffer than standard.

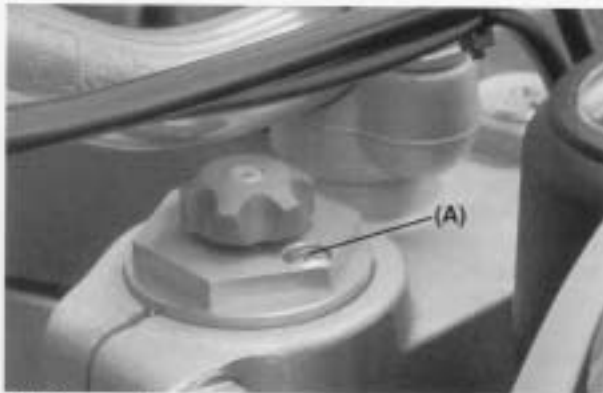
Fork clamp position: Steering qualities and greatly affected by the fork clamp position (the amount of the outer tube projecting above the steering stem head). When the fork tube height is smaller, the front end becomes lighter due to change in weight bias. Also, it tends to understeer in turns and « wash out». When the height is greater, the results are opposite.

Air Pressure

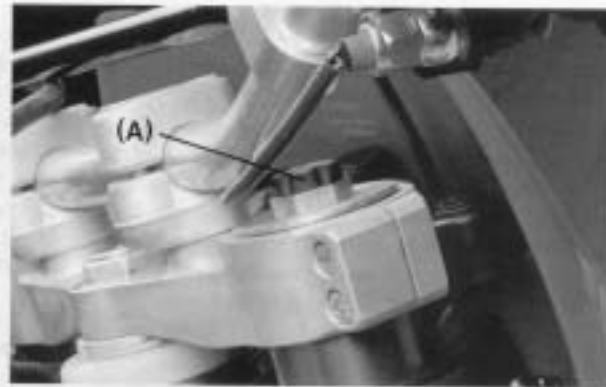
The standard air pressure in the front fork legs is atmospheric pressure (Ø psi). The air pressure in the fork legs increases as operation progresses.

- . Using the stand under the frame, stabilize the motorcycle.
- . Place a stand or block under the engine so that the front wheel is raised off the ground.
- . Remove the screws at the top of the front fork top bolts to let the air pressure equalize. Then replace them.





(A). Screw, air purge



(A). Adjuster knobs

GB

Rebound Dampening Adjustment

To adjust turn the knob located at the top of the fork. Adjust to rider preference.

CAUTION

The left and right fork tubes must be aligned (level) at the top clamps. (see the illustration).



(A). Adjuster

Compression Dampening Adjustment

To adjust, turn the knob located at the top of the fork. Adjust to rider preference.



GB

Oil level Adjustment

- . Using the stand under the frame, stabilize the motorcycle.



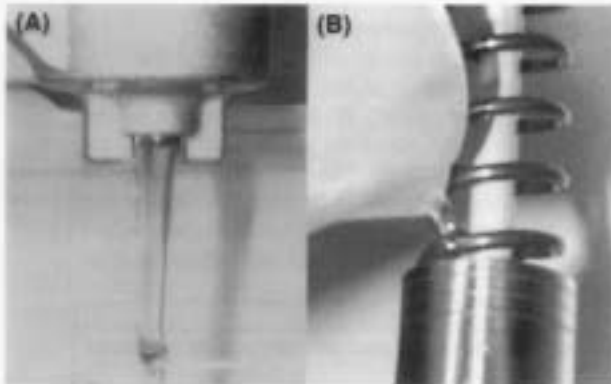
- . Remove the caps from the fork legs.
- . Remove the fork springs.
- . Put the oil level gauge on the top of the fork tube, and measure the distance from the top of the fork tube to the oil level.

Standard Oil Level

Marzocchi: 110 mm
WP: 120 mm

GB

- . Place a stand or block under the engine so that the front wheel is raised off the ground.
- . Remove the front fender and front disc cover.
- . Unbolt the brake hose holder mounting bolts.
- . Remove the front fork protectors.
- . Remove the handlebar clamp bolts and remove the handlebar.
- . Remove the top clamps of the forklegs.
- . Let the forks completely compress.
- . Raise the fork springs from the fork.
- . Grasp the top caps and loosen the click nuts on the caps.



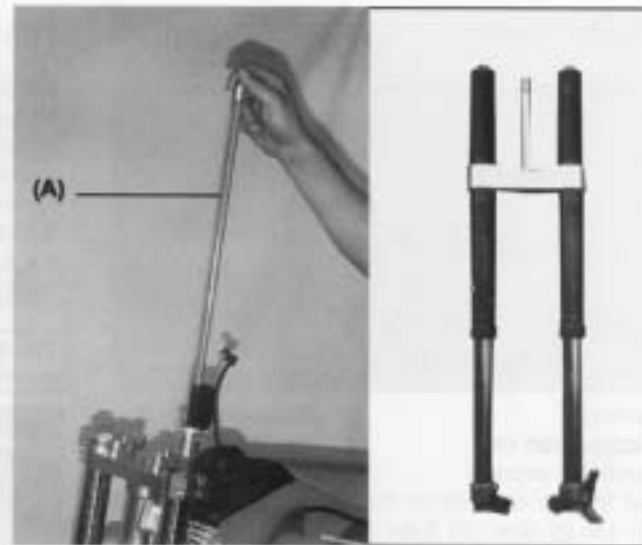
(A).Draining Oil

(B). Filling Oil

Adjust the oil level as required within the adjustable range using the following oil.

MARZOCCHI SAE 7.5
WP. SAE 5

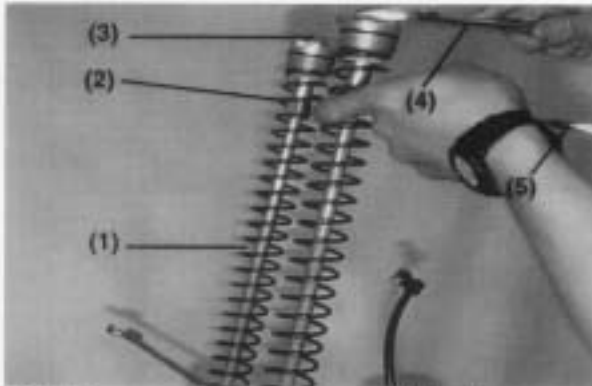
. Screw in the push rod puller (special tool) onto the push rod.



(A). Push Rod.

- . Pull up the push rod slowly.
- . At this time, the fork oil comes out of the push rod hole, let it overflow until it stops.
- . Put the fork spring into the fork tube.
- . Pull down the fork spring and insert the spring holder (special tool) under the push rod nut or piston holder.

GB



- (1). Spring
 (2). Locknut
 (3). Suspension cap
 (4). Cap Wrench
 (5). Lock nut wrench

- . Install the top cap bolt on the top of the fork tube and tighten it to 29 N-m. (21 ft.lbs).
- . Repeat on other fork.
- . Install removed parts.

Fork Springs

Different fork springs are available to achieve suitable front fork action in accordance with the rider's weight and track conditions.

- . Harder springs make the fork stiffer, and rebound action quicker.
- . Softer springs make the fork softer, and rebound action slower.

Fork Clamp Position Adjustment

Steering qualities are greatly affected by the fork clamp position (the amount of the outer tube projecting above the steering stem head). When the fork tube height is smaller, the front end becomes lighter due to change in weight bias. Also, it tends to understeer in turns at «whash out». When the height is greater, the results are opposite. Be sure the front tire doesn't rub the fender when the fork tubes compress fully. Make this adjustment in 5mm increments.

CAUTION

The outer tubes, both right and left, should be adjusted evenly.



(1). Fork tube Height

Rear Suspension

The rear suspension system of this motorcycle is single shock. It consist of a rear shock absorber, swing arm, tie rods and rocker arm.

In general the operating characteristics of the single shock are similar to the front fork. But, in achieving progressive spring characteristics a linkage system is used.

To suit various riding conditions, the spring preload of the shock absorber can be adjusted or the spring can be replaced with an optional one. Also the dampening force can be adjusted easily so changing oil viscosity is unnecessary.

Shock Rebound Dampening Adjustment: Rear shock Absorber

To adjust shock rebound dampening, turn the rebound dampening adjuster on the rear shock absorber lower end until you feel a click.

The total number of adjustments is: 60 clicks
The standard setting is: 18 clicks
(counterclockwise from fully closed).



(A). Rebound Dampening Adjuster

. If the dampening setting feels too soft or too stiff, adjust it as necessary.

GB

Nitrogen Gas Reservoir

Shock compression dampening adjustment.

To adjust shock compression dampening, turn the adjuster screw on the gas reservoir until you feel a (click).

The total number of adjustments is:

26 CLICKS

The middle position is:

15 CLICKS

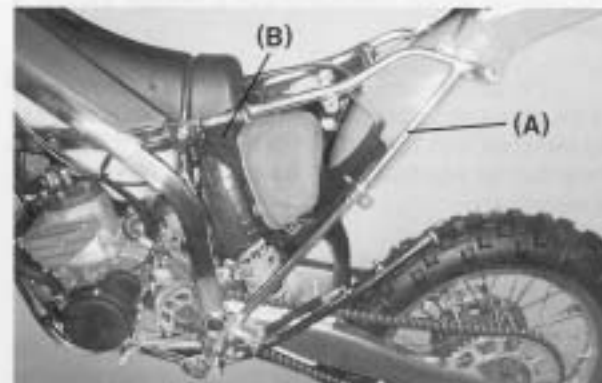
(Counterclockwise from fully closed).



(A). Compression dampening adjuster.

Adjusting the spring

- . Remove the seat, right and left side number plates.
- . Loosen the air cleaner duct clamp screw.
- . Remove the silencer.
- . Remove the rear subframe with the air cleaner box.



(A). Rear Subframe

(B). Air Cleaner Box

Suspension spring

The standard spring is a 4.0.

The standard spring preload length is 258 mm.



(A). Adjusting Nut (ring)

(B). Spring

(C). Lock nut (ring)

- . Tighten the locknut (ring) securely.
- . After adjustment, move the spring up and down to make sure that the spring is seated.
- . Install the parts removed.

Rear Shock Absorber Spring Replacement

In addition to the standard spring, harder and softer springs are available. If the standard spring is improper for your purpose, select a proper one according to the rider's weight or course conditions.

- . **Using the harder spring:** The spring rate is higher.
- . **Using the softer spring:** The spring rate is lower.

WARNING!

Improper removal of the spring from the rear shock absorber body may cause the spring and associated parts to be ejected at high velocity. Always wear eye and face protection. Removal and installation of spring should be performed by a person or company.

Wheels

Tires

Tire pressure affects traction, handling, and tire life.

. Adjust the tire pressure to suit track conditions and rider preference, but do not stray too far from the recommended pressure.

NOTE

Tire pressure should be checked when the tires are cold before you ride.

GB

. Track condition

- . When the track is wet, muddy, sandy or slippery, reduce the tire pressure.
- . When the track is pebbly or hard, increase the tire pressure.

. Spokes and Rim

The spokes on both wheels must all be tightened securely and evenly and not be allowed to loosen. Unevenly tightened or loose spokes will cause the rim to warp, hasten nipple and overall spoke fatigue, and may result in spoke breakage.

Tire bead lock (clamp)

There is a lock (clamp) on the front and rear wheels. The bead lock (clamp) prevents the tire and tube from slipping on the rim and damaging the valve stem. Valve stem damage may cause the tube to leak, necessitating tube replacement. In order that the tire and tube remain fixed in position on the rim, inspect the bead lock (clamp) before riding and tighten it if necessary. Tighten the valve stem nut finger tight only.

NOTE

- . The weld joint area of the rim may show excessive runout. Disregard this when measuring runout.

GB

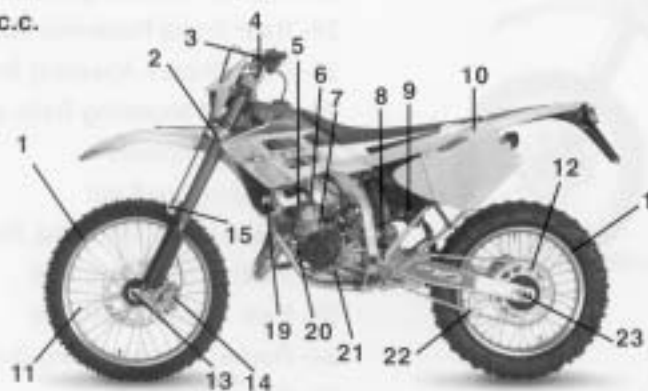


(A). Spoke Wrench

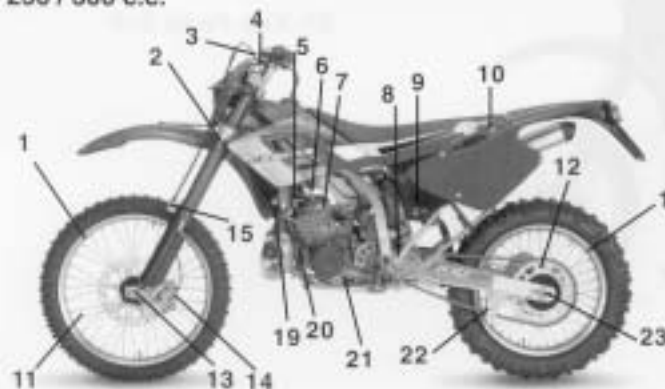
Bolt and Nut Tightening

Every day before riding, check without fail the tightness of the bolts and nuts described here. Also, check to see whether or not each cotter pin is in place and in good condition.

125 c.c.



200 / 250 / 300 c.c.



- 1 - Bead lock Nut
- 2 - Front fork clamp Bolts, lower
- 3 - Front fork clamp Bolts, upper
- 4 - Handlebar Mounting Bolt
- 5 - Cylinder head Bolts
- 6 - Bujia
- 7 - Spark Plug
- 8 - Rear Subframe Mounting Bolts
- 9 - Air cleaner Box Bolts
- 10 - Seat Mounting Bolt
- 11 - Spokes
- 12 - Disc plate Screws
- 13 - Front Axle Clamp Nuts
- 14 - Brake Hose Clamp Nuts
- 15 - Brake Hose Mounting Bolts
- 19 - Radiator mounting Bolts
- 20 - Engine Mountings Nuts
- 21 - Shift Pedal Bolt
- 22 - Chain Guide Bolts
- 23 - Chain Adjuster Locknuts

GB



- 24- Rear Axle Nut
- 25- Silencer Mounting Bolts
- 26- Rear Brake Reservoir Mounting Bolts
- 27- Rear Shock Absorber Bolts
- 28- Exhaust Mounting Bolts and nut
- 29- Fork clampbolts
- 30- Steering shaft nut
- 31- Brake Lever Mounting Bolt
- 32- Tie Rod Mounting Bolt
- 33- Rear Brake Pedal Bolt
- 34- Rocker Arm Mounting Bolt
- 35- Pivot Shaft Nut
- 36- Kick Pedal Nut
- 37- Kick Pedal Bolt

200 / 250 / 300 c.c.



GB

Torque Table

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

	Part Name	N-m	FT.LBS.	Kg-m	IN.LBS.
E	Cylinder head bolts	25	18	2.5	221
N	Cylinder base nuts	34	25	3.5	300
G	Engine drain plug	20	15	2.0	177
I	Kick pedal bolt	20	15	2.0	177
N	Kick pedal nut	25	18	2.5	221
E	Shift pedal bolt	10	7	1.0	88
	Spark plug	27	20	2.8	239
	Water pump cover drain plug	9	6.6	0.9	80
C	Caliper mounting bolts	25	18	2.5	221
H	Disc plate mounting screws	10	7	1.0	88
A	Engine mounting bolts	36	26.5	3.6	318
S	Front axle	51	38	5.1	451
S	Trottle clamp bolts	6	4	0.6	53
I	Tripple clamp bolts	29	21	3.0	256
S	Steering shaft nut	98	72	10.0	866
	Rear axle nut	98	72	10.0	866
	Brake pedal nut	9	6.6	0.9	80
	Front fork top bolts	26	19	2.7	230
	Handlebar clamp bolts	39	28	4.0	345
	Steering shaft nut	29	21	3.0	256
	Spokes	1.5	1.1	0.15	13
	Axle clamp nuts	4	3	4.5	35
	Swing arm pivot bolt	81	60	8.3	716
	Rear tie rod bolts	81	60	8.3	716



Cleaning

1- Preparation for washing

Before washing, precautions must be taken to keep water off the following places:

Rear opening of:

The silencer cover with a plastic bag secured with rubber bands

Clutch and brake levers, hand grips, engine stop button: Cover with plastic bags.

Air cleaner intake: Close up the opening with tape, or Stuff in rags.

2- Where to be careful

Avoid spraying water with any great force near the following places:

- . Disc brake master cylinders and calipers
- Under the fuel tank : If water gets into the ignition coil or into the spark plug cap, the spark will jump through the water and be grounded out. When this happens, the motorcycle will not start and the affected parts must be wiped dry.
- . Front and rear hubs
- . Steering pivots (Steering stem head pipe)
- . Suspension linkage system pivots
- Swing arm pivot

3- After washing

- . Remove the plastic bags, and clean the air cleaner intake.
- . Lubricate the points listed in the lubrication section.
- . Start the engine and run for 5 minutes.
- . Dry the brakes before operating the motorcycle.

WARNING!
Never wax or lubricate the brake disc. Loss of braking and an accident could result. Clean the disc with an oil-less solvent such as trichloroethylene or acetone.

Lubrication

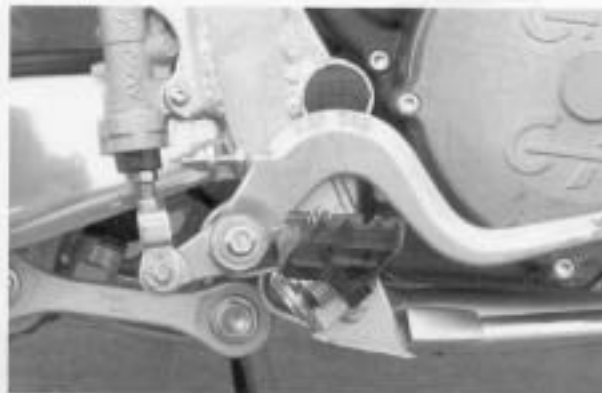
Lubricate the points shown here, with either motor oil or regular grease, in accordance with the Periodic Maintenance Chart or whenever the vehicle has been operated under wet or rainy conditions, and especially after using a high pressure spray washer. Before lubricating each part, clean off any rusty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

General Lubrication

- . Clutch Lever
- . Front Brake Lever

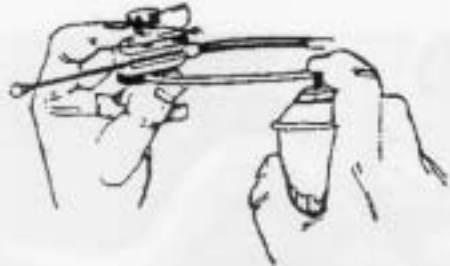


- . Rear Brake Pedal
- . Rear Brake Rod Joints
- . Shift pedal



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Use an aerosol cable lubricant with a pressure luber.



Apply grease to the following point:
• Throttle Inner Cable Upper End

GB



(A). To grease



TROUBLESHOOTING

NOTE

This is not an exhaustive list, giving every possible cause for each problem listed. It is meant simply as a rough guide to assist the troubleshooting for some of the more common difficulties.

Engine doesn't start; starting difficulty; engine won't turn over:

Cylinder-piston seizure, crankshaft seizure, Connecting rod small end seizure, Connecting rod big end seizure, Transmission gear or bearing seizure, Kick shaft return spring broken, Kick ratchet gear not engaging.

. No fuel flow:

No fuel in tank, fuel tap turned off, tank cap air vent obstructed, fuel tap clogged, fuel line clogged, float valve clogged.

. Engine flooded:

. Float level too high, Float valve worn or stuck open, Starting technique faulty, (when flooded, kick with the throttle fully open to allow more air to reach the engine).

. No spark; spark weak:

Spark plug dirty, broken, or maladjusted, Spark plug cap or high tension wiring trouble, Spark plug cap not in good contact, Spark plug incorrect, Igniter trouble, Ignition coil trouble, Ignition coil resistor open, Flywheel magneto damaged, Wiring shorted or open.

Fuel/air mixture incorrect:

. Idle adjusting screw maladjusted, slow jet or air passage clogged, air cleaner clogged, poorly sealed, or missing starter jet clogged.

Compression Low:

Power valve open:

Power valve is open or stuck from the accumulation of carbon. Power valve maladjusted or installed incorrectly. Power valve spring or arm worn or broken.

Poor Running or No Power at High Speed:

spark plug dirty, little spark.





Fuel/air mixture incorrect:

Idle adjusting screw maladjusted, slow jet or air passage clogged, air cleaner clogged, poorly sealed, or missing choke button stuck open, float level too high or too low, fuel tank air vent obstructed, carburetor clamps loose, air cleaner duct loose.

Compression low:

Engine rpm will not rise properly:

Choke button stuck open, float level too low, main jet clogged, throttle valve does not fully open, air cleaner clogged, muffler clogged, water or foreign matter in fuel, cylinder exhaust port clogged, brake dragging, clutch slipping, overheating, transmission oil level too high.

Power valve closed:

Power valve stuck closed due to accumulation of carbon. Power valve closed or sluggish due to accumulation of carbon.

Power valves broken or frozen, actuating rod is broken or frozen.

Detonation (spark knock):

Carbon in combustion chamber. Incorrect or poor gasoline. Incorrect spark plug, ignition problems.

Overheating:

Spark plug dirty, broken, or maladjusted, spark plug incorrect, igniter trouble.

Fuel/air mixture incorrect:

Main jet clogged or wrong size, fuel level in carburetor float bowl too low.

Compression high:

Carbon built up in combustion chamber

Lubrication inadequate:

Transmission oil level too low, transmission oil poor quality or incorrect.

Coolant incorrect:

Coolant level too low, coolant deteriorated.

Coolant system component incorrect:

Radiator clogged, radiator cap trouble, water pump not rotating.

Clutch Operation Faulty:

Clutch slipping

No clutch lever play, maladjusted, friction plate worn or warped, steel plate worn or warped, clutch spring broken or weak, clutch release mechanism trouble, clutch hub or housing unevenly worn.

Clutch not disengaging properly:

Clutch lever play excessive, clutch plate warped or too rough, clutch spring tension uneven, transmission oil deteriorated.

Gear Shifting Faulty

Clutch not disengaging, shift fork bent or seized, gear stuck on the shaft, gear positioning lever binding, shift return spring weak or broken.

Jumps out of gear:

Shift fork worn, gear worn, gear dogs and/or dog holes worn, shift drum groove worn, gear positioning, lever spring weak or broken, shift fork worn, drive shaft, output shaft, and/or gear splines worn.

Overshifts:

Gear positioning lever spring weak or broken, shift mechanism arm spring broken.

Abnormal Engine Noise:**Knocking:**

Igniter trouble, carbon built up in combustion chamber, fuel poor quality or incorrect, spark plug incorrect, overheating.

Piston slap:

Cylinder/piston clearance excessive, cylinder, piston worn, connecting rod bent, piston pin, piston pin holes worn.

Other noise:

Connecting rod small end clearance excessive, connecting rod big end clearance excessive, piston ring worn, broken or stuck, piston seizure, damage, cylinder head gasket leaking. Exhaust pipe leaking at cylinder head connection.

Abnormal Drive Train Noise:

Igniter trouble, carbon built up in combustion chamber, fuel poor quality or incorrect, spark plug incorrect, overheating.

Transmission noise:

Crankcase bearing worn or damaged, transmission gear worn or chipped, metal chip jammed in clutch housing gear teeth, transmission oil insufficient or too thin, kick ratchet gear not properly disengaging from kick gear, output shaft idle gear worn or chipped.

Drive chain noise:

Drive chain adjusted improperly, chain worn, rear and/or engine sprocket(s) worn, chain lubrication insufficient, rear wheel misaligned.

Front fork noise:

Oil insufficient or too thin, spring weak or broken.

Rear shock absorber noise:

Shock absorber damaged.

Disc brake noise:

Pad installed incorrectly, pad surface glazed, disc warped, caliper trouble, cylinder damaged.

Other noise:

Bracket, nut, bolt, etc. not properly mounted or tightened.

Handling and/or Stability Unsatisfactory:

Control cable routing incorrect, wiring routing incorrect, steering stem locknut too tight, roller bearing damaged, bearing race dented or worn, steering stem lubrication inadequate, steering stem bent, tire air pressure too low.



Handlebar hard to turn:

Control cable routing incorrect, wiring routing incorrect, steering stem locknut too tight, roller bearing damaged, bearing race dented or worn, steering stem lubrication inadequate, steering stem bent, tire air pressure too low.

Handlebar shakes or excessively vibrates:

Tire worn, swing arm sleeve or needle bearing damaged, rim warped, or not balanced, front, rear axle runout excessive, wheel bearing worn, handlebar clamp loose. Steering stem head nut loose.

Handlebar pull to one side:

Frame bent, wheel misalignment, swing arm bent or twisted, swing arm pivot shaft runout excessive, steering maladjusted, steering stem bent, front fork leg bent, right/left front fork oil level uneven.

Shock absorption unsatisfactory:(too hard), front fork oil excessive, front fork oil viscosity too high, front fork leg bent, tire air pressure too high, rear shock absorber maladjusted, (too soft), front fork oil insufficient and/or leaking, front fork oil viscosity too low, front fork, rear shock absorber gas leaking, rear shock absorber maladjusted.

Brakes Don't Hold:

Air in the brake line, pad or disc worn, brake fluid leak, disc warped, contaminated pads, disc warped, brake fluid deteriorated, primary or secondary piston damaged, master cylinder scratched inside, brake maladjustment (lever or pedal play excessive).

TUNNING

Carburetor Tuning

Tuning a carburetor is not the mysterious science many racers believe it to be. One needs only to establish a basic knowledge of the identification and function of carb components as well as how they work together to do the job well.

.. Change due to temperature:

Condition	Mixture will be	Setting change
Cold air	lean	rich
Warm air	rich	lean
Dry air	lean	rich
Low altitude	standard	standard
High altitude (above 1500 m).	rich	lean

. The main jet should be increased or decreased one to five sizes and tested until the engine gives maximum power.

Symptoms of improper settings

If your machine exhibits one or more of the symptoms listed below, it may need carb tuning changes. Before attempting any changes, however, make sure that everything else is in good shape and tuned properly.

Check the condition of the spark plug, make sure the ignition timing is correct, service the air cleaner element, decarbonize the muffler.

If your machine has run properly at a certain track in the past and then starts running poorly with the same carb settings, the problem is almost certain to be elsewhere; changing the carb settings in such a case would probably be a waste of time.

If your bike is too "rich", it will:

Accelerate poorly, misfire at low engine speeds, smoke excessively, foul spark plugs, have a "deep" exhaust noise.

If your bike is too "lean", it will:

Ping or rattle, accelerate erratically, act like it's running out of fuel, run extremely hot.

Making setting changes:

Four components, the jet needle, main jet and slow jet, regulate the flow of fuel; air screw regulate the flow of air.

Carburetor

Main Jet

The number of the main jet, stamped on the bottom or side of the jet, indicates the relative size of the hole in the jet which meters fuel.

• Make main jet changes one step at a time.



(A). Main Jet.

WARNING!

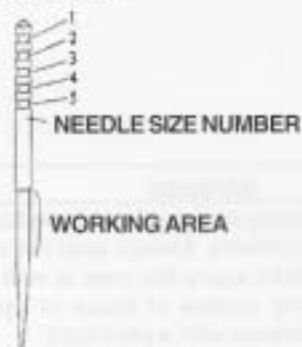
Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

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Jet Needle

The jet needle and jet needle hole together have their greatest effect in the 1/4 to 3/4 throttle range. The needle moves in and out of the jet needle hole; since the needle is tapered, its position in the jet determines the amount of fuel allowed through. There are five grooves in the top of the needle in which a circlip fits. This clip locates the needle in the throttle valve and, therefore, determines its position relative to the jet needle hole.

CLIP POSITION



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Slow Jet (pilot jet) and Air Screw

The slow jet and air screw controls the mixture in the closed to 1/8 throttle range, but has little effect on up to full throttle. To adjust the mixture in this range, the air screw can be turned to change the air flow through the circuit, or the slow jet can be changed to provide more or less fuel. Start by turning the air screw to provide more or less fuel. Screwing it in richens the mixture. Air screw specs indicate the turns out from a lightly seated position. Make changes in 1/2 turn increments. If turning the screw between one and two-and-a-half turns doesn't provide the desired results, change the slow jet.



(A). Slow Jet (Pilot Jet).



(A). Air Screw

Test Runs

- . Warm up the engine with the carburetor at the standard settings, and run two or three laps of the course while examining the operating condition of the spark plug.
- . Test-ride the bike by varying the throttle opening.

Condition of spark plug	
Correct	Insulator is dry and light tan color
Too lean	Insulator is whitish
Too Rich	Insulator is wet, black and sooty

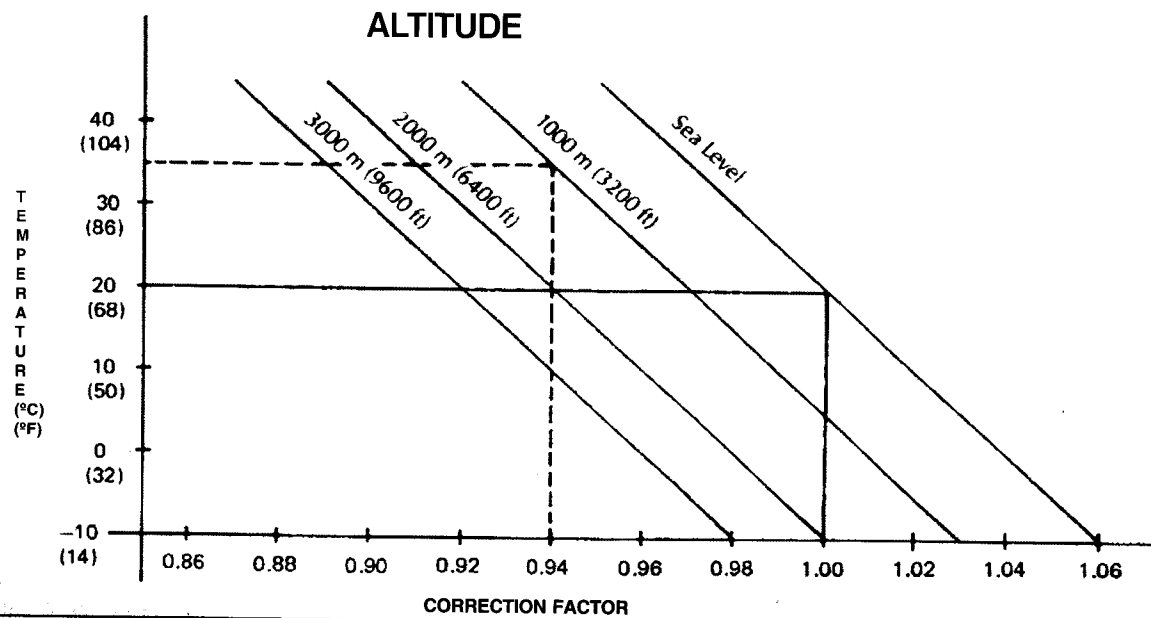
- . If spark plug is whitish, the fuel-air mixture is too lean. Replace the main jet with one step larger.
- . If spark plug is wet, or black, the fuel-air mixture is too rich. Replace the main jet with one step smaller.
- . Set the carburetor so that the engine delivers satisfactory power at any throttle opening.
- . If the air-fuel mixture is too lean, the engine tends to overheat and may seize up; on the other hand, if it is too rich, the spark plug easily gets wet, thus causing richness, the spark plug easily gets wet, thus causing misfires. The proper strength of the mixture varies depending on atmospheric conditions (pressure, humidity, and temperature). Taking these conditions into consideration, adjust the carburetor settings properly.

Correction Factors:
(For changes in altitude and temperature).

NOTE

For the following recommendations to be accurate, you must use the standard settings as a base-line. Also don't change any of the settings until you've determined what changes are necessary. All specifications are based on the use of the specified fuel and oil.

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JET NEEDLE/AIR SCREW CHART					
CORRECTION FACTORS	1,06 OR ABOVE	1,06 - 1,02	1,02 - 0,98	0,98 - 0,94	0,94 OR BELOW
JET NEEDLE SETTING	LOWER CLIP ONE POSITION	SAME	SAME	SAME	RAISE CLIP ONE POSITION
AIR SCREW OPENING	ONE TURN IN	1/2 TURN IN	SAME	1/2 TURN OUT	ONE TURN OUT POSITION

Standard Settings

250 C.C. Cross 250 c.c.

FUEL	UNLEADED	LEADED
Throttle valve cutaway	7	7
Slow jet	38	35
Jet needle	N1EC	N1ED
Main Jet	185	160

1.- Find your correction factor to adjust the carburetor.
EXAMPLE: 1000 meters (3200 ft) altitude with an air temperature of 35° C (95°F). The correction factor is 0.94 (see dotted line for the example).

2.- Using your correction factor, select the correct slow jet and main jet.

EXAMPLE: For a correction factor of 0.94, multiply the jet size by that number.

Slow jet: # 50 x 0.94 = #47

Chiclé principal: # 162 x 0.94 = # 158

3.- Find your correction factor on the Jet Needle/Air Screw chart and change the jet needle clip position and air screw opening as indicated.

. EXAMPLE: For correction factor of 0.94, raise the needle clip one position and turn out the air screw one extra turn.

. Jet needle clip setting: 3rd groove from top minus 1 - 2nd groove.

. Air screw opening: $1 \frac{1}{2} + 1 \text{ turn} = 2 \frac{1}{2} \text{ turns out}$

Suspension Tuning

No area of machine adjustment is more critical than proper suspension tuning. An improperly tuned suspension will keep even the best rider from attaining the full benefit of his machine's ability. Match the suspension to the rider and the course conditions.

. If the machine is new, break-in the suspension with at least one hour of riding before making any setting evaluations or changes.

. The three major factors which must be considered in suspension tuning are RIDER WEIGHT, RIDER HABILITY, and TRACK CONDITIONS. Additional influences include the RIDER'S STYLE and POSITIONING on the machine.

. If you have a problem, test by changing your riding posture or position so that the cause of the problem can be deduced.

. It is a wise practice to adjust suspension settings to suit the rider's strong points. If you are fast through the corners, adjust the suspension to allow fast cornering.

. Make setting changes in small increments; a little bit goes a long way, and it is very easy to overadjust a setting.

. The front and rear suspension should be balanced; when one is changed, the other might need to be changed similarly.

. When evaluating suspension performance the rider must make every effort to ride consistently and recognize the effects of his input; such things as changes in rider position and increasing fatigue may lead to incorrect judgments about necessary setting adjustments.



. When the proper settings have been determined for a particular track, they should be written down for reference when returning to that track.

Oil Level Adjustment

. Adjust the front fork oil level (see the Oil Level Adjustment of the Front Fork section in the Maintenance and adjustment chapter).

Front Fork

The fork oil level in the fork tube is adjustable. A change in the fork oil level will not affect the spring force much at the top of fork travel, but it will have a great effect at the bottom.

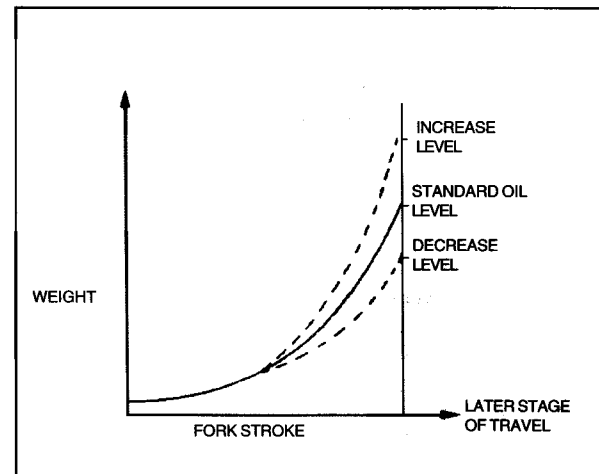
. When the oil level is raised:

The air spring effect becomes more progressive, and the front fork action feels "harder" in the later stage of travel, near the bottom.

. When the oil level is lowered:

The air spring is less progressive, and the front fork does not become as "hard" in the later stage of travel.

. Changing the fork oil level works effectively at the end of fork travel. If fork bottoming is experienced, raise fork oil level in 10 mm increments. This will change the secondary spring rate.



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Troubleshooting Improper Settings:

Listed below are some symptoms of improper suspension settings and the most likely means of correcting them. The proper settings can be achieved by applying the information in this chapter in a scientific, methodical manner; this does not mean, however, that you must be a scientist or trained technician to succeed. Simply take time to think about the changes you believe necessary, check them against the symptoms and cures described here, make the changes in small increments, and take notes on the changes and their effects.

Symptoms of the Front Forks

Too Hard

1. The front forks are too stiff

- .. rebound or compression damping adjustment incorrect.
- .. the springs are too strong
- .. too much oil
- .. too heavy oil

2. The front forks stiffens up the end of stroke

- .. the fork oil level is too high.

3. The front forks operate but ride is too hard

- .. oil too heavy
- .. worn out fork oil

Too soft

The front forks dive excessively during braking and deceleration.

1. Fork oil level is low
2. Springs are too soft
3. Oil too light
4. Fork oil is worn out

5. Rebound or compression damping adjusting incorrect.

Symptoms of the Rear Shock

Too hard

1. The suspension is too stiff
 - .. Compression damping is too high
 - .. Spring is too hard

Too soft

On landing after a big jump, bottoming occurs (normally O.K.).

- .. Spring preload is too soft or compression damping is too soft
- .. spring is too soft
- .. shock oil is worn

Determining the Proper Settings

Standard Settings

From the factory, the machine is set up for an intermediate-weight rider possessing intermediate riding ability. Hence, if the actual rider weight is considerably more or less than this, or if his riding experience and ability are much greater or lesser than the intermediate made to put the suspension "in the ballpark".

Readjustment of the suspension

Smooth	Softer spring
Rough	Harder spring





Riding experience

Beginner: Softer spring with more rebound damping

Experienced: Harder spring

Rider's weight

Heavy: Harder spring

Light: Softer spring

Type of course

Many corners: Lower the front end slightly (increase the fork tube height 5mm). This quickens steering and turning ability.

Fast course with many jumps

Raise the front end slightly (decrease the front tube height 5 mm).

Deep whoops, or sandy ground

Raise the front end slightly to gain stability.

After making such preliminary adjustments, begin the actual on-track testing and evaluation.

Remember:

1. Always make changes in small increments.
2. Make sure the rider is consistent in this evaluation of improper suspension performance.
3. A change in the front suspension might require a change in the rear, and vice versa.

Front and Rear Compatibility

Use this procedure to determine if the suspension is balanced reasonably well: Hold the bike upright (retract the side stand). While standing next to the machine, lightly

pull on the front brake, place one foot on the footpeg closest to you, and push down hard. If the bike maintains its level attitude as the suspension is compressed, the spring rates are well balanced. Sit astride the bike and take a riding posture. Next check to see that the bike is in a horizontal position. If one end drops noticeably more than the other, the front and rear are not compatible and must be readjusted to achieve a better balance.

This is one of the most effective adjustment procedures but suspension settings will vary depending on the conditions at the track and the rider's preferences.

Front end seaching during down hill or during acceleration out of corner:

Front fork is too soft.

- .1- Increase the compression damping or rebound damping.
- .2- Increase the oil level 10 mm.
- .3- Use alternate harder sping, or increase spring preload.

**Front end "knifes" or oversteers in turns:
(front end tends to turn inward)**

Front fork is too soft.

1. Increase the compression damping or rebound damping.
2. Increase the oil level 10 mm.

NOTE

. **Heavier or expert riders may need the heavy spring.**

. Front end pushes or "washes out" in turns:

1. Decrease the compression damping or rebound damping.
2. Release the air at the fork tubes.
3. Decrease oil level 10-20 mm.
4. Use softer spring.

NOTE

. **A softer spring may be required for lighter or less experienced riders.**

Front fork doesn't respond to small bumps in sweeping turns:

Front Fork is too hard.

1. Decrease the compression damping or rebound damping.
2. Decrease oil level 10 mm.
3. Use softer duty spring.

Rear end "kicks" when braking over bumps:

The shock probably has too little rebound damping.

.. Increase the rebound damping.

**Rear tire won't "hook up" out of corners:
(A lack of traction coming out of turns)**

The shock may be too stiff.

1. Decrease the rear shock spring preload
2. Decrease the compression damping
3. Use softer spring (In case of a lightweight rider).



. Front and rear of the bike bottom off high speed jumps:
(If harsh bottoming occurs once or twice per lap of the race)

Front and rear suspension system are too soft.

1. **Front:** Increase oil level

Front: Use harder spring

2. **Rear:** Increase spring preload

Rear: Increase compression damping or use harder spring.

NOTE

.After any adjustment, check front and rear compatibility.

.Adjustment depending on bottoming condition:

. Bottoms at low speed

. Increase spring preload until maximum preload is achieved.

. Bottom after successive 3 or 4 successive jumps

. Decrease rebound damping

NOTE

The rear shock on this machine may mislead some riders.

a. The rear shock bottoms when the spring and damping are overcome by the total weight of the machine and rider (due to full stroke).

b. A bottoming sensation (even through the machine is not bottoming) may actually be the inability of rider and machine weight to overcome an overly stiff spring or excessive damping.

Observe the rear end off jumps; if it doesn't approach bottoming, try lowering the spring preload and damping.

Gearing

Preconditions :

Course condition	Rear sprocket
Fast course	Small
Many courves or hills Sandy or soft ground	Large

. If the straight portion of a course is longer, the secondary reduction ratio should be reduced so that the machine speed can be increased.

. When the course has many corners or uphill or is wet, the secondary reduction ratio should be increased so that gear shifting is possible with smooth acceleration.

. Actually, the speed must be changed depending on the ground condition on the day of race and therefore, be sure to run through the racing circuit prior to a race and set the machine suitable for the entire course.

. If the straight portion of a course on which the machine can be run at maximum speed is longer, the machine should be set so that the maximum machine speed can be developed toward the end of the straight course, but care should be taken not to over-rev the engine.

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. It is difficult to set the machine to be best suited for all portions of the circuit. Therefore, determine which circuit portions will have the greatest effect on lap time. Set the machine for these portions. Confirm your settings by recording lap times after each change. In this way the machine will deliver best performance for the entire circuit.

Special Care According to Track Conditions.

1. In dry, dusty conditions (such as volcanic ash or fine powdery dust) special care must be given to keep the air cleaner element clean.

2. When riding on wet heavy clay the mud adheres to the tires and other parts of the vehicle. The mud can add significantly to the weight of the vehicle and therefore reduce performance. Take care to remove built-up mud from the tires and chassis after each ride, before drying occurs.

3. The engine works hardest in muddy conditions and the radiator can become clogged with mud. Take care not to overheat the engine in these conditions. The engine also works very hard when ridden in deep sand.

4. In muddy or sandy conditions adjust the chain looser than in other conditions as the chain and sprockets will pack with mud/sand and reduce chain slack.

5. Check chain and sprocket wear frequently when riding in mud or sand since wear is increased in these conditions.

6. In dusty conditions as the air cleaner collects dust, the engine runs richer. Therefore it may be advisable to run slightly leaner jetting (main jet) in very dusty conditions.

SPARE PARTS

carburation
front sprocket
rear sprocket
front suspension springs
rear suspension spring



PREPARATION CHECK

1. Front axle shaft and nut, or axle clamp nut tightness
2. Front fork clamp bolt tightness
3. Handlebar clamp bolt tightness
4. Throttle grip screw tightness
5. Throttle grip operation
6. Front and rear brake hose installation
7. Front and rear brake fluid level
8. Front and rear brake disc and caliper installation
9. Front and rear brake function
10. Fuel tank installation
11. Shift pedal bolt tightness
12. Engine mounting bolt tightness
13. Engine sprocket installation
14. Brake pedal bolt tightness
15. Transmission oil level
16. Carburetor clamp screw tightness
17. Carburetor top cap tightness
18. Linkage tie rod mounting bolt tightness
19. Linkage rocker arm mounting bolt tightness
20. Rear shock absorber bolt tightness
21. Swing arm pivot shaft nut tightness
22. Rear axle shaft nut tightness
23. Rear sprocket bolts or nuts tightness
24. Rear brake pedal operation
25. Seat installation
26. Front and rear wheel spoke tightness

27. Front and rear tire air pressure
28. Drive chain slack
29. Coolant level

(2). After first race maintenance

1. Air cleaner element
2. Drive chain slack
3. Rear sprocket nuts
4. Sprockets
5. Front and rear tire air pressure
6. Front and rear axle shaft nuts
7. Pivot shaft nut
8. Muffler, silencer bolts or nuts
9. Front, rear fender mounting bolts or nuts
10. Fuel tank, seat mounting bolts or nuts
11. Front and rear brakes
12. Steering play
13. Fuel tank fill
14. Coolant level check

(3) Maintenance notice for after riding on dusty course

If dirt or dust gets through into the engine, the crankshaft big end will wear excessively. After riding, inspect the crankshaft big end. If the crankshaft big end is worn past the service limit, replace the crankshaft big end with a new one.

(4) Maintenance notice for after riding in rain on muddy course

1. Apply grease to swing arm pivot and rear suspension system.
2. Inspect the drive chain and rear sprocket wear
3. Clean the air cleaner element
4. Check the cylinder and crankshaft big end bearing
5. Grease the throttle grip and cable.

(5) Suggest spare parts

- . Spare wheels (front and rear)
- . Shift pedal and brake pedal
- . Brake lever, clutch lever, and holders
- . Throttle cable
- . Handlebar
- . Front and rear fenders, side covers, and number plate
- . Radiator, radiator cover, and hoses
- . Throttle grip assembly
- . Jets (carburetor)
- . Air cleaner element
- . Muffler, silencer, and installation parts
- . Chain
- . Fork springs (for different settings)
- . Rear shock absorber spring (for different settings)
- . Assorted gearing, mounting bolts and nuts, and circlips
- . Electrical parts set
- . Spark plugs
- . Clutch assembly or friction plates
- . Gasket set

. Assorted tires (various compounds and tread patterns for different conditions).

. Front fork assembly

. Piston and piston rings

- Tie wraps, bolts, nuts, O-rings, washers, snap rings, wire, adhesive tape, vinyl tape (or duct tape), and # 400 to # 600 emery cloth.



STORAGE

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

- . Clean the entire vehicle thoroughly.
- . Run the engine for about five minutes to warm the oil shut it off and drain the transmission oil.
- . Put in fresh transmission oil.
- . Empty the fuel from the fuel tank, and empty the carburetor float bowl. (If left in for a long time, the fuel will deteriorate).

WARNING!

Gasoline is extremely flammable and can be explosive. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

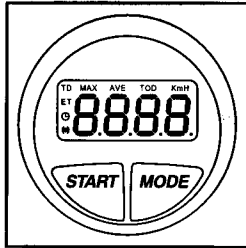
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- . Remove the spark plug and put several drops of SAE 30 oil into the cylinder. Kick the engine over slowly a few times to coat the cylinder wall with oil, and install the plug.
- . Lubricate the drive chain and all the cables.
- . Spray oil on all unpainted metal surfaces to prevent rusting. Avoid getting oil on rubber parts or in the brakes.
- . Set the motorcycle on a box or stand so that both wheels are raised off the ground. (If this cannot be done, put boards under the front and rear wheels to keep dampness away from the tire rubber).

- . Tie a plastic bag over the exhaust pipe to prevent moisture from entering.
- . Put a cover over the motorcycle to keep dust and dirt from collecting on it.

To put the motorcycle back into use after storage.

- . Remove plastic bag from exhaust.
- . Make sure the spark plug is tight.
- . Fill the fuel tank with fuel.
- . Check all the points listed in the Daily Pre-ride Inspection Section.
- . Perform the General lubrication procedure.



- Functions.**
- ☉ Work mode. This can be activated (ON) and deactivated (OFF).
 - 🕒 Clock. Indicates hour and minutes.
 - ET Chronometer. Indicates the time passed since the last activation of the work mode.
 - TD Partial distance. Indicates the distance covered since the last activation of the work mode.
 - MAX Maximum speed obtained since the last activation of the work mode.
 - AVE Average speed during the last activation of the work mode.
 - TOD Total distance covered since the equipment was turned on.
 - KmH Instantaneous speed.

Note: In order to select any of the functions, the motor must remain stopped for ten seconds. A minute after selecting a function, the screen will turn off automatically. It is activated again by pressing the MODE key or putting on the motor.

Work mode.

This option is selected by means of the MODE key. By pressing START it goes from the deactivated state (OFF) to the activated state (ON) and viceversa.

When it is in the activated mode, the symbol ☉ is visualised permanently on the screen. The gathering of data then begins and the calculations are carried out to obtain the information which is visualised in the function Chronometer, partial Distance, maximum Speed and average Speed. When OFF is pressed, the acquisition of data and the calculations are detained, but the calculated values are not lost, and can be visualised by selecting the corresponding function.

By activating once more the work mode (ON), the values previously stored are wiped out.

Chronometer.

The chronometer visualises the time passed since the last activation of the work mode. Initially, minutes and seconds are visualised. After an hour has passed, hours and minutes are visualised.

Maximum speed.

This shows the maximum speed reached during the activated work mode.

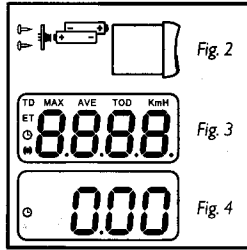
Average speed.

This shows the average speed reached during the activated work mode.

Total distance.

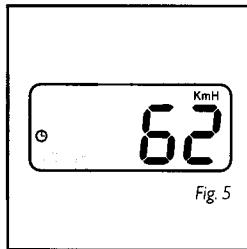
This visualises the total distance covered since the moment when the equipment was turned on for the first time. The value accumulated is maintained permanently, even without batteries, and is independent of the condition of the work mode.





Installation of batteries.

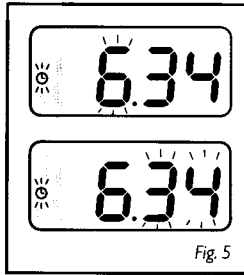
- To replace the batteries, remove the cover of the battery space by unscrewing the two screws at the back of the multi-function.
- Substitute the old batteries with the new ones, maintaining the same polarity which is indicated on the diagram.
- Finally, screw on the cover again. (Fig. 2)
- If the previous process has been carried out correctly, all the segments and legends of the screen will appear momentarily. (Fig. 3). After a few seconds, the clock symbol will appear with a reading of zeros (Fig. 4), disappearing after 10 seconds.



Instantaneous speed.

On turning on the motor, the reading of Km/h. will appear automatically. While the motor is in operation, the instantaneous speed reading will remain on the screen (Fig. 5). On detaining the motor, the screen will remain lit up for about ten seconds with the indication of zero Km/h. After this time, if the motor is not turned on again, the last function previously selected will appear on the screen. The screen will turn off completely after one minute, if during this time the power has not been turned on again or if a function has been selected. While this function is visualised, it is not possible to select any other one.





Setting the time.

Press the MODE key until the clock symbol appears. By pressing the START key, the minute digits and the clock symbol will flash, indicating that it is in time set mode (Fig. 6).

By pressing lightly on the START key, the minutes indicator will be advanced.

On keeping the same key pressed, the advance will be automatic, being detained on letting go of the key.

On pressing the MODE key, the hour digits will flash, proceeding in the same way as above. Once the correct values have been selected, press the MODE key to give said values. The digits will stop flashing.





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PU010238016