Foreword

This KAWASAKI Motorcycle has been developed by Kawasaki engineering as a light weight, high performance machine with superb handling and stability for trial and sporting use.

Since the KT250 is already a specially tuned production trials machine, it does not require tuning modification for participation in trials. However, as with any mechanical device, proper care and maintenance are important for trouble-free operation and top performance. This manual is written to enable to keep your KT250 properly tuned and adjusted.



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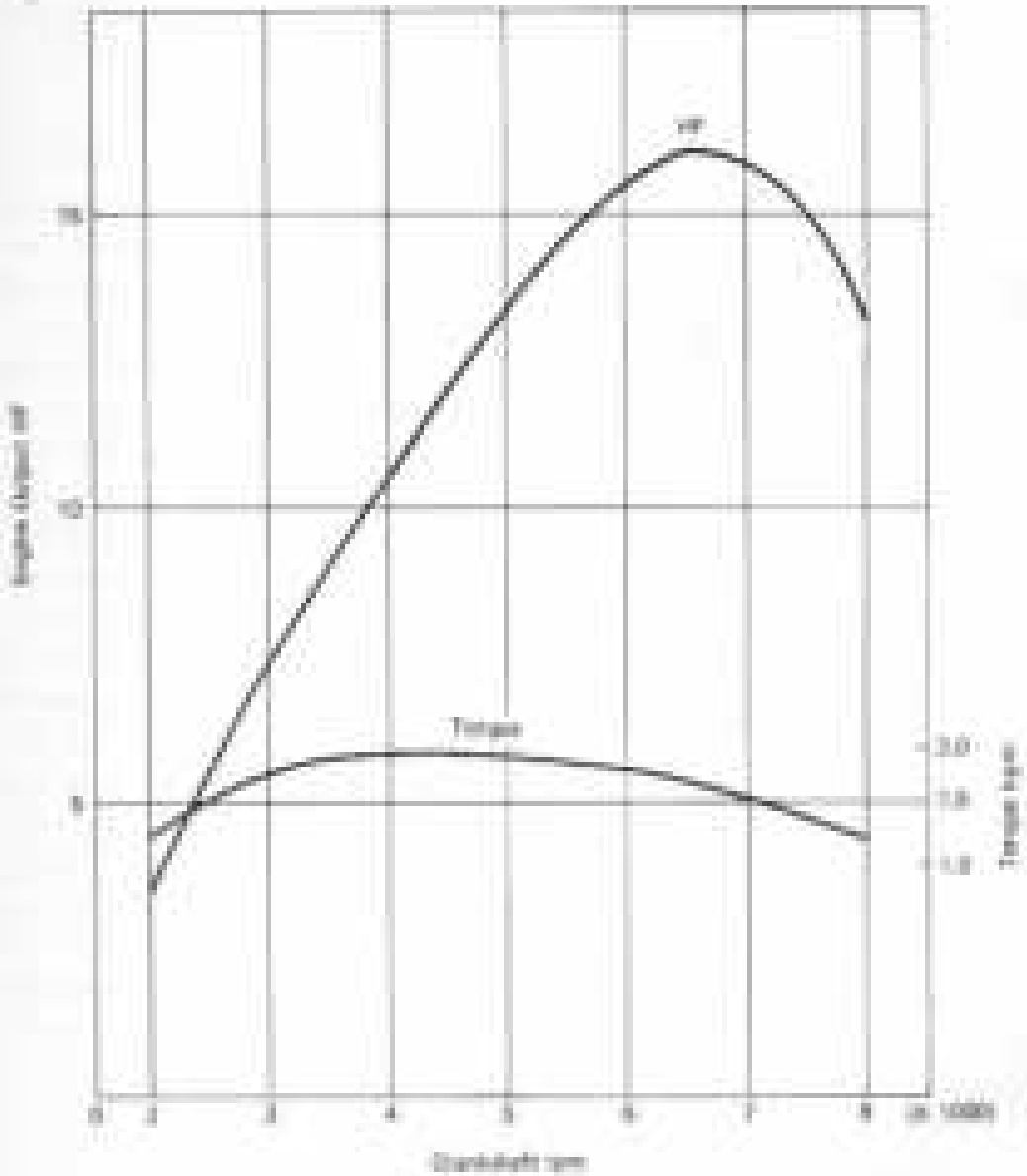
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Specifications

Dimensions		
Overall length		2,210 mm
Overall width		830 mm
Overall height		1,195 mm
Wheelbase		1,395 mm
Ground clearance		310 mm
Dry weight		96 kg
Fuel tank capacity		6.5 L (1.5 US gal)
Oil tank capacity		2.25 L (2.1 US qt)
Engine		
Type		2-stroke, single cylinder, piston valve
Bore and stroke		44.5 x 44.5 mm
Displacement		248 cc
Compression ratio		6.5:1
Maximum horsepower		18 HP @6,500 rpm
Maximum torque		1.6 kg-m @5,000 rpm
Port timing		
Intake	Open	90° ATDC
	Close	90° ATDC
Scavenging	Open	62° BBDC
	Close	62° ABDC
Exhaust	Open	90° BBDC
	Close	90° ABDC
Carburetor		Mikuni VM30SC
Lubrication system		Separate (Oil injection)
Engine oil		2-stroke oil
Starting system		Primary kick
Ignition system		Electronic CDI
Ignition timing		23° BTDC/3.35 mm ATDC@6,000 rpm
Spark Plug		NGK B7HS
Transmission		
Type		Rotary valve piston reed, wet multi-plate
Clutch		Wet, multi-disc
Gear ratios	1st	3.25 (39/12)
	2nd	2.21 (31/14)
	3rd	1.63 (31/19)
	4th	1.33 (28/21)
	5th	1.19 (25/21)
Primary reduction ratio		3.25 (65/20)
Final reduction ratio		3.47 (52/15)
Overall drive ratio		9.88 (849/86)
Transmission oil	capacity	1.2 L
	type	SAE 10W30 or 10W40
Frame		
Type		Tubular, double cradle
Steering angle		45° to either side
Caster		63.5°
Trail		60 mm
Fork angle		18°
Type		Telescopic fork
Fork tube	Front	1.25 (31.4) KYB
	Rear	1.49 (37.8) KYB
Suspension	Front	Telescopic fork
	Rear	Swing arm
Suspension stroke	Front	170 mm
	Rear	160 mm
Front fork oil type (per shock absorber)		SAE 10W 150 / 169 cc
Brakes		
Type		Internal expansion, leading-trailing
Drum diameter	Front	130 x 30 mm
	Rear	130 x 25 mm
Electrical equipment		
Headlight		6 V 25/25W
Tail/brake light		6V 5.2/21W (0.01 cc)

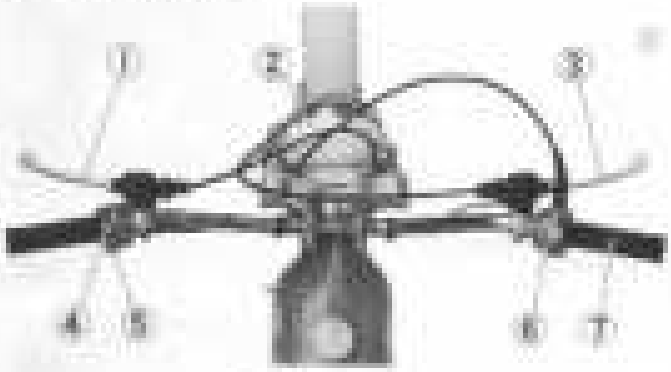
Specifications subject to change without notice.

Engine Performance Curves



General Information

LOCATION OF PARTS







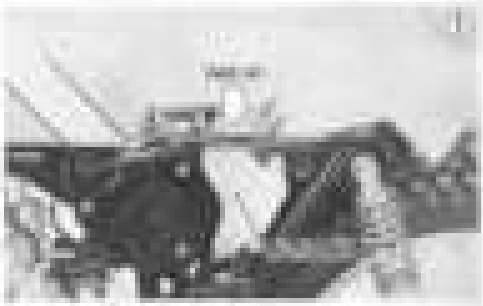
SERIAL NUMBER LOCATIONS

The frame and engine serial numbers are the only means of identifying your particular machine when ordering parts. These serial numbers may be needed for your dealer when ordering parts. In the event of theft, the investigating authorities will require both numbers as well as the model type and any distinctive features or color scheme that can help them locate it.









CAUTION: Never run the oil tank low enough to allow engine damage will occur. If the oil does run dry, seek out where the oil pump holes or the pump, repair the oil pump. (Fig. 42).

Note: Check the oil tank and system that can be

FUEL

The Kawasaki Superlube system is used in this motorcycle. Only unleaded gasoline for the lowest octane is to be used with the gasoline. Use only fresh gasoline in the fuel tank.

NOTE: Always put in gasoline with the ignition key turned off, and the motorcycle away from any source of sparks.

ENGINE OIL

We use and recommend Kawasaki oil, Kawasaki oil, or an oil of equal grade oil as a replacement for the proper oil. The use of detergent oil will lead to engine trouble.

Remove the left side cover to check the oil level. If the level is too low, fill to the proper level. Never overfill the oil tank and push the top off towards the rear, then remove the dipstick and wipe it dry. Insert the dipstick without screwing it in, and then remove it. The oil level should be between the upper and lower marks on the dipstick.

TRANSMISSION OIL

In order for the transmission and clutch to function properly, maintain the transmission oil at the proper level, and change the oil in accordance with the periodic maintenance chart (Fig. 13). Motorcycle has been ridden submerged, overheated, or overlubricated transmission oil will cause accelerated wear and may result in transmission damage.

Oil Level

- With the motorcycle has just been used, wait 3 to 5 minutes for all the oil to drain down.
- With the oil has been drained to check the transmission oil level, with the transmission over 3 or 4 times with the ignition switch off in the off position. This ensures that the oil will "settle".
- Position the motorcycle so that it is fully perpendicular to the ground (off its kick stand).
- Remove the oil filler opening plug (dipstick), and wipe off any oil on the end.
- Insert the dipstick back through the oil filler opening without screwing it in, and then remove it. The oil should be between the dipstick marks.

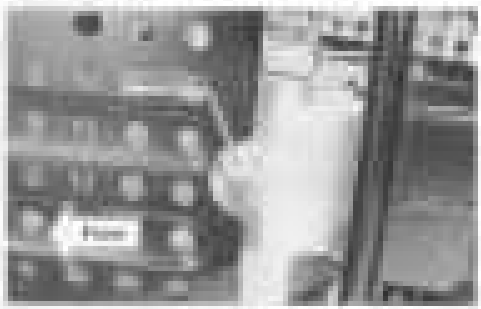


- If there is too much oil, remove the excess oil with a syringe or some other suitable device.
- If there is not enough oil, add the correct amount of oil through the oil filler opening. Fit and fix cap in place and check oil dip stick is already in the correct position.
- Replace the dipstick making sure that the O ring is in place and that the dipstick is fully screwed in.

Oil Change

The recommended oil should be changed periodically (Fig. 12).

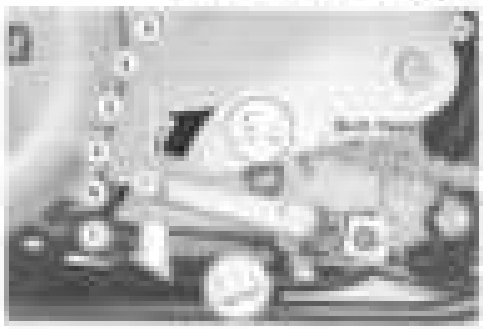
- Warm up the engine thoroughly so that the oil will pick up any sediments and drain easily.
- Stop the engine and place a good size container under the engine.
- Remove the drain plug (1) and loosen the oil filler cap so as to help drain the oil more quickly and thoroughly.
- Remove the oil filter (2) using a filter wrench.



- Replace the drain plug with its gasket, tightening it to 1.8 ~ 2.5 kg-m (13 ~ 18 ft-lb) of torque.
- Measure the oil filler hole plug and pass no 2.5 (1.2) (7 ~ 10 pcs) of hole (cap 250 cc / 15 cu in) oil.
- Lubricate the oil seal (Fig. 13) after fastening the oil filter cartridge 3/4 turn.
- Replace the oil filler hole plug with its O ring.

TRANSMISSION

The transmission is a 4 speed, constant mesh type. Power is supplied between the clutch and gears by gears is meshed by shifting down from neutral, and 2nd through 5th gears are meshed by shifting up from neutral. The shift system is shown on the engine operation page.



RECTIFIER

Since the rectifier is a semiconductor type, the engine can be started even if the transmission is in gear, by setting in the clutch lever and keeping the engine over.



IGNITION SWITCH

The is a key operated switch with 3 positions. The key can be removed from the switch when it is in the OFF position.



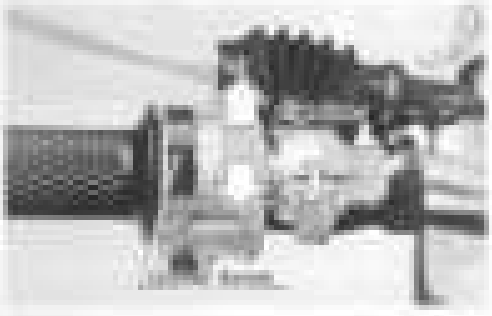
OFF	Engine off. All electrical circuits off.
ON	For starting and electrical use. All electrical equipment except head and tail lights can be used.
LIGHTS	For night riding. Head and tail lights and all electrical equipment can be used.

DIMMER SWITCH

The head and tail lights come on when the ignition switch is turned to the RIGHT position while the engine is running.

Light or low beam can be selected with the dimmer switch:

HI ..... High Beam LO ..... Low Beam

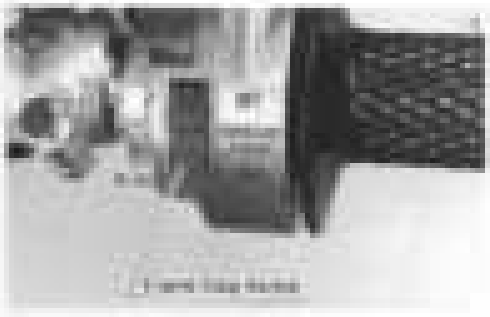


ENGINE STOP SWITCH

In addition to the ignition switch, the engine stop switch must be in the **RUN** position for the motorcycle to operate.

For ordinary engine stoppage and, if some emergency requires stopping the engine, flick the engine stop switch to the **OFF** position.

NOTE: Although the engine stop switch stops the engine, it does not turn off all the electrical circuits. Incidentally, the ignition switch should be used to shut the engine.



FUEL TAP

The fuel tap has three positions: **OFF** (Duty), **ON** (Run) and **RES** (Reserve). If the fuel runs out with the tap in the **ON** (Run) position, the last 0.9 ℓ (0.24 US gal) of fuel can be used by turning the tap to **RES** (Reserve).

NOTE: Do not ride with the fuel tap in the **RES** (Reserve) except in the cases mentioned.

1. Make certain that the fuel tap is in the **ON** position then **RES** after filling up the fuel tank.



STARTING THE ENGINE

- Turn the fuel tap to **ON** (On).
- Make certain the engine stop switch is in the **RUN** position.
- Check that the side stand is up.
- Make certain the gear is in neutral.
- If the engine is cold, push down the choke lever, locking the knurled wheel.



- Turn the ignition switch to the **ON** position.
- Kick the engine over.
- When you the engine starts, lower the choke lever knurled down. When the engine is warm enough, pull up the choke lever.

NOTE: 1. When the engine is already warm or on hot days, open the throttle grip and instead of using the choke lever. Then kick over the engine.

2. If the engine is breaking back with the throttle fully open while the engine starts.

3. If the clutch lever is pulled, the motorcycle can be moved while still in any gear.

STOPPING THE ENGINE

- Shift the transmission into neutral.
- Turn the ignition switch off.
- Turn the engine stop switch off.
- Turn the fuel tap to the **OFF** (Duty) position.

Stopping the Motorcycle in an Emergency

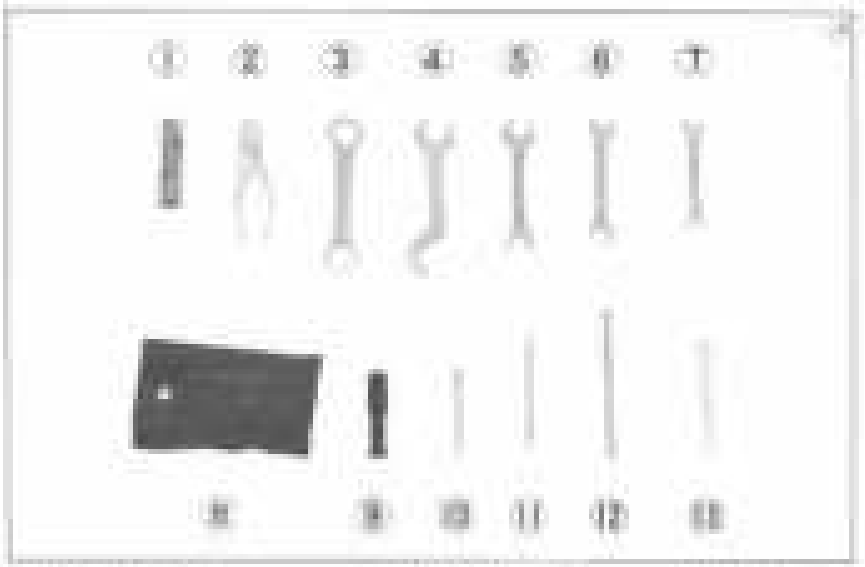
Your Kawasaki Motorcycle has been designed and manufactured to provide you operation safety and convenience. However, in order to fully benefit from Kawasaki's safety engineering and craftsmanship, it is essential that you, the owner and operator, properly maintain your motorcycle and become thoroughly familiar

BREAK-IN

CHAIN OIL TANK



TOOL KIT



1. Spark Plug Wrench (13 x 21 mm)
2. Plug
3. Hook Wrench
4. Hook Wrench and 14 mm Open End Wrench
5. Open End Wrench (10 x 12 mm)
6. Open End Wrench (12 x 14 mm)
7. Open End Wrench (8 x 10 mm)
8. Tool Bag
9. Screwdriver Grip
10. Shim Bar
11. Shim and Bar Combination Bit
12. Lever
13. Spoke Wrench

Inspection and Adjustment

CLUTCH

Clutch Lever

Proper clutch lever play ensures the clutch lever and the clutch lever holder is 2 ~ 3 mm (1/16 ~ 1/8 in). This play increases with cable stretch, necessitating periodic adjustments.

When there is too much lever play, it is time to adjust the cable at the clutch lever.

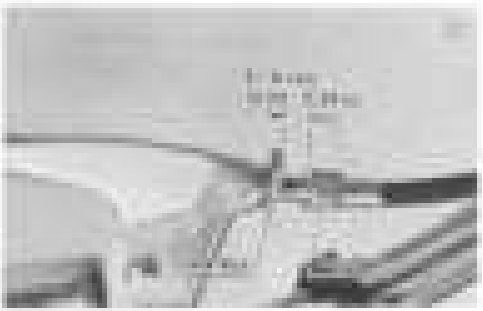
- Slide the clutch lever dust cover out of place.
- Loosen the lock nut, turn the adjuster to obtain the proper amount of lever play, and tighten the lock nut.



- Slide back the clutch lever dust cover.

If the adjuster at the clutch lever has reached its limit, adjust the cable with the adjuster on the right engine cover.

- Slide the clutch lever dust cover out of place.
- Loosen the lock nut at the clutch lever just enough so that the adjuster will turn freely, and then turn the adjuster to bring there is a 2 ~ 3 mm (0.08 ~ 0.12 in) gap between the adjuster and lock nut.



- Slide the dust cover up out of its recesses in the bracket on the clutch cable.
- Loosen the lock nut (13 mm) at the bottom of the clutch cable, pull out the cable play with the adjuster at the bottom of the cable, and then tighten the lock nut.



- Slide back the bottom dust cover.
- Turn the adjuster at the clutch lever so that the clutch lever will have 2 ~ 3 mm (1/16 ~ 1/8 in) of play, and tighten the lock nut.
- Slide back the clutch lever dust cover.

Clutch Release Lever Angle

If the clutch slips or the action of the lever feels touch, slightly screw clutch cable adjustment, inspect and adjust the clutch release mechanism in the following manner.

- Remove the oil pump cover.
- Check that the clutch release lever is at a 70 ~ 90° angle with the clutch cable, when the clutch is just starting to release.



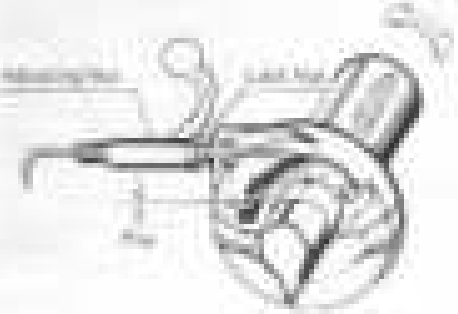
- If it is not, loosen in the cable adjuster in the right engine cover, remove the clutch release lever oil plug, pull out the shaft to obtain the proper angle, and then adjust cable play.

THROTTLE GRIP

The throttle grip cable, connecting to both the carburetor cable and the oil pump cable, controls both the carburetor throttle valve and the oil pump lever. If there is too much play in the cable, increase the carburetor and you will engine will respond immediately when the grip is turned. Play in the cable should be adjusted out.

If the throttle grip has too much play, loosen the lock nut (1/2 inch), open the adjusting nut (2 inch) to take up the excess play at the throttle grip, and tighten the lock nut.

Throttle Grip Play

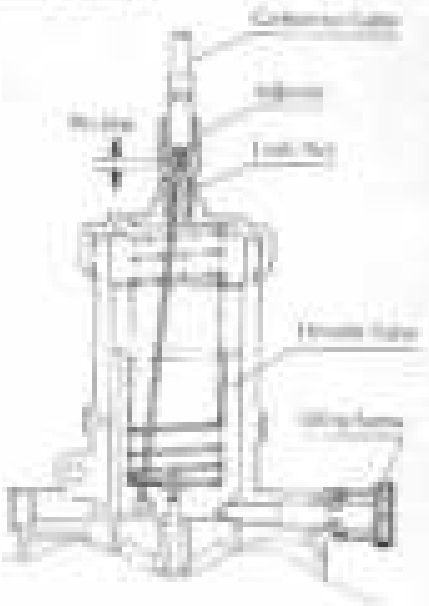




NOTE: A small amount free play in the throttle cable installation will not affect the throttle valve or throttle lever.

- Loosen the lock nut (1/2 inch), and turn in the adjuster so that the throttle valve is at its lowest possible position.
- Adjust the engine idle speed.
- Using Lawnfit tool to turn the adjuster on the top the throttle valve cap, set to fastest position, turn the adjuster back out to immediately the point at that the engine begins the speed rather and check the throttle valve. Tighten the lock nut.

Carburetor Cable Play

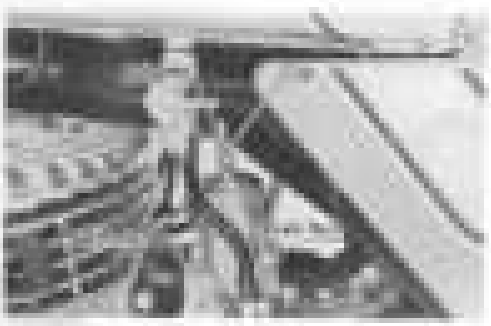


CARBURETOR

Carburetor Cable Adjustment

Due to operating on the carburetor cable, the throttle valve does not respond immediately to the opening of the throttle, and as a result the rpm of engine does not begin as a given throttle opening. Check and adjust the carburetor cable periodically.

- Start and idle engine. Let it warm.
- Slide up the adjuster dust cover, and loosen the cable clip from the adjuster.



- Install the cable clip on the adjuster, and snap back the dust cover.
- Check the throttle grip play (Pg. 15).
- Check the oil pump adjustment (Pg. 13).

Idle Speed Adjustment

- Turn in the air screw fully but not tightly, and then back it out 1½ turns.



12 INSPECTION AND ADJUSTMENT

- Warm up the engine for about 5 minutes.
- Attach the tuning gauge and the tuning probe to the spark plug of the engine (see p. 4 for details). Turn the tuning screw counterclockwise (more engine speed) after turning it counterclockwise (more) fu



- Turn the throttle grip a few times to make sure that the idling speed is not changed (i.e., the engine will not idle) when the grip is released. Readjust if necessary.
- Turn the handlebar fully to the right side, and check that the engine is stopped when the throttle grip is fully closed. If the engine is still running, throttle grip cable play is insufficient; otherwise the throttle control cable assembly is wrongly routed.
- Adjust the carburetor cable. (Fig. 11)
- Adjust the air screw cable. (Fig. 12)

NOTE: The carburetor tuning must be correct for proper riding performance.



NOTE: The oil pump control rod on the oil pump body is designed so that the rod ends on each end of the rod engages with the throttle grip in fully open. It may be used to check whether or not the throttle grip is opening the pump fully.



13 OIL PUMP CABLE

After re-assembly of the oil pump cable, the oil pump flow may become too low or a giant throttle opening (throttle grip) when the oil pump cable accidentally.

Check to see that the lower mark on the oil pump lever is aligned with the corresponding mark on the oil pump lever stopper at idle throttle. If it is not, turn the adjusting nut to line up the two marks.



IGNITION TIMING

The motorcycle has a CDI (Capacitor Discharge Ignition) system which has no moving parts. Ignition velocity, or a sparks development to advance the ignition timing, makes the magneto base to mechanically readjust during engine assembly. However, if there is any doubt as to correct timing, inspect and adjust as follows:

- Remove the magneto cover, and remove the magneto flywheel using the magneto flywheel puller and magneto flywheel puller handle rod(s).
- Check to see whether or not the magneto rotor's pick-up is aligned with the crankcase mark.



- If the marks are not aligned, loosen the ignition control plate screws (3), shift the position of the plate so the marks are aligned, and then tighten the screws securely.

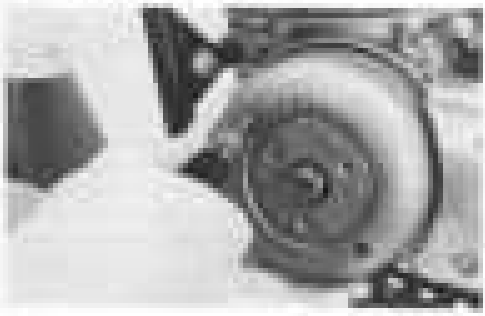
If a stroboscope and a strobe light are available, it is possible to inspect the ignition timing with the engine.

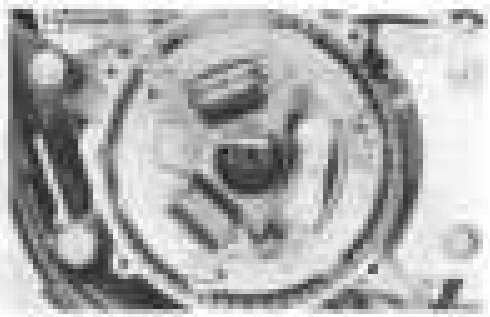
NOTE: This should be inspected for carrying out the routine inspection.

- Remove the inspection cover, connect the strobe light to the engine according to the manufacturer's instructions.
- Start the engine and attach a hand tachometer to the carrier of the flywheel. Set the engine speed to 1,000 rpm.
- Direct the light at the timing marks on the flywheel and clutch cover. The marks should align at 1,000 rpm. (The mark on the right is not used to check the timing.)



- Then, as you did, stop the engine.
- Loosen the magneto stator plate mounting screws (3) using a #2 Phillips screwdriver through the flywheel holes. The screw heads are located along the inner circumference of the flywheel.



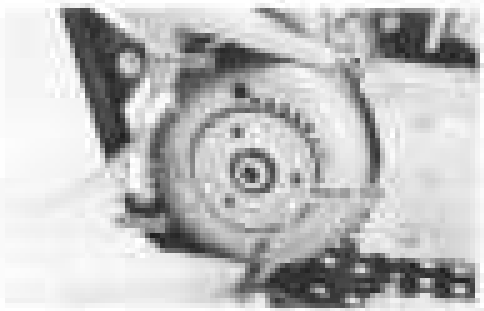


NOTE: From the screwdriver recently against the screw, otherwise the screw head may be damaged. If the screw can not be loosened, the flywheel must be removed with special tools to loosen the screw(see).

- Insert a metal rod 10 mm (0.394 in.) in diameter and at least about 100 mm (4 in.) long into one of the flywheel holes to a depth of about 10 ~ 30 mm (1/2 ~ 1 in.).

CAUTION: When inserting the metal flywheel holder rod into the flywheel hole, or when moving the rotor area, be careful not to damage the coil windings.

- When both the flywheel are found to place the timing (flywheel installed reference) the timing and inserted (indicator mounts to. (The flywheel will over-move can be 1/3 turn before the rod hits the stator coil over and begins moving the stator to change the timing)



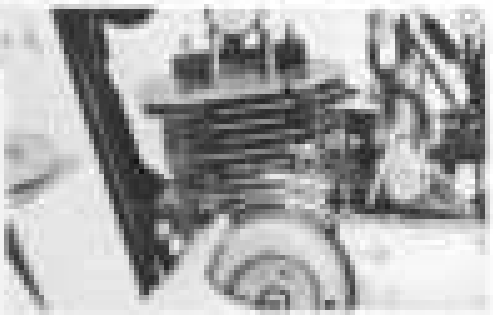
- After adjustment, tighten the stator screws securely.

The accuracy of the timing marks may be checked with a dial gauge and TDC Model "B" (special tool).

- Remove the magneto cover and the protector hood.
- Locate the suggested flywheel which the inspection of the piston is close to the top.
- Using TDC Model "B" (special tool), mount a dial gauge on the cylinder, rotate the flywheel to set the piston to a point TDC (top dead center), and set the dial to zero.



- Measure the throttle cable play with the axle gauge (see Fig. 4-5a). If it is not within the specified range, adjust it with the adjuster nuts.



- The timing mark on the flywheel should align with the crankcase mark at this point. If it does not, the pickup has been set at 0.33 mm (0.013 in) BTDC before the point contact make a new timing mark on the flywheel and reset the pickup.

SPARK PLUG

The standard spark plug is an NGK BP7S. It should have a 0.6 ~ 0.7 mm (0.024 ~ 0.028 in) gap, and be tightened with 2.4 ~ 2.9 kgm (18 ~ 21 ft-lbs) of torque.

Spark Plug Gap 0.6



0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

The spark plug should be taken out periodically for cleaning and to check the gap (Fig. 4-7). If the plug is dirty or has carbon build up on it, clean it (preferably with a sandblaster) and then check and adjust the gap.

The plug may also be checked using a compression gauge, and adjust the gap if necessary by bending the side electrode.

To find out whether the right spark plug is being used, pull it out and examine the ceramic insulator around the center electrode. If the ceramic is a light brown color, 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 B5HS). If the ceramic is black, the plug should be replaced with the next hotter type. (NGK B8HS).

AIR CLEANER

A clogged air cleaner results in too much air mixing with too little fuel, causing fuel consumption, reducing engine power, and causing spark plug fouling.

Inspect the element after each one or two riding seasons (or, if you ride in dusty areas, more frequently).

- Take out the element, and then remove the element from the side frame.
- Clean up the air cleaner body opening with rags, or stuff in rags so that no dirt is allowed to enter the carburetor.



- Clean a dirty element by rotating it around in both oil and some kind of solvent having a high flash point, and squeezing it dry.
- After cleaning, saturate the element with SAE 30 oil, squeeze out the excess, then wrap it in a clean rag and squeeze it dry as possible. Be careful not to tear the element.

NOTE: Replace the element after cleaning it 7 times or if it is damaged.

CAUTION:

1. Clean the element in a well-ventilated area, and take pains to see that there are no sparks or flame anywhere near the working area.
2. Because of the danger of highly flammable liquids, do not use gasoline or any kind of solvent having a low flash point to clean the element.
3. A break in the element material or damage to the gasket edge will allow dirt and dust to pass through into the carburetor and eventually damage the engine. If any part of the element is damaged, the element must be replaced.

STEERING

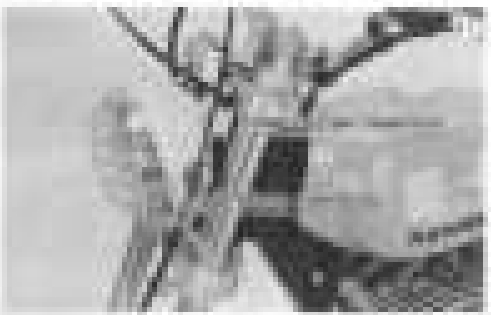
For safety, the steering should always be kept adjusted so that the handlebar will turn freely but not have excessive play.

To check the steering adjustment, first 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 too loose. Tightening in front of the motorcycle, grasp the lower ends of the front fork or the axle, and push and pull the front end back and forth. If play is felt, the steering is too loose.



If steering needs adjusting:

- Place a stand under the frame to raise the front wheel off the ground.
- Loosen the steering stem head bolt (12 mm) and the two front fork holder clamp bolts (both bolts 17 mm).



- Turn the steering stem bolt nut until the play and stiffness are eliminated, then retighten the bolts.

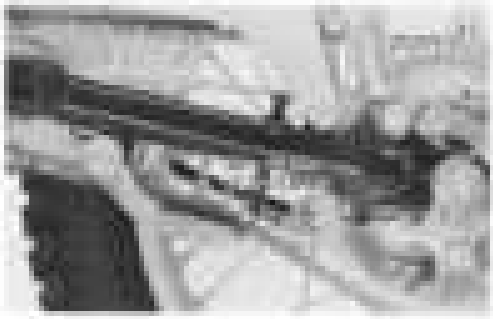


- Tighten the steering stem head bolt to 4.2 – 6.8 kgm (30 – 49 ft-lbs) of torque and the two front fork holder clamp bolts to 1.4 – 2.2 kgm (10 – 16 ft-lbs) of torque.
- Check the steering again, and readjust if necessary.

DRIVE CHAIN

Every time the rear wheel is fixed the slack in the chain has to be adjusted, and when the adjustment is being done, check the chain for wear and lubrication.

Grip the mid-point on the chain lower run between the front and rear sprockets and pull it up. There should be 20 – 30 mm (0.8 – 1.2 in) of slack. If adjustment is necessary, the chain must be lubricated.



- Remove the cotter pin, then the torque link nut at the strut bolt head, and loosen the torque link nut (14 mm).

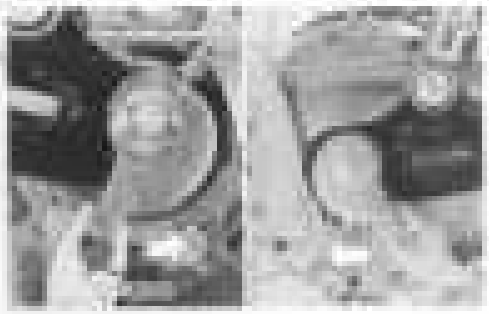


- Remove the cotter pin and loosen the nut one-and-a-half turns.



- If the chain is too tight, loosen the right side chain adjuster counternut/screw and the left side chain adjuster counternut, and then turn the wheel forward until the chain is too loose.
- Turn the right side chain adjuster clockwise and the left side chain adjuster counterclockwise evenly until the chain has the correct amount of slack. To keep

the brake and the wheel aligned, the left mark should be in the same general position from the right side slightly advanced.



- Tighten the axle nut to the specified torque.
- Raise the wheel, measure the amount of play, and readjust if necessary.
- Insert a new cotter pin through the axle nut and bend.
- Tighten the screws and nut with the specified torque.
- Check the rear brake adjustment (Fig. 14) and the rear brake light switch adjustment (Fig. 15).

BRAKES

Rear Brake Cam Lever Angle

- When the brake is fully applied, the rear brake cam lever should come to 90° – 100° angle with the brake cable. If it does not, loosen the adjusting nut on the rear brake rod, disconnect the cam lever at the rear brake rod, remove the cam lever at a serration, so the shaft is turned the proper angle, and then adjust the rear brake rod.



CAUTION: Since a cam lever angle greater than 90° reduces braking effectiveness, the adjustment should not be neglected. Whenever the cam lever angle is adjusted, also check the drag and pedal height specifications. In case of doubt, as for braking effectiveness, disassembly and inspect all internal brake parts. Worn parts should cause the brake to fade or fail.

Front Brake Lever

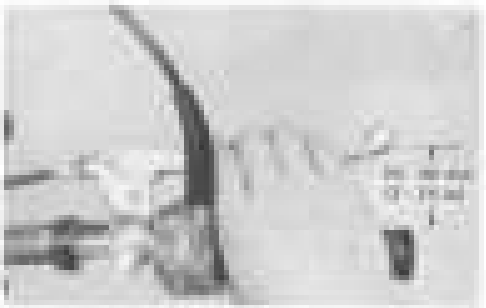
- Slide the front brake lever dust cover out of place.
- Loosen the lock nut at the front brake lever, make the clearance 2–3 mm, and tighten the lock nut.



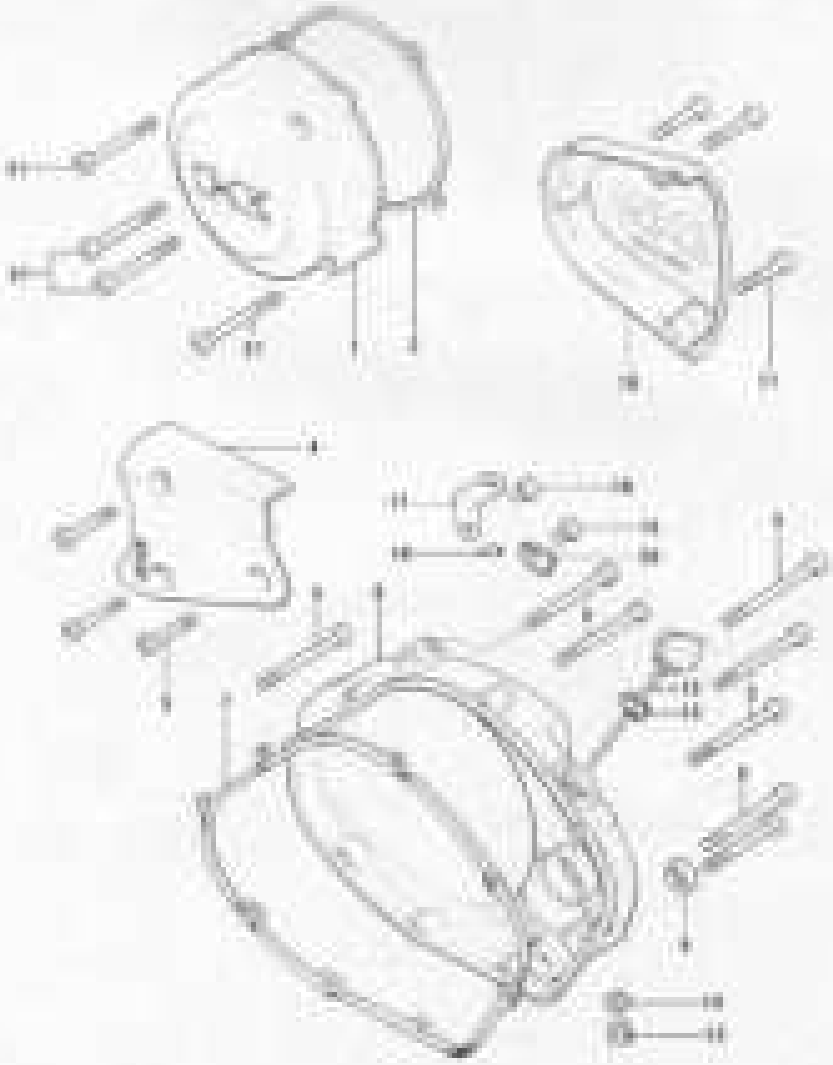
- Slide up the dust cover, and loosen the lock nut (Thread) at the lower end of the brake cable.



- Turn the adjuster on the lower end of the front brake cable so that when the brake is fully applied, there is 2.5 – 3.5 mm (2 – 3/1) play at the end of the brake lever, and the end of the brake cable.



- If adjuster adjustment cannot be made with the adjuster, complete the adjustment with the adjuster at the brake lever, and then tighten all lock nuts.
- Check the brake drag.



WHEELS

Spokes and Rims

The spokes on both wheels must be tightened securely and evenly and not allowed to become loose. Unevenly tightened or loose spokes will cause the rim to warp. Broken spokes and uneven spoke tightness will result in spoke breakage. Standard spoke tightening torque is 0.31 – 0.39 kgm (22 – 28 in-lbs).

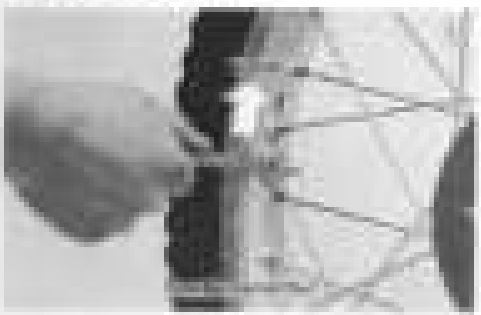


The axial rim runout should be under 2 mm (0.12 in), and the radial rim runout should be under 2 mm (0.08 in).



Bead Protectors

There is a bead protector on the rim's inside and one on the rims. The use of the bead protectors is to prevent the tire and tube from slipping on the rim and damaging the valve stem. Valve stem damage may cause the tube to lose pressure while maneuvering. To make sure the tire and tube will remain firmly in position on the rim, inspect the bead protectors before riding and tighten them if necessary.



Tires

The tires are designed so that when they are inflated to the correct pressure and not overloaded, they will provide good traction and power transmission during acceleration and braking over certain road road surface conditions.

To ensure good handling and stability, use only the recommended tires for replacement and inflate them to the standard pressure.

A serious variation from the standard pressure is undesirable depending on road surface conditions (dry, wet, rough, smooth, etc.).

Table 1 Tires, Air Pressure (Unloaded and when cold)

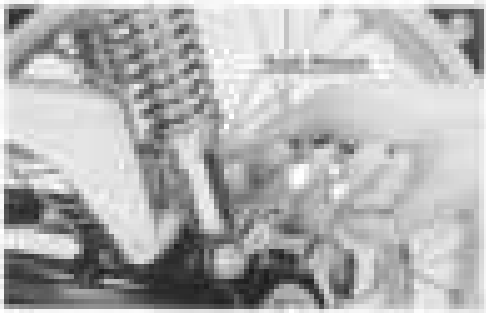
	Front	Rear
Up to 90 kg	1.75 kg/cm²	2.00 kg/cm²
90 kg to 180 kg	1.75 kg/cm²	2.25 kg/cm²
Tire Size	3.25-19 4PR	4.00-18 4PR
Tire Type	TT	TT
Tire Pressure	1.75 kg/cm² (25 psi)	2.25 kg/cm² (32 psi)

Inspect the tires for wear or damage. If they are damaged, replace them.

REAR SHOCK ABSORBERS

The rear shock absorbers can be adjusted to one of 5 positions to suit riding conditions.

Adjustment is made by rotating the adjusting sleeve with a hook wrench. The higher the adjusting sleeve is positioned, the harder the shock absorber.



NOTE: Always adjust both shock absorbers to the same positions.

Check that the shock absorbers function properly, that there is no oil leakage, and that the mounting bushings are in good shape.

FRONT FORK

The condition of the front fork is very important for steering stability, and more than performance is dependent on them. Fork oil viscosity, quantity, and evenly.

Contaminated or deteriorated oil will cause sludge forming and excessive internal wear. The fluid can should be changed periodically (Fig. 12), or sooner if the oil appears dirty.

Addition of oil (differs in oxidation of the stock distributor can be achieved by using fuel oil of a different viscosity. It may be desirable to change from the standard viscosity connection in order to suit special conditions.

Fuel Oil Level

To check the fuel oil level, first place a jack in order under the engine so that the front wheel is raised off the ground. Remove the cap and flush the lower side, and pull out the dipstick gauge. Wipe it over thoroughly with the cloth, and replace the dipstick from the top of the inner tube to the oil level. If the oil is below the correct level, add enough oil to bring it up to the proper level, taking care not to overfill the tank.



Table 2. Fuel Oil

Type	Amount	Oil level (Fuel gauge)
	pint (UK)	pint of inner tube
SAE 10W	litre (UK)	UNC inner

Oil Change

To drain out the old oil, remove the drain screw from the lower end of the outer tube on each side. With the front wheel on the ground, drain down to the handlebar, now acted to prime via the oil. Replace the drain screws, remove the top fuel from each side, and pour in the specified type and amount of oil. Then replace the cap using tightening down securely.



After tightening the top nut, check that the air breather hole of the top fuel comes to the front. If it does not, loosen the upper and lower clamp bolts and turn the inner tube to correct the breather hole position. Tighten the clamp bolts to the specific torque (Fig. 14).



NOTE: Since oil viscosity greatly influences damping performance, use only the specified viscosity.

General Lubrication

Lubricate exposed parts subject to rust with SAE 30 motor oil or light grease periodically (Fig. 1), whenever the vehicle has been operated under wet or rainy conditions, and after each wash or pressure washing. Before lubricating each part, clean off any rust with wire brushes. Refer to each item, as shown in the illustration.

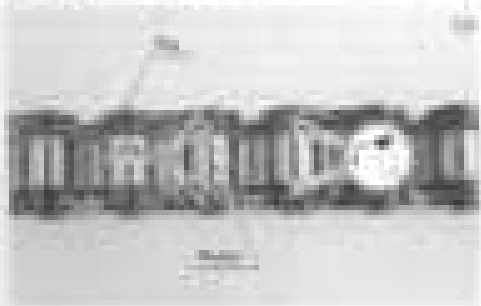
LUBRICATION BEFORE AND AFTER EACH EVENT

Drive Chain

An effective, good quality lubricant specially formulated for chains is best for regular chain lubrication. If a special lubricant is not available, 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.

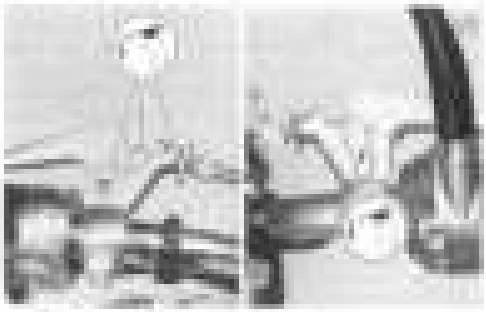
Lubricating the drive chain alone on the left side of the swing arm or swing arm joint, or to the rear of the rollers and between the side plates of the chain so that oil will penetrate to the pins and bushings where they wear (see plate). Wipe off any excess oil.



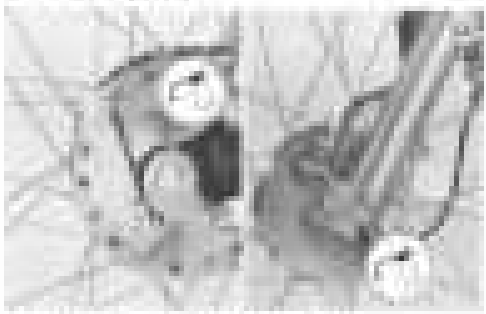


Clutch Lever and Brake Lever

Lubricate the clutch lever and brake lever pivots and exposed portions of the clutch and brake cables with SAE 30 motor oil.



Brake Cam Levers



Kickstarter Pedal, Side Stand Pivot, Brake Pedal Pivot, and Right Foot Peg Pivot



Clutch Takeover Pivot, Left Foot Peg Pivot



LUBRICATION BEFORE AND AFTER TRIAL

In addition to the normal chassis, apply oil or grease as the following.

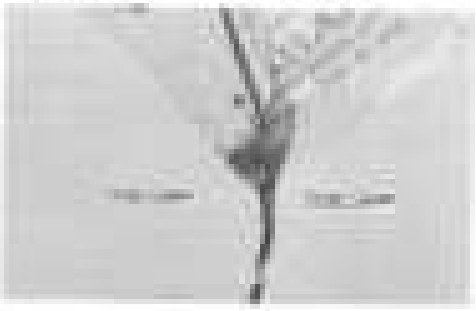
Throttle Grip

Remove the engine stop switch housing screws (1). Wipe clean the throttle grip inner surface and the handlebar where the throttle grip fits. Apply a light coat of grease to the exposed portion of the throttle grip inner collar and to where it is installed to the throttle grip.



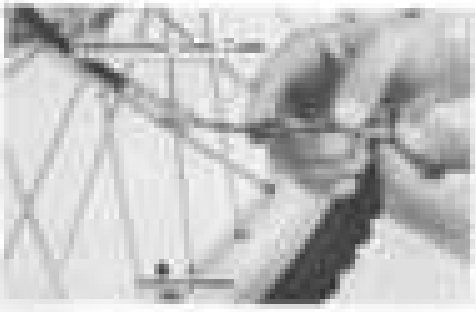
Clutch, Brake, Throttle Cable

Lubricate the clutch cable, throttle cable, and the front brake cable as shown in the figure.



Speedometer Cable

Pull out the speedometer inner cable, and apply a thin coat of grease to it.



NOTE: Insert the speedometer inner cable into the speedometer gear housing while turning the wheel, so that the pin in the end of the cable is aligned with the notch of the speedometer pinion.

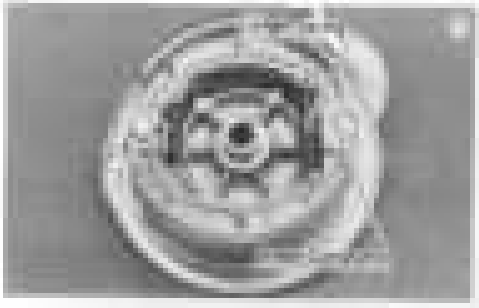
Brake Camshafts

Wipe out the old grease, and re-grease the brake shoe pivots. Apply grease to the brake shoe anchor pins, spring ends, and cam surface of the camshaft, and fill the camshaft grooves with grease.

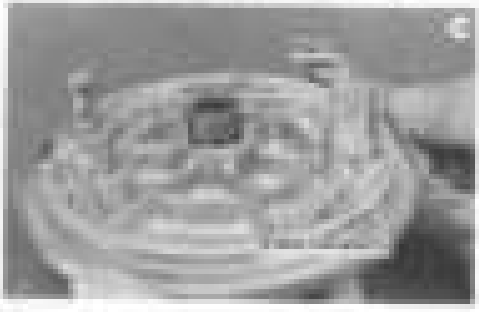


NOTES: 1. Do not get any grease on the brake shoe linings, and wipe off any excess grease so that it will not get on the linings or shoe when brake assembly.

2. When installing the brake shoe springs onto the brake shoes, be sure the spring shorter tip on the camshaft side.



3. The camshaft must be installed so that the triangular mark on the camshaft end is aligned with the groove of the pivot.

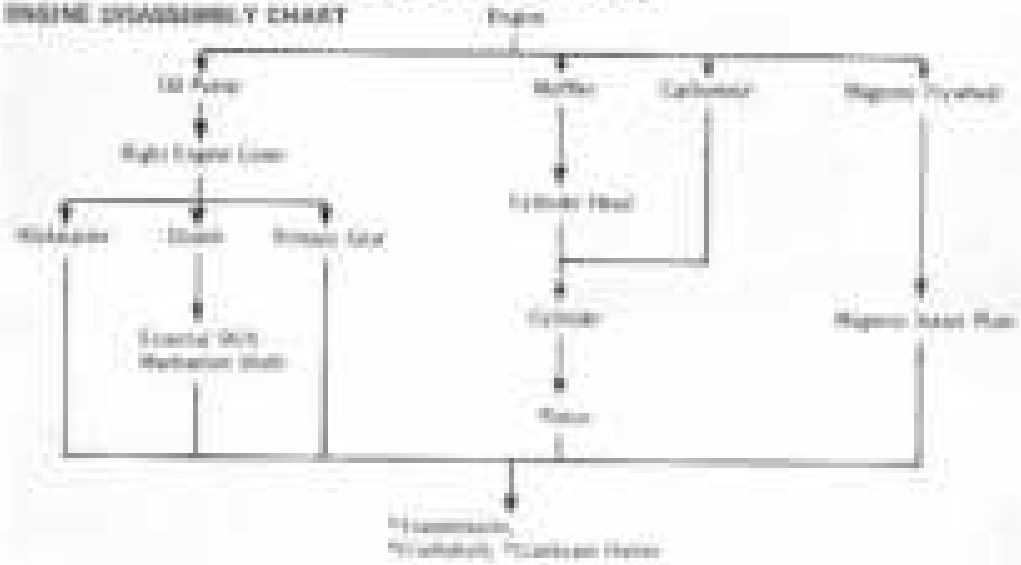


[illegible] Carburetor [illegible]

Ref. No.	Part No.	Part Name	Quantity	Remarks
1	[illegible]	COVER, cable adjuster	1	
2	[illegible]	CARBURETOR ASSY	1	
3	[illegible]	ADJUSTER, cable	1	
4	[illegible]	NUT, cable adjuster	1	
5	[illegible]	CAP, mixing chamber	1	
6	[illegible]	SPRING, throttle valve	1	
7	[illegible]	SPRING SEAT, throttle valve	1	
8	[illegible]	CIRCLIP, jet needle	1	
9	[illegible]	JET NEEDLE [illegible]	1	
10	[illegible]	VALVE, throttle [illegible]	1	
11	[illegible]	CAP, starter plunger [illegible]	1	
12	[illegible]	CAP, starter plunger	1	
13	[illegible]	SPRING, starter plunger	1	
14	[illegible]	LEVER, starter plunger	1	
15	[illegible]	SPRING, starter plunger	1	
16	[illegible]	PLUNGER, starter	1	
17	[illegible]	SCREW, throttle adjuster	1	
18	[illegible]	SPRING, throttle adjuster	1	
19	[illegible]	CAP, throttle adjuster spring	1	
20	[illegible]	"O" RING, [illegible]	1	
21	[illegible]	SCREW, pilot air	1	
22	[illegible]	SPRING, pilot air screw	1	
23	[illegible]	"O" RING, [illegible]	1	
24	[illegible]	WASHER, float valve seat	1	
25	[illegible]	FLOAT VALVE ASSY	1	
26	[illegible]	NEEDLE JET [illegible]	1	
27	[illegible]	WASHER, main jet	1	
28	[illegible]	MAIN JET, [illegible]	1	[illegible]
	[illegible]	MAIN JET, [illegible]	1	[illegible]
	[illegible]	MAIN JET, [illegible]	1	[illegible]
	[illegible]	MAIN JET, [illegible]	1	[illegible]
	[illegible]	MAIN JET, [illegible]	1	[illegible]
29	[illegible]	PILOT JET, [illegible]	1	
30	[illegible]	PLATE, float chamber	1	
31	[illegible]	GASKET, float chamber	1	

Disassembly

ENGINE DISASSEMBLY CHART



NOTES: 1. An asterisk (*) indicates parts which are removed and disassembled after engine removal.
2. Work parts only are shown in this chart.

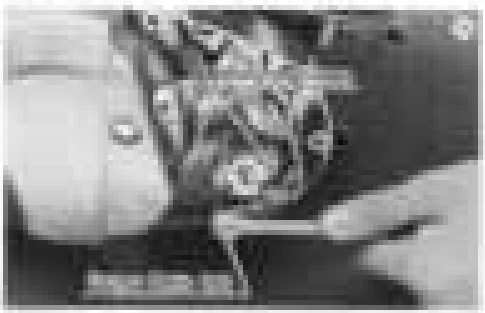
ENGINE

Disassembly

NOTE: Engine parts not requiring engine removal for service, are listed below.

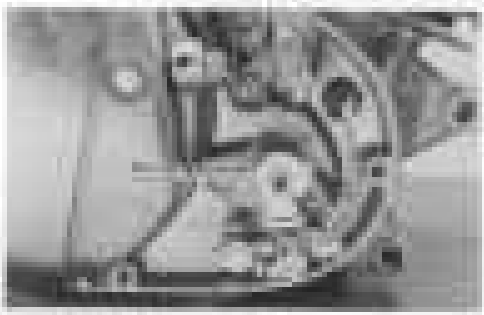
a. Magneto flywheel
b. Magneto cover assy
c. Cylinder head, cylinder and piston
d. Right engine cover
e. Oil pump
f. Starter and primary gear
g. Transmission mainshaft (A/T)

●Remove the Oil Pump.
○Remove the oil pump output banjo bolt (8 mm). There is a washer on each side of the connector.



○Remove the oil pump mounting screws (3), and remove the oil pump and gasket. There is a copper washer on the M5 hand oil pump mounting screw.

CAUTION: Do not remove the bolt between the input banjo bolt and output banjo bolt.

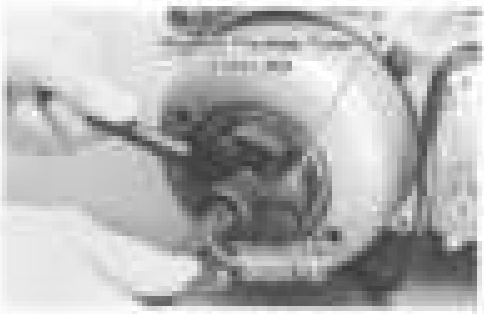


●Remove the Magneto Flywheel.
○Remove the magneto cover and its gasket.
○Using the magneto flywheel holder (special tool) to keep the flywheel stationary, remove the magneto nut

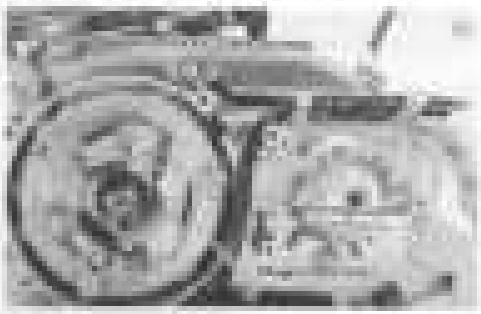
(19 mm) with a socket wrench, and take off the seal washer and flat washer.



Remove the magneto flywheel with the magneto flywheel puller and take pulley spacer using.

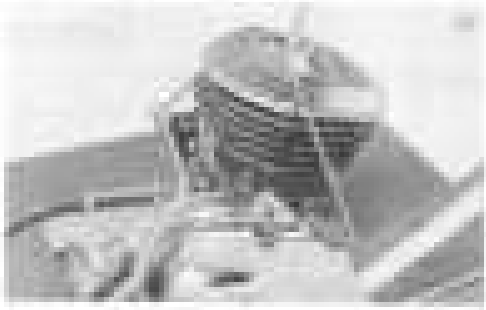


Remove the Magneto Stator
Remove the magneto output wiring grommet (1). Unscrew the two (or more) crankcase screws.

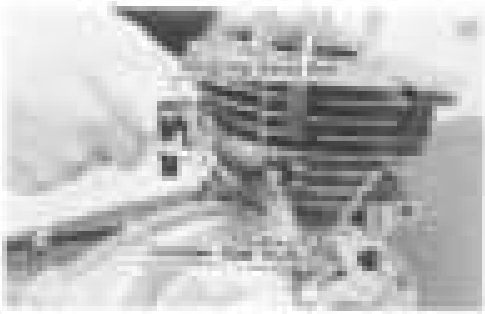


Remove the magneto stator plate screws (2) and pull the stator free from the side of the crankcase, pulling the magneto output wiring with the rubber grommet through the crankcase hole.

Remove the Cylinder Head and Cylinder
Remove the 12 mm cylinder head nuts, bolt washers, and washers (2 nos), and lift off the cylinder head and gasket.



Remove the pushrod tube (2 nos) from the crankcase. Note: it is better to mark one of the pushrod tubes



Remove the 10 mm cylinder base nuts and bolt washers (3 nos).
Lift off the cylinder and cylinder base gasket. If necessary, tightly tap around the cylinder with a mallet, taking care not to damage the cooling fins.

Wrap a short cloth around the base of the piston to hold it at the lowest position for removal and so that not any dirt or foreign matter can fall into the crankcase.

Remove the Pistons
Remove one of the gudgeon pin circlip rings.



Using the piston pin puller and adaptor "C" (special tool), remove the pin from the side the circlip has removed.



Remove the piston and the connecting rod needle bearing.

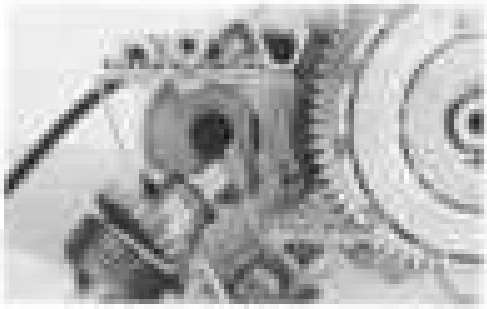
●Remove the Right Engine Cover.
Mount the mainshaft and drive shaft on the shaft so that it can be tightened tight in the vise position, and remove the lock shaft.



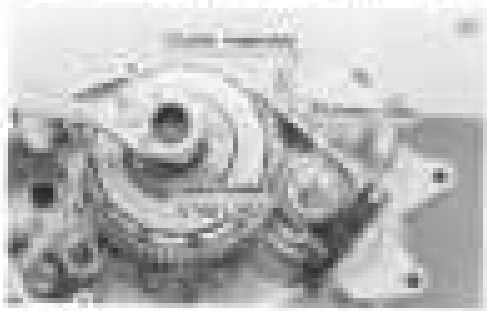
Remove the screws (3), and pull off the right engine cover and gasket. (The spring dowel washer may fall down).



●Remove the Kickstarter.
Remove the end of the kick spring from the mainshaft hole.
Pull out the kickstarter assembly. (There is a thrust washer where the kick shaft goes to the crankcase.



●Remove the Clutch.
Using the gear holder (special tool) to prevent the clutch hub rotating, undo the clutch hub nut (3) (left), and remove the lock washer and washer washer.



Pull the clutch assembly off the drive shaft. There is a thrust washer at the end of the clutch assembly. A sleeve and drive shaft (the gear may be pulling off with the clutch assembly).

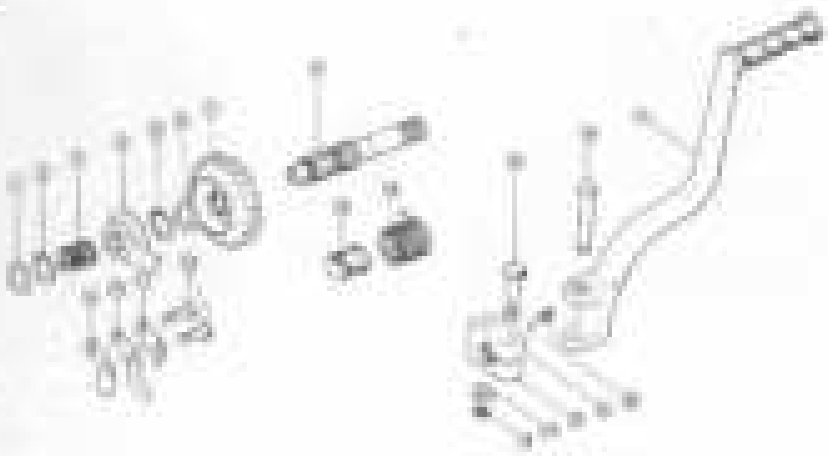
●Remove the Primary Gears.
Position the position of the lock washer which is bent over against the side of the crankshaft bolt (1) (left), and take the crankshaft lock and lock washer off the crankshaft.



Position the position of the worked washer which is bent over the primary gear nut (2) (left), and take off the primary gear nut, modified washer, primary gear and crankshaft key. Remove the gear holder.

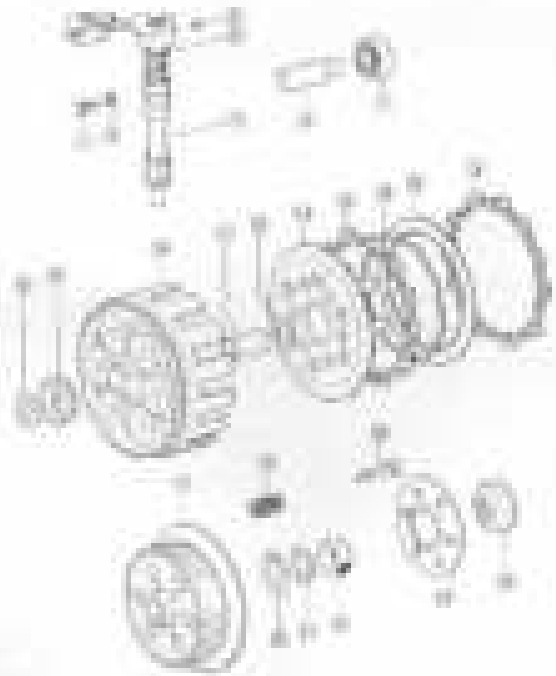
28. DISASSEMBLY

Kickstarter



1. Thrust Washer
2. Circlip
3. Spring
4. Bushing
5. Clamp
6. Washer
7. Kick Gear
8. Kick Shaft
9. Damper
10. Collar
11. Lock Washer
12. Bolt
13. Spring Cover
14. Kickstarting
15. Bolt
16. Pin
17. Kick Pedal
18. Circlip
19. Washer
20. Kick Pedal Boss
21. Bolt
22. Spring

Clutch



1. Bolt
2. Cotter
3. Adjust Screw
4. O-Ring
5. Release Shaft
6. Push Rod
7. Ball Bearing
8. Thrust Washer
9. Drive Sprocket Side Gear
10. Clutch Housing
11. Sleeve
12. Thrust Washer
13. Spring Holder
14. Friction Plate
15. Steel Ring
16. Spur Plate
17. Clutch Hub
18. Spring
19. Bolt
20. Toothed Washer
21. Lock Washer
22. Nut Pin
23. Spring Plate
24. Spring Plate Rubber

[illegible] Oil Pump

Ref. No.	Part No.	Part Name	Quantity	Remarks
1	[illegible]	GEAR, DRIVE JOINT	1	
2	[illegible]	GASKET, oil pump	1	
3	[illegible]	BODY, [illegible]	1	
4	[illegible]	STRAINER, [illegible]	1	
5	[illegible]	GASKET, [illegible]	1	
6	[illegible]	BOLT, [illegible]	5	
7	[illegible]	[illegible]	1	
8	[illegible]	[illegible]	1	
9	[illegible]	[illegible]	1	

Using the engine sprocket holder (special tool) to hold the engine sprocket stationary, remove the engine sprocket nut (27 mm) and lockwasher.

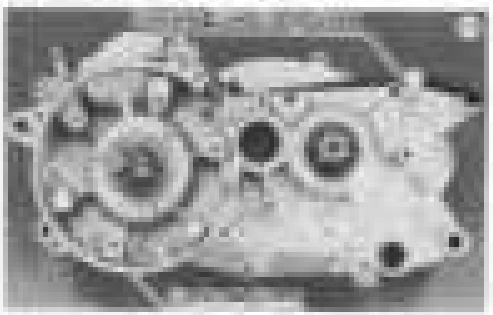


Pull off the engine sprocket.

Remove the Transmission.

NOTE: Due to close tolerance between the crankshaft and crankshaft bearings, a press will be necessary for the following installation. Do not attempt to service the transmission and kick shaft of a press is not available.

Remove the screw and the shoulder cam clamp.



Remove the remaining crankcase screws (13).

Screw the crankcase splitting tool and adapter (special tools) into the left side of the crankcase. Be certain to screw the tool in all the way.

Tighten the tool (19 mm) on the crankcase splitting tool to split the crankcase.



When the crankcase is split, remove the crankcase splitting tool, and lift off the left crankcase half. Remove the shift cam (2), shift forks (3), shift drums, and mainshaft and drive shaft assemblies.

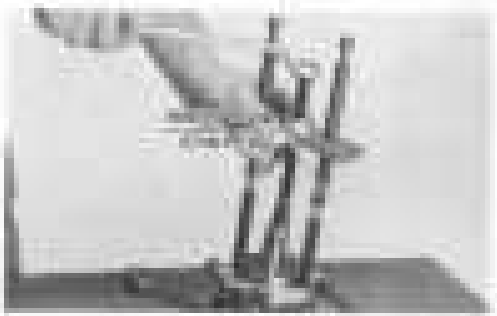


Remove the output shaft sleeve and O-ring from the left crankcase half.

Remove the breather tube from the right crankcase half.

Remove the crankshaft from the right crankcase half using a press.

Remove the bearing on the left side of the crankshaft with the bearing puller (special tool).



Assembly

Any oil seal that is removed must be replaced. Press in the oil seal using a press and suitable adapters so that the face of the seal is level with the surface of the crankcase.

Apply a little amount of heat-durable grease to the outer lip of the oil seal.

Install the ball bearings using a press and the bearing driver and bearing driver holder (special tools). Install the shift drum needle bearing using a press and the shift drum bearing driver (special tool).



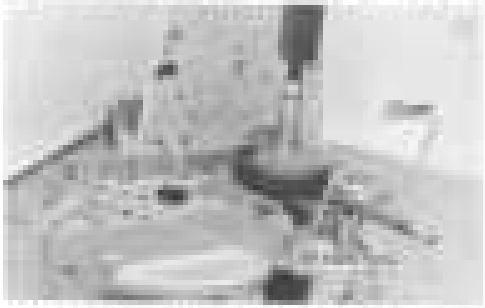


Table 3 Bearing Bores Reamed for Crankcase Assembly

			Bore Number
Left Crankcase Half	Ball Bearing	Crankshaft	[illegible]
		Primary Shaft	[illegible]
Right Crankcase Half	Ball Bearing	Crankshaft	[illegible]
		Drive Shaft	[illegible]
	Ball Bearing	Needle Bearing	[illegible]

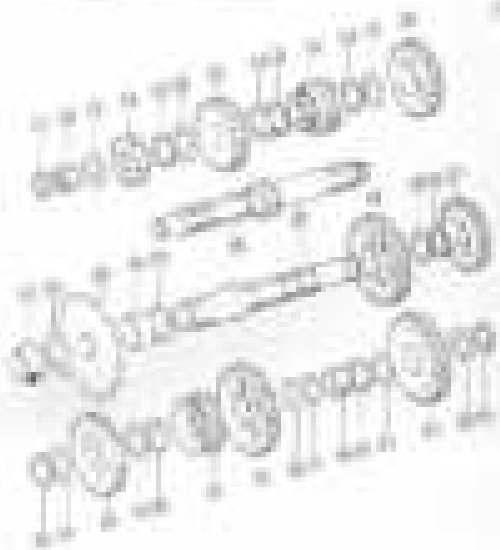
Main Bearing, Drive Shaft, Crankpin Bearing

- Clean out the crankcase, and clean off any grime on the mainshaft and crankshaft gears with some kind of solvent having a high flash point.
- Attach a small air wedge between the crankshaft flywheels to squeeze the connecting rod big end to engage the wheel alignment as shown in the figure, and fit the crankshaft into the right crankcase half using a press.



- Replace the crankcase bearing (see 12) if play was excessive.
- Replace the transmission.





1. Shift Shaft
2. Pin
3. Pin Plate
4. Lock Washer
5. Screw
6. Shift Fork
7. Shift Rod
8. Drive Shaft, 3rd Gear
9. Output Shaft, 4th Gear
10. Output Shaft, 5th Gear
11. Circlip
12. Needle Bearing
13. Washer
14. 2nd Gear (R)
15. Circlip
16. Splined Washer
17. 4th Gear (R)
18. 3rd Gear (R)
19. Washer
20. 5th Gear (R)
21. Engine Sprocket Nut
22. Splined Washer
23. Engine Sprocket
24. Starter
25. O Ring
26. Drive Shaft
27. Needle Bearing
28. 2nd Gear (D)
29. Washer
30. Circlip
31. 4th Gear (D)
32. Splined Washer
33. 3rd Gear (D)
34. 5th Gear (D)
35. 1st Gear (D)
36. Washer (R)
37. Washer
38. Needle Bearing
39. Circlip
40. Thrust Washer
41. Clutch Shaft Left Gear
42. Circlip

[illegible] Frame

Ref. No.	Part No.	Part Name	Quantity	Remarks
1	[illegible]	FRAME	1	
2	[illegible]	STAY, steering lock	1	
3	[illegible]	CAP, steering stem	1	
4	[illegible]	COVER, steering stem	1	
5	[illegible]	COVER, steering stem	1	
6	[illegible]	BASE, steering stem bearing	1	
7	[illegible]	RACE, ball 1/	20	
8	[illegible]	RACE, engine mounting, 19 x 1.50	1	
9	[illegible]	RACE, engine mounting, 19 x 1.50	1	
10	[illegible]	COLLAR, engine mounting	2	
11	[illegible]	PIPE, lock, 15 dia dia	4	
12	[illegible]	RACE, engine mounting, 12 x 1.0	2	
13	[illegible]	BOLT, 6 x 45	1	
	[illegible]	BOLT, 6 x 19	[illegible]	
14	[illegible]	NUT, 6 dia dia	1	

NOTE: Carefully check the alignment of the two halves, and the position of the transmission shafts. The three and four of crankcase must be pulled together evenly.

- Align the crankcase halves and press together, screw in the crankcase screws (10) and tighten them with an impact driver.
- Check to see that the crankshaft, drive shaft, and output shaft all turn freely in the neutral positions of the crankshaft and not lock, probably the crankshaft is not centered, so tap the appropriate end of the crankshaft with a mallet to reposition it. If it does not free up, the crankcase will have to be disassembled to locate and correct the problem.
- Assemble the output shaft, shift the transmission through all gears to make certain there is no binding and that all gears shift properly.
- Fill a piece of clean cloth into the crankcase opening around the connecting rod so that no parts will fall into the crankcase.
- Fit the breather tube into its grommet, and screw the guide base on the crankcase.

- Install the Magneto Stator.

Align the magneto stator wiring through its crankcase hole, and push in the rubber grommet.

Reinstall the magneto stator so that its mark and the crankcase mark are aligned. Tighten its screws (3).



Fit the magneto output wiring into the guides (2), and screw the guide base into the crankcase, tightening them with an impact driver.

- Install the Magneto Flywheel.

Wipe dust the woodruff key is properly in place in the crankshaft, and then fit the magneto flywheel (rotor) so that the key fits into the groove in the flywheel hub. Push the flywheel fully home by hand.

Clamp the flywheel in in the vise jaws in shaft, remove the washer and lock washer, and tighten the engineer nut (13 mm) while holding the flywheel inside with the Magneto Flywheel Holder (special tool). The tightening torque for the engineer nut is 5.0 ~ 6.0 kgf-m (36 ~ 43 ft-lb).

Replace the gasket and magneto cover.

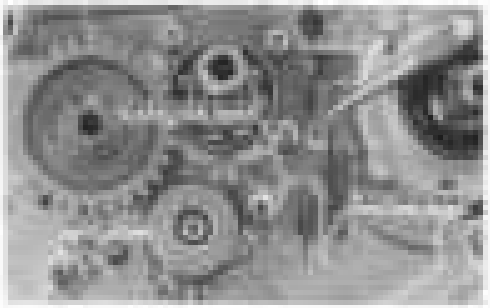
- Fit a new O ring into the output shaft, and then replace the screw.
- Fit the engine sprocket onto the output shaft, and install a new splined washer so that its work inside wide flange of the splined output shaft.



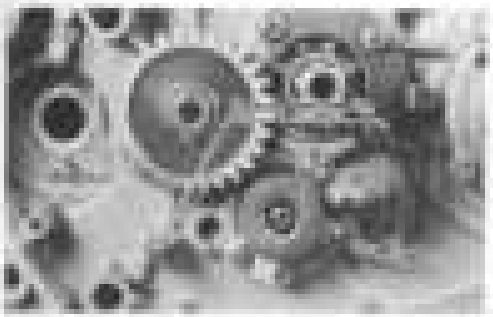
- Fitting the engine sprocket washer (special tool) to hold the engine sprocket stationary, tighten the engine sprocket nut with 1.4 ~ 1.6 kgf-m (10 ~ 12 ft-lb) of torque.
- Bend back one side of the splined washer over the nut.
- Replace the chain guide, output shaft idle gear, thrust washer, and circlip. The side of the hook that goes into the shaft, faces in.



- Replace the shift drum stopper.
- Replace the neutral (or lock and gear set bolt, and bolt the wire clamp back into position.



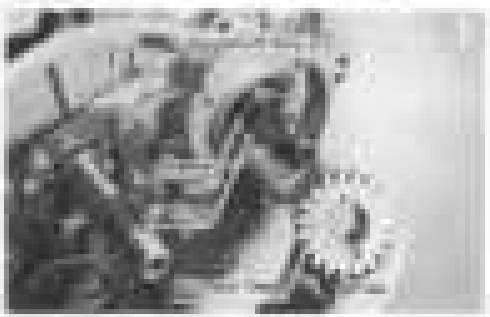
- Check to see if the clutch pilot pin is loose or lost. If it is loose, remove it and apply a locking agent to the threads. Then screw it back in tightening to the specified torque.



- Install the Universal Joint Maintainer (tool).
- Using the shift shaft of one gear (second) hold on the countershaft with shaft on end, insert the universal joint maintainer shaft through the countershaft, and fit the spline teeth onto the end of the shift shaft.



- Install the Primary Gear.
- Replace the collar, E-ring, and the woodruff key on the right side of the countershaft.
- Replace the primary gear by hand with the hub facing outward to accommodate the countershaft washer.

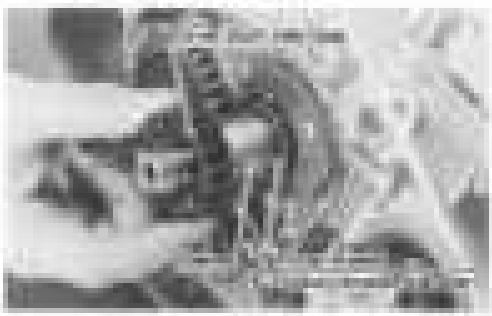


- Now, the primary gear is ready to place, replace a new countershaft washer with the tooth facing into the rear of the primary gear, and replace the primary gear nut.
- Hold the primary gear with the gear holder (special tool), and tighten the primary gear nut with 5.1 ~ 5.8 kgm (37 ~ 42 ft-lbs) of torque.
- Bend back part of the toothed washer against the side of the primary gear nut.

- Install the Clutch.

NOTE: When replacing any clutch plate, apply some lubricant oil to the new clutch plate surfaces.

- All the clutch assembly are disassembled, re-assemble the clutch hub, friction plates (2), steel plates (4), and steel rings (3) to facilitate clutch operation. The sequence is friction plate, steel ring, steel plate, friction plate, steel ring, etc. finishing with a steel ring. Screw in the clutch spring bolts (3) slightly.
- To properly installing the clutch to the drive shaft, align-set the clutch assembly into the clutch housing and the clutch hub assembly. There is a difined washer between the clutch housing and the clutch hub assembly. Install the thrust washer, drive, drive shaft into gear (biggest) side during said, clutch housing, and thrust washer in that order. The metal thrust washer is thinner and has a larger diameter.



- Replace the clutch hub assembly while meshing the friction plate tabs with the clutch housing fingers, and clutch hub tabs with the splined portions of the drive shaft. If necessary, screw the (3) mm clutch bolts (3) on four ten friction plates can be removed by hand to align the tabs.
- If the clutch bolts were loosened, screw tighten them evenly by hand rather than use compressed air, which might make cutting between washers. The torque for the bolts is 0.4 ~ 0.7 kgm (31 ~ 43 in-lbs).
- Replace the countershaft washer, fitting to tooth into the hub tabs, and replace the lock washer and the hub nut.

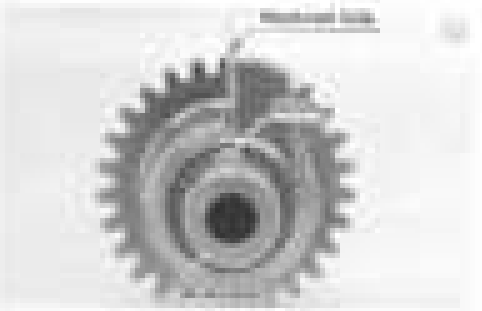


...shaft and crankshaft with the gear holder and tighten the lock nut (22 mm) with 9.0 kgm (65 ft-lbs).

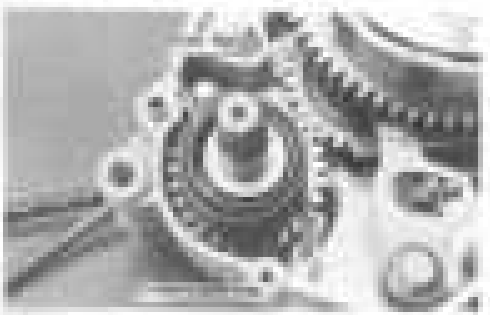
NOTE: a new lock washer fitted on the crankshaft lock (15 mm), tighten the lock securely. Bend each part of the lock washer against the side of the crankcase bolt.



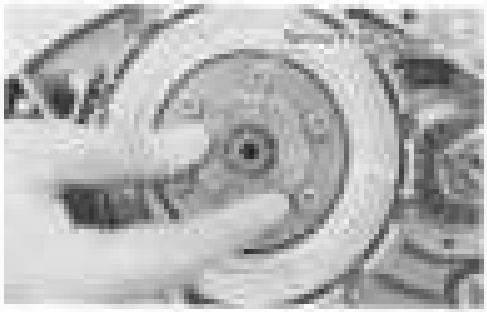
...Remove the gear holder.
...Install the kickstarter.
NOTE: When installing the cranked arm the lock shaft, the machined side of the ratchet lever should be clean up with the screw on the lock shaft.



...Position the kickstarter assembly with the thrust washer and over the lock shaft on the rear crankcase.
...the kick idle running back into the crankcase hole.



...Install the Right Engine Cover.
...Apply the spring plate bosses on the cluster with a thin layer of grease.



...Apply the gasket to positions with a thin layer of grease, and mount the right engine cover using the lock shaft and guide (special tool) to prevent the gasket from moving. Tighten the screws (5).
CAUTION: Be sure always to install the cover with the oil pump installed, or the engine may be broken.



...Install the Oil Pump.
...Turn the oil pump shaft so that it will fit into the groove on the crankshaft lock.

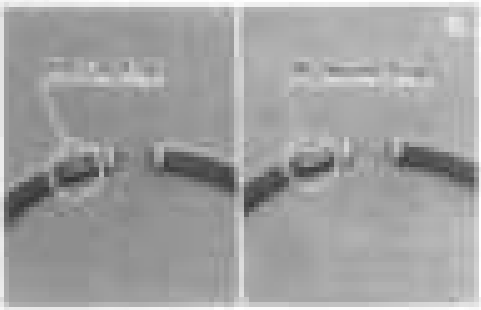


...When installing the crankshaft lock onto the pump, be sure that there is a washer on each side of the crankshaft. Tighten the lock bolt with 0.8 kgm (6 ft-lbs) of pressure. Check to see that the oil leaves when both bolts have been removed.

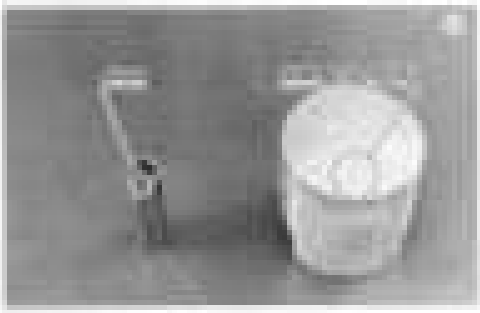
...Install the Clutch.
NOTE: 1. If the gasket is replaced with a new one, adjust to correct clearance (page 35) 2. New

...piston, a new piston or piston and rod assembly, check the ...gaps for ...clearance. (Fig. 19.)

...Install the piston rings as ...the ...mm (...inches) "N" ...up. ...The ...ends are the ...and second ring. The ...ring is the ...and marked "TOP", ...second ring is the ...and with an ...and marked "2N".



...the Dealer: ...piston, ...pins ...each ...is ...a ...pin is ...with an "A" ...and ...connecting ...with a "B" ...



...Apply ...to the ...and ...bushing ...(...). ...the ...rod. ...the ...and ...arrow on the ...of the ...must ...towards the ...

...a new ...pin ...ring in ...of ...one that ...removed. ...remove ...and ...the ring. ...installed, ...the ...ring on ...by ...that ...with the ...in the ...of the ...



...Cylinder and Cylinder Head.

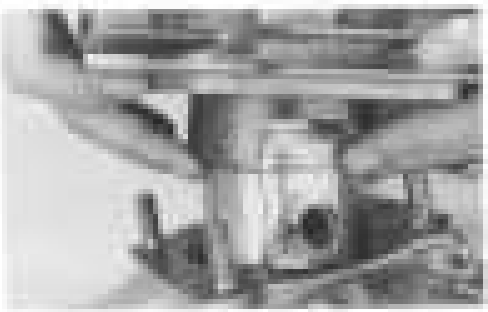
...the ...that ...the ...bore ...and ...the ...at BDC ...) to ...cylinder ...

...the ...gasket in ...Tab ...to the ...of ...

...Apply a ...to the ...rings and the ...wall of the ...

...the ...over the rings, ...a ...about the rings is ...No ...that the rings do not ...out of ...The pin in ...ground ...must be ...the ends of the ...ring.





...tighten the ...cylinder ...nuts (...) with ...(...). ...

...the cylinder head gasket and the cylinder head ...the ...

...tighten the ...cylinder head nuts (...) evenly ...(...). ...

NOTE: ...servicing and ...the ...be ...to do the ...

1. ...the ...with ...and ...the ...
2. ...the ...and ...the ...cable (Pgs. ...).

Maintenance

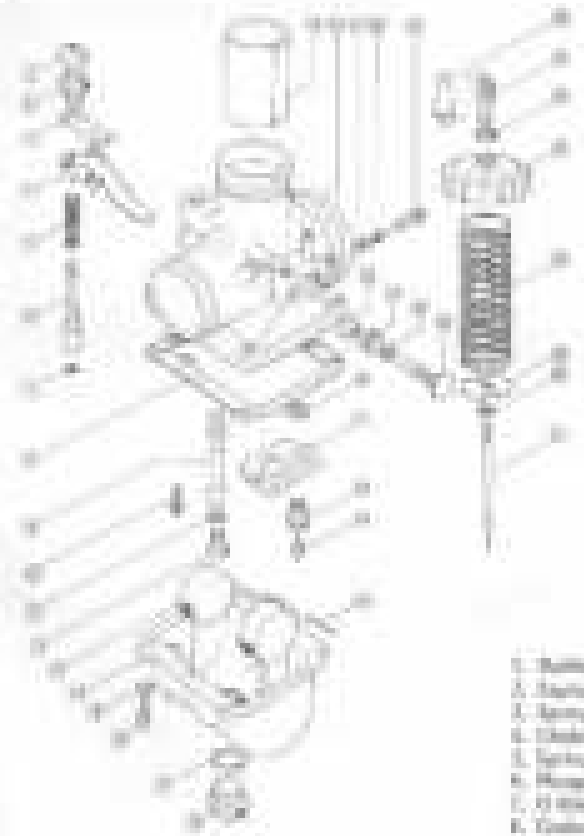
CARBURETTOR

The carburettor specifications (Table 4) must be strictly observed for best all around performance, and authority with new engines who change. However, adjustments or alterations may be desirable for improved performance under special conditions, and when proper access is not obtained after the carburettor has been properly adjusted and all parts cleaned and found to be functioning properly.

Table 4 Carburettor Specifications

Main Jet	108
Air Jet	2.0
Jet Needle	6D3-3T
Needle Jet & Badge #	0-6 (# 1-1)
Throttle	2.5
Pilot Jet	35
Air Screw (turns out)	1.5
Float Level	16.5+/-0.5

Carburettor

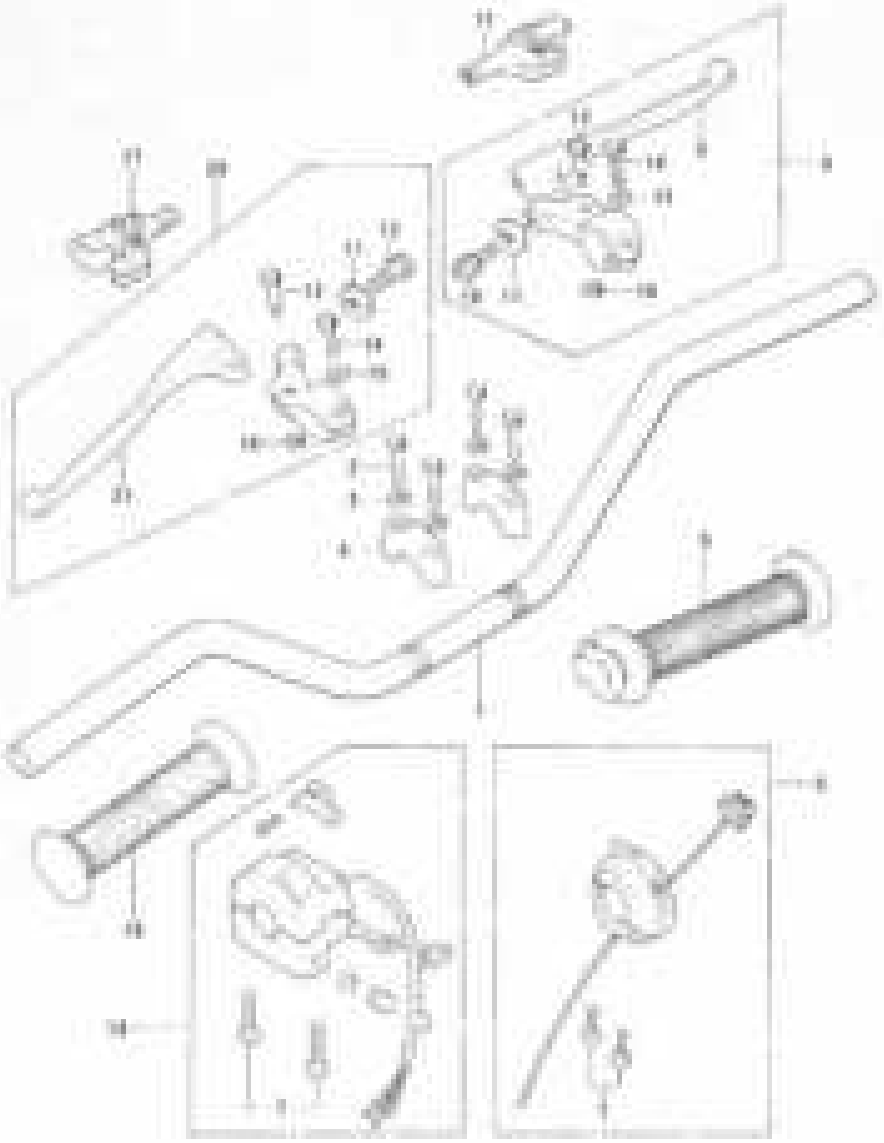


1. Throttle Cap
2. Starter Plunger Cap
3. Spring Pipe
4. Choke Lever
5. Spring
6. Plunger Assembly
7. O-Ring
8. Gasket
9. Needle Jet
10. Pilot Jet
11. Washer
12. Main Jet
13. Float
14. Float Bowl
15. Lock Washer
16. Screw
17. O-Ring
18. Drain Plug
19. Throttle Valve
20. Carburettor Body
21. Spring
22. O-Ring
23. Jet Screw
24. Throttle Cap
25. Cable Adjuster
26. Lock Nut
27. Carburettor Cap
28. Spring
29. Spring Seat
30. Clamp
31. Jet Needle
32. Clip
33. Spring
34. O-Ring
35. Idling Screw
36. Gasket
37. Pipe
38. Valve Seat
39. Valve Needle
40. Pin

The "C" in 3D1-3 is the jet needle setting range. The "3" is the jet needle clip position and is set numerically on the needle. The only practical method of counting the grooves is the top of the jet needle from the top down.

Jet Needle



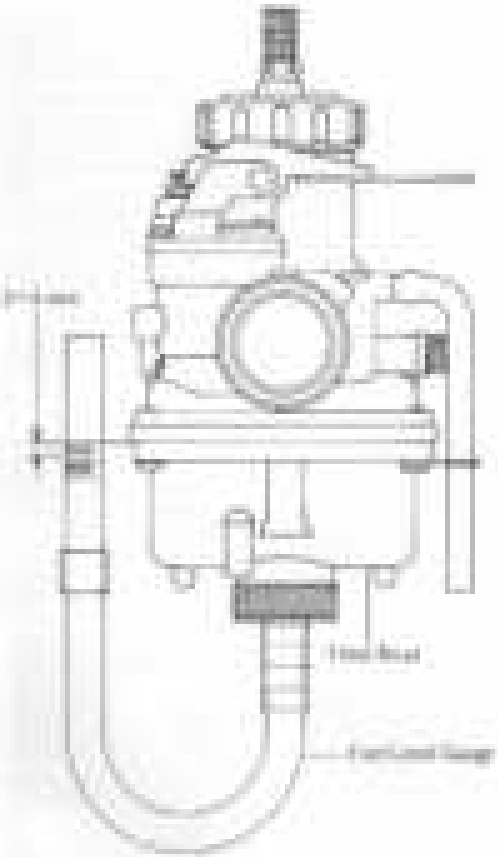


(2) Adjusting the fuel level

- Close the fuel tap, and remove the carburettors. The fuel level will otherwise cause the right hand to be removed to inspect the fuel level.
- Remove the drain plug from the bottom of the float bowl, and screw the fuel level gauge (special tool) into the plug hole.
- Open the fuel tap on the fuel rail and flow into the carburettor.
- Line up the uppermost part of the level gauge (see where the bottom edge of the carburettor body contacts the fluid level. The proper fuel level is 4.5 mm from the top of the tube (arrow).

NOTE: Measure the fuel level keeping the carburettors fully perpendicular to the ground.

Fuel Level Measurement



- (3) The fuel level is incorrect, make the float adjustment. Bend the tab on the float arm a slight amount and then recheck the level, readjusting if necessary.



DECARBONIZATION

The exhaust system (i.e., muffler, tube, manifold, pipes, head, exhaust port and cylinder head) on the car will collect soot when exhaust gas condenses and an excessive amount of carbon, resulting in a drop in performance. Decarbonization of the cylinder should be done periodically.

- Remove and disassemble the muffler. Clean out traffic tube with a wire brush and be careful not to damage the baffle plate.
- Remove the cylinder head, clean out any carbon, and clean the head with solvent having a high flash point.
- Remove the cylinder, clean out the carbon from the exhaust port carefully.
- Reassemble the piston, cylinder and the exhaust, and then lightly polish the piston with fine emery cloth.
- Clean carbon out and out of the piston ring grooves using a suitable tool.

CYLINDER AND PISTON

Compression Measurement

A compression test is very useful as an aid in determining the condition of the engine. Low compression may be due to cylinder wear, worn piston ring grooves, worn, broken, or sticking piston rings, cylinder head leaks, or damage to the engine such as piston seizure. Too high a compression may be due to carbon buildup on the piston head and cylinder head.

Before measuring compression, check that the cylinder head is tightened down with (12 – 14 kgm / 11.5 – 12.5 ft-lbs) of torque and cylinder base nuts with (3.5 – 4.5 kgm / 25 – 32 ft-lbs) of torque, and then thoroughly warm up the engine so that engine oil increases the piston and cylinder wall will fully and compression is at its peak during normal running. While the engine is running, check also about to see gas leakage from around the spark plug or the cylinder head gasket.

Stop the engine, remove the spark plug, and press the compression gauge hose assembly against the spark plug hole so that there will be no leakage. With the throttle fully open so that air can flow freely to the engine, turn the engine over several times with the compression gauge hose being

The compression is highest reading obtainable.



Table 6 Cylinder Compression

Standard	Service Limit
[illegible]	[illegible]

Cylinder wear

Since there is a difference in cylinder wear in different directions, take a look for side and a front to back measurement at each of three locations (total of six measurements) using an inside micrometer or a cylinder gauge. If any measurement exceeds the service limit, we'd have a performance or repair (type 2) (the tolerance on the measurements, the cylinder need be repaired or bored to oversize and then honed). There are two sizes of oversize pistons available: 0.5 mm and 1.0 mm. Honing or pistons require need to rings.

Cylinder Inside Diameter Measurement

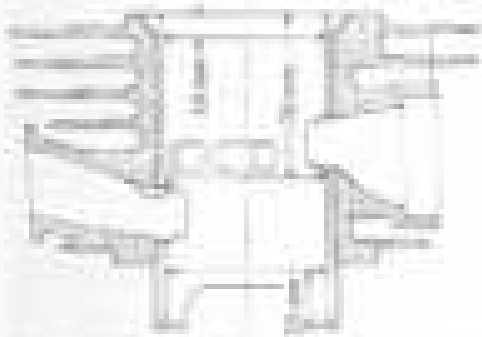


Table 7 Cylinder Inside Diameter

Standard	Service Limit
[illegible]	[illegible]

Piston wear

Measure the outside diameter of the piston 5 mm up from the bottom of the piston at a right angle to the direction of the piston pin using a micrometer. If the measurement is under the service limit, replace the piston.

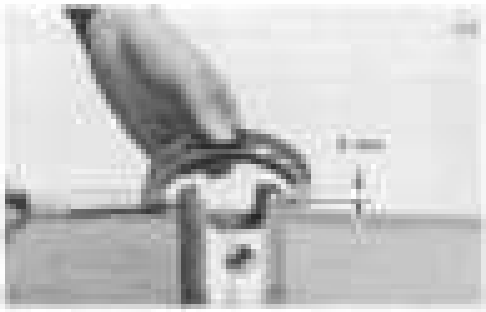


Table 8 Piston Diameter

Standard	Service Limit
[illegible]	[illegible]

Piston-to-cylinder clearance

In order to maintain proper piston-to-cylinder clearance, the piston-cylinder clearance is determined whenever a new piston or cylinder is installed. The most accurate way to find the clearance is to make separate piston and cylinder measurements and then compare the differences between the two values. Measure the piston diameter as was described, and measure the cylinder diameter at the very bottom of the cylinder.

Table 9 Piston/Cylinder Clearance

Standard
[illegible]

Piston ring end gap

Place the piston ring being checked inside the cylinder even to the bottom where the wear is low. Measure the gap between the ends of the ring with a thickness gauge. If the gap is wider than the service limit, the ring is oversized and must be replaced.



Table 10 Ring End Gap

Standard	Service Limit
[illegible]	[illegible]

Piston ring ovality

Piston ring ovality can be evaluated by measuring the gap between the ends of the ring with the ring free of any restraint. If the gap is less than the service limit, the ring is worn and must be replaced.

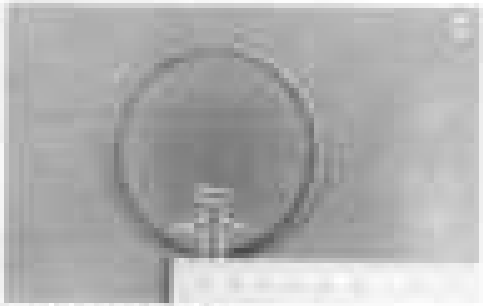


Table 11 Ring Free Gap

Standard	Service Limit
about 9.2 mm	8.2 mm

Piston, piston pin, connecting rod small end wear

Measure the diameter of the piston pin with a micrometer. If the piston pin diameter is less than the service limit, or any wear, replace the piston pin.

Using a cylinder gauge, measure the diameter of both piston pin holes in the piston and the inside diameter of the connecting rod small end. If either piston pin hole diameter exceeds the service limit, replace the piston. If the connecting rod small end diameter exceeds the service limit, replace the crankshaft assembly.



Table 12 Piston Pin, Piston Pin Hole, Small End Dia

	Standard	Service Limit
Piston pin	17.994 – 18.000 mm	17.96 mm
Piston pin hole	18.004 – 18.012 mm	18.05 mm
Small end I.D.	22.000 – 22.013 mm	22.050 mm

To the Dealer When possible, match each new piston pin hole, a matched pin is assembled with an "01" piston and an oversized pin with a "02" piston (Fig. 60).

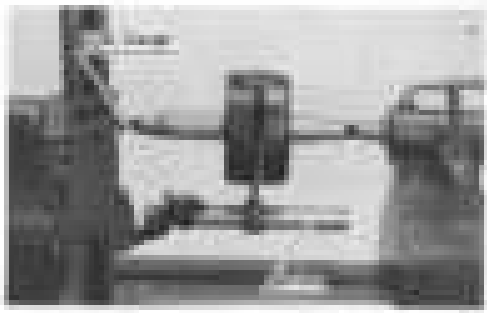
NOTE When a new piston or pin is used, check that cannot be set clearance is 0.002 – 0.013 mm.

CRANKSHAFT

Connecting rod bending, twisting

Set the crankshaft on a V-block alignment jig or on a V-block on a surface plate. Select an arbor of the same diameter as the piston pin and of sufficient length, and insert it through the small end of the connecting rod.

Using a height gauge or dial gauge, measure the difference in the height of the rod above the surface plate over a 100-mm length to determine the amount the connecting rod is bent.



Using the arrangement shown in the figure, measure the amount that the arbor varies from being parallel with the crankshaft over a 100 mm length of the arbor to determine the amount the connecting rod is twisted.

If either of the above measurements is excessive, the service limit, the crankshaft assembly must be replaced.

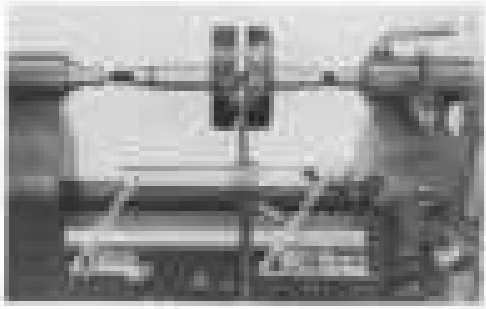


Table 13 Connecting Rod Bend, Twist

Standard	Service Limit
under 0.05 mm/100 mm	0.30 mm/100 mm

Connecting rod big end radial clearance

Set the crankshaft on a V-block alignment jig. Push a dial gauge against the connecting rod big end, push the connecting rod first towards the gauge and then in the opposite direction. The difference between the high and low reading is the radial clearance.

If the radial clearance exceeds the service limit, replace the crankshaft assembly.



Table 14 Connecting Rod Big End Radial Clearance

Standard	Service Limit
[illegible]	[illegible]

Crankshaft big end side clearance

Measure the side clearance of the connecting rod with a thickness gauge. If the clearance exceeds the service limit, replace the crankshaft assembly.



Table 15 Connecting Rod Big End Side Clearance

Standard	Service Limit
[illegible]	[illegible]

Crankshaft runout

Set the crankshaft in a frame alignment jig and place a dial gauge on each side of the crankshaft where crankshaft ball bearing fits. Turn the crankshaft slowly. The maximum difference in gauge readings is the crankshaft runout. If the runout exceeds the service limit, replace the crankshaft assembly.

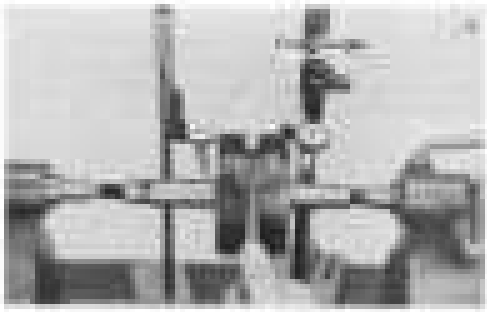


Table 16 Crankshaft Runout

Standard	Service Limit
[illegible]	[illegible]

CLUTCH

Clutch spring tension

Measure the free length of the clutch springs with vernier calipers. If any spring is shorter than the service limit, replace all the springs as a set to ensure even pressure on the clutch plate.

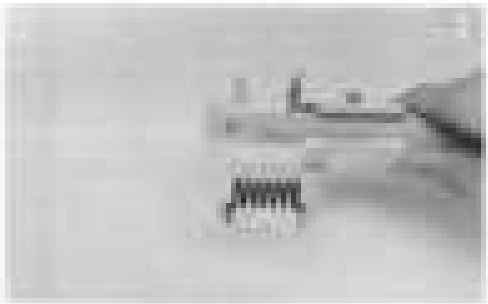


Table 17 Clutch Spring Free Length

Standard	Service Limit
[illegible]	[illegible]

Friction plate wear, damage

Visually inspect the friction plates for any abnormal wear, damage or discoloration. Measure the thickness of the plates with vernier calipers. If any plate shows signs of damage or if the tips exceed the service limit, replace them with new ones.

Friction Plate Measurement



Table 38 Friction Plate Thickness

Standard	Service Limit
2.9 ~ 3.1 mm	2.6 mm

Friction plate/clutch housing clearance

Measure the clearance between the tangs on the friction plates and the fingers of the clutch housing. If the clearance is excessive, the plates will be noisy. In this inspection examine the service limit(s) marked the friction plates.

Friction Plate/Clutch Housing Clearance



Table 39 Friction Plate/Clutch Housing Clearance

Standard	Service Limit
0.057 ~ 0.457 mm	0.61 mm

Clutch plate wear

Place each friction plate and each steel plate on a surface plate, and measure the gap between each plate's tabs and the surface plate. This gap is the amount of plate tang wear. Measure the plates without their tangs (ends).

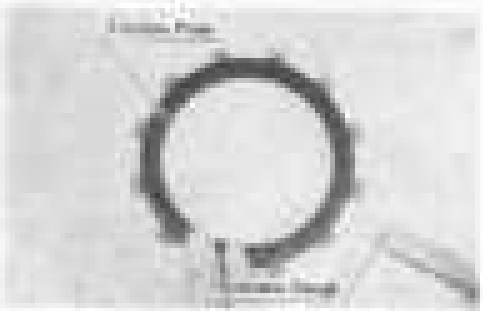


Table 40 Clutch Plate Wear

	Standard	Service Limit
Friction plate	width 19.9 mm	19.6 mm
Steel plate	width 19.7 mm	19.4 mm

TRANSMISSION

Shift lever bending

Visually inspect the shift forks, and replace any that is bent. A bent fork could cause difficult to shifting or allow the transmission to jump out of gear when under power.

Shift fork, gear groove wear

Measure the thickness of the fingers of each shift fork, and measure the width of the gear shift fork grooves. If the thickness of a shift fork finger is under the service limits, the shift fork must be replaced. If a gear shift fork groove is worn over the service limits, the gear must be replaced.

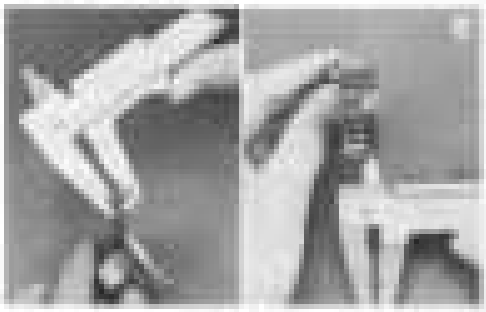


Table 41 Shift Fork Thickness

Standard	Service Limits
4.9 ~ 5.0 mm	4.8 mm

Table 42 Gear Shift Fork Groove Width

Standard	Service Limits
5.05 ~ 5.15 mm	5.3 mm

Shift fork guide pin/pitch shaft groove wear

Measure the diameter of each shift fork guide pin, and measure the width of each shift drum groove. Replace any shift fork or shaft the guide pin has worn past the service limit. If a shift drum groove is worn past the service limit, replace the shift drum.



Table 23 Shift Fork Guide Pin Diameter

Standard	Service Limit
5.01–5.0 mm	4.92 mm

Table 24 Shift Drum Groove Width

Standard	Service Limit
5.00–5.03 mm	5.10 mm

Transmission gear damage

Dents or galling on the transmission gear, like light damage on the connecting arm or collapsed, but the gear must be replaced if the teeth are badly damaged. Damaged teeth on a gear indicate that the teeth on the gear that drives it may also be damaged. In the same way that a gear is inspected or replaced, the driving gear should also be inspected and replaced or replaced if necessary.

Bearing and shaft assembly inspection

Inspect the shift pawl spring, gear set lever spring, neutral set lever spring and shift guard. Replace any broken or otherwise damaged parts.

Check to see if the return spring pin is loose or lost. If it is loose, remove it and apply a locking agent to the threads. Then screw it back in tightening it to the specified torque.



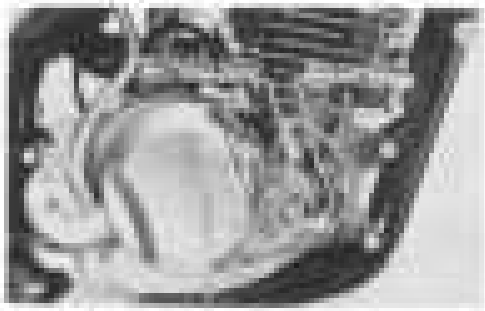
OIL PUMP

In the Kawasaki Automatic System, oil is fed to the crankcase from the engine and pumped by an oil pump in the engine sump. It mixes with the fuel/air mixture from the carburetor. The rate at which the oil is pumped is controlled by both throttle opening and engine speed so that the quantity of oil will vary with engine load. The pumped amount is optimum, this system is compared to a system whereby oil is premixed with the fuel. Some of these engine benefits, reduce heavy duties engine performance and economy.

Bleeding the oil pump

When some of the oil pump lines have been removed, or may become emptied, bleed and maintain oil flow.

Set the oil lines type the oil pump control lever before disconnecting it to the pump. Bleed the oil lines by running the engine at idle speed. Remove 5,000 rpm) while pulling up on the oil pump cable as shown in Fig. 13.5 in order to accelerate the engine slowly. Keep the engine idling until the oil is completely drained out. If air bubbles continue to appear in the output lines, check the oil lines connections or the pump.



Oil pump performance test

If a drop in oil pump performance is suspected, check the line that the oil is being pumped.

- Remove the oil pump cover.
- Remove the hose from the cylinder, and run the engine from into a container.

CAUTION: DURING THE OIL PUMP TEST, USE A MIX RATIO OF GASOLINE TO OIL IN THE FUEL TANK IN PLACE OF THE GASOLINE NORMALLY USED.

- Remove the stopping screw.
- Start the engine, check oil pump operation to the carburetor and set the engine on 5,000 rpm.

NOTE: Two people are necessary to carry out the oil pump and engine test.

- Holding the oil pump hose fully open for holding out the cable, and confirm the oil flow is being pumped for 3 minutes. If the amount of oil pumped corresponds with the table, the oil pump is operating properly.



Table 25 Oil Pump Output

- If oil pump output is low, disassemble the pump and clean it. If this does not correct the problem, replace the oil pump as an assembly. Try using a previous model with no provisions for replacement of individual parts when the parts are well lubricated and wear is minimal.
- Reinstall the frame belt, bleed the pump, and replace the oil pump cover.

WHEELS

Wheel runout

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

Set the dial gauge to the front 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.

If excessive amount of rim wobble (runout) can be corrected by repositioning the rims, that is, loosen spoke nipples and tighten others to change the position of deflected parts of the rim. If the rim is badly bent, however, it should be replaced.



Table 28 Rim Runout

	Standard	Service Limit
Axial	under 0.2 mm	2 mm
Radial	under 0.2 mm	2 mm

Axle shaft

A bent axle causes vibration, poor handling, and excessive

To measure axle runout, remove the axle, place it on V blocks and set the dial gauge on the axle, and set the gauge to the axle or a point halfway between the blocks. Then the axle or measure the runout. The amount of runout is the amount of dial variation.

If runout exceeds the service limit, straighten the axle or replace it. If the axle cannot be straightened to within tolerance, or if runout exceeds the service limit, replace the axle.

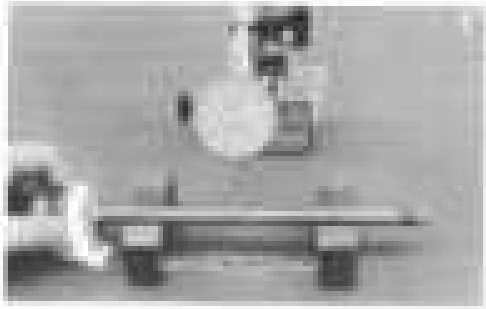


Table 27 Axle Runout (1100 cm)

	Standard	Service Limit
X axis	under 0.1 mm	0.2 mm
Y axis	under 0.1 mm	0.2 mm

BRAKES

Brake drum relay

Measure the inside diameter of the brake drum with calipers or micrometer. Drum wear will cause poor braking effectiveness. Take measurements at a minimum of two points. If any diameter exceeds the service limit, the drum must be replaced.

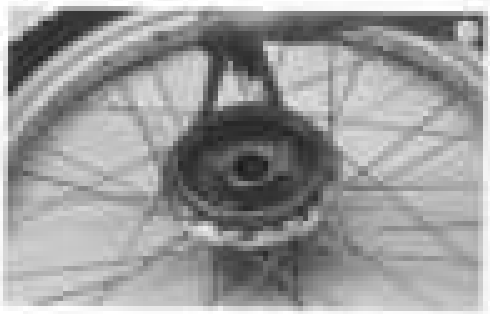


Table 29 Brake Drum Inside Diameter

	Standard	Service Limit
X axis	130.000 ~ 130.15 mm	130.15 mm
Y axis	130.000 ~ 130.15 mm	130.15 mm

Brake shoe lining wear

Check the thickness of the brake linings, and replace both shoes as a set if the thickness at any point is less than the service limit. If the thickness of the brake linings is sufficient, check the brake for correct work, and for no sand down any high spots. With a wire

brush, remove any foreign particles imbedded in the lining surface. Wash off any oil or grease with some kind of solvent having a high flash point. In case the linings are damaged or the surface cannot be restored by sanding and cleaning, the shoes have to replaced.



Table 09 Brake Lining Thickness

Standard	Service Limit
3.93~4.13 mm	2 mm

Brake shoe spring tension

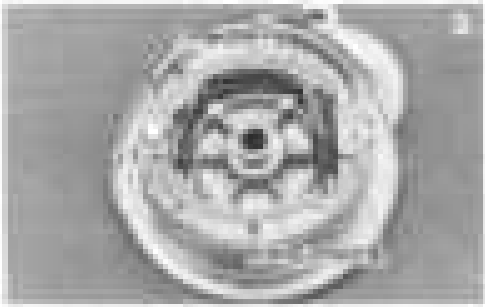
If the brake springs become stretched, they will not pull the shoes back wide. Grab the shoes when the brake lever is pulled a moment, causing the shoes to drag on the drum. Remove the springs, and check them the height with some vernier. If it has a stretched beyond the service limit, replace both springs.



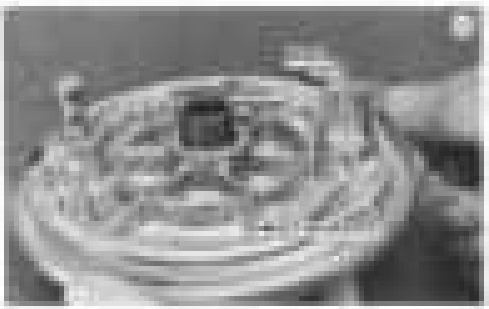
Table 10 Brake Spring Free Length

	Standard	Service Limit
Front	41.7 ~ 43.7 mm	40 mm
Rear	36.8 ~ 37.4 mm	34 mm

NOTES: 1. When fitting the brake shoe springs onto the brake shoes, the longer spring should be on the upper side.



2. The camshaft lever for installed so that the engraved mark on the end surface points to the center of the shaft.



GREASE SEALS, OIL SEALS AND BEARINGS

Ball bearing wear, damage

Since the ball bearings are made to extremely close tolerances, the clearances cannot practically be measured. Therefore, the conditions of the bearings must be judged by feel. Wash each bearing with some kind of solvent having a high flash point, dry it **lubricate it with oil** or **grease**, and roll it. Take it by hand to check its conditions. If it is noisy, does not spin smoothly, or has any rough spots, it need to replaced. Before reassembling the bearing, redress to oil and work a little into

Needle bearing wear, damage

The rollers on the needle bearings wear in such a way that wear is difficult to measure. Instead, inspect the bearings for obviously color change or other damage. If there is any doubt as to the condition of roller bearing, replace it.

Grease, oil seal damage

Inspect the oil seals or grease seals, and replace any seals that have worn lips, are worn inside diameter, are damaged (for example, nicked or cut), or otherwise deteriorated. When oil seals or grease seals are newly installed on reassembly, they removed all scars or grease seals from or replacing. When pressing in an oil seal (which is covered), coat it the seal's lip with

Lubricating the wheel bearings

If the parts bearing is to be used again, wash it with some kind of solvent having a high flash point,



NOTE: When installing, the speedometer gear housing to the hub, turn the speedometer gear retainer so that it fits in the hub notches.

DRIVE CHAIN

Drive chain wear

When the chain has worn so much that it is more than 3% longer than when new, it is no longer safe to use and should be replaced. Whenever the chain is removed, inspect both the engine and rear sprockets, and replace them if necessary. Dismantle, lubricate and reassemble chain as soon as worn links.

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. Remove the drive chain, lubricate, and suitable the chain taut (either by using the chain puller or by hanging a 10 kg (22 lb) weight on the chain). Measure the length of 20 links on a straight part of the chain (use pin centre at the 1st pin to pin centre of the 21st pin). If the length is greater than the service limit, the chain should be replaced.



Table 31 Drive Chain Length

	Standard	Service Limit
20-link Length	317.5 mm	326.9 mm

NOTES: 1. The drive sprocket was designed for use with DID chains (415D, 428HBR) as new chains. For maximum strength and safety, the Scorpio 415LE, 428HBR 120 link chain must be used for replacement.

2. For information and chains of the master link shielding the master link must be installed with the closed end in the 12:00 position in the direction of chain rotation. See Fig. 100.

Structure of Chain Rotation



Chain tensioner wear

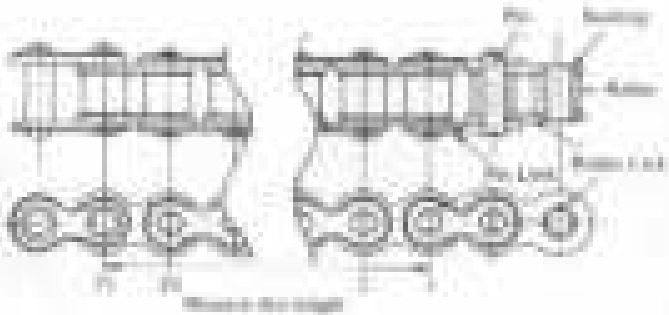
Periodically inspect the drive chain tensioner roller. If it is worn down or damaged, replace it.

SPROCKETS

Sprocket wear

Periodically inspect the sprocket teeth. If they are worn as illustrated, replace the sprocket.

Drive Chain



Sprocket Teeth



Measure the diameter of the sprocket at the base of the teeth. If the sprocket is worn down to the limit, the sprocket body, replace the sprocket.

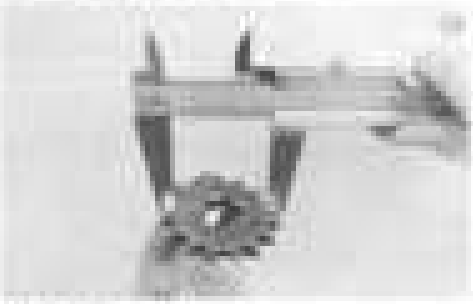


Table 33 Sprocket Dimensions

	Standard	Service Limit
Engine	13.91 ~ 13.97 mm	13.8 mm
Rear	201.93 mm	200.0 mm

NOTE: When installing the engine sprocket, bend up one tab of the lock washer against the mounting nut. For the rear sprocket, bend up the bolt washers against two bolt of each bolt.

FRONT FORK

Before the damage becomes severe or any wearing parts have been caught by abnormal wear conditions. Replace any spring which is shorter than the service limit. If the length of a replacement spring and that of the remaining spring vary greatly, the remaining spring should also be replaced in order to keep the fork's proper balance necessary for even-rate cushion.

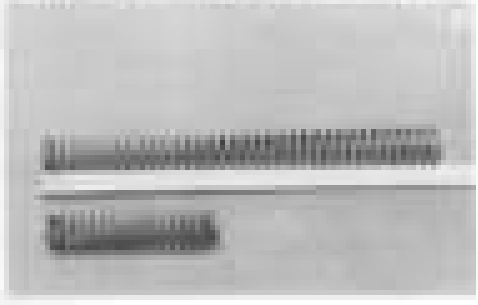


Table 34 Front Fork Spring Free Length

	Standard	Service Limit
Left	374.8 mm	371 mm
Right	376.8 mm	373 mm

NOTE: When installing the inner tube, check that the upper surface of the upper bushing is even with the upper surface of the upper bush.



Clean all threaded area of the front fork cap bolt before installing.



When assembling the front fork and assembly, apply a non-permanent locking agent to the threaded of the fastener of the lower tube.

STEERING STEM BEARINGS

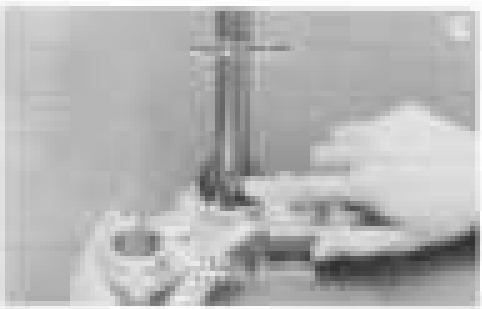
Front steering is from a loose result in the steering post, the bearing race surfaces and become dented. Damaged bearing races will cause the handlebar to jerk or catch when turning.

Bearing Lubrication

In accordance with the periodic maintenance chart (Fig. 12), and whenever the steering head is disassembled, the steering bearings should be re-lubricated.

Wipe off the old grease off the inner and outer bearing races. If necessary, replace them as sets with all worn or bent parts. Replace the bearing cone if they show wear or damage. Apply grease (heavy) to the upper and lower races and the bearings before re-install with grease. Pack the steering with grease.







FUEL SYSTEM

Inspection and cleaning

Appendix

PRE-TRIAL CHECK POINTS

Gasoline	Examine or care
Engine oil	Engine oil level sufficient
Transmission oil	Transmission oil level correct
Tires	Check for wear, cracks and other damage (About this air pressure)
Brakes and cable	Tighten and lower brakes
Wheel chuck	Check overall condition and clean dust Oil as necessary
Clean oil cable	Clean oil sufficient
Brakes	Check the brake adjustment
Hand plug	Tighten (counter) torque
Cylinder, cylinder head	Tighten to correct torque
Muffler	Check the fixing property
Carburetor, air cleaner	Correct and tighten
Ignition timing	Ignition timing correct
Muffler	Muffler not damaged
Wiring	Wiring (Fig. 11)
Throttle grip	Throttle grip play correct (Fig. 12)
Steering	Check that the steering turns freely but has no play (Fig. 13)
Front fork	When pushing down on the handlebar with the front brake fully applied, check that front fork operates properly and has no leakage
Rear shock absorber	Function properly, no oil leakage
Electrical equipment	Check that the headlight, tail/brake light and horn work
Bolts and nuts	Tighten any loose bolts and nuts (Fig. 14)
Fuel tank	Recorded quantity
Engine and transmission	Noise-free or damaged

AFTER TRIAL CHECK POINTS

After any riding, first check the resistance (Fig. 15), and then inspect the entire motorcycle, while paying care to every part of the oil cooler, carburetor, brakes, etc., that may have been submerged in water or splashed with water.

Carry out general lubrication (Fig. 16) and make adjustments as necessary (Fig. 17 ~ 19).

STORAGE

When the motorcycle is to be stored for any length of time, or placed in preparation for storage in indoors

●Clean the entire vehicle thoroughly.

●Drain the gasoline from the fuel tank, and inject one tablespoon (two) ounce (27 cc) of fuel a long time (no gasoline will use.)

●Remove the engine fuel tank, pour about 1 pint of mixed oil into the tank, let the tank pressure to cool lower surface thoroughly, and then put the mixture into the tank.

●Remove the spark plug and put several drops of SAE 10 oil into the cylinder. Kick the engine over slowly a few times to coat the cylinder wall with oil, and replace the plug.

●Lubricate the drive chain and all the cables.

●Fix a plastic bag over the exhaust pipe to prevent moisture from entering.

●Put 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 help determine when there are no rattles.)

●Place oil on all unpainted metal surfaces to prevent rusting. Avoid getting oil on rubber parts or on the engine.

●Put a cover over the motorcycle to keep dust and dirt from collecting on it.

To put the motorcycle back into use after storage:

●Wipe off the plastic bag if any.

●Start the engine (Fig. 4 ~).

●Fill the fuel tank with fuel.

●Let the engine run about five minutes to warm the oil, and check the transmission oil.

●Put in fresh transmission oil (Fig. 5 ~).

●Check all the points listed under the Inspection and Adjustment section (Fig. 6) ~ (15).

●Lubricate the chain and the other points listed in the Periodical Lubrication section (Fig. 16) ~ (17).

CLEANING

1) Preparation for washing

Before washing, prepare the items to cover or keep water off the following parts:

Rear opening of the muffler ..... Cover with a plastic bag secured with rubber bands

Check and take these,
Hand brake, right handle
Steering engine and
piston housing ..... Cover with plastic bags
Ignition switch ..... Cover with plastic bags and tape
Air cleaner inside ..... Close up the opening with tape so water is not

2) Where to be careful

Avoid washing more with any place from the following places:

Crank does not turn

- Starter motor gear inside the body. The starter will not operate until they are out.

Engine too hard to start

- Old fuel

If owner gets more out of starter motor and/or only the spark plug cap, the starter will come through the socket and be grounded only. When this happens, the starter motor will not start and the ignition bank have to repair etc.

Dirty starting

- Remove the starter bags, and clean the air cleaner bodies.
- Test the brake ballast resistor(s) operation.
- Lubricate the starter motor/solenoid as would new.

Key gasses

- Compression (valves)
  - Spark plug loose
  - Cylinder head not sufficiently tightened down, or not evenly tightened down
- Carbon fouling
  - Choke maladjusted or worn
- Timing is maladjusted
- Insufficient firing
  - Spark plug defective
  - Ignition coil defective

TROUBLESHOOTING GUIDE

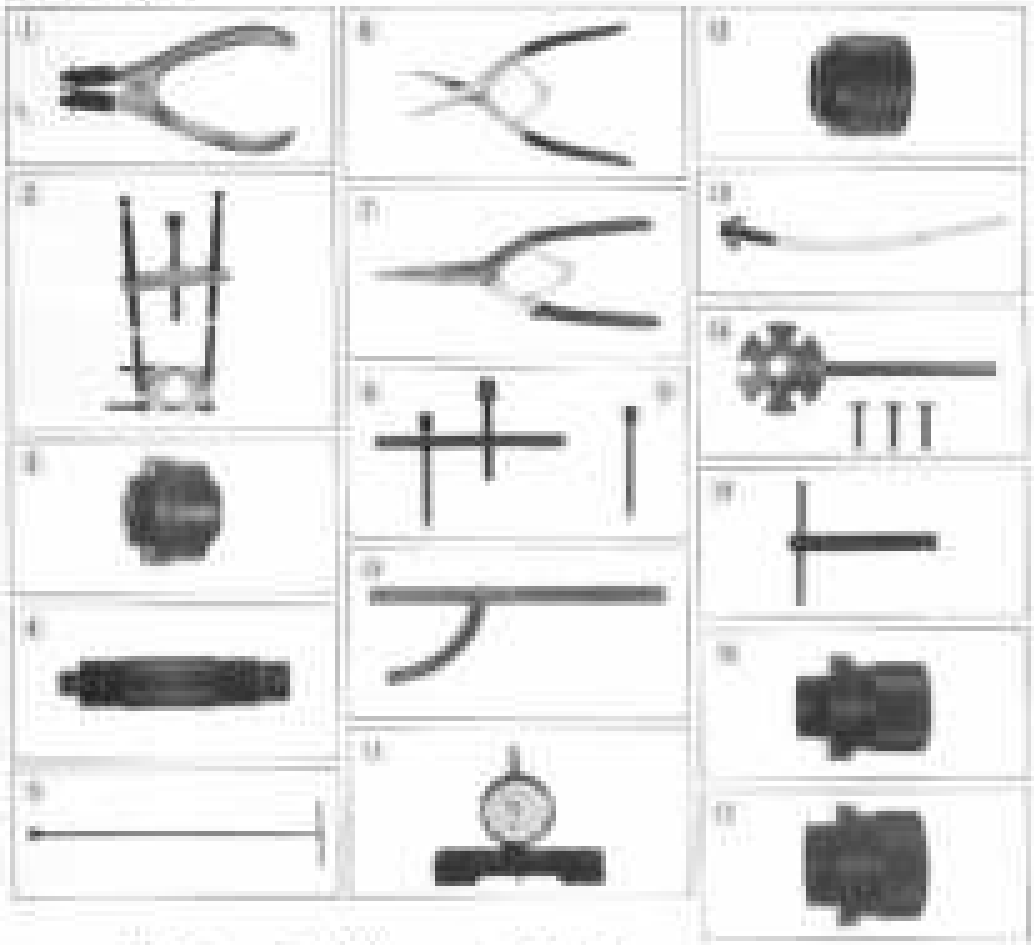
Engine doesn't start

- No gasoline in tank
- Gasoline not reaching carburetor
  - Fuel cut-off valve stuck/not functioning
  - Fuel tank vent blocked or defective
- Flooded
  - If the engine is flooding (not starting) with the throttle fully open or the choke off, try
- Choke not working properly
  - Ignition switch on engine was switch OFF
  - Starter won't stay engaged
  - Wire disconnected or defective
  - Solenoid chattering
- Compression leakage
  - Spark plug loose
  - Cylinder head not sufficiently tightened down, or not evenly tightened down
- Spark plug not firing
  - Ignition switch in engine was switch OFF
  - Fouled spark plug (refiring)
  - Wire disconnected or defective

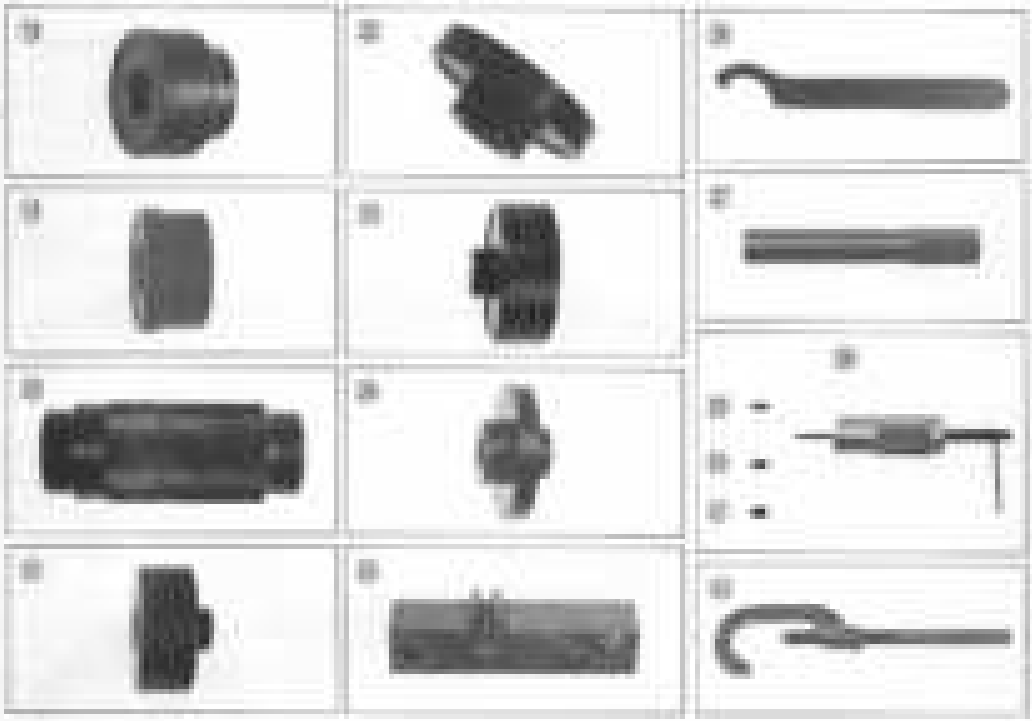
Engine stops

- No gasoline
- Fuel tap clogged or lines restricted
- Fuel tank cap air vent obstructed
- Overload
  - Too engine on
  - Transmission in low
  - Incorrect spark plug
  - Carburetor adjusted too lean
  - Timing incorrect
  - Clutch held up to overheat or slipping

SPECIAL TOOLS



REF. NO.	TOOL NO.	DESCRIPTION
1	0980-110	PISTON RING PLIERS
2	0980-130	[illegible]
3	0980-150	[illegible]
4	0980-160	[illegible]
5	0980-180	[illegible]
6	0980-190	[illegible]
7	0980-200	[illegible]
8	0980-220	[illegible]
9	0980-230	[illegible]
10	0980-240	[illegible]
11	0980-260	[illegible]
12	0980-270	[illegible]
13	0980-280	[illegible]
14	0980-290	[illegible]
15	0980-300	[illegible]
16	0980-310	[illegible]
17	0980-320	[illegible]



REF. NO.	TOOL NO.	DESCRIPTION
13	[illegible]	BEARING DRIVER — Front Hub
14	[illegible]	BEARING DRIVER — Front Hub
15	[illegible]	SHAFT GUIDE BEARING DRIVER
17	[illegible]	BEARING DRIVER — Rear Hub
20	[illegible]	BEARING DRIVER "R" — Outside Bush
23	[illegible]	BEARING DRIVER — Drive Shaft
24	[illegible]	BEARING DRIVER — Crankshaft
26	[illegible]	GEAR HOLDER — Primary Gear
28	[illegible]	27MM NUT SPANNER
31	[illegible]	TRANSMISSION CIRCLIP DRIVER — Selecting Main Gear Bearing
38	[illegible]	PISTON PIN PULLER ASSEMBLY
39	[illegible]	ADAPTER "D" — Bolt used for A7SW
40	[illegible]	ADAPTER "E" — Nut used for A7SW
41	[illegible]	ADAPTER "C"
42	[illegible]	TIMING SPROCKET HOLDER

PERIODIC MAINTENANCE

Frequency / Operation	After initial 600 km	After initial 3,000 km	Every subsequent 3,000 km	Every subsequent 6,000 km	See Page
Adjust brakes	•	•	•		16
Adjust drive chain	•	•	•		16
Check, adjust clutch	•	•	•		17
Check, adjust carburetor	•	•	•		11
Adjust throttle grip and oil pump cable	•	•	•		10,12
Check spoke tightness and rim runout	•	•	•		18,43
Tighten nuts and bolts	•	•	•		33
Clean fuel system	•	•	•		41
Clean, oil point drive gear	•	•	•		34
Check steering play	•			•	16
Check ignition timing	•	•	•		12
Clean air intake element		•	•		14
Carry out general lubrication		•	•		30
Check tire wear		•	•		18
Check drive chain wear		•	•		46
Change transmission oil	•	Every subsequent 6,000 km			1
Clean, lubricate drive chain	Every 300 km				30
Check brake wear	Every 6,000 km				43
Check front fork oil level	Every 6,000 km				19
Decarbon head and exhaust system	Every 6,000 km				37
Change air cleaner element	Every 12,000 km				14
Change front fork oil	Every 15,000 km				19
Regrease wheel bearings	Every 1 year or 15,000 km				23,44
Regrease speedometer gear housing	Every 1 year or 15,000 km				22,45
Regrease brake camshaft	Every 1 year or 15,000 km				21
Lubricate steering stem bearings	Every 2 years or 30,000 km				23,46

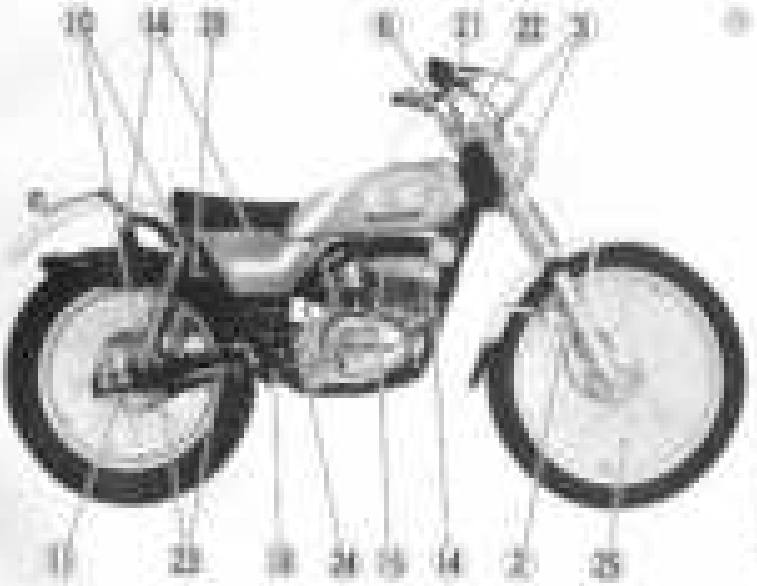
NOTE: Before and after initial riding, check and lubricate the points in the sections, "Pre-ride Check Points", and "General Lubrication".

BOLT AND NUT TIGHTENING

Every day before riding, check whether all the tightness of the bolts and nuts described here. Also, check to see whether or not cotter pin is in place and in good condition.



1. Rear Fender Nut
2. Front Fender Mounting Bolts
3. Fork Clamp Bolts
4. Steering Stem Bear Nut Clamp Bolt
5. Clutch Lever Holder Bolt
6. Headlight Case Mounting Bolts
7. Spark Plug
8. Carburetor Cable End Safety Clip (Top of the Carburetor)
9. Pivot Shaft Nut
10. Rear Shock Absorber Mounting Screws
11. Brake Cam Lever Bolt
12. Axle Nut and Cotter Pin
13. Brake Panel Stopper
14. Muffler Mounting Bolts
15. Cylinder Head, Cylinder Base Mounting Nuts
16. Engine Mounting Nuts
17. Shift Pedal Bolt
18. Cotter Pin (Foot Peg)
19. Clutch Turnscrew Screw



20. Spark Arrester Muffler Connector
21. Front Brake Lever Holder Bolt
22. Steering Stem Head Bolt
23. Torque Link Nut, Cotter Pin
24. Kick Pedal Bolt
25. Sprocket

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, strip an internal screw, or break and then fall out.

The following table lists the tightening torque for the major bolts and nuts.

Part Name	Metric	English	See Pg.
Clutch Hub Nut	4.0 ~ 5.0 kg-m	29 ~ 36 ft-lbs	33
Clutch Spring Bolts (6)	0.4 ~ 0.5 kg-m	35 ~ 43 in-lbs	33
Cylinder Head Nuts (8)	2.5 ~ 3.5 kg-m	18.5 ~ 17.5 ft-lbs	36,37
Cylinder Base Nuts (4)	2.3 ~ 3.7 kg-m	24 ~ 27 ft-lbs	36,37
Engine Drain Plug	1.9 ~ 1.5 kg-m	7.24 ~ 11.0 ft-lbs	3
Engine Mounting Bolts (4)	3.4 ~ 4.8 kg-m	25 ~ 33 ft-lbs	–
Engine Sprocket Nut	7.5 ~ 8.5 kg-m	52 ~ 57 ft-lbs	31
Front Axle Nut	6.0 ~ 7.0 kg-m	36 ~ 51 ft-lbs	–
Front Fork Clamp Bolts (6)	2.3 ~ 3.2 kg-m	16.5 ~ 15.5 ft-lbs	15
Handlebar Clamp Bolts (4)	1.8 ~ 2.4 kg-m	11.5 ~ 18.0 ft-lbs	–
Magneto Flywheel Nut	9.0 ~ 10.0 kg-m	65 ~ 72 ft-lbs	31
Oil Hose Banjo Bolts (2)	0.4 ~ 0.6 kg-m	35 ~ 43 in-lbs	33
Primary Gear Nut	4.5 ~ 5.0 kg-m	33 ~ 36 ft-lbs	32
Rear Axle Nut	7.0 ~ 11.0 kg-m	51 ~ 80 ft-lbs	46
Rear Sprocket Bolts (6)	2.0 ~ 2.2 kg-m	14.5 ~ 16 ft-lbs	–
Spark Plug	2.5 ~ 3.0 kg-m	18.0 ~ 22 ft-lbs	14
Spokes	0.25 ~ 0.3 kg-m	22 ~ 26 in-lbs	19
Steering Base Allen Bolt (2)	4.2 ~ 5.2 kg-m	30 ~ 40 ft-lbs	–
Steering Stem Head Bolt	4.1 ~ 4.8 kg-m	29 ~ 40 ft-lbs	15
Swing Arm Pivot Shaft Nut	8.0 ~ 8.8 kg-m	58 ~ 63 ft-lbs	–
Torque Link Nut	2.8 ~ 3.5 kg-m	19 ~ 25 ft-lbs	18

The table below, relating tightening torque to thread diameter and pitch, lists the basic torque for the bolts and nuts used on Kawasaki Motorcycles. However, the actual torque that is necessary may vary among bolts and nuts with the same thread diameter and pitch. The bolts and nuts listed on Pg. 98 vary as a grade or tensile strength from what is given in this table. Refer to this table for only the bolts and nuts not included in the table on Pg. 98. All of these tables are for use with dry solvent cleaned threads.

Coarse threads

dia (mm)	pitch (mm)	kg-m	ft-lbs
6	1.00	0.45 ~ 0.80	3.3 ~ 5.8
8	1.25	1.8 ~ 3.0	13 ~ 22
10	1.50	3.5 ~ 5.5	25 ~ 40
12	1.75	5.5 ~ 8.5	40 ~ 61
14	2.00	9.0 ~ 13.0	65 ~ 94
16	2.00	14 ~ 21	101 ~ 152
18	2.50	19 ~ 29	137 ~ 209
20	2.50	27 ~ 40	195 ~ 289

Fine threads

dia (mm)	pitch (mm)	kg-m	ft-lbs
6	0.75	0.55 ~ 0.90	4.0 ~ 6.5
8	1.00	1.3 ~ 2.1	9.5 ~ 15
10	1.25	2.7 ~ 4.3	20 ~ 31
12	1.50	4.8 ~ 7.2	35 ~ 52
14	1.50	7.8 ~ 11.0	56 ~ 80
16	1.50	12 ~ 17	87 ~ 123
18	1.50	17 ~ 25	123 ~ 181
20	1.50	25 ~ 35	181 ~ 253

