Kawasaki

'89 model

第二版

Motorcycle Owner's Manual

保存版

KX250

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.**

NOTE

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

WARNING

THIS VEHICLE IS A COMPETITION MODEL ONLY AND WAS NOT MANUFACTURED FOR, NOR SHOULD IT BE USED ON, PUBLIC STREETS, ROADS, OR HIGHWAYS. THE USE OF THIS VEHICLE SHOULD BE LIMITED TO PARTICIPATION IN SANCTIONED COMPETITION EVENTS UPON A CLOSED COURSE. THIS VEHICLE SHOULD NOT BE USED FOR GENERAL OFF-ROAD RECREATIONAL RIDING.

DISCLAIMER OF WARRANTY

THIS MOTORCYCLE IS SOLD AS IS, WITH ALL FAULTS, OBVIOUS OR CONCEALED AND THERE ARE NO WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OF FITNESS.

The purchaser accepts all responsibilities concerning quality, performance, cost of service and/or necessary repairs.

IMPORTANT

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

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.

(UK model only)

This warning may apply to any of the following components or any assembly containing one or more of these components:—

Brake Shoes or Pads
Clutch Friction Material
Gaskets
Insulators

SAFETY INSTRUCTIONS

- Operate if possible out of doors or in a well ventilated place.
- Preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extraction facility. If high speed tools are used, they should always be so equipped.
- If possible, dampen before cutting or drilling.
- Dampen dust and place it in properly closed receptacle and dispose of it safely.

Foreword

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

Your new KX250 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 KX250 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.

WARNING

○Brake linings contain asbestos fiber. Inhalation of asbestos may cause serious scarring of the lungs and may promote other internal injury and illness, including cancer. Observe the following precautions when handling brake linings:

1. Never blow brake lining dust with compressed air.

2. If any components are to be cleaned, wash with detergent, then immediately discard the cleaning solution and wash your hands.

3. Do not grind any brake lining material unless a ventilation hood is available and properly used.

Oct. 1988 (2). (M)

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Dimensions			
Overall length			2 190 mm (86.2 in)
Overall width			815 mm (32.1 in)
Overall height			1 205 mm (47.4 in)
Wheelbase			1 490 mm (58.7 in)
Road clearance			370 mm (14.6 in)
Dry weight			96.5 kg (213 lb)
Fuel tank capacity			8.5 L (2.25 US gal)
Engine			
Type			2-stroke, single cylinder, piston reed valve, liquid-cooled "This engine licensed under one or more of Eyvind Boyesen's Patent Nos:3 905 340. 3 905 341. Re. 30 425. 4 062 331; 4 161 163. 4 202 298 and 4 202 299."
Bore and stroke			67.4 x 70.0 mm (2.65 x 2.76 in)
Displacement			249 mL (15.25 cu in)
Compression ratio			9.8 : 1 (high speed), 11.3 : 1 (low speed)
Port timing:	Intake	Open	Full open
		Close	–
	Scavenging	Open	60.5° BBDC
		Close	60.5° ABDC
	Exhaust	Open	92° BBDC (high speed), 81.5° BBDC (low speed)
		Close	92° ABDC (high speed), 81.5° ABDC (low speed)
Carburetor			KEIHIN PWK38
Lubrication system			Petrol mix (32 : 1)
Starting system			Primary kick
Ignition system			CDI system
Ignition timing			14° BTDC @6 000 r/min (rpm)
Spark plug			NGK B9EG © NGK BR9EG

Transmission

Transmission type		5-speed, constant mesh, return shift
Clutch type		Wet, multi disc
Driving system		Chain drive
Gear ratio:	1st	2.133 (32/15)
	2nd	1.687 (27/16)
	3rd	1.388 (25/18)
	4th	1.136 (25/22)
	5th	1.000 (24/24)
Primary reduction ratio		2.750 (55/20)
Final reduction ratio		3.357 (47/14)
Overall drive ratio		9.232 (Top gear)
Transmission oil:	Capacity	800 mL (0.85 US qt)
	Type	SE class SAE 10W30 or 10W40

Frame

Type		Tubular, single down tube
Steering angle		45° to either side
Castor		27°
Trail		119 mm (4.7 in)
Tire size:	Front	80/100-21 51M, DUNLOP K490
	Rear	110/90-19 62M, DUNLOP K595
Suspension:	Front	Telescopic fork (Air fork)
	Rear	Swing arm (Uni-trak)
Front suspension stroke		300 mm (11.8 in)
Rear wheel travel		330 mm (13.0 in)
Front fork oil (each)		KAYABA 01 601 – 609 mL (20.32 – 20.59 US oz)
Front fork oil level (compressed, spring removed)		148 – 152 mm (5.8 – 6.0 in)

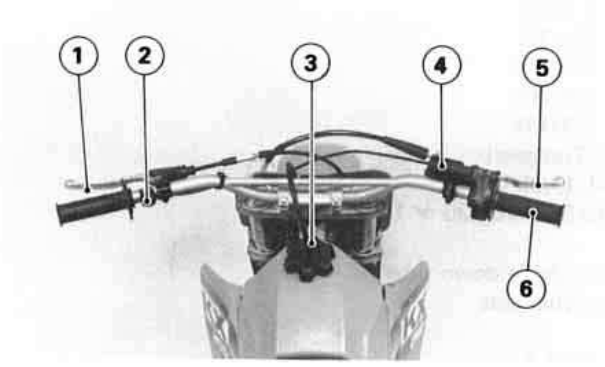
Brakes

Type:	Front and Rear	Disc brake
Effective disc diameter:	Front	220 mm (8.7 in)
	Rear	190 mm (7.5 in)

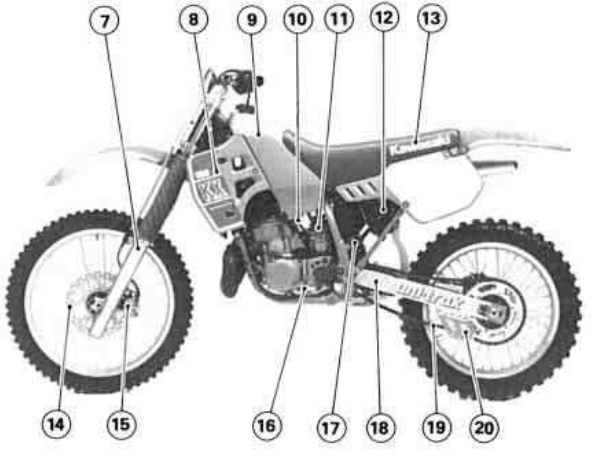
Specifications subject to change without notice, and may not apply to every country.

© : Canadian model

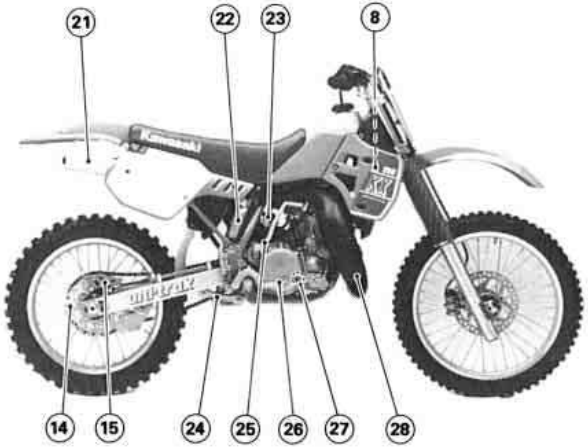
Location of Parts



1. Clutch Lever
2. Engine Stop Button
3. Fuel Tank Cap
4. Front Brake Reservoir
5. Front Brake Lever
6. Throttle Grip



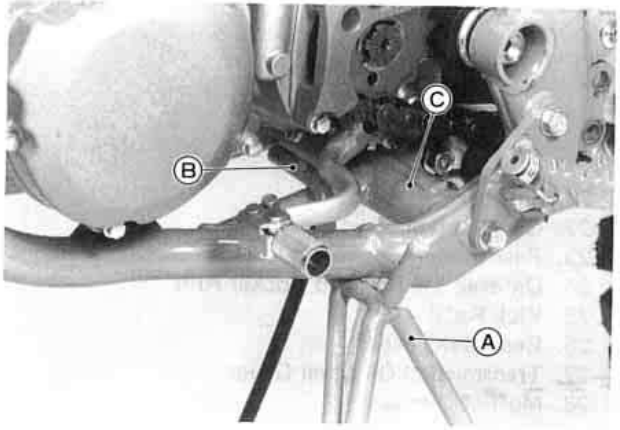
7. Front Fork
8. Radiator
9. Fuel Tank
10. Fuel Tap
11. Carburetor
12. Air Cleaner Rotary Shutter
13. Seat
14. Brake Disc
15. Brake Caliper
16. Shift Pedal
17. Rear Shock Absorber
18. Swing Arm
19. Drive Chain
20. Chain Guide



21. Silencer
22. Gas Reservoir
23. Rear Brake Reservoir
24. Uni-trak Tie Rod and Rocker Arm
25. Kick Pedal
26. Rear Brake Pedal
27. Transmission Oil Level Gauge
28. Muffler

Side Stand

Position the side stand through the gusset portion at the left side of the frame pipe with the longer bar facing inside and parallel with the connection frame pipe.



A. Side Stand
B. Longer Bar
C. Connection Frame Pipe

NOTE

○*Do not start the engine or ride the motorcycle when the side stand is used.*

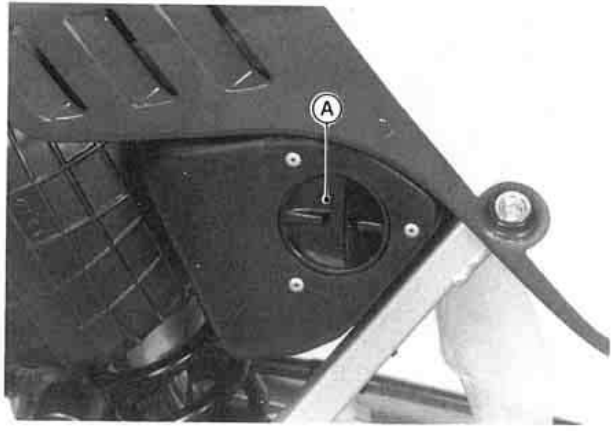
Air Cleaner Rotary Shutter

A rotary shutter is equipped to the left and right sides of the air cleaner case respectively.

When the shutter is opened, extra air is led to the air cleaner case, so more efficient intake is obtained.

NOTE

○*The rotary shutter should be closed in the wet condition to prevent rain from entering.*



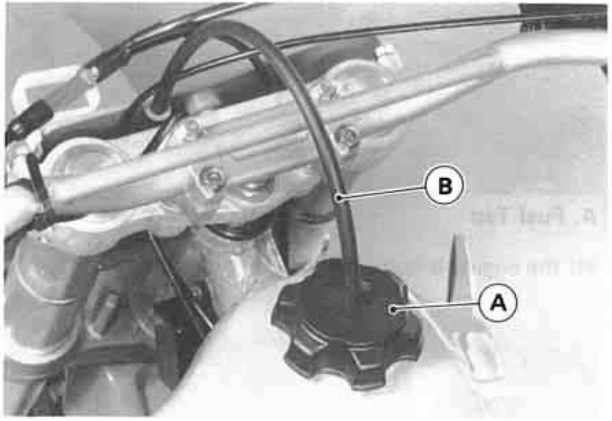
A. Rotary Shutter

Fuel

The Kawasaki KX has a 2-stroke engine that requires a gasoline-oil mixture.

The capacity of the fuel tank is 8.5 L (2.25 US gal).

To open the fuel tank cap, pull out the breather hose from the hole of the number plate, and turn the tank cap counterclockwise.



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

Recommended Fuel

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

Octane Rating Method	Minimum Rating
Antiknock Index $\frac{(RON + MON)}{2}$	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:
- ○Kawasaki 2-stroke racing oil
- ○Shell Super-M
- ○Castrol A747
- ○Castrol TTS (A545)
- ○Rock Oil K2

NOTE

○*If none of the recommended oils are available, use 2-stroke racing oil only.*

Gasoline and engine oil mixing ratio:
32 : 1 (Gasoline 32, Engine Oil 1)
(A 32 to 1 mixture is 4 fluid ounces of oil per gallon of gasoline or about 31 mL. of oil per liter of gasoline.)

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.**

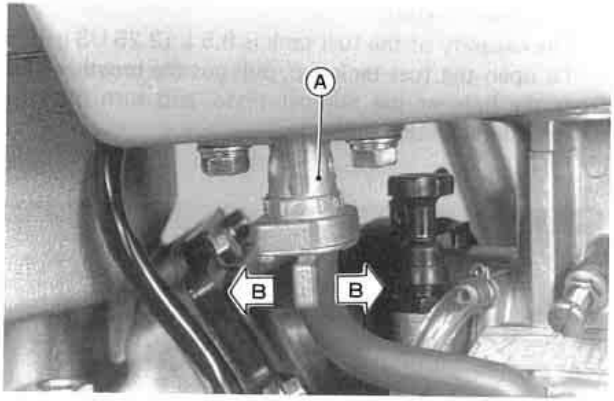
To make an gasoline-oil mixture, pour oil and half of the gasoline into a container first and stir the mixture thoroughly. Then add the rest of the gasoline and stir the mixture well.

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.*

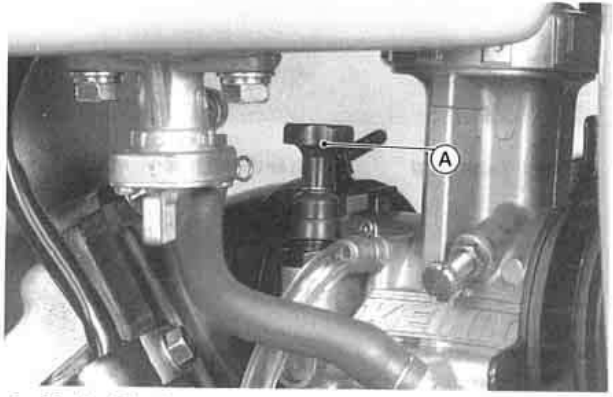
Starting the Engine

●Turn the fuel tap to ON.



A. Fuel Tap **B. ON position**

●If the engine is cold, pull up the choke knob.



A. Choke Knob

●Kick the engine over, leaving the throttle closed.

A. Kick Pedal

●Even after the engine starts, keep the choke knob pulled up. When the engine is thoroughly warmed up, push down the choke knob.

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 until the engine starts.*
○*If the clutch lever is pulled, the motorcycle can be started while in any gear.*

Shifting Gears

The transmission is a 5-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.

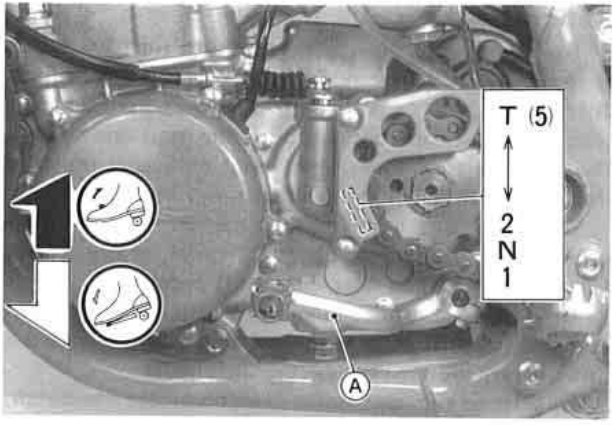
To engage first gear from neutral, pull in the clutch lever and push down on the shift pedal, gently release the clutch lever, then release the shift pedal.

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.

CAUTION

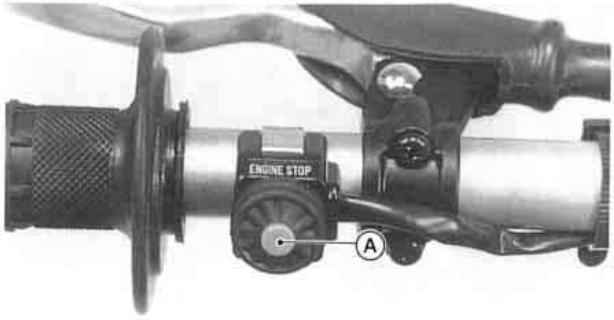
○**When changing gears, press firmly on the shift pedal to ensure complete, positive shifting. Careless, incomplete shifts can cause the transmission to jump out of gear and lead to engine damage.**



A. Shift Pedal

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.

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.

Break-In

To obtain the proper operating clearances in the engine and transmission that are necessary for smooth engine performance and reliability, a brief break-in procedure must be carried out. For the first hour or 20 km (12 mi) of operation, run the engine at low and moderate r/min (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 NGK B9EG (Canada: BR9EG) with an NGK B8EG (Canada: BR8EG) for the duration of the break-in period.*

Break-in according to following steps.

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 HARD ACCELERATION.**
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 HARD ACCELERATION.**
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.

   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 radiator filler neck with coolant. Before putting the motorcycle into operation, bleed the air from the cooling system.
9. Start the engine and ride for **30** minutes at moderate speed – **NEVER HARD ACCELERATION.**
10. Stop and let the engine cool completely. Check and adjust as Step **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 NGK B9EG (Canada: BR9EG) 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.

Daily Pre-ride Inspection

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

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

WARNING

○Failure to perform these checks every day before you ride may result in serious damage or a severe accident.

Engine

Transmission oil	Transmission oil level correct.
Coolant	No coolant leakage, coolant level correct (when engine is cold).
Radiator cap	Properly installed.
Spark plug	Tighten to correct torque.
Cylinder head	Tighten to correct torque.
Cylinder	Tighten to correct torque.
Clutch	Clutch functioning properly.
Carburetor	Adjusted properly.
Air cleaner	Clean, properly installed.
Muffler	Muffler not damaged.
Engine sprocket	Not worn or damaged.

Frame

Tires	Check overall condition; wear, cuts and other damage. Check pressure.
Spokes	Check for any loose spokes.
Drive chain	Check overall condition and chain slack, oil as necessary.
Brakes; front and rear	Function properly, brake lever and pedal have correct play.
Throttle	Functions properly, returns smoothly.
Steering	Action is smooth but not loose from lock to lock. No binding of control cables.
Front fork	Functions properly, no oil leakage.
Rear shock absorber	Function properly, no oil leakage.
Fuel tank	Mounted securely, no fuel leakage.
Rear sprocket	Not worn or damaged.
Engine stop button	Functions properly.
Nuts, bolts, fasteners	Tighten any loose bolts and nuts.

After Race Check Points

After racing, first clean the motorcycle (Pg. 59), then inspect the entire motorcycle with special attention to the air cleaner, carburetor, brakes, etc.

Carry out general lubrication (Pg. 60) and make adjustments as necessary.

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.

Periodic Maintenance Chart

	FREQUENCY / OPERATION	Each race	Every 3 races	Every 5 races	Every 10 races	As required	See Page
ENGINE	Clutch--adjust	●					32
	*Clutch and friction plates--check †		●	R			–
	Throttle cable--adjust	●					30
	Spark plug--clean, gap †	●	R				25
	Air cleaner element--clean	●					27
	Air cleaner element--replace	Damaged					27
	Carburetor--inspect/adjust	●					31
	Transmission oil--change		●				21
	*Piston and piston ring--clean/check †		●	R			–
	*Cylinder head, cylinder and exhaust valves--inspect		●				–
	Muffler--clean/check †	●					33
	Silencer wool--change		●				33
	*Small end bearing--check †		●		R		–
	Kick pedal and shift pedal--clean	●					–
	Exhaust pipe O-ring--replace		●				33
	Engine sprocket--check †	●					37
	Coolant--check †	●				R	24
	Radiator hoses, connections--check †	●					22
	Brake adjustment--check †	●					40
	Brake wear--check †			●			42

	OPERATION \ FREQUENCY	Each race	Every 3 races	Every 5 races	Every 10 races	As required	See Page
CHASSIS	Brake fluid level--check †		●				41
	*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--replace	Every 4 years					–
	Spoke tightness and rim runout--check †	●					53,54
	Drive chain--adjust	●					35
	Drive chain--lubricate	●					38,61
	Drive chain wear--check †			●			36
	Chain slipper and guide--replace	Damaged					37
	Front fork--inspect/clean	●					44
	*Front fork oil--change	1st time after 2 races, then every 5 races					–
	Nuts, bolts, fasteners--check †	●					56
	Fuel hose--replace	Every 4 years					–
	Fuel system--clean	●					–
	Steering play--check †	●					43
	*Steering stem bearing--grease			●			–
	Rear sprocket--check †			●			37
	General lubrication--perform	●					60
	*Wheel bearing--grease				●		–
	*Swing arm and Uni-trak linkage pivots--check †			●			–
	*Swing arm and Uni-trak linkage pivots--grease			●			–
	*Rear shock oil--replace	1st time after 2 races, then every 5 races					–

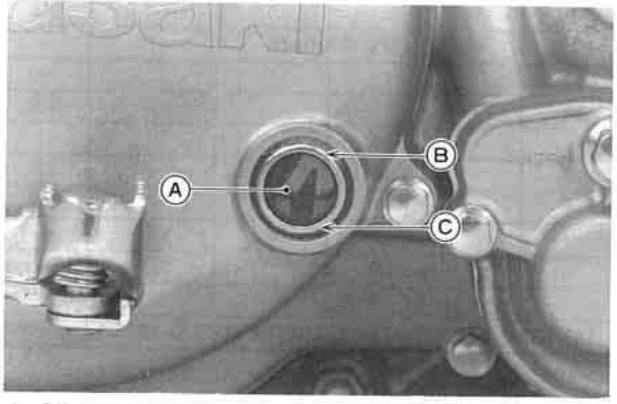
† Replace, add, adjust or torque if necessary.
* Should be serviced by referring to the Service Manual.
R : Replace

Transmission Oil

In order for the transmission and clutch to function properly, maintain the transmission oil at the proper level, and change the oil periodically. Motorcycle operation with insufficient, deteriorated, or contaminated transmission oil will cause accelerated wear and may result in transmission seizure.

Oil Level

- Situate the motorcycle so that it is perpendicular to the ground.
- If the motorcycle has just been used, wait several minutes for all the oil to settle.
- Check the transmission oil level through the oil level gauge in the lower right side of the engine. The oil level should come up between the upper and lower level.



A. Oil Level Gauge **C. Lower Level**
B. Upper Level

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

Transmission Oil

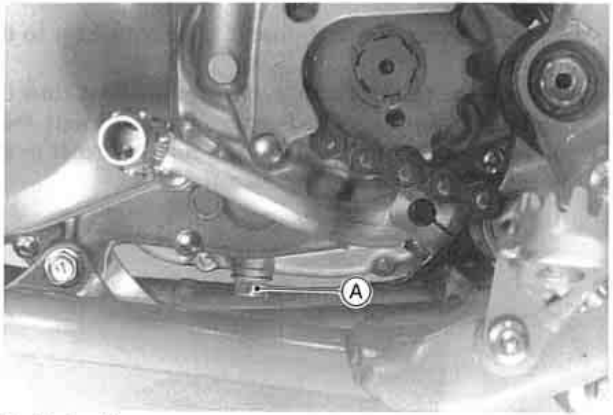
Grade:	SE class
Viscosity:	SAE 10W30 or 10W40 motor oil
Capacity:	800 mL (0.85 US qt)

A. Oil Filler Opening

Oil Change

The transmission oil should be changed periodically to ensure long engine life.

- Warm up engine thoroughly so that the oil will pick up any sediment and drain easily.
- 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.



A. Drain Plug

- Install the drain plug with its gasket, tightening it to 20 N-m (2.0 kg-m, 14.5 ft-lb) of torque.
- Remove the oil filler opening plug, and pour in 800 mL (0.85 US qt) 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

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 of 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 aluminum 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

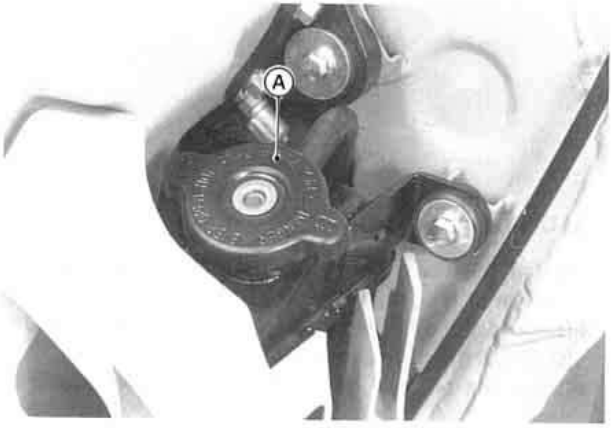
○**Permanent types of antifreeze on the market have anticorrosion and anti-rust properties. When it is diluted excessively, it loses its anti-freeze and anti-corrosion properties. Dilute a permanent type of antifreeze in accordance with the instructions of manufacturer.**

NOTE

○*A permanent type of antifreeze is installed in the cooling system when shipped. It is colored green, contains a 43% solution of ethylene glycol, and has a freezing point of –30°C (–22°F).*

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.

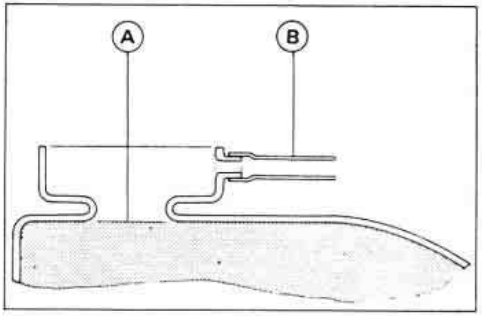


A. Radiator Cap

●Check the coolant level in the radiator. The coolant level should be to the radiator filler neck.

NOTE

○*Check the level when the engine is cold (room or ambient temperature).*



A. Coolant Level **B. 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 (1.2 US qt)

Coolant Change

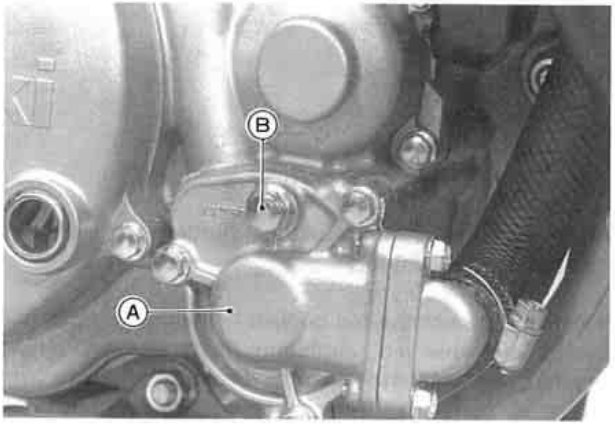
The coolant should be changed periodically to ensure long engine life.

●Wait the engine to cool completely.

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

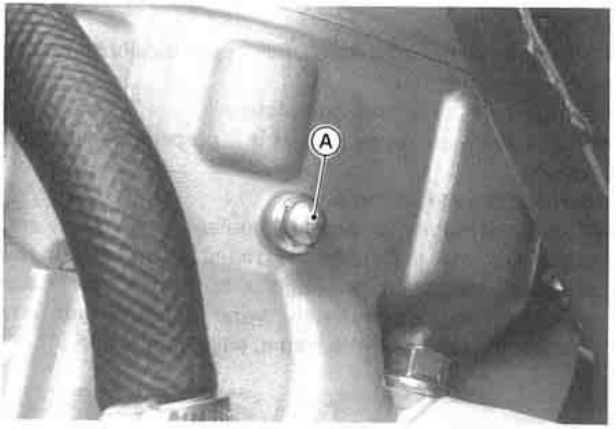
●Remove the radiator cap.

●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 out any coolant that spills on the frame, engine, or wheel.



A. Water Pump Cover **B. Drain Plug**

●Place a container under the drain plug on the right side of the cylinder and drain the coolant by removing the drain plug.



A. 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 and cylinder drain plugs with the specified torques shown in the table. Always replace the gasket with a new one, if it is damaged.

Drain Plug Torque

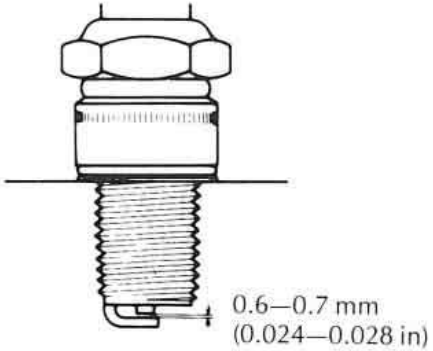
Water Pump Cover Plug:	15 N-m (1.5 kg-m, 11 ft-lb)
Cylinder Drain Plug:	9 N-m (0.9 kg-m, 78 in-lb)

- Fill the radiator up to 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 specified level.

Spark Plug

The standard spark plug is an NGK B9EG (Canada: BR9EG). It should have a 0.6 – 0.7 mm (0.024 – 0.028 in) gap, and be tightened to 27 N-m (2.8 kg-m, 20 ft-lb) of torque.

Spark Plug Gap



The spark plug should be take out periodically to check its gap and ceramic insulator. If the plug is oily or has carbon built 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 white, the plug should be replaced with the next colder type, NGK B10EG (Canada: BR10EG). If the ceramic is black, the plug should be replaced with the next hotter type, NGK B8EG (Canada: BR8EG).

NOTE

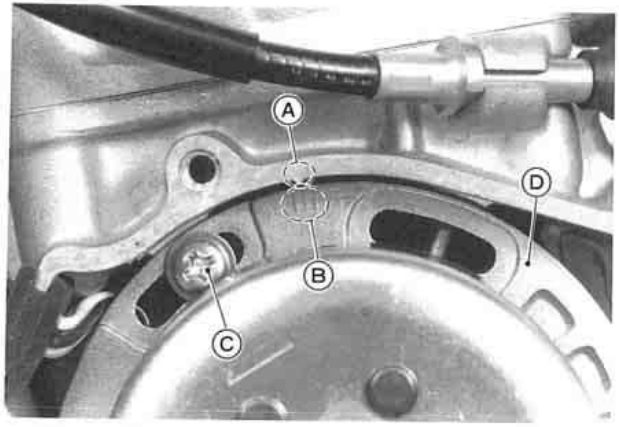
○*If the engine performance drops, replace the spark plug first to regain performance.*

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.
- Loosen the magneto starter screw.
- Check to see if the center mark of the three marks on the magneto stator is aligned with the mark on the crankcase.

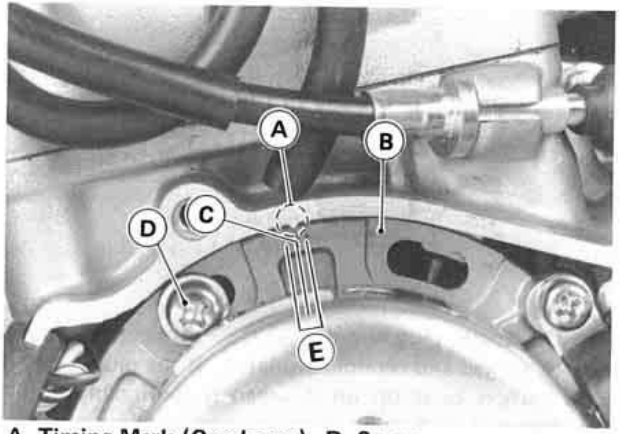


A. Timing Mark (Crankcase)
B. Timing Mark (Stator Plate)
C. Screw
D. Magneto Stator

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

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

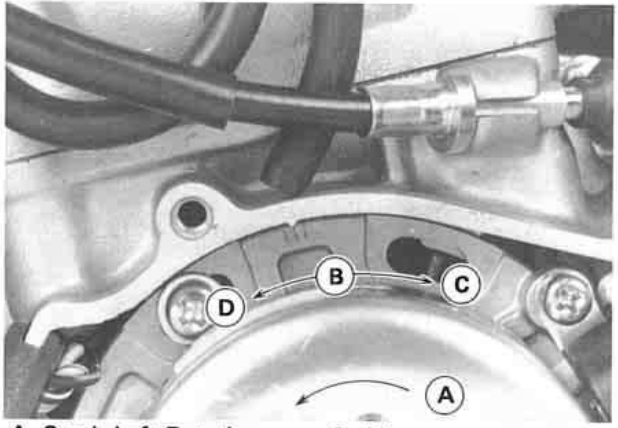
- Remove the magneto cover.
- Loosen the stator screws.
- Adjust the timing by shifting the stator position within the three lines.



A. Timing Mark (Crankcase)
B. Stator Plate
C. Standard Timing Mark
D. Screw
E. Adjustable Range

NOTE

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



A. Crankshaft Rotation
B. Stator Movement
C. Advance
D. Ratard

- 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 intaking, 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.**

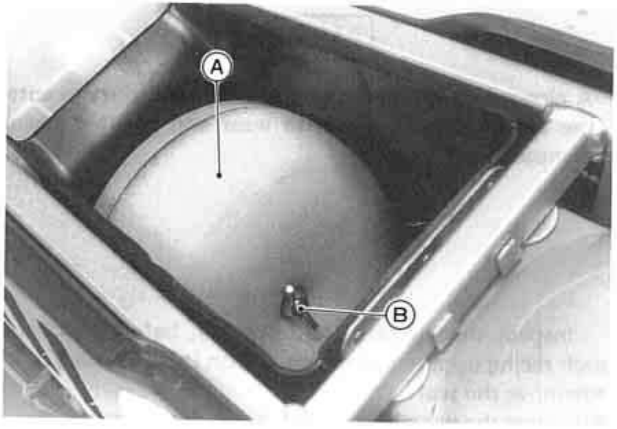
CAUTION

○**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.

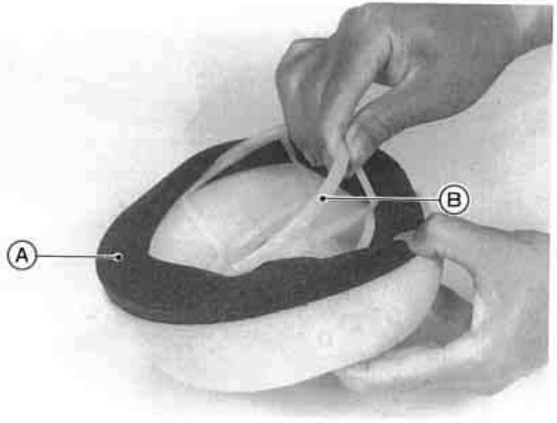
- Remove the seat.
- Remove the wing bolt, and pull out the element.

A. Seat B. Seat Mounting Bolt



A. Element B. Wing Bolt

- Stuff rags into the carburetor so no dirt is allowed to enter the carburetor.
- Take the element off the frame.



A. Element B. Frame

CAUTION

- **Do not twist or wring the element, as it can easily be torn or otherwise damaged.**

- Clean the element in a bath of a high flash-point solvent, and squeeze the element dry.

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.**

●After cleaning, saturate the element with 2-stroke racing oil or 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.

●Inspect the element for damage. If damaged, replace it or it will allow dirt into the carburetor.

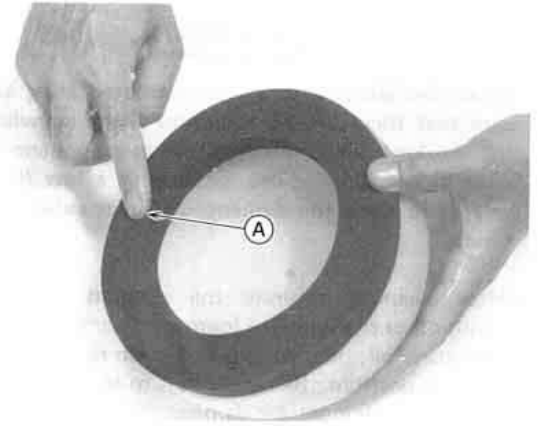
WARNING

○**If dirt or dust is allowed to pass through into the carburetor, the throttle may become stuck, possibly causing an accident.**

CAUTION

○**If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.**

●Install the element on the frame, and coat the lip of the element with a thick layer of all purpose grease to assure a complete seal against the element base. Also, coat the base where the lip of the element fits.

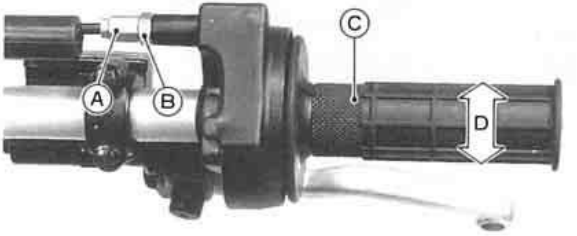


A. Grease.

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

Throttle Cable

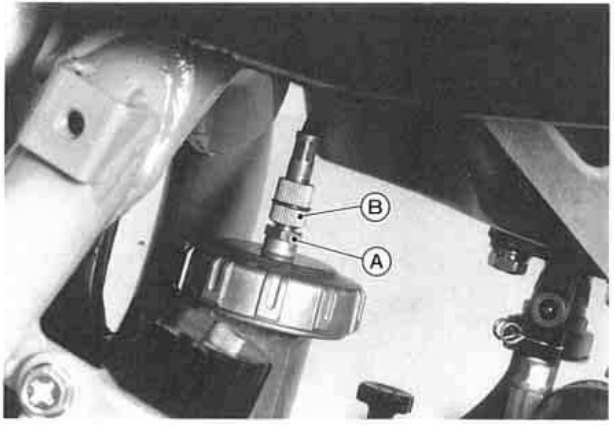
Inspect the throttle grip for smooth operation in all steering positions. In accordance with the Periodic Maintenance Chart check and adjust the throttle cable.
●Check that the throttle grip has 2 – 3 mm (0.08 – 0.12 in) of play and turns smoothly.



A. Adjuster
B. Locknut
C. Throttle Grip
D. 2 – 3 mm (0.08 – 0.12 in)

★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.

★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.



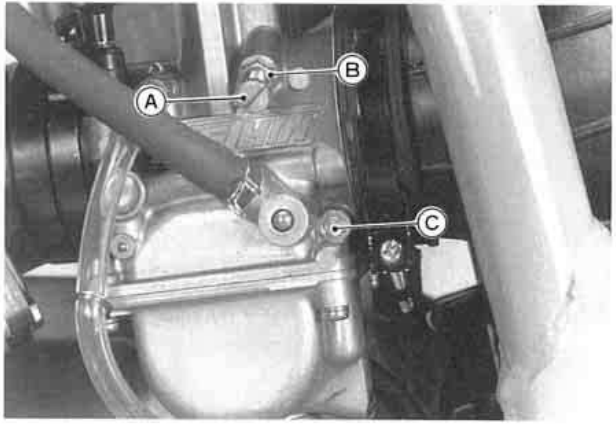
A. Locknut **B. Adjuster**

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 1½ turns.
- After thoroughly warming up the engine, loosen the locknut, turn the idle adjusting screw to obtain the desired idle speed. If no idle is preferred, turn out the screw until the engine stops. Tighten the locknut.



A. Idle Adjusting Screw **C. Air Screw**
B. Locknut

●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

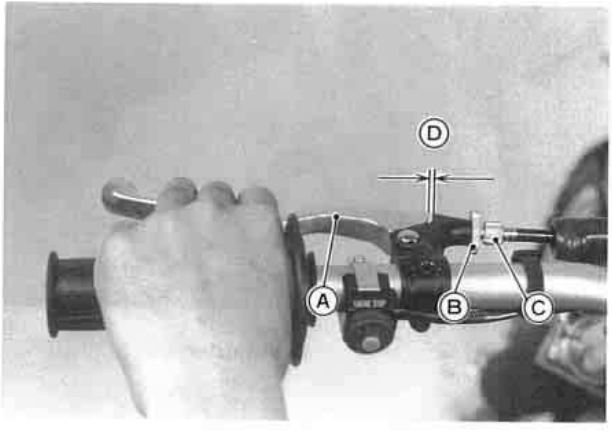
○**Operation with a damaged cable could result in an unsafe riding condition.**

Clutch

Proper clutch lever play between the clutch lever and the clutch lever holder is 2 – 3 mm (0.08 – 0.12 in). Play increases with cable stretch and friction plate wear, necessitating adjustment.

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

●Slide the clutch lever dust cover out of place.
●Loosen the knurled locknut, turn the adjuster to obtain the proper amount of lever play, and tighten the locknut.

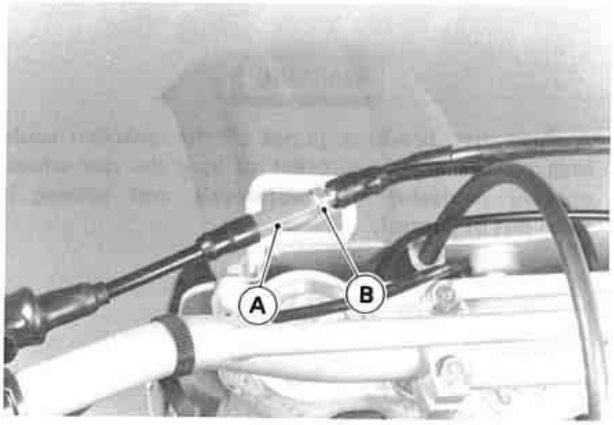


A. Clutch Lever
B. Knurled Locknut
C. Adjuster
D. 2 – 3 mm (0.08 – 0.12 in)

●Slide back the clutch lever dust cover.

If the adjuster at the clutch lever has reached its limit, adjust the cable with the adjusting nut at the upper of the clutch cable.

- Loosen the knurled locknut at the clutch lever.
- Turn the adjuster in all the way, then tighten the knurled locknut.
- Loosen the locknut at the upper of the cable, and turn the adjusting nut so that clutch lever has 2 – 3 mm (0.08 – 0.12 in) of play.



A. Adjusting Nut **B. Locknut**

- Tighten the locknut.
- Slide the dust cover back into place.

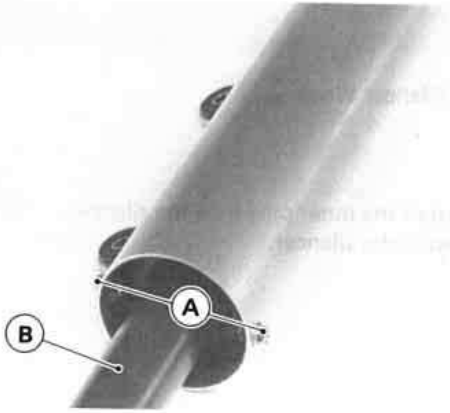
Exhaust System

The muffler and silencer reduce exhaust noise and conduct the exhaust gases back away from the rider while keeping power loss to a minimum. If carbon built up inside the muffler, exhaust efficiency is reduced. This lowers engine power.

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

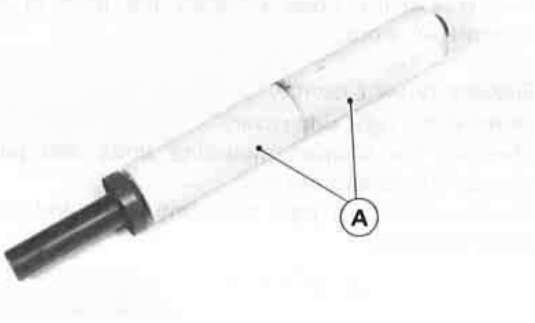
Silencer Wool Change

- Remove the right side cover.
- Remove the silencer mounting bolts and pull the silencer off toward the rear.
- Remove the inner pipe mounting bolts, and pull out the inner pipe.



A. Mounting Bolts **B. Inner Pipe**

●Pull off the old silencer wools, and warp new silencer wools around the inner pipe.



A. Silencer Wools

●Install the inner pipe into the silencer.
●Install the silencer.

Drive Chain

The drive chain must be checked, adjusted, and lubricated in accordance with the Periodic Maintenance Chart for safety and to prevent excessive wear. 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

With the motorcycle on the side stand, push up the drive chain in the middle of the upper run to measure the chain play. The space between the chain and the swing arm at the rear of the chain slipper should be 50 – 60 mm (2.0 – 2.4 in). 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.

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ult in abnormal wear
condition.

uts.
10 kg-m, 72 ft-lb) of

●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

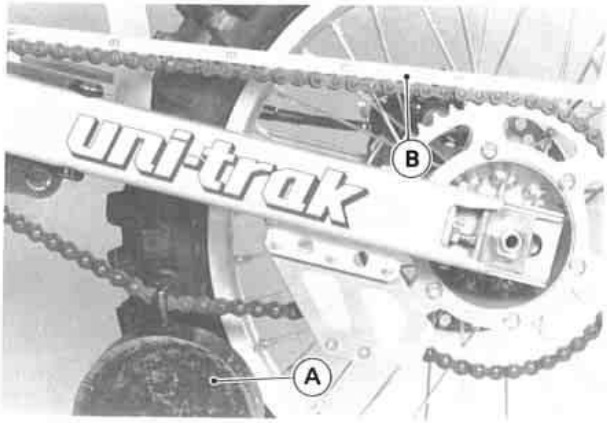
○*In wet and muddy conditions, mud sticks to the chain and sprockets resulting in an overly tight chain, and the chain may break. To prevent this, adjust the chain to 55 – 65 mm (2.0 – 2.6 in) of space between the chain and swing arm whenever necessary.*

Drive Chain, Chain Guide, Chain Slipper, and Sprockets Wear Inspection

When the chain has worn so much that 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. Overworn sprockets will cause a new chain to wear quickly.

Drive Chain Wear

Since it is impractical to measure the entire length of the chain, determine the degree of wear by measuring a 20-link length of the chain. Stretch the chain taut either by using the chain adjuster, or by hanging a 10 kg (20 lb) weight on the chain. Measure the length of 20 links on a straight part of the chain from the center of the 1st pin to the center of the 21st pin. If the length is greater than the service limit, the chain should be replaced.



A. Weight B. Measure

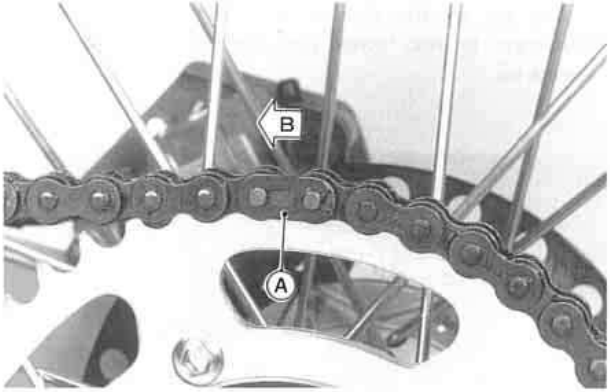
Drive Chain Length

Standard	Service Limit
307.5 mm (12.1 in)	314 mm (12.4 in)

NOTE

○*The drive system was designed for use with a DAIDO D.I.D 520DS-5 114 link chain. For maximum stretch resistance and safety, a genuine part must be used for replacement.*

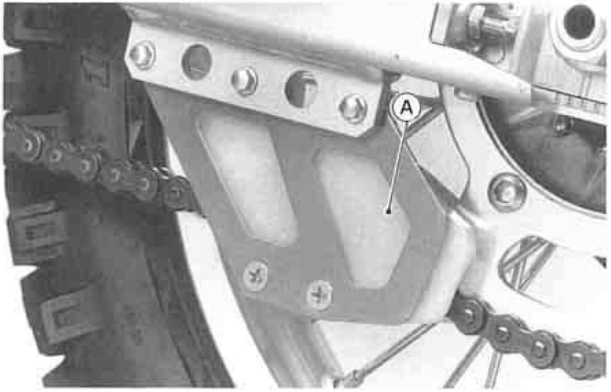
○*To minimize any chance of the master link coming apart, the master link clip must be installed with the closed end of the "U" pointed in the direction of chain rotation.*



A. Clip **B. Direction of Chain Rotation**

Chain Guide Wear

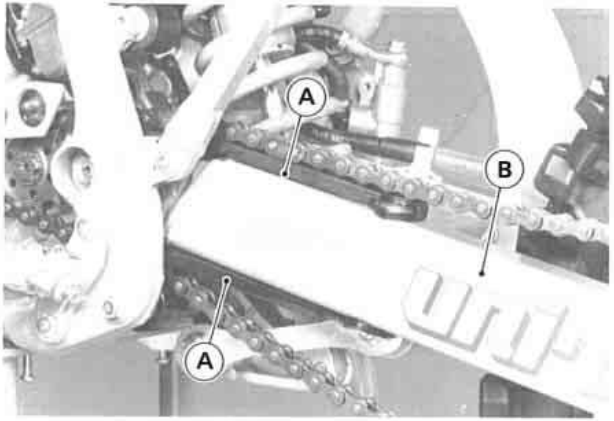
Visually inspect the drive chain guide. If the guide is worn excessively damaged, replace it.



A. Chain Guide

Chain Slipper Wear

Visually inspect the upper and lower chain slippers on the swing arm. If the chain slipper is worn or damaged, replace it.



A. Chain Slipper **B. Swing Arm**

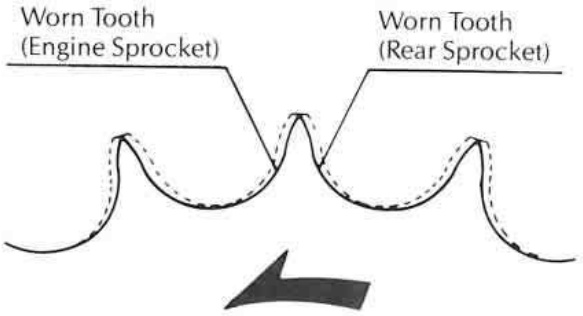
Sprocket Wear

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

NOTE

○*Sprocket wear is exaggerated for illustration.*

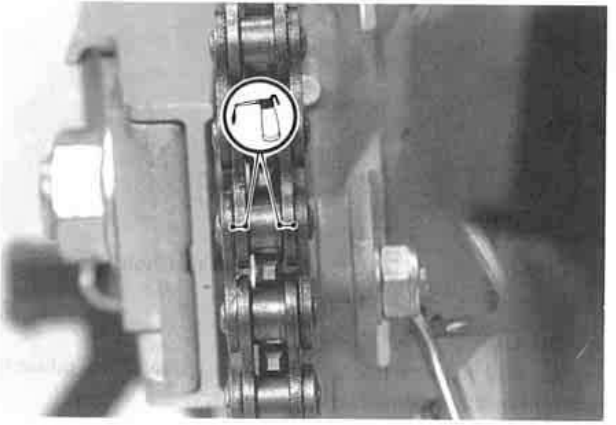
Sprocket



Lubrication

Lubrication is necessary after riding through rain or in the mud, or any time that the chain appears dry. A heavy oil such as SAE90 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.

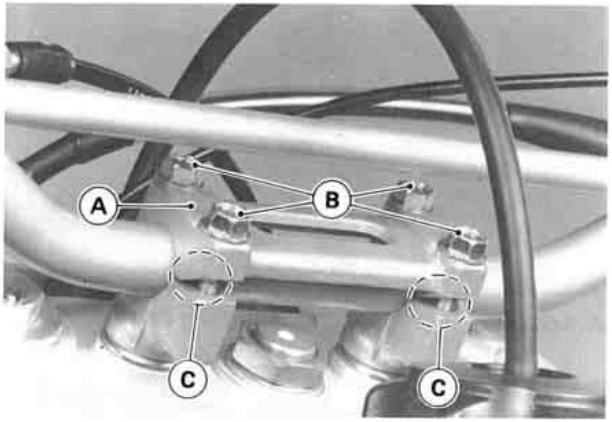


Handlebar

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

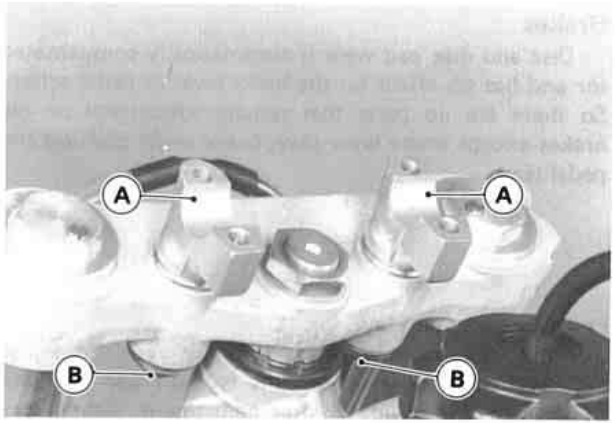
Handlebar Position Adjustment

- Remove the handlebar clamp and bolts, and take off the handlebar.



A. Handlebar Clamp **C. Cut Side**
B. Bolts

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



A. Handlebar Holder **B. Nut**

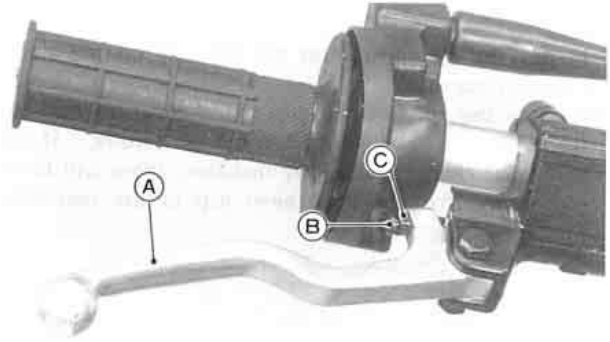
- Mount the clamp so that the cut side on the clamp points at the rear.
- Tighten the clamp bolts, front first and then the rear, to 25 N-m (2.5 kg-m, 18 ft-lb) of torque. If the handlebar clamp is correctly installed, there will be no gap at the front and an even gap at the rear after tightening.

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, brake pedal position and pedal play.

Front Brake Lever Play

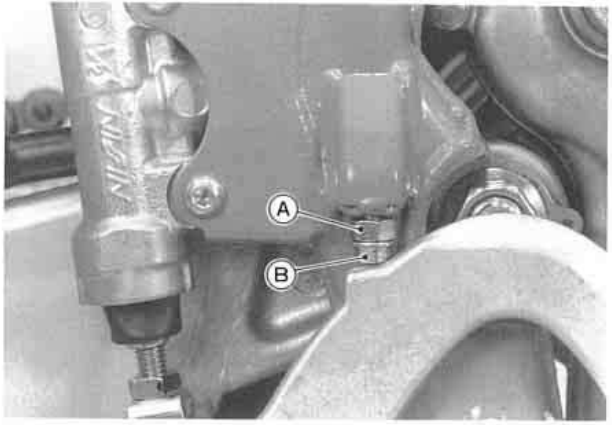
Adjust the front brake lever to suit you. To adjust the brake lever play, loosen the locknut and turn the adjuster to either side. After adjustment, tighten the locknut securely.



A. Brake Lever
B. Adjuster
C. Locknut

Rear Brake Pedal Position

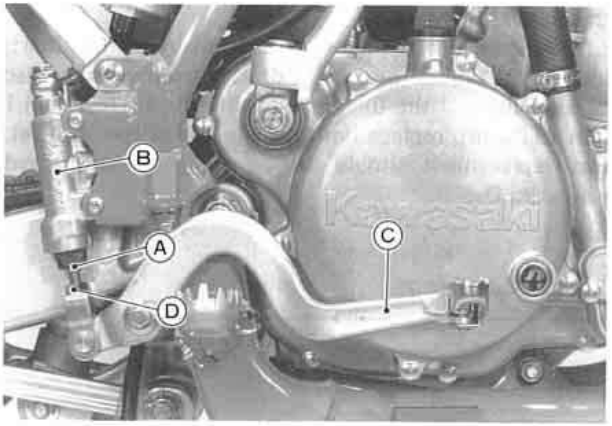
Adjust the rear brake pedal position to suit you. To adjust the pedal position, loosen the locknut, turn the adjusting bolt, and then tighten the locknut.



A. Locknut **B. Adjusting Bolt**

Rear Brake Pedal Play

Adjust the rear brake pedal play to suit you. To adjust the pedal play, loosen the locknut and turn the adjuster on the rear master cylinder. After adjustment, tighten the locknut securely.



A. Adjuster
B. Rear Master Cylinder
C. Rear Brake Pedal
D. Locknut

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 reservoirs and change the brake fluid. The brake fluid should also be changed if it becomes contaminated with dirt or water.

Fluid Requirement

Recommended fluid are given in the table. If none of the recommended brake fluids are available, use extra heavy-duty brake fluid only from a container marked D.O.T.3.

Recommended Disc Brake Fluid

Atlas Extra Heavy Duty
Shell Super Heavy Duty
Texaco Super Heavy Duty
Wagner Lockheed Heavy Duty
Castrol Girling-Universal
Castrol GT (LMA)
Castrol Disc Brake Fluid

Fluid Level Inspection

●The front and rear reservoirs must be kept more than half full with brake fluid.

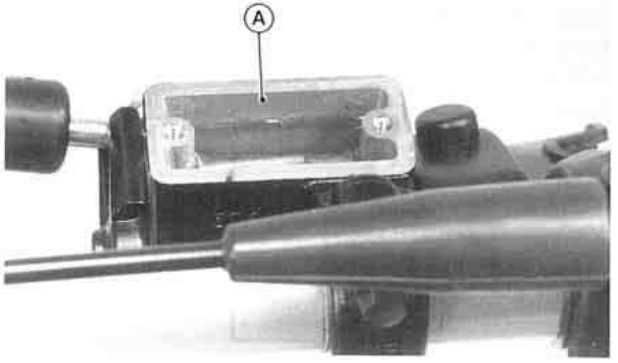
If the amount of brake fluid is insufficient, add brake fluid.

CAUTION

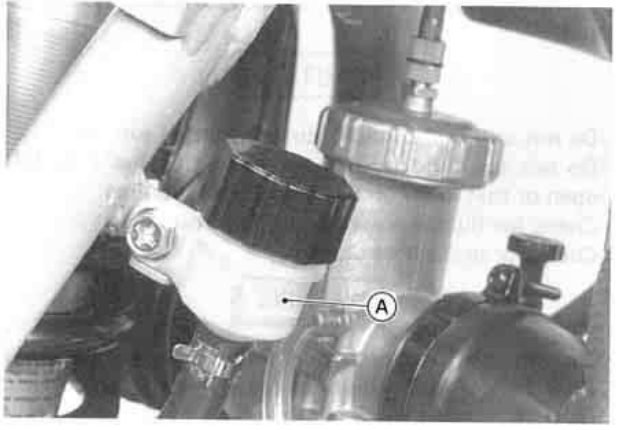
○Do not spill brake fluid onto any painted surface.
○Do not use fluid from a container that has been left open or that has been unsealed for a long time.
○Check for fluid leakage around the fittings.
○Check for brake hose damage.

WARNING

○Do not mix two brands of fluid. Change the brake fluid in the brake line completely if the brake fluid must be refilled but the type and brand of the brake fluid already in the reservoirs are unidentified.



A. Front Reservoir

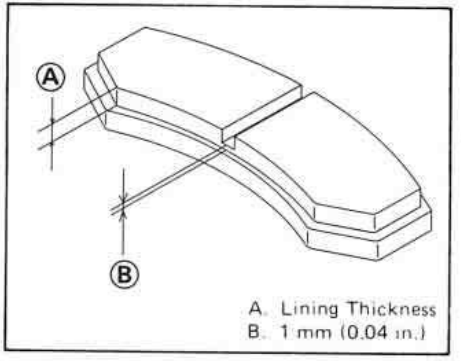


A. Rear Reservoir

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 (0.04 in), replace both pads in the caliper as a set. Pad replacement should be done by an authorized Kawasaki Dealer.

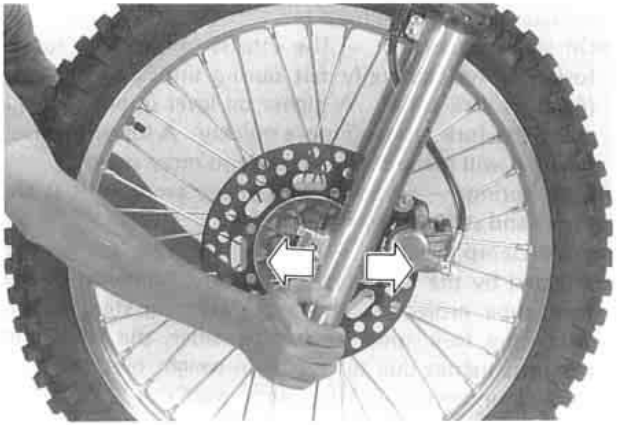
Pad Usable Range



Steering

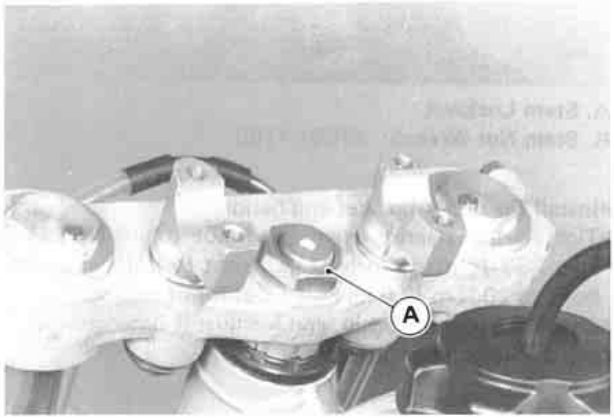
The steering should always be kept adjusted so that the handlebar will turn freely but not have excessive play.

To check the steering adjustment, using the jack stand (special tool) under the frame, and place a stand or block under the engine so that the front wheel is raised 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.



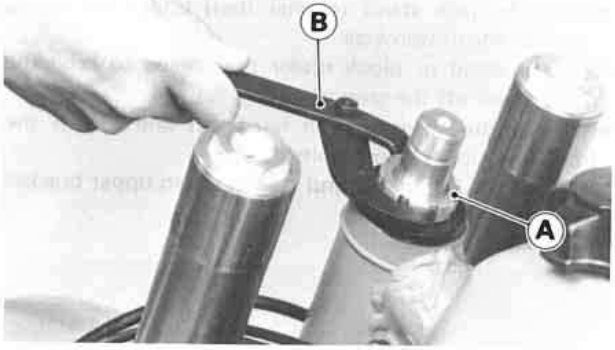
If the steering needs adjusting:

- Remove the number plate.
- Using the jack stand (special tool) under the frame, stabilize the motorcycle.
- Place a stand or block under the engine to raise the front wheel off the ground.
- Remove the steering stem head nut and loosen the front fork upper clamp bolts.
- Pull out the handlebar and steering stem upper bracket from the steering stem.



A. Stem Head Nut

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



A. Stem Locknut
B. Stem Nut Wrench: 57001-1100

- Install the upper bracket and handlebar.
- Tighten the steering stem head nut to 44 N-m (4.5 kg-m, 33 ft-lb) of torque and front fork upper clamp bolts to 20 N-m (2.0 kg-m, 14.5 ft-lb) of torque.
- Check the steering again, and readjust it if necessary.
- Install the number plate.

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.

Basically, there are four adjustments you can make to the front fork.

★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 KX will get stiffer as the race progresses. Because of this, we don't recommended using air pressure for additional springing. Your KX forks are designed to work without adding any air.

★Compression damping adjustment – this adjustment affects how quickly the compresses. The fork compression damping adjuster has 16 clicks. The seated position (full counterclockwise until the adjuster stops) is full soft. From the point, 8 clicks clockwise is the standard setting, and 16 clicks (full clockwise until the adjuster stops) is full hard.

★Oil level adjustment – The effects of higher or lower fork oil level are only felt during the final 100 mm (4 in) of fork travel. A higher oil level (more oil) will make the fork rebound more quickly. A lower oil level (less oil) will make the fork rebound more slowly.

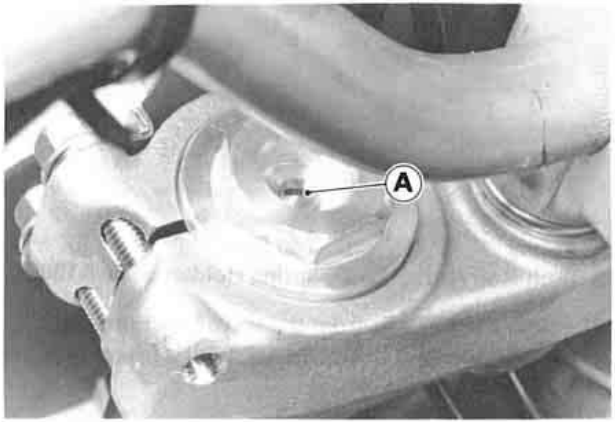
★Fork springs – Optional springs are available that are softer and stiffer than standard.

★Fork clamp position – Steering qualities are greatly affected by the fork clamp position (If amount of the fork tube projecting above the steering stem heed). When the fork tube height is smaller, the front end becomes lighter due to change in weight bias. Also, it tend to understeer in turns and "wash out". When the height is greater, the results are opposite.

Air Pressure Adjustment

The standard air pressure in the front fork legs is atmospheric pressure. The air pressure in the fork legs increase as the fork heats up, so the fork action will get stiffer as the vehicle operation progresses.

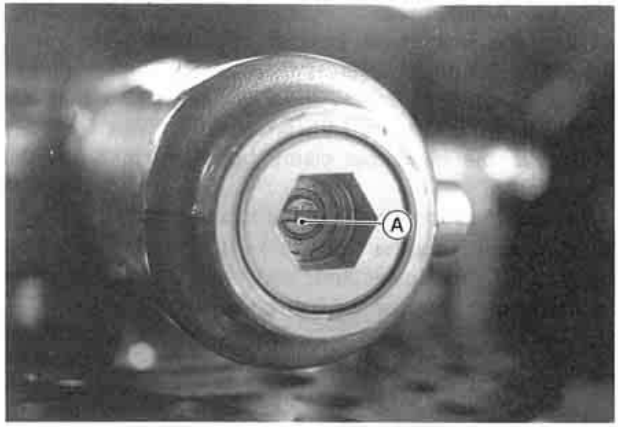
- Park the vehicle on level ground.
- Remove the screws at the top of the front fork top bolts.



A. Screw

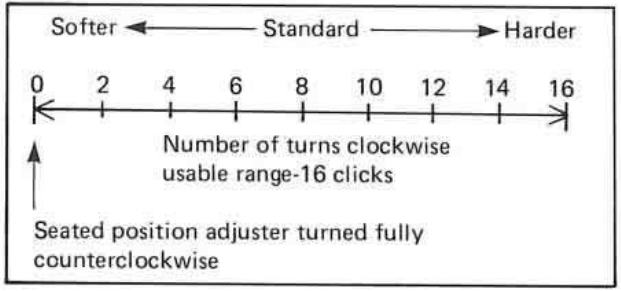
Compression Damping Adjustment

- Clean the bottom of the outer tubes.
- Remove the caps on the bottom of the outer tubes.
- To adjust compression damping, turn the adjuster on the front fork cylinder valve with the blade of a screwdriver until you feel a click. Adjust the compression damping to suit your preference under special condition.



A. Adjuster

Compression Damping Adjustment



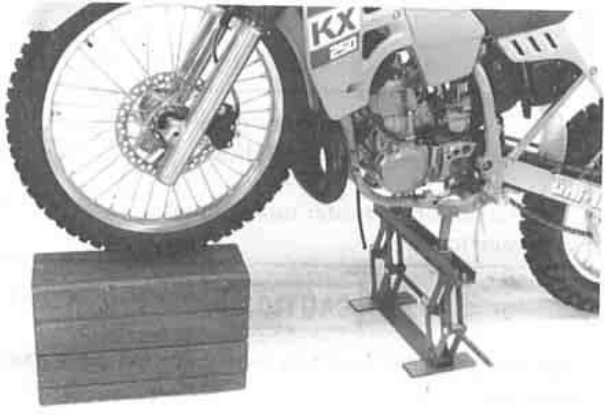
CAUTION

- **The left and right fork legs must have the same shock damping.**

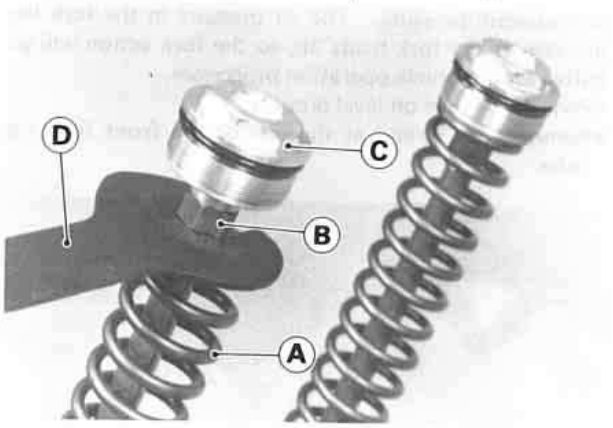
- Put the caps into the bottom of the outer tubes.

Oil Level Adjustment

- Using the jack stand (special tool) 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 handlebar clamp bolts and take out the handlebar.
- Remove the top bolts from the top of the fork tubes.
- Slowly compress the front forks fully with pushing up the outer tube lower end, and place a stand or other suitable means under the front wheel.



- Pulling down the fork spring and insert the spring holder (special tool) under the push rod nut.



A. Spring **C. Top Bolt**
B. Push Rod Nut **D. Spring Holder: 57001-1286**

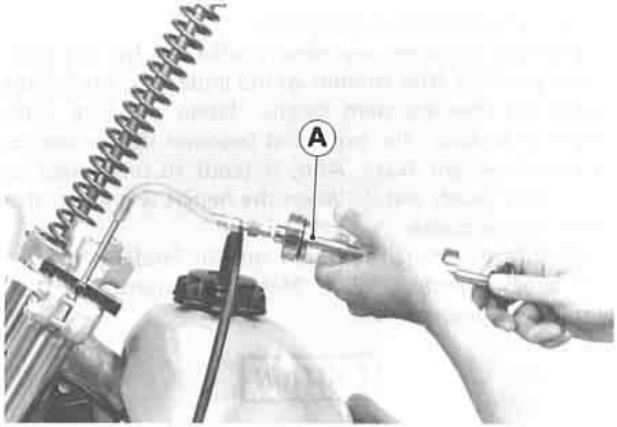
- Remove the top bolt from the top of the push rod.
- Take the spring holder (special tool) off and pull out the fork spring.
- Remove the other fork spring.
- Put the oil level gauge (special tool) on the top of the fork tube, and measure the distance from the top of the fork tube to the oil level.

Standard Oil Level:

148 – 152 mm (5.8 – 6.0 in)

Adjustable Range:

120 – 180 mm (4.7 – 7.1 in)

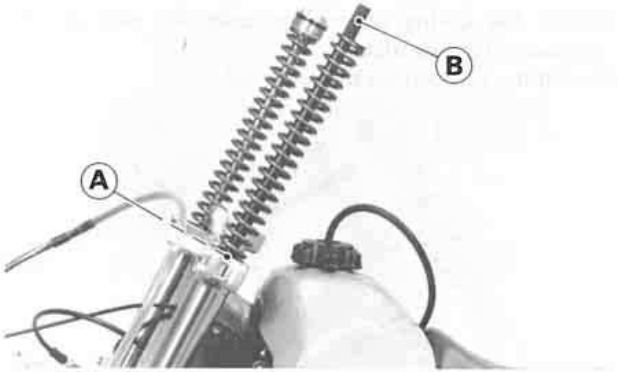


A. Oil Level Gauge: 57001-1290

●Adjust the oil level as required within the adjustable range using one of the following oils.

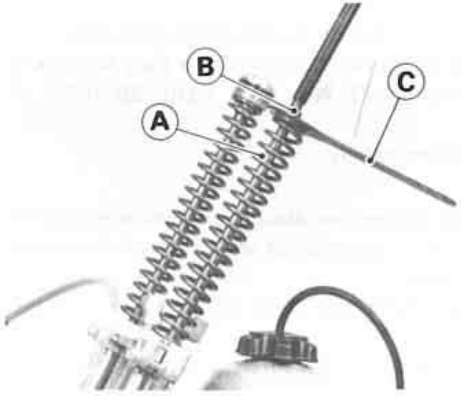
Recommended Oil: KAYABA 01

●Put the fork spring in both fork tubes.
●Screw in the push rod puller (special tool) onto the push rod.



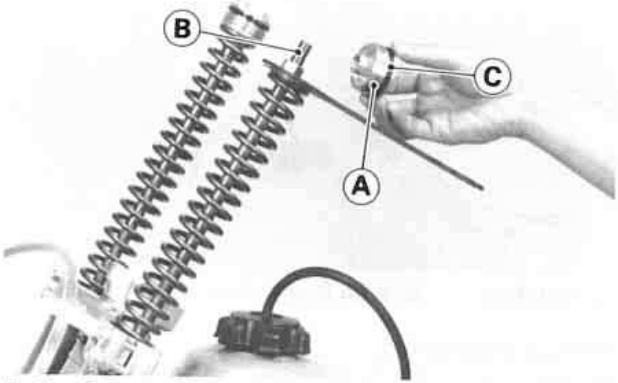
A. Push Rod **B. Push Rod Puller: 57001-1289**

●Pull up the push rod.
●Pulling down the fork spring and insert the spring holder (special tool) under the push rod nut.



A. Spring **C. Spring Holder: 57001-1286**
B. Push Rod Nut

●Remove the push rod puller.
●Check the O-ring of the top bolts for damage. If necessary, replace them.
●Install the top bolt on the push rod.



A. Top Bolt **B. Push Rod** **C. O-Ring**

●Remove the spring holder.
●Install the another top bolt on the other push rod.
●Install the top bolts on the top of the fork tubes and tightening them to 27 N-m (2.8 kg-m, 20 ft-lb) of torque.
●Install the parts removed.

Fork Spring

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

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

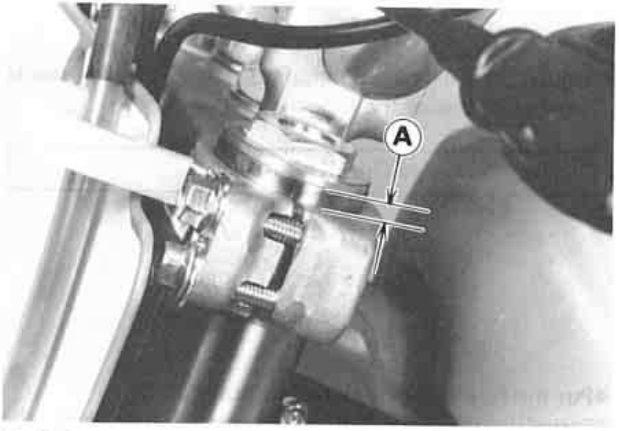
Fork Clamp Position Adjustment

Steering qualities are greatly affected by the fork clamp position (the amount of the inner 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.

Be sure the front tire does't rub the fender when the fork tubes compress fully. Make this adjustment in **5 mm (0.2 in)** increments.

CAUTION

○**The inner tubes, both right and left, should be adjusted evenly.**



A. Tube Height

Rear Suspension (Uni-Trak)

The rear suspension system of this motorcycle is Uni-trak. It consists of a rear shock absorber, swing arm, tie rod and rocker arm.

In general the operating characteristics of the Uni-trak are similar to the front fork. But, in achieving progressive spring characteristics a linkage system is used and gas pressure/volume adjustment makes only a little difference in spring action.

To suit to 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 damping force can be adjusted easily so changing oil viscosity is unnecessary.

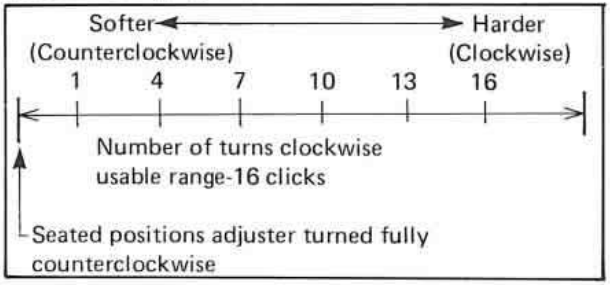
Shock Damping Adjustment:

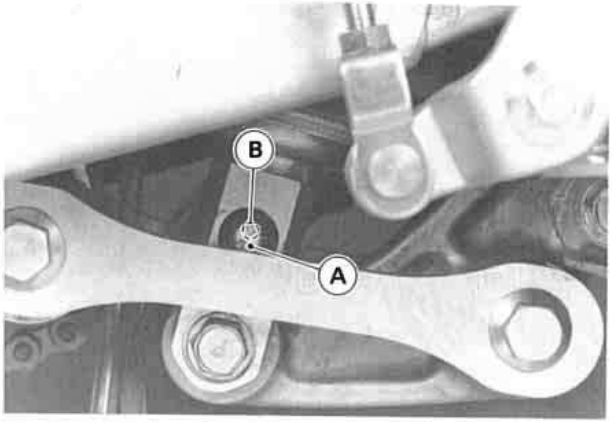
Rear Shock Absorber

Rebound Damping Adjustment

To adjust shock rebound damping, turn the rebound damping adjuster on the rear shock absorber lower end with the blade of a screwdriver until you feel a click. If the damper setting feels too soft or too stiff, adjust it in accordance with the following table:

Rebound Damping Adjustment





A. Rebound Damping Adjuster **B. Mark**

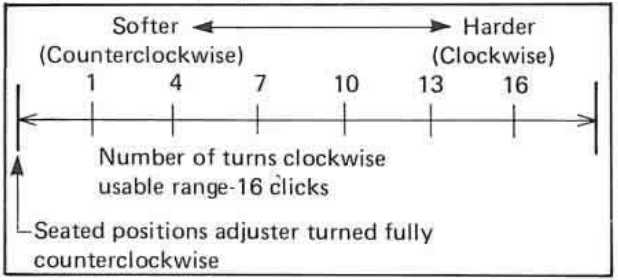
Gas Reservoir

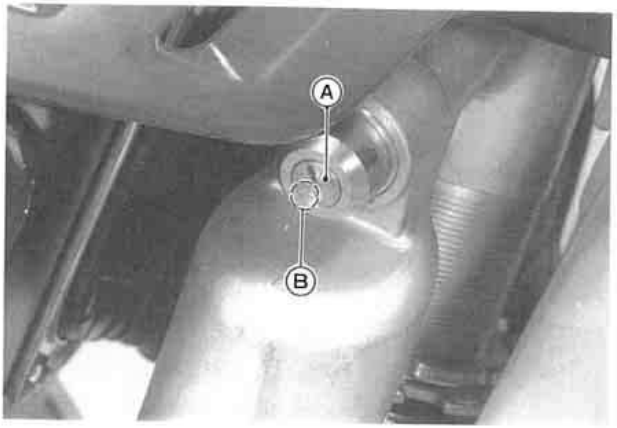
Compression Damping Adjustment

To adjust compression damping, turn the compression damping adjuster on the gas reservoir with the blade of a screwdriver until you feel a click.

If the damper setting feels too soft or too stiff, adjust it in accordance with the following table.

Compression Damping Adjustment





A. Compression Damping Adjuster
B. Mark

Gas Pressure Adjustment:

The gas pressure in the gas reservoir can be adjusted for different course and loading conditions.

The following table shows an example of gas pressure adjustment. To obtain stable handling or a suitable riding condition, adjust the gas pressure for different course and loading conditions as necessary. The standard gas pressure is 1 200 kPa (12.0 kg/cm^2, 170 psi). Ordinarily, the heavier the total load becomes, the higher the gas pressure should be set.

Gas Pressure Adjustment (Adjustable Range)

Gas Pressure [kPa (kg/cm^2, psi)]	Setting	Load	Course
1 000 (10.0, 142)	Soft	Light	Smooth
↕	↕	↕	↕
1 500 (15.0, 213)	Hard	Heavy	Rough

To adjust the gas pressure:

NOTE

○*Check and adjust the gas pressure when the gas reservoir is cold (room temperature).*

- Place a jack stand (special tool) under the frame so that the rear wheel is raised off the ground
- Remove the valve cap and check the gas pressure with the air pressure gauge.

A. Valve

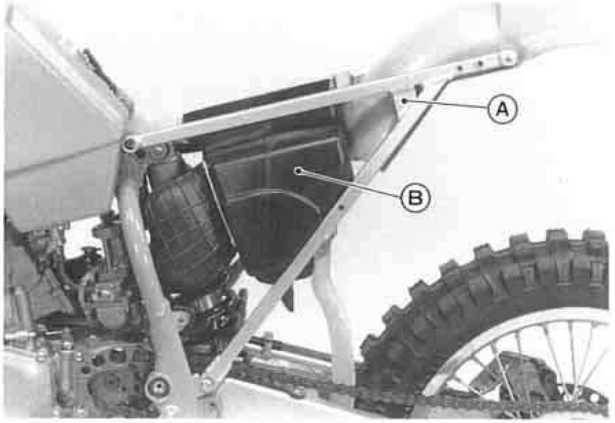
- If standard pressure is insufficient for you, add nitrogen gas using a suitable tool until the desired pressure is reached. Change the gas pressure within the range specified in the table above to suit various riding conditions.

WARNING

- **Use only nitrogen gas.**
- **Do not incinerate the gas reservoir.**

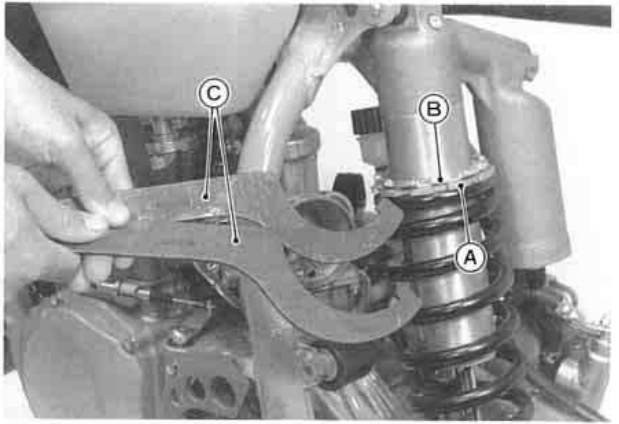
Spring Preload Adjustment:

- Remove the seat, right and left side covers.
- Loosen the air cleaner duct clamp screw.
- Remove the silencer.
- Remove the rear frame with the air cleaner case.



A. Rear Frame **B. Air Cleaner Case**

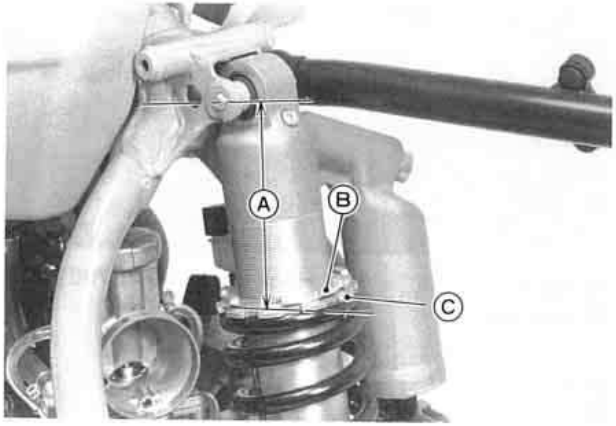
- Place a jack stand (special tool) under the frame so that the rear wheel is raised off the ground.
- Using the hook wrenches (special tools), loosen the locknut and turn the adjusting nut as required. Turning the adjusting nut down makes the spring preload stronger.



A. Adjusting Nut **C. Hook Wrenches: 57001-1101**
B. Locknut

- Standard spring preload is 736 N (75 kg, 165 lb). The adjusting nut changes the preload 74 N (7.5 kg, 17 lb) turn.

- The standard adjusting nut position from the center of the upper mounting hole is 114 mm (4.5 in). The adjustable range is 104 – 124 mm (4.1 – 4.9 in).
- Tighten the locknut securely.
- After adjustment, move the spring up and down to make sure that the spring is seated.



A. Adjusting Nut Position.
B. Locknut
C. Adjusting Nut

Rear Shock Absorber Spring Replacement

In addition to the standard spring, hard and soft 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; the spring is stiffer and rebounds more quickly.

★**Using the softer spring:** The spring rate is lower; the spring is softer and rebounds more slowly.

WARNING

○**Improper removal by spring from rear shock absorber body may cause the spring and/or associated parts to be ejected at high velocity. Always wear eye and face protection. Removal and installation of spring should be performed by an authorized Kawasaki Dealer.**

Wheels

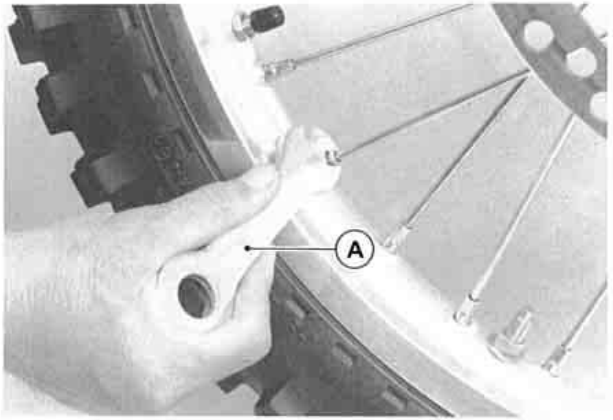
Tires

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.*

Track Condition	Tire Pressure
○When the track is wet, muddy, sandy or slippery,reduce the tire pressure to increase the tire tread surface on the ground. ○When the track is pebbly or hard, increase the tire pressure to prevent damage or punctures, though the tires will skid more easily.	80 kPa (0.8 kg/cm^2, 11 psi) ↑ ↓ 100 kPa (1.0 kg/cm^2, 14 psi)



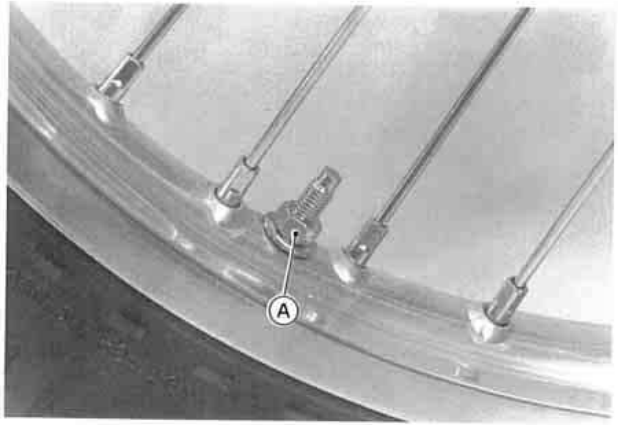
A. Spoke and Spark Plug Wrench

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.

Bead Protector

There is a bead protector on the front and rear wheels. The bead protector 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 protector before riding and tighten it if necessary. Tighten the valve stem nut finger tight only.



A. Bead Protector Nut

Rim Runout

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

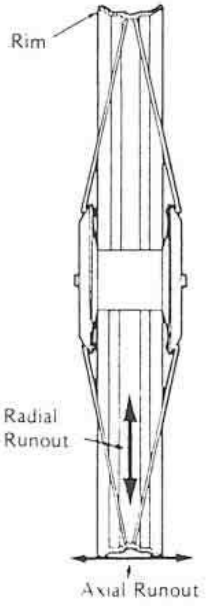
Set the dial gauge to the inner circumference of the rim and rotate the wheel to measure radial runout. The difference between the highest and lowest dial readings is the amount of runout.

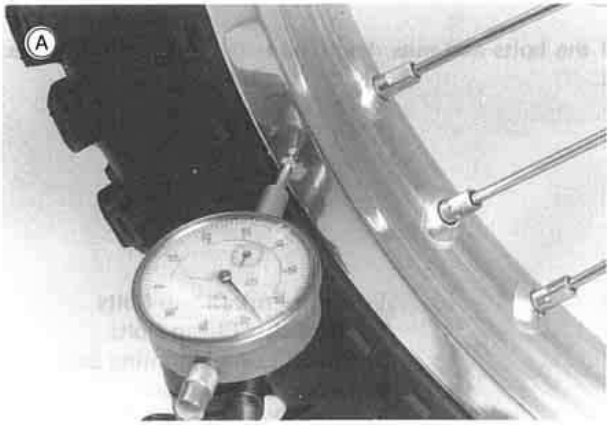
A certain amount of rim warp (runout) can be corrected by recentering the rim, that is, loosening some spokes and tightening others to change the position of different parts of the rim. If the rim is badly bent, however, it should be replaced.

NOTE

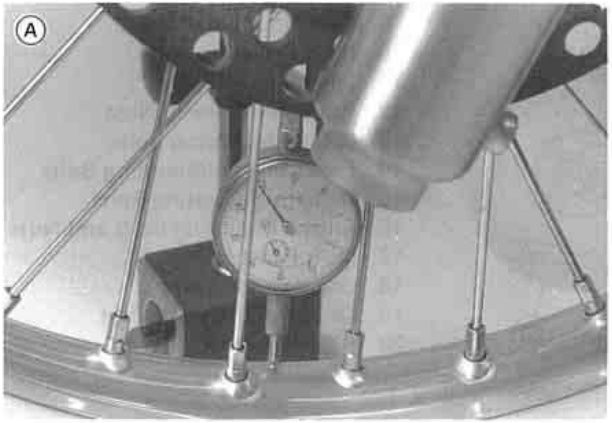
○*Weld area of the rim may show excessive runout. Disregard this when measuring runout.*

Rim Runout





A. Axial Runout



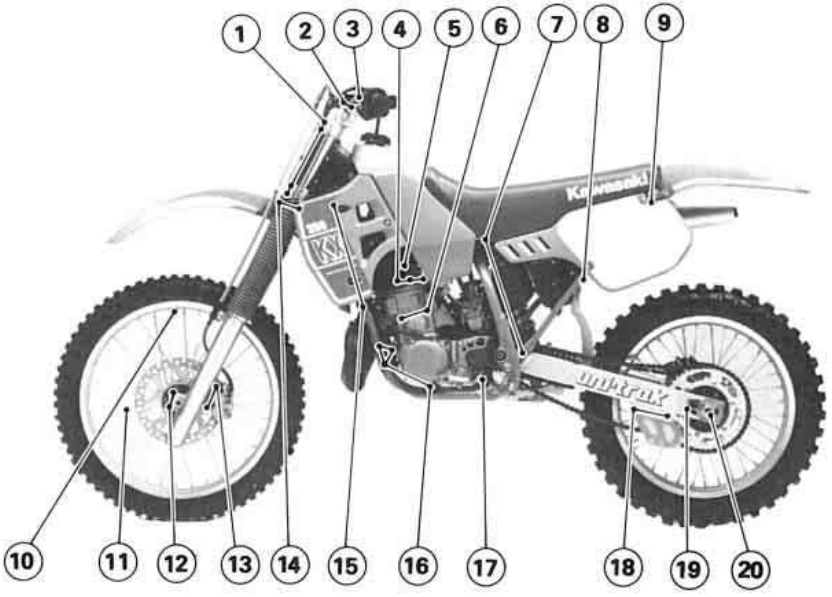
A. Radial Runout

Rim Runout

	Standard	Service Limit
Axial	under 0.5 mm (under 0.02 in)	2.0 mm (0.08 in)
Radial	under 0.8 mm (under 0.03 in)	

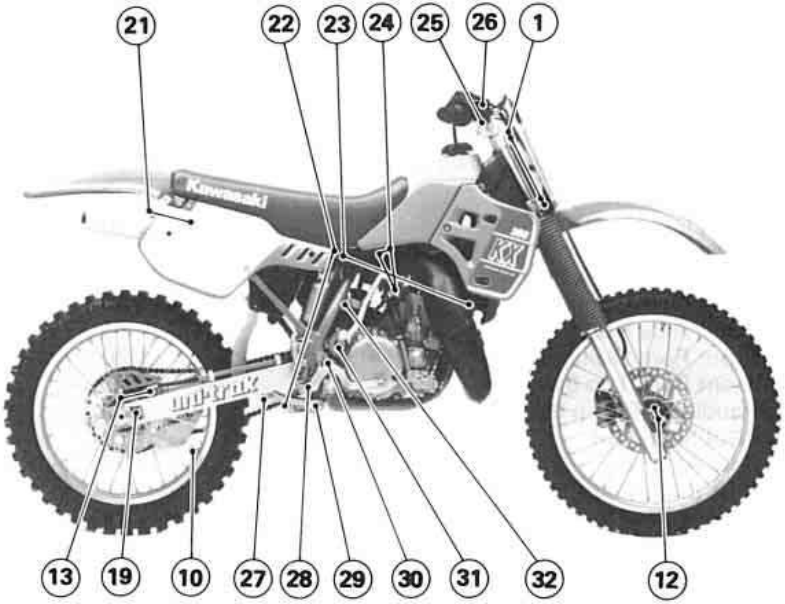
Bolt and Nut Tightening

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.



1. Front Fork Clamp Bolts
2. Handlebar Clamp Bolts
3. Clutch Lever Mounting Bolt
4. Cylinder Head Nuts
5. Spark Plug
6. Cylinder Nuts
7. Rear Frame Mounting Bolts
8. Air Cleaner Case Bolts
9. Seat Mounting Bolt
10. Bead Protector Nut
11. Spokes
12. Front Axle Clamp Nuts
13. Caliper Mounting Bolts
14. Front Fender Mounting Bolts
15. Radiator Mounting Bolts
16. Engine Mounting Bolts and Nuts
17. Shift Pedal Bolt
18. Chain Guide Bolts
19. Chain Adjuster Locknut
20. Rear Axle Nut

21. Silencer Mounting Bolts
22. Rear Shock Absorber Bolts
23. Muffler Mounting Bolts and Nut
24. Engine Bracket Bolts
25. Steering Stem Head Nut
26. Brake Lever Mounting Bolt
27. Tie Rod Mounting Bolt
28. Rear Brake Pedal Bolt
29. Rocker Arm Mounting Bolt
30. Pivot Shaft Nut
31. Kick Pedal Bolt
32. Rear Brake Reservoir Mounting Bolt



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. A bolt or nut which is over-tightened may become damaged or break and then fall out.

	Part Name	N-m	kg-m	ft-lb
ENGINE	Cylinder Drian Plug	9	0.9	78 (in-lb)
	Cylinder Head Nuts	25	2.5	18
	Cylinder Nuts	34	3.5	25
	Engine Drain Plug	20	2.0	14.5
	Kick Pedal Nut	49	5.0	36
	Shift Pedal Bolt	10	1.0	87 (in-lb)
	Spark Plug	27	2.8	20
	Water Pump Cover Drain Plug	15	1.5	11
CHASSIS	Caliper Mounting Bolts	25	2.5	18
	Disc Plate Mounting Screw	10	1.0	87 (in-lb)
	Engine Bracket Bolts	25	2.5	18
	Engine Mounting Bolts	34	3.5	25
	Front Axle Clamp Nuts	10	1.0	87 (in-lb)
	Front Axle Nut	54	5.5	40
	Front Fork Clamp Bolts	20	2.0	14.5
	Front Fork Top Bolts	27	2.8	20
	Handlebar Clamp Bolts	25	2.5	18
	Pivot Shaft Nut	78	8.0	58
	Rear Axle Nut	98	10.0	72
	Rear Brake Pedal Bolt	9	0.9	78 (in-lb)
	Rear Frame Mounting Bolts	34	3.5	25
	Rear Shock Absorber Bolts	34	3.5	25
	Rear Sprocket Nuts	26	2.7	19.5
	Spokes	3	0.3	26 (in-lb)
	Steering Stem Head Nut	44	4.5	33
	Steering Stem Locknut	4	0.4	35 (in-lb)
	Uni-trak Rocker Arm Bolt	81	8.3	60
	Uni-trak Tie Rod Bolts	81	8.3	60

Cleaning

1) Preparation for washing

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

Rear opening of the muffler. . . . . 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)

Uni-Trak 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 it for 5 minutes.
- Test the brakes before riding 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 trichoroethlene or acetone. Observe the solvent manufacture's warning.**

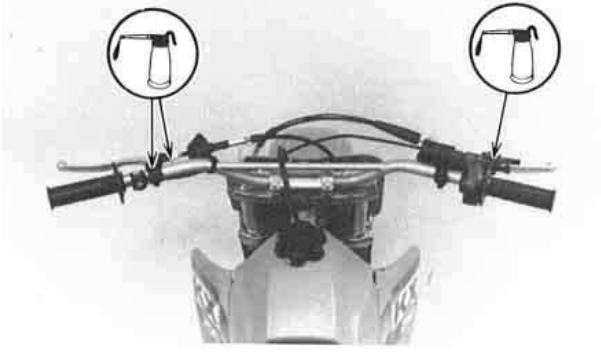
Lubrication

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.

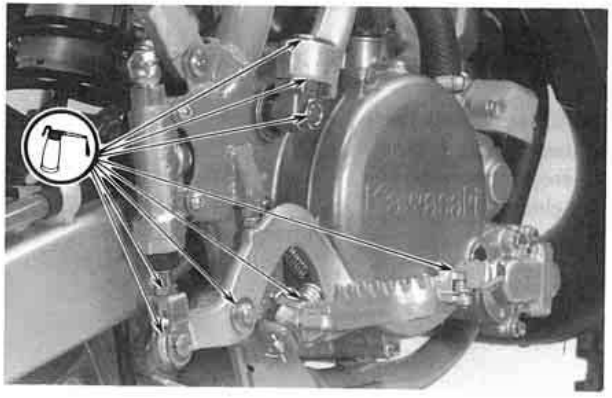
General Lubrication

Apply motor oil to the following pivots:

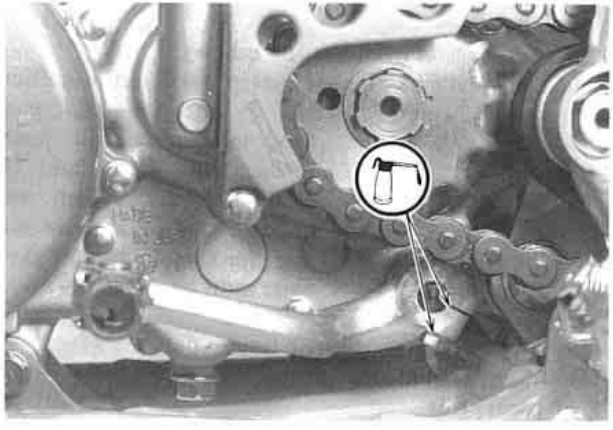
- ○Clutch Lever
- ○Front Brake Lever



- ○Rear Brake Pedal
- ○Rear Brake Rod Joints
- ○Kick Pedal



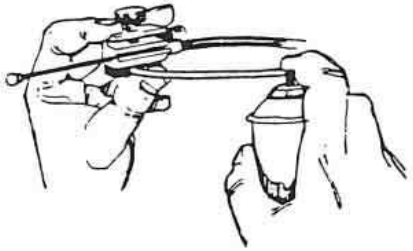
- ○Shift Pedal



Use an aerosol cable lubricant with a pressure luber on all cables:

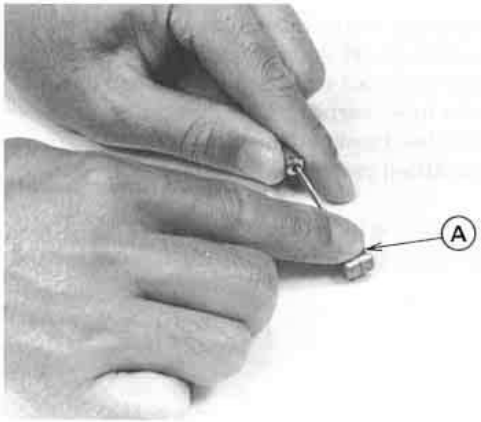
- ○Clutch Inner Cable
- ○Throttle Inner Cable

Cable Lubrication



Apply grease to the following points:

- ○Clutch Inner Cable Upper End
- ○Throttle Inner Cable Upper End

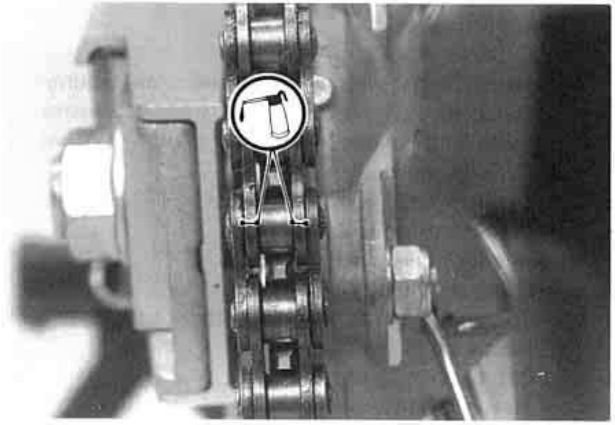


A. Grease.

Drive Chain Lubrication:

Lubrication is also necessary after riding through rain or on wet track, or any time that the chain appears dry. A heavy oil such as SAE 90 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.



Engine Doesn't Start or Starting Difficulty:

Engine won't turn over
- Cylinder, piston seizure
- Connecting rod small end seizure
- Connecting rod big end seizure
- Transmission gear or bearing seizure
- Kick return spring broken
- Kick gear not engaging

Compression low
- Cylinder worn
- Piston ring(s) worn, weak, broken, or sticking
- Piston ring groove and ring clearance excessive
- Cylinder head not sufficiently tightened down
- Cylinder warped
- Cylinder head gasket damaged
- Crankshaft oil seal leak

No spark or wear spark
- Spark plug faulty
- Spark plug cap poorly connected or shorted
- Ignition coil faulty
- Wiring open or shorted
- Magneto faulty (layer short)

No fuel flow
- No fuel in fuel tank
- Fuel hose clogged
- Fuel tap clogged
- Float valve clogged
- Slow jet clogged

Flooded
- Fuel level too high
- Float valve worn or stuck open

Poor Running at Low Speed:

Spark weak
- Spark plug faulty
- Ignition coil faulty
- Spark plug cap, high tension lead short
- Spark plug gap excessive

Mixture too rich or too lean
- Slow jet or air passage clogged
- Idle adjusting screw maladjusted
- Starter plunger stuck open
- Fuel level too high or too low
- Air cleaner clogged
- Intake manifold loose
- Tank cap air vent obstructed

Compression low
- Cylinder worn
- Piston ring(s) worn, weak, broken, or sticking
- Piston ring groove and ring clearance excessive
- Cylinder head not sufficiently tightened down
- Cylinder head warped
- Cylinder head gasket damaged
- Crankshaft oil seal leak

Other
- Ignition timing incorrect
- Transmission oil viscosity too high

Poor Running or No Power at High Speed:

Mixture too rich or too lean
- Air cleaner clogged
- Intake manifold loose
- Main jet clogged or wrong size
- Jet needle worn
- Starter plunger stuck open
- Tank cap air vent obstructed
- Fuel level too high or too low

Compression low
- Cylinder worn
- Piston ring(s) worn, weak, broken, or sticking
- Piston ring groove and ring clearance excessive
- Cylinder head not sufficiently tightened down
- Cylinder head warped
- Cylinder head gasket damaged
- Crankshaft oil seal leak

Misfiring
- Spark plug worn
- Spark plug cap poorly connected or shorted
- Ignition coil faulty
- High tension lead damage

Knocking
- Ignition timing advanced
- Fuel poor quality
- Carbon built up in combustion chamber

Other
- Ignition timing incorrect
- Brakes dragging
- Overheating
- Clutch slipping
- Throttle valve does not fully open
- Transmission oil quantity excessive
- Transmission oil viscosity too high

Overheating:

- Ignition timing retarded
- Carbon built up in combustion chamber
- Brakes dragging
- Clutch slipping
- Intake manifold loose or damaged
- Main jet clogged
- Fuel level too low
- Coolant level too low
- Coolant deteriorated
- Radiator clogged or hose obstructed
- Radiator cap faulty

Clutch Not Operating Smoothly:

Clutch slipping
- No clutch lever play
- Friction plates worn
- Clutch springs weak
- Clutch inner cable not sliding smoothly

Clutch doesn't disengage properly
- Clutch lever play excessive
- Clutch plates warped or damaged
- Clutch springs not evenly tightened
- Transmission oil deteriorated or of too high a viscosity
- Clutch inner cable not sliding smoothly

Shift Operation Not Smooth:

Doesn't go into gear or shift pedal doesn't return
- Clutch not disengaging
- Shift return spring weak or broken
- Shift lever spring broken
- Shift lever broken
- Shift fork bent or seized
- Shift drum damaged

Jumps out of gear
- Shift fork worn
- Drive shaft, output shaft, or gear splines worn
- Gear groove worn
- Shift drum groove worn
- Shift fork guide pin worn

Poor Handling or Stability:

Handlebar hard to turn
- Steering stem nut too tight
- Tire pressure too low
- Steering stem lubrication insufficient

Handlebar vibrated or shakes
- Swing arm bent
- Front fork bent
- Frame bent
- Wheel alignment incorrect
- Pivot shaft warped
- Right/left front fork oil level uneven

Shock absorption too stiff
- Front fork oil quantity excessive
- Front fork oil viscosity too high
- Front fork air pressure too high
- Tire air pressure too high

Shock absorption too soft
- Oil quantity insufficient
- Oil viscosity too low
- Fork spring wear
- Suspension oil leak

Brakes Don't Hold:
- Air in the brake line
- Pad or disc worn
- Brake fluid leak
- Disc warped
- Contaminated pads
- Brake fluid Deteriorated
- Primary cup faulty
- Master cylinder scratched inside
- Brake maladjustment
  (lever and pedal play excessive)
- Brakes overheated
- Water in brakes

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 (at constant atmospheric pressure and humidity).

Condition	Mixture will be	Setting change
Cold air	lean	rich
Warm air	rich	lean
Dry air	lean	rich
Low Altitude	Standard	
High Altitude (above 1,500 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 turning 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

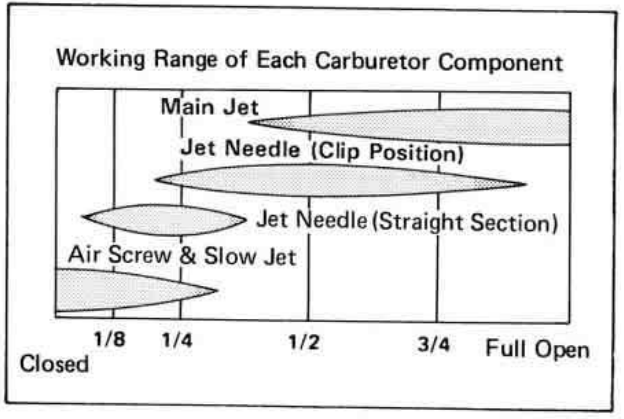
If your bike is too lean, it will:
• Ping or rattle • Accelerate erratically • Act like it's running out of fuel • Run extremely hot

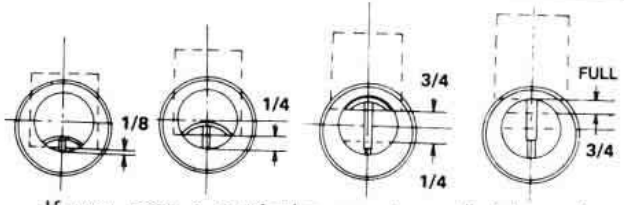
- If your bike pings or rattles, make sure the gasoline you are using is fresh and of a sufficient octane rating. You might also try different brands of high-octane gasoline.

Making setting changes

Carb setting changes are made by changing or adjusting four carburetor components.

Four components, the jet needle, main jet and slow jet, regulate the flow of fuel; air screw regulate the flow of air. The following chart indicates the working range of each component. Note how the working ranges overlap each other as the throttle valve moves from closed to fully open.

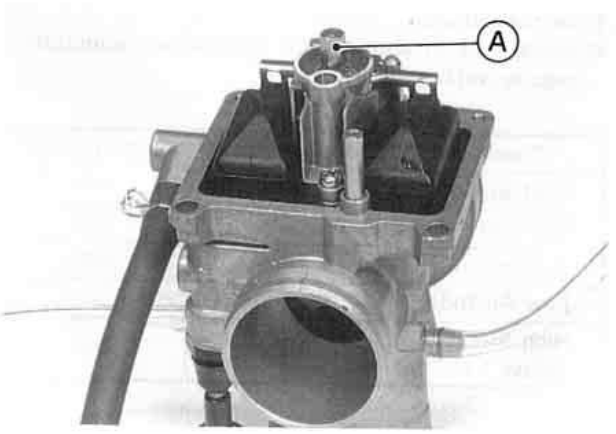




If you note a particular symptom of rich or lean running in a specific range, use the chart to determine which component needs changing. Use the following information to decide what changed to make.

Main Jet

The main jet has its greatest effect in the ½-to-full-throttle range. 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. The larger the number on the main jet is, the bigger the hole and the more fuel it will pass; hence, larger numbers mean richer jetting. Smaller numbers, of course, mean leaner jetting. Make main jet changes one step at a time.



A. Main Jet

WARNING

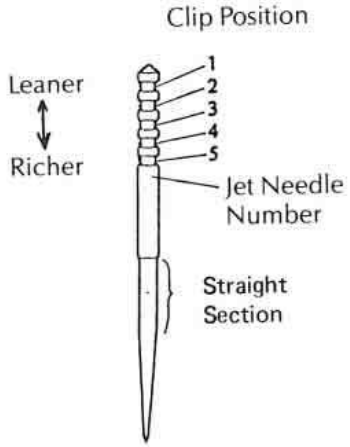
○Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

Jet Needle

The jet needle and jet needle hole together have their greatest effect in the ¼-to-¾-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.

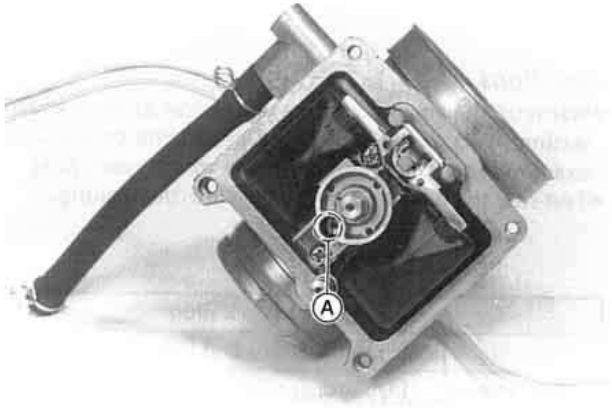
Moving the clip down has the effect of pulling the needle further out of the jet; the mixture is thereby richened. Moving the clip up leans the mixture. Change the clip position one step at a time.

The straight section of the jet needle affects throttle response at smaller throttle openings.

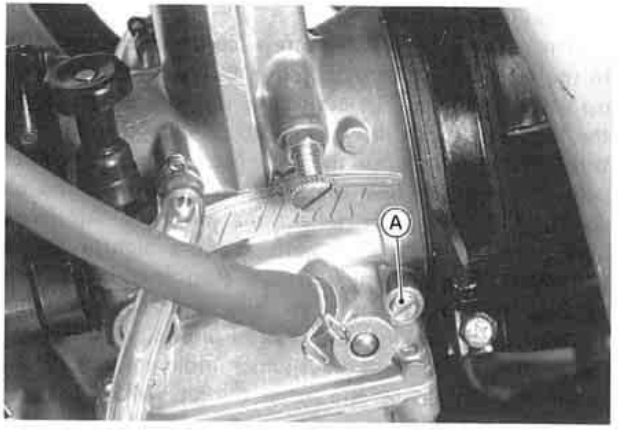


Slow jet and air screw

The slow jet and air screw controls the mixture in the closed-to-⅛-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. Screwing it in richens the mixture. Air screw specs indicate the turns out from a lightly seated position. Make changes in ½ turn increments. If turning the screw between one and two-and-a-half turns's doesn't provide the desired results. The slow jet has a number stamped on it which indicates its size; the larger the number is, the richer the jet. Make one-step changes in the slow jet, and fine-tune with the air screw.



A. Slow 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 and sooty.

☆If spark plug is whitish, the fuel-air mixture is too lean.
- Replace the main jet with one step larger.

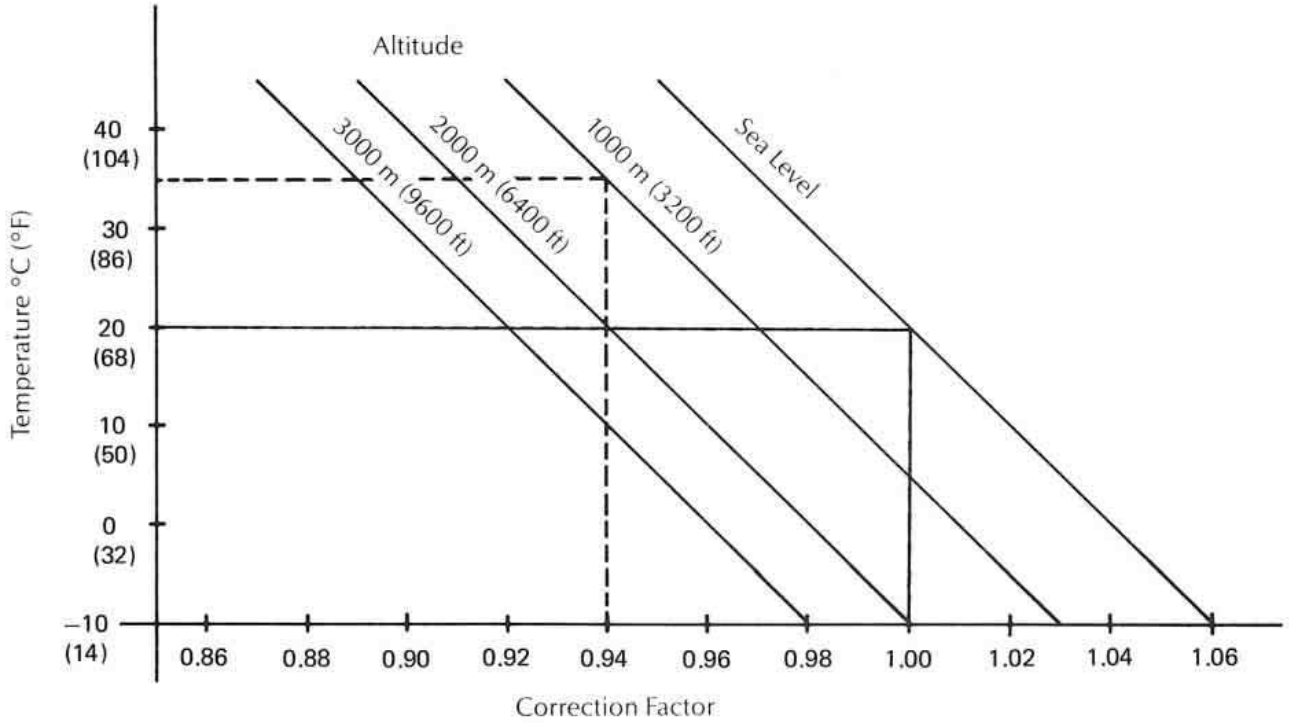
☆If spark plug is wet, the fuel-air mixture is too rich.
- Replace the main jet with one step smaller.
- Set the carburetor so that the engine delivers satisfactory power at any throttle opening.

☆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 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.*



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			Raise clip one position
Air screw opening	one turn in	½ turn in	Same	½ turn out	One turn out position

Standard Settings

Air screw opening	1½
Throttle valve cutaway	7
Slow jet	55
Jet needle	R1368J
Jet needle clip position	4
Main jet	172

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: #55x 0.94 = #55
   - Main jet: #172 x 0.94 = #162

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: 4th groove from top minus 1 — 3rd groove
   - Air screw opening: 1½ + 1 turn = 2½ turns out

Suspension Tuning

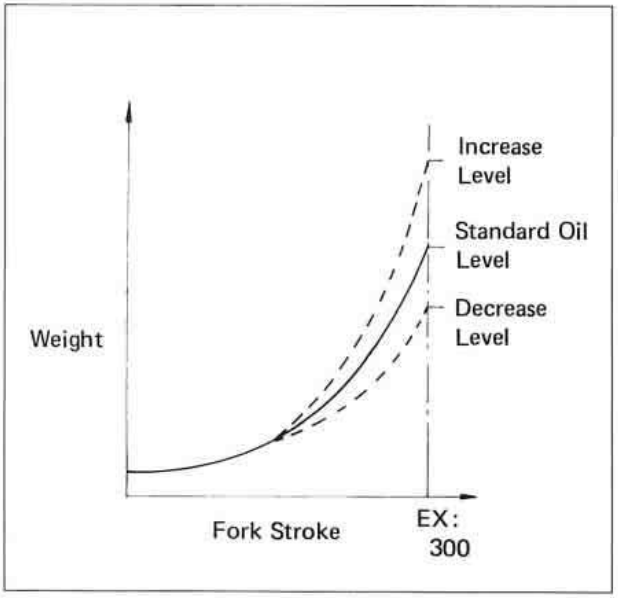
Introduction

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.

WHILE TUNING THE SUSPENSION, KEEP THE FOLLOWING IMPORTANT POINTS IN MIND:

- 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 ABILITY, 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.
- Lubricate the bearings in the swing arm and uni-trak linkage after break-in and after every 5 races to prevent excess friction from affecting suspension performance.



Front Fork:

Front Fork oil level

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:

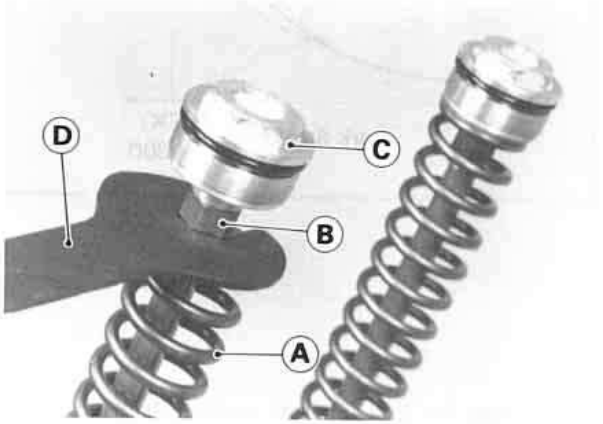
  The air spring effect becomes more progressive, and the front fork action feels "harder" in the later stage of travel, near the bottom.
- When the oil level is lowered:

  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 (0.4 in)** increments. This will change the secondary spring rate.

Oil level adjustment

1. Using the jack stand (special tool) under the frame, stabilize the motorcycle
2. Place a stand or block under the engine so that the front wheel is raised off the ground.
3. Remove the handlebar clamp bolts and take out the handlebar
4. Remove the top bolts from the top of the fork tubes.
5. Slowly compressed fork fully with pushing up the outer tube lower end, and place a stand or other suitable means under the front wheel.
6. Pulling down the fork spring and insert the spring holder (special tool) under the push rod nut.
7. Remove the top bolt from the top of the push rod.
8. Take the spring holder (special tool) off, and pull out the fork spring.
9. Remove the other fork spring.
10. Put the oil level gauge (special tool) on the top of fork tube, and measure the distance from the top of the fork tube to the oil level.



A. Spring
B. Push Rod Nut
C. Top Bolt
D. Spring Holder: 57001-1286

★To raise the oil level, add a little too much and then adjust the level down to the desired position.
★To lower the oil level, remove oil until the level is at the desired position.

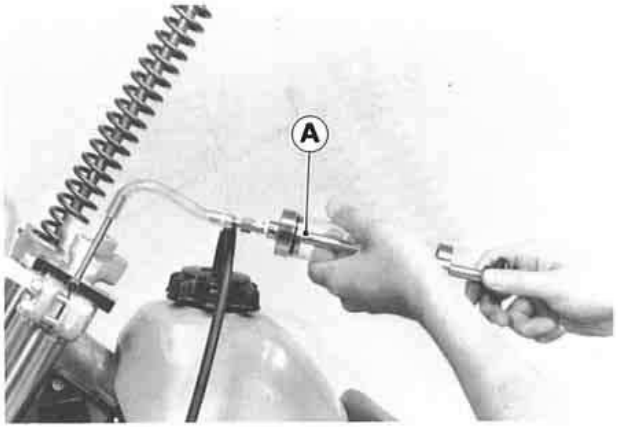
The oil level is adjustable in variations of **10 mm (0.4 in).**

Standard Oil Level:

148 – 152 mm (5.8 – 6.0 in)

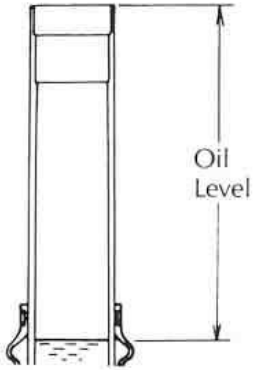
Adjustable Range:

120 – 180 mm (4.7 – 7.1 in)

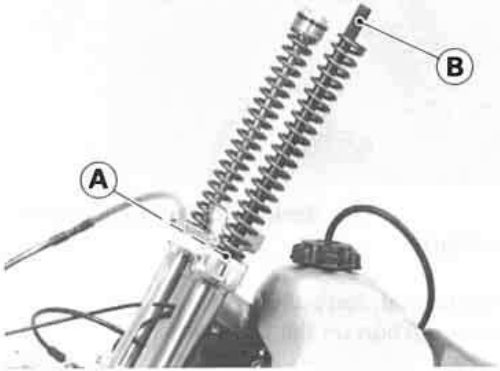


A. Oil Level Gauge: 57001-1290

Fork Oil Level

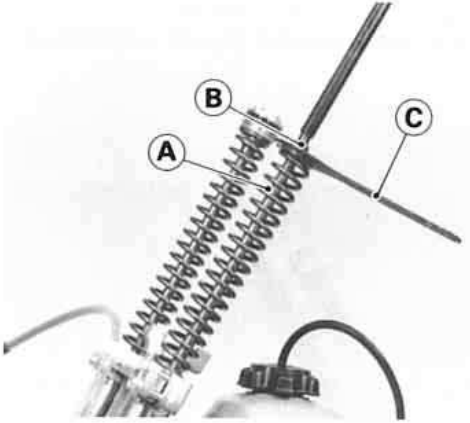


11. Put the fork springs into the fork tubes.
12. Screw in the push rod puller (special tool) onto the push rod.



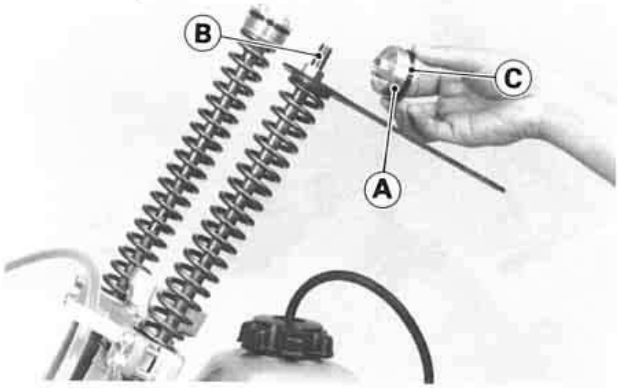
A. Push Rod
B. Push Rod Puller: 57001-1289

13. Pull up the push rod.
14. Pulling down the fork spring and insert the spring holder (special tool) under the push rod nut.



A. Spring **C. Spring Holder: 57001-1286**
B. Push Rod Nut

15. Remove the push rod puller.
16. Install the top bolt on the push rod.



A. Top Bolt **B. Push Rod** **C. O-Ring**

17. Remove the spring holder.
18. Install the another top bolt on the other push rod.
19. Install the top bolts on the top of the fork tubes and tightening them to 27 N-m (2.8 kg-m, 20 ft-lb) of torque.

NOTE

○*Turn top bolt once counterclockwise, make sure it is seated correctly, then tighten to specification.*
○*After changing the oil level, check the front fork travel.*

20. Install the parts removed.

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 are 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
   - . . . . . 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.

Symptoms of the Rear Shock

Too hard

1. The suspension is too stiff
   - . . . . . compression damping is too high
   - . . . . . spring is too hard.
2. The suspension operates but ride is too hard ..... unbalance between the spring and rebound damping (rebound damping is too low).
3. Spring preload is too hard.

Too soft

On landing after a big jump, bottoming occurs (Normally OK)

- . . . . . 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 considerably more or less than this, or if his riding experience and ability are much greater or lesser than the intermediate level, it is likely that some rough adjustment can be made to put the suspension "in the ballpark."

Readjustment of the Suspension

Ground surface

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 5 mm (0.2 in)]. This quickes steering and turning ability
Fast course with many jumps	Raise the front end slightly. [Decrease the front tube height 5 mm (0.2 in)]. This slows steering gives greater stability at high speed
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 his evaluation of improper suspension performance.
3. A change in the front suspension might require a change in the rear, and vise 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. 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 searching during down hill or during acceleration out of corner:

Front fork is soft.
- ○Step 1 – Increase the compression damping
- ○Step 2 – Increase the oil level **10 mm (0.4 in).**
- ○Step 3 – Use alternate harder spring, or increase spring preload.

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

Front fork is too soft.
- ○Step 1 – Increase the compression damping
- ○Step 2 – Increase the oil level **10 mm (0.4 in).**

NOTE

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

Front end pushes or "washes out" in turns:
(When a front wheel tends to push outward rather than "bite" in a turn)

Front fork is too stiff.
- ○Step 1 – Decrease the compression damping
- ○Step 2 – Release the air in fork tubes.
- ○Step 3 – Decrease oil level **10 – 20 mm (0.4 – 0.8 in).**
- ○Step 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
- ○Step 1 – Decrease the compression damping
- ○Step 2 – Decrease oil level **10 mm (0.4 in).**
- ○Step 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
- ○Step 1 – Decrease the rear shock spring preload.
- ○Step 2 – Decrease the compression damping.
- ○Step 3 – Use softer spring (In case of a lightweight rider.)

Brake lands on the front wheel off high speed jumps:
(This may be due to improper riding posture)
Rebound damping is too soft or spring is to hard
- ○Step 1 – Increase rebound damping.
- ○Step 2 – Decrease the shock spring preload.
- ○Step 3 – Decrease the compression damping.

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

○Step 1 — F/F: Increase oil level **10 mm (0.4 in).**
R/S: Increase spring preload. Use harder spring.

○Step 2 — F/F: Use harder spring.
R/S: Increase compression damping or use harder spring.

NOTE

○*After any adjustment, check front and rear compatibility.*

Adjustment depending on bottoming condition:
(Rear shock)

●Bottom at low speed ○Increase spring preload until maximum preload is achieved.

●Bottom after successive 3 or 4 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

Selection of the secondary reduction ratio (Sprocket).

Preconditions

Course condition	Rear Sprocket
•Fast course	Small
•Many curves 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 uphills 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 so set 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.
- It is difficult to set the machine so it is 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 keeping 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.

Carburetor Jetting Parts	
Main Jet	168
	170
	175
	178
	192
Slow Jet:	50
	52
	58
	60
Jet Needle:	R1366J
	R1367J
	R1369J
	R1370J
Engine Sprocket:	15T
	13T

Rear Sprocket	
Aluminum:	45T
	46T
	48T
	49T
Steel:	47T (Wet condition use)
Suspension Spring (kg/mm)	
Front:	K = 0.365
	K = 0.39
Rear	K = 4.8
	K = 5.2
Seat	
Low:	H = 135 mm
Middle	H = 150 mm (standard)
High:	H = 165 mm
Disc Plate	
Front:	No Hole (wet condition use)
Rear:	No Hole (wet condition use)
Wheel (except tire)	
Front Wheel Assembly (1.60-21)	
Rear Wheel Assembly (2.15-18)	

(1)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. All control cable routing
12. Engine mounting bolt tightness
13. Engine sprocket installation
14. Shift pedal bolt tightness
15. Transmission oil level
16. Carburetor clamp screw tightness
17. Carburetor top cap tightness
18. Uni-trak tie rod mounting bolt tightness
19. Uni-trak 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 heat maintenance

1. Air cleaner element – clean
2. Drive chain slack – adjust
3. Rear sprocket nuts – tighten
4. Spokes – tighten
5. Front and rear tire air pressure – check
6. Front and rear axle shaft nuts – tighten
7. Pivot shaft nut – tighten
8. Muffler, silencer bolts or nuts – tighten
9. Front, rear fender mounting bolts or nuts – tighten
10. Fuel tank, seat mounting bolts or nuts – tighten
11. Front and rear brakes – check function
12. Steering play – check
13. Fuel tank – fill with fuel
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 with a new one.

(4)Maintenance notice for after riding in rain or 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 control cables

(5)Suggested spare parts

- ○Spare wheels (front and rear)
- ○Shift pedal and brake pedal
- ○Brake lever, clutch lever, and holders
- ○Throttle, clutch, and brake cables
- ○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 case
- ○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

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.
- Empty the fuel from the fuel tank, and empty the carburetor float bowl. (If left in for a long time, the fuel will deteriorate.)

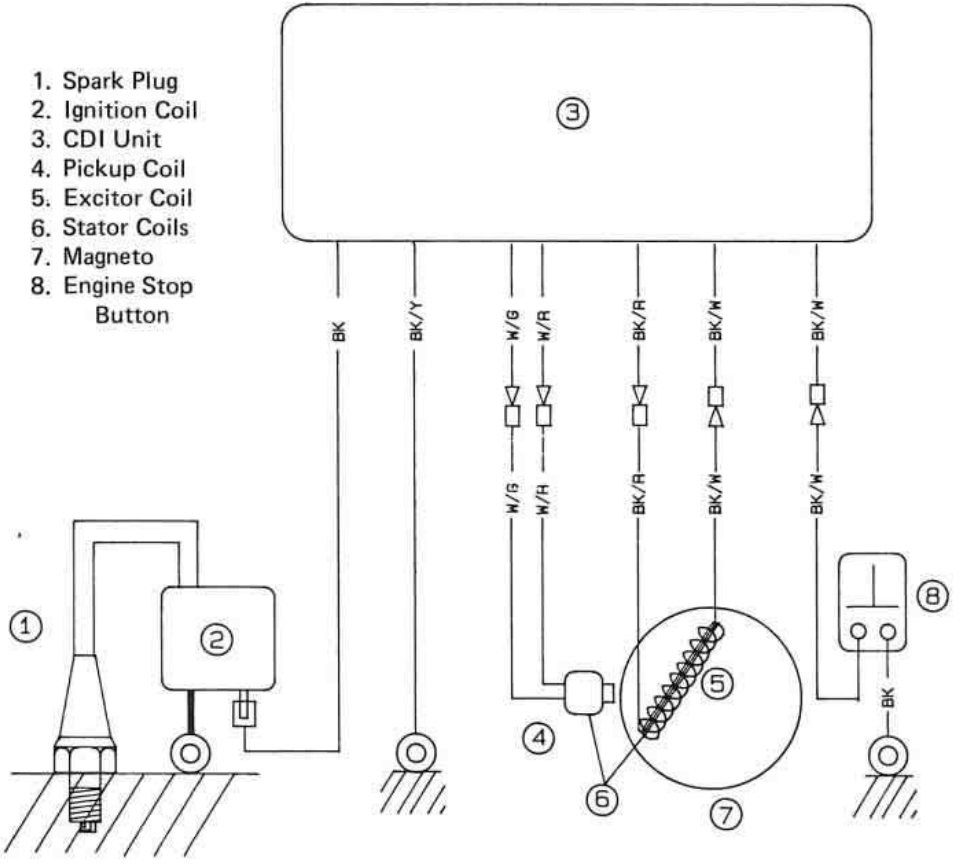
WARNING

- **Gasoline is extremely flammable and can be explosive 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.**

- 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.

- Make sure the spark plug is tight.
- Fill the fuel tank with fuel.
- Run the engine for about five minutes to warm the oil, and drain the transmission oil.
- Put in fresh transmission oil.
- Check all the points listed in the Daily Pre-ride Inspection Section.
- Perform the General lubrication procedure.


1. Spark Plug
2. Ignition Coil
3. CDI Unit
4. Pickup Coil
5. Excitor Coil
6. Stator Coils
7. Magneto
8. Engine Stop Button
③
BK
BK/Y
W/G
W/R
BK/R
BK/W
BK/W
W/G
W/R
BK/R
BK/W
BK/W
BK
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