FOREWORD

Congratulations for choosing this fine KAWASAKI Motorcycle from the many models available.

The makers are certain that you will be pleased with the dependable performance and have many enjoyable experiences with your new motorcycle.

It was manufactured in Japan under the most exacting quality control standards by the Kawasaki Heavy Industries, Ltd., a member of the world renowned KAWASAKI Group. This is a giant industrial complex producing railway rolling stock, jet planes, electrical products, helicopters, engines, iron, steel and operating a global network of shipping services as well as making both 2-Cycle and 4-Cycle Motorcycles.

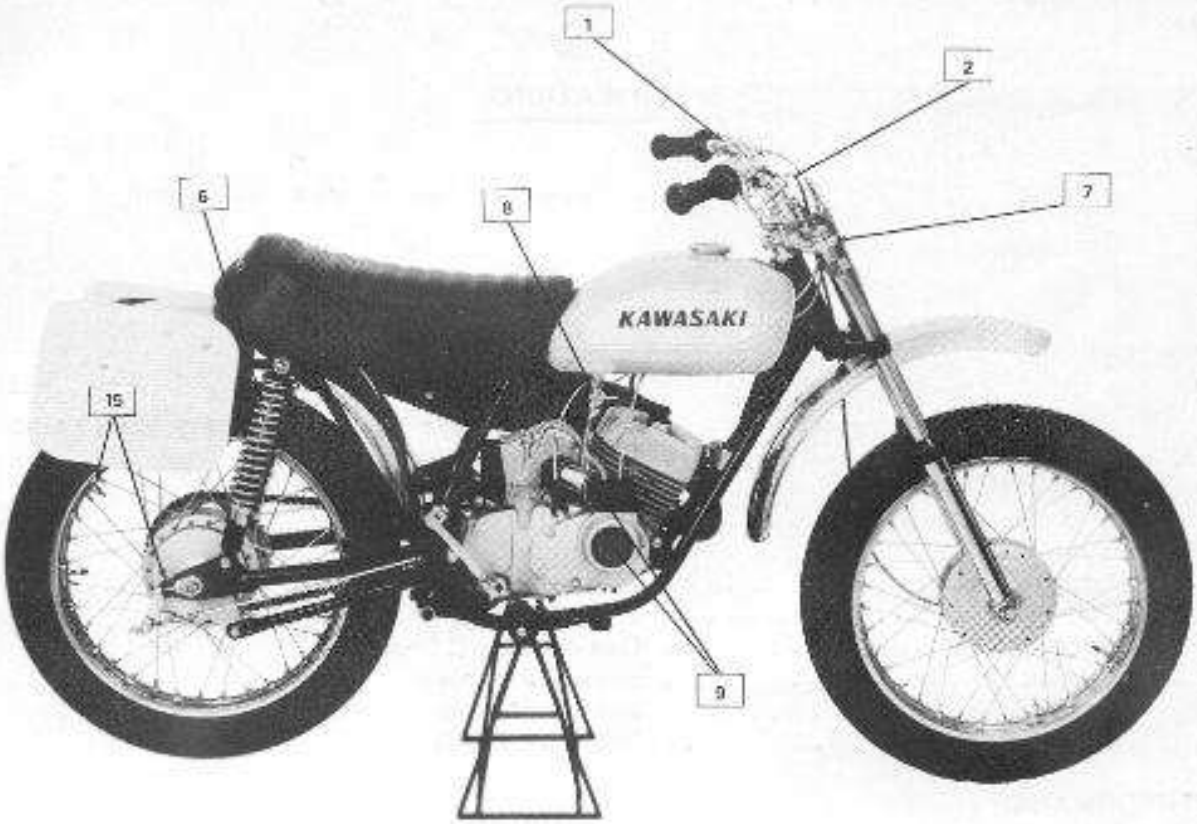
As with any mechanical device, proper care and maintenance are important for troublefree operation and peak performance. Your new G31M is a highly tuned production racer and any modifications to the engine will certainly be harmful to its performance. However, in order to enjoy maximum performance at all times the motorcycle must be kept properly tuned and adjusted.

Read this Handbook carefully at once, and follow the instructions exactly to get maximum performance and longer life from your KAWASAKI Motorcycle.

KAWASAKI MOTORS CORPORATION

Text by Howard Ressinger
Photos by "Buzz" Baty

1. Scrambles type handle bars
2. Competition type levers with quick adjusters
3. Competition type grips
4. Cerani type front forks (long travel)
5. Racing style aluminum front fender
6. Competition proven shocks (5-way adjustable)
7. Pinch type treble clamp for greater front end stability
8. Fuel cock with reserve position
9. High capacity air intake system
10. Dyno-tuned expansion chamber
11. Aluminum rear fender
12. Factory attached number plates
13. Heavy duty chain
14. Heavy duty chain adjusters
15. Rim lock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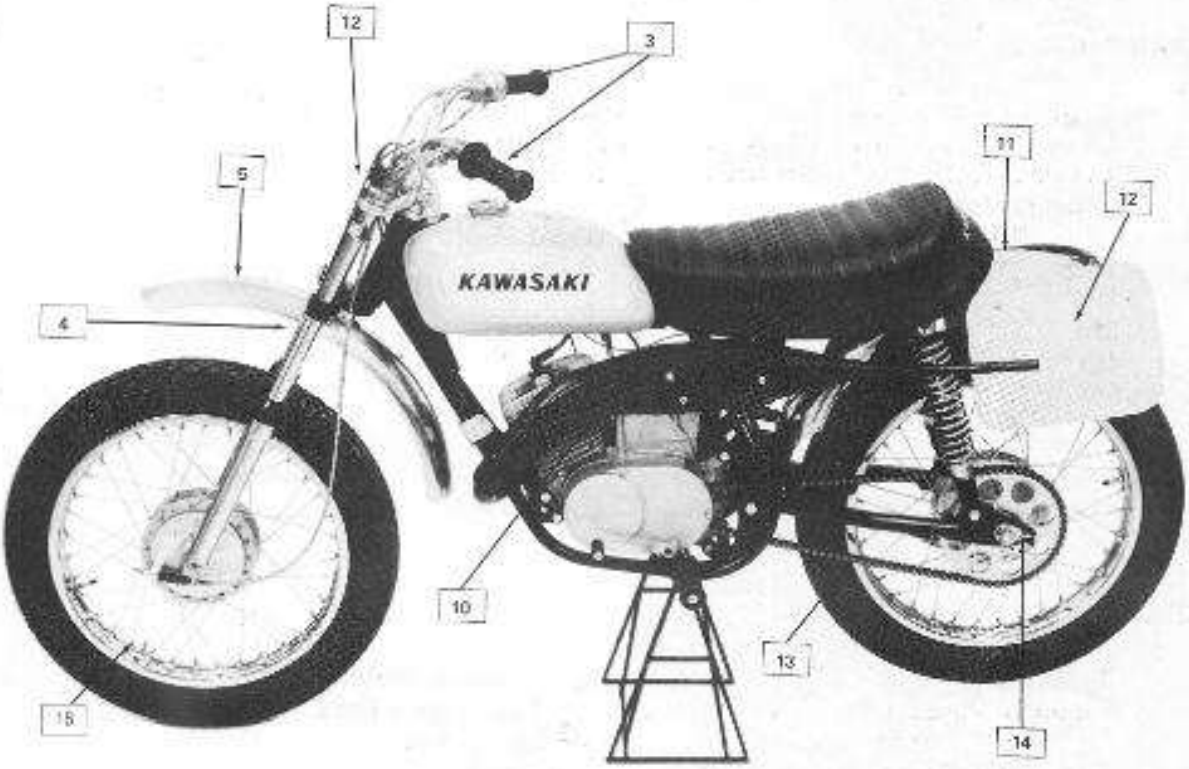
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SPECIFICATIONS

ENGINE

Type	2 stroke, Single Cylinder, Rotary Disc Valve
Displacement	6.04 Cu. in. (99 cc)
Bore x Stroke	1.95 x 2.04 in. (49.5 x 51.8 mm)
Compression Ratio	7.8 to 1 (corrected)
Fuel	Premium
Ignition System	Magneto
Starting	Primary kick
Lubrication	Gas oil Mix (15~20:1)
Engine Oil	Racing 2-Stroke
Carburetor	Mikuni 24 mm
Spark Plug	B8HN or B9HN

PERFORMANCE

Max. Horsepower	18.5/10,250 RPM
Max. Torque	9.75 ft. Lb./9750 RPM

TRANSMISSION

Type	Constant mesh, return shift
Clutch	Wet, Multi-disc.
Primary Reduction ratio	1: 3.52

Gear Ratios

	Stock	Optional
1st	1 : 2.36	1 : 2.92
2nd	1 : 1.61	1 : 1.77
3rd	1 : 1.30	1 : 1.30
4th	1 : 1.09	1 : 1.09
5th	1 : 0.96	1 : 0.96

Final Reduction Ratio 1 : 3.57 (14 : 50)
Overall Drive Ratio 1 : 12.1
Transmission Oil . . . . . ATF or 30 w Oil

FRAME

Type	Tubular double cradle
Suspension, Front	Telescopic Fork 5" travel
Rear	Swing Arm
Tire Size, Front	3.25 x 18
Rear	3.25 x 18
Castor	62°
Trail	3.9 in.

BRAKES

		Total Swept Area
Front ..... Diameter & Width...	5.12" x 1.18"	17.7 Sq. In.
Rear..... Diameter & Width...	5.12" x 1.18"	17.7 Sq. In.
Braking Distance.....	21.2 ft./22 MPH	

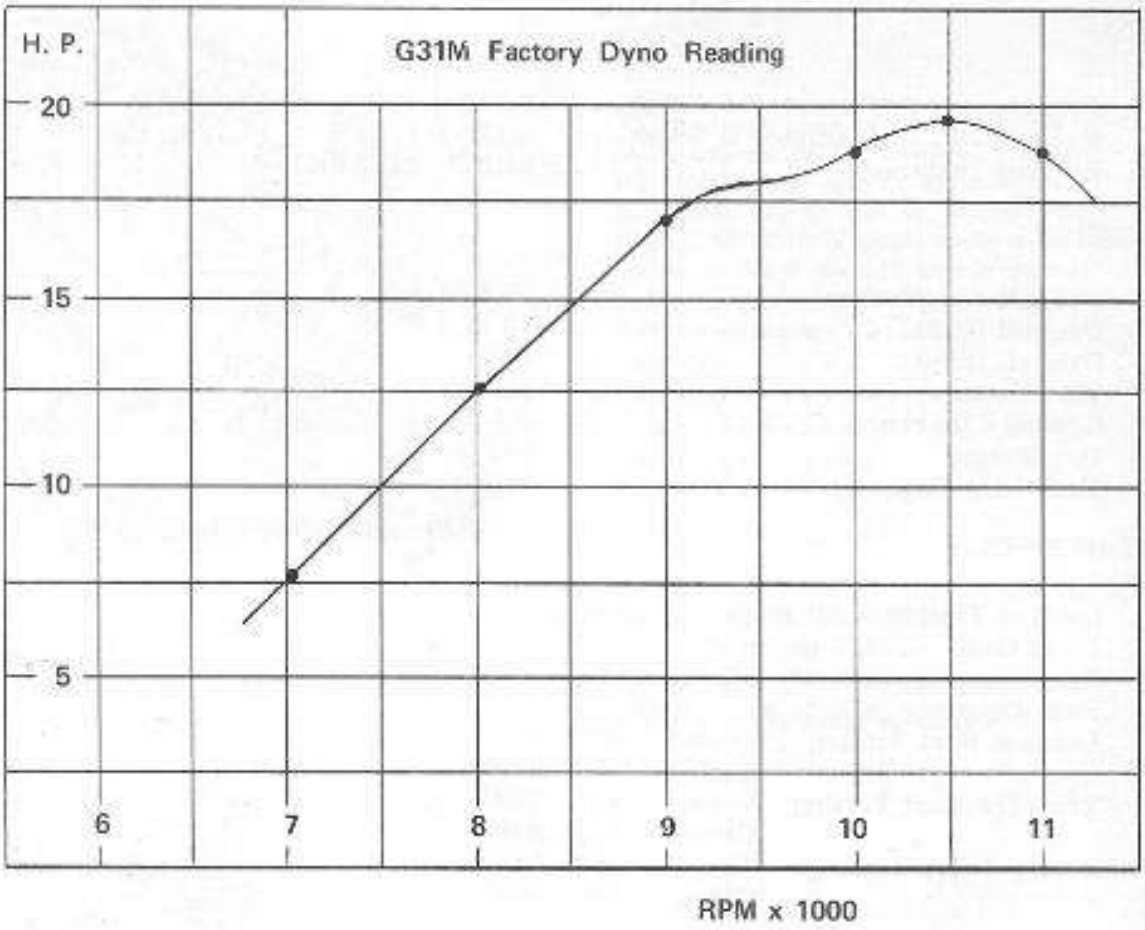
DIMENSIONS

Overall Length	75.4 in.
Overall Width	33 in.
Overall Height	42 in.
Wheelbase	50.4 in.
Ground Clearance	9.7 in.
Dry Weight	185 lb.
Fuel Tank Capacity	1.7 U.S. gal.

TUNE-UP SPECS.

Ignition Timing - 23° BTDC - 2.58 mm = 1.03"
Point Gap. = .012" to .015"
Transmission Capacity = 20 oz. = 700cc = .74 qts.
Fork Capacity = 5.75 oz. - 170cc

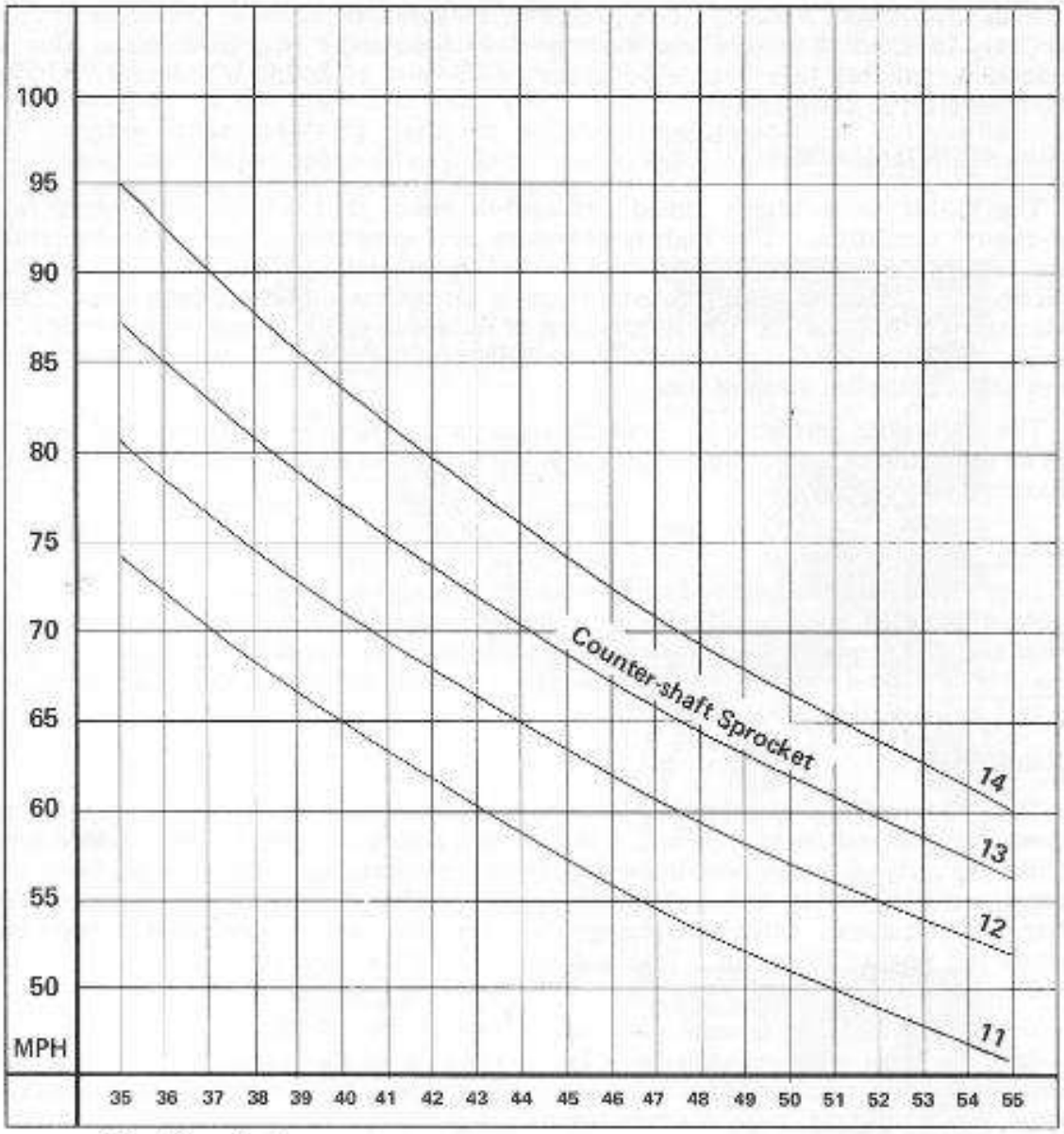
Exhaust Port Timing	Open	93°	BBC
	Close	93°	ABC
Transfer Port Timing	Open	62°	BBC
	Close	62°	ABC
Rotary Valve Timing	Open	140°	BTC
	Close	70°	ATC



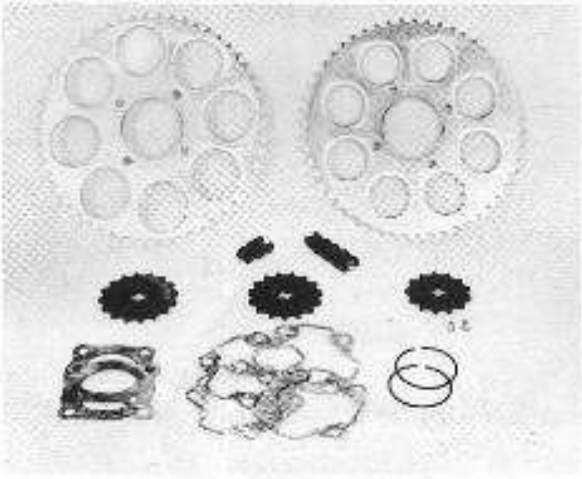
Fuel Ratio Chart

Gas (Gal.)		Oil (Oz.)	
5	40	36	32
4	32	28.8	25.6
3	24	21.6	19.2
2	16	14.4	12.8
1	8	7.2	6.4
Ratio	16 to 1	18 to 1	20 to 1

GEARING VS. M.P.H.



Rear Sprocket



SPARE PARTS KIT

BREAKING IN

This KAWASAKI Motorcycle is precisely manufactured, but it should be broken in properly in order to ensure maximum performance and a long troublefree life. It is recommended that this engine be operated for 8 to 10 hours at moderate RPM's before it is used in competition.

NORMAL MAINTENANCE

The G31M is a highly tuned production racer that comes to the owner in a 'race-ready' condition. The high horsepower and excellent torque characteristics of this engine are the result of a concentrated engineering effort and a very careful test program. Because this engine is so close to its optimum state of tune any further modifications will certainly result in a loss of horsepower or torque, and reliability. However, in order to take advantage of the full potential of this fine machine it must be kept at its optimum state of tune.

The following paragraphs (and their accompanying photographs) tell how to perform the various adjustments that are necessary to keep the G31M operating at its maximum potential.

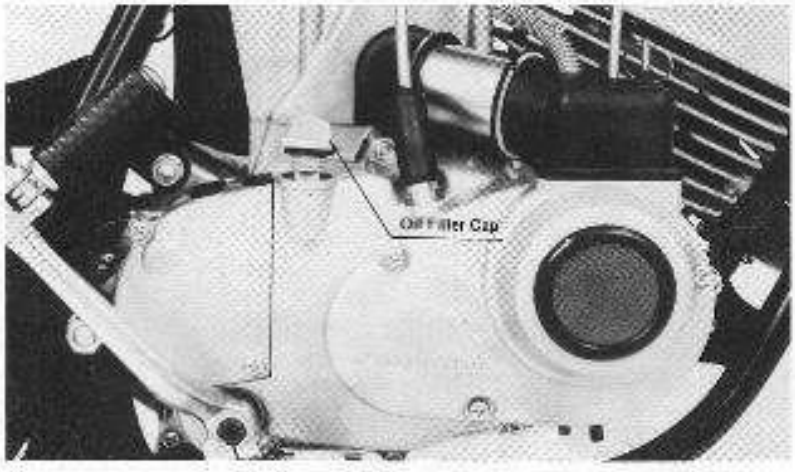
LUBRICATION (Engine)

Lubrication for the engine is provided by oil mixed with the incoming fuel. This is accomplished by mixing oil with the gasoline in the fuel tank. It is recommended that you use a high quality 2-stroke racing oil mixed at a ratio of 15 to 20 parts of gas per part of oil. One quart of oil in 3 3/4 gallons of gas equals 15 to 1, and one quart of oil in 5 gallons of gas equals 20 to 1.

TRANSMISSION

The transmission and primary share a common oil supply. The transmission oil should be checked regularly and a small amount added if needed. (Any sudden loss will indicate a leak which should be repaired immediately). Drain the oil from the transmission completely and refill with fresh oil after the break in (approximately 10 hours of operation). After that, change oil every 100 hours of operation. Drain the oil when the engine is warm. Use automatic transmission fluid or a high grade SAE #30 motor oil.

To put oil into the transmission case, remove the oil filler hole cap and pour in oil until the level is between the two lines marked on the level gauge when the gauge is screwed in and replace the filler cap. The transmission capacity is 20 ounces, or 700cc, or 3/4 quarts. See Picture No. 1



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CHAIN

To insure long chain life and friction-free operation, the chain should be lubricated with a high quality chain lubricant after every 4 to 6 hours of operation. Periodically the chain should be removed, soaked and completely cleaned using a good solvent or gasoline. When lubing the chain remember the oil must penetrate under the rollers and between the side plates.

LEVERS

The levers, the cable ends that fit into the levers and the inner cable where it runs through the adjuster should be lubed every 4 to 6 hours also.

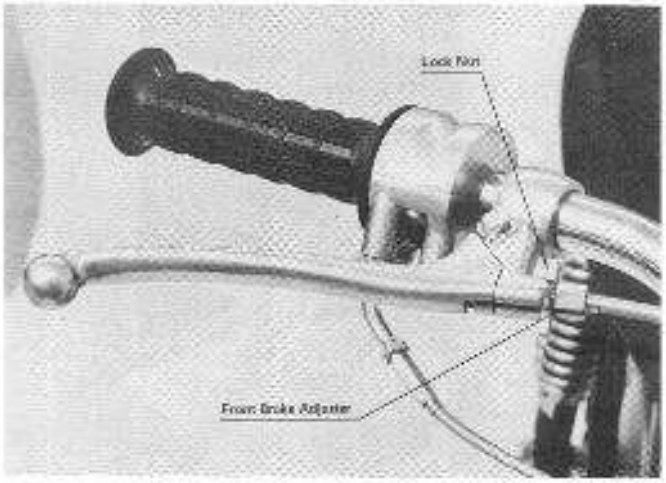
OTHER

The swing arm which is equipped with a grease fitting and the brake cams should be greased with a high quality chassis lube about every 100 hours of operation.

MINOR ADJUSTMENTS

Front brake lever. The front brake lever is adjusted by screwing the adjuster out until the desired tension is felt on the brake. The lock nut is then tightened in order to hold the adjustment in place. See Picture #2.

The front brake tension can also be adjusted at the front wheel by adjusting the nut at the lower end of the front brake cable. See Picture #3.



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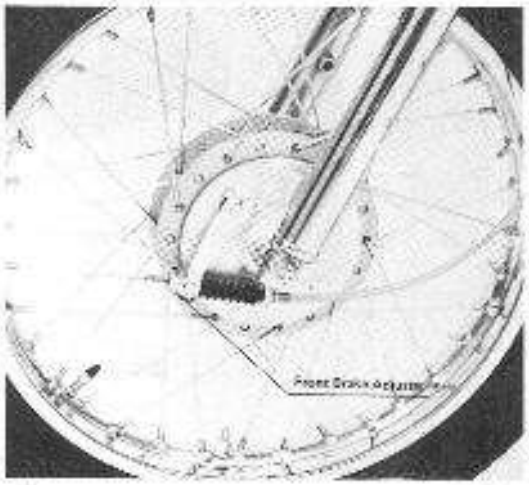

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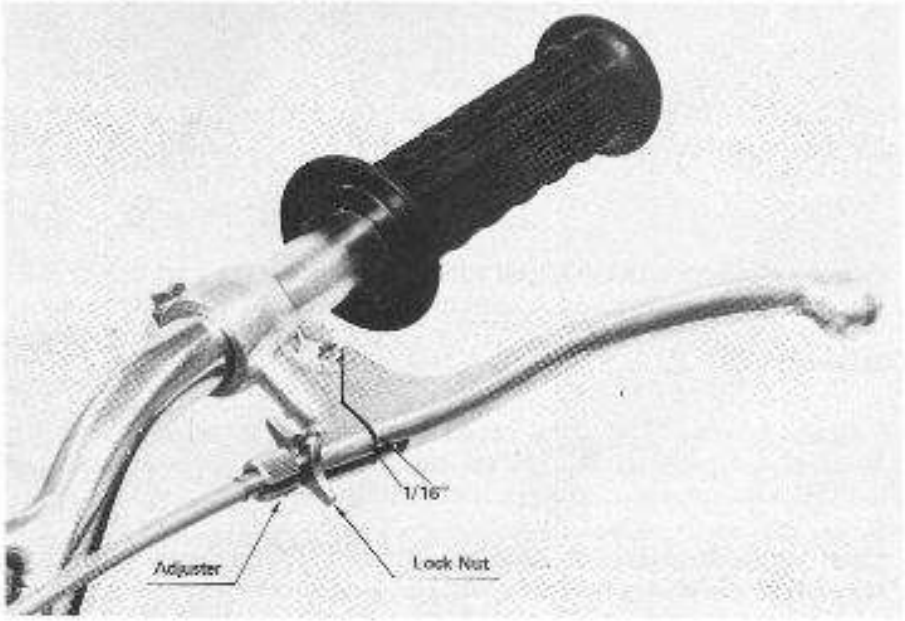
CLUTCH LEVER

The clutch lever is adjusted by screwing out the adjuster until the proper tension is felt at the clutch lever. When the clutch lever is properly adjusted there should be about 1/16" freeplay before the clutch begins to engage. After positioning the adjuster the lock should be tightened to hold the adjuster in place. See Picture #4.



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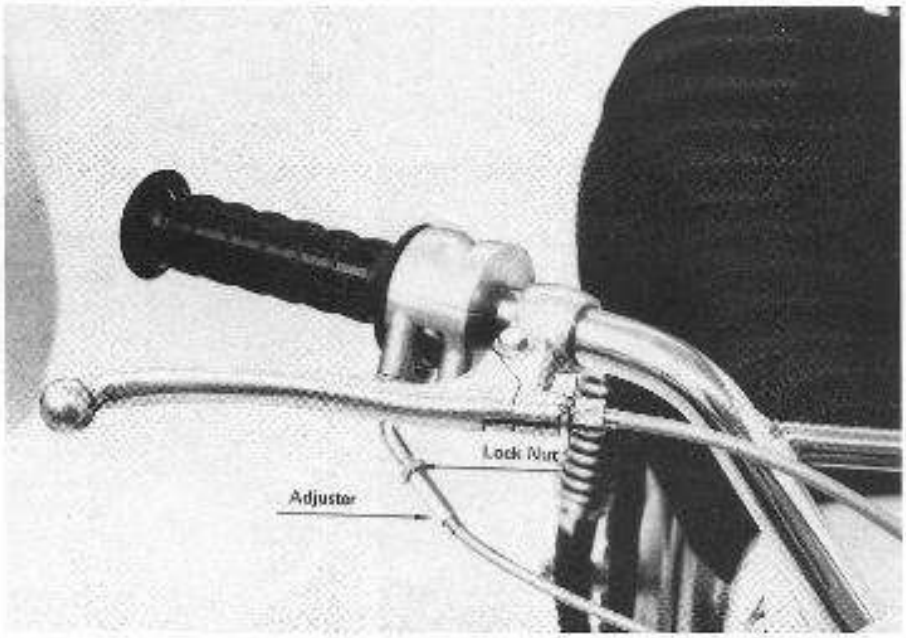

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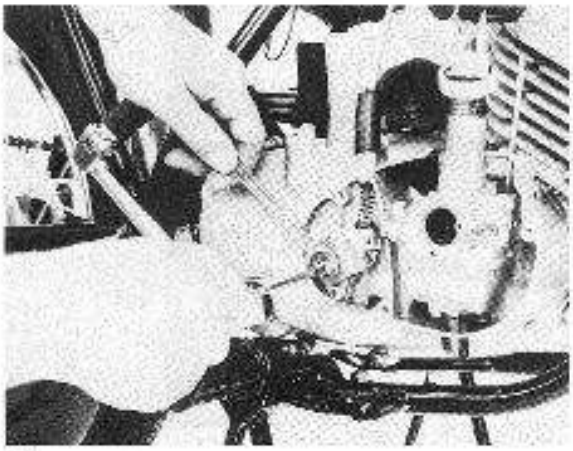
THROTTLE CABLE

The throttle cable is provided with an adjustment so that the slack from the inner cable can be removed thus eliminating freeplay between the twist grip and the slide of the carburetor. To adjust the cable screw the adjuster out until there is almost no freeplay between twist grip and slide. See Picture #5. Tighten lock nut to keep adjuster in place.

CLUTCH MECHANISM ADJUSTMENT

Remove the carburetor cover to expose the clutch operating mechanism. Using a 10mm wrench loosen the lock on the adjuster nut. See Picture #6.

Screw the adjusting screw in until you can feel it begin to bottom. Back the screw out 1/4 to 3/8 of a turn and tighten the lock nut to hold it in this position. NOTE: Before making this adjustment back off the adjusters at both ends of the clutch cable so that there will be maximum slack in the clutch cable.



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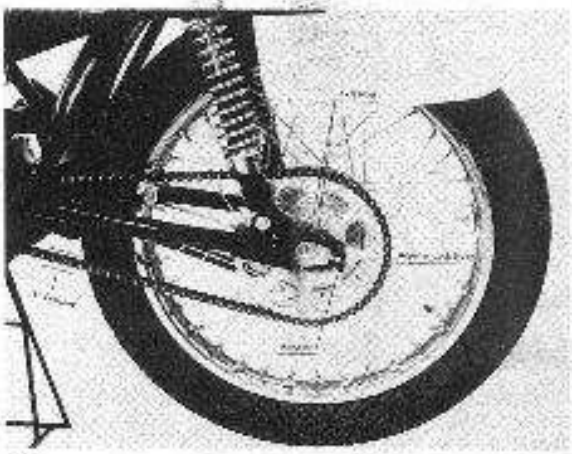


7

CHAIN

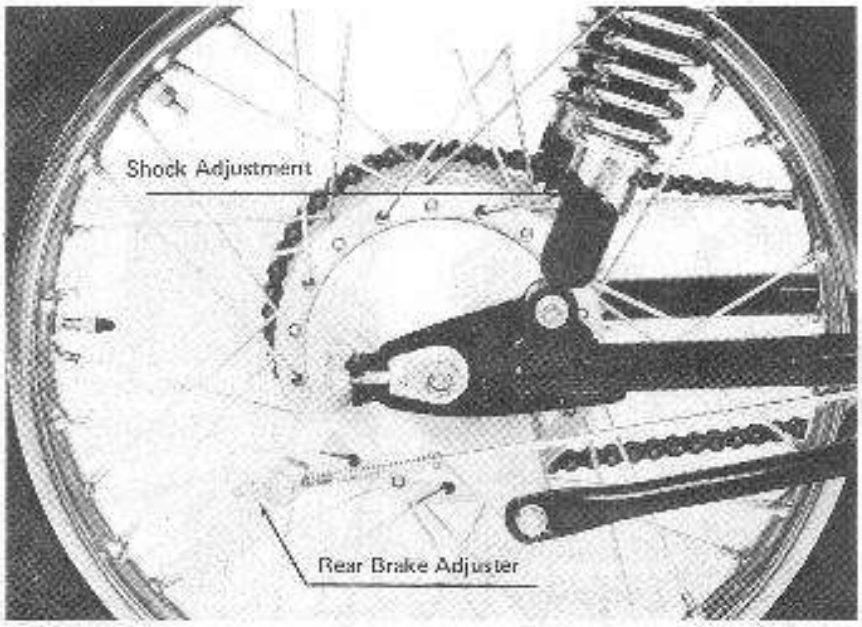
The chain should be adjusted until it has one inch of slack halfway between the sprockets. To adjust the chain remove the cotter pin from the left end of the rear axle and loosen the axle nut a couple of turns. Then loosen the nut behind the axle nut a couple of turns. Now adjust the chain tension by moving the axle forward or backward as needed. When the axle has been correctly positioned tighten the axle nuts and then tighten the adjuster nuts so that the axle cannot be pulled forward. Replace the cotter pin in the axle. Be certain that the rear wheel is straight in the frame when job is finished. After adjusting the chain the rear brake should always be readjusted. See Picture #7. NOTE: Chain should be adjusted with rider sitting on motorcycle.

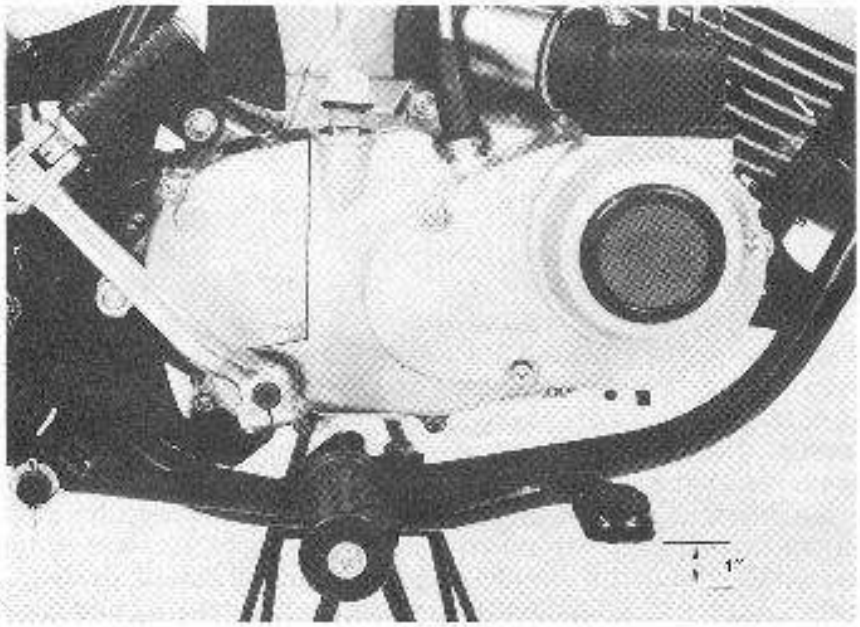
REAR BRAKE

The adjustment for the rear brake pedal is located at the rear wheel. To adjust the rear brake tighten the adjusting nut until the brake pedal moves about one inch before becoming firmly engaged. See Pictures #8 and #9.

REAR SHOCKS

The rear shocks are racing quality shocks that are equipped with a five position adjustment for spring tension. In order to increase the tension on the rear springs turn adjustor to a higher step. See Picture #8.





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IGNITION

To check or adjust the ignition timing remove the L. H. engine cover to expose the magneto. Before setting the ignition timing be sure to check the condition of the ignition points. If the points are pitted, the points and the condenser should be replaced. If the points are only oxidized or very slightly pitted then they may be cleaned with a flex-stone. In order to check the ignition timing you must use a dial indicator. Insert the dial indicator into the cylinder head (See Picture #10) and establish TDC. Now rotate the engine until the points are fully open. Loosen the two screws that hold the breaker points to the backing plate and adjust the point gap to .012" to .015". Next rotate the engine until it is 23° BTDC. This is equal to 2.58mm (.103") on the dial indicator. Loosen the screws that hold the magneto backing plate and move the backing plate until the points just open at this point. (NOTE: Sometimes it is necessary to make very fine adjustments of the timing by varying the opening of the points slightly). In order to determine exactly when the points open it will be necessary to use a timing tester (Buzz Box), a test light, or an Ohmmeter.

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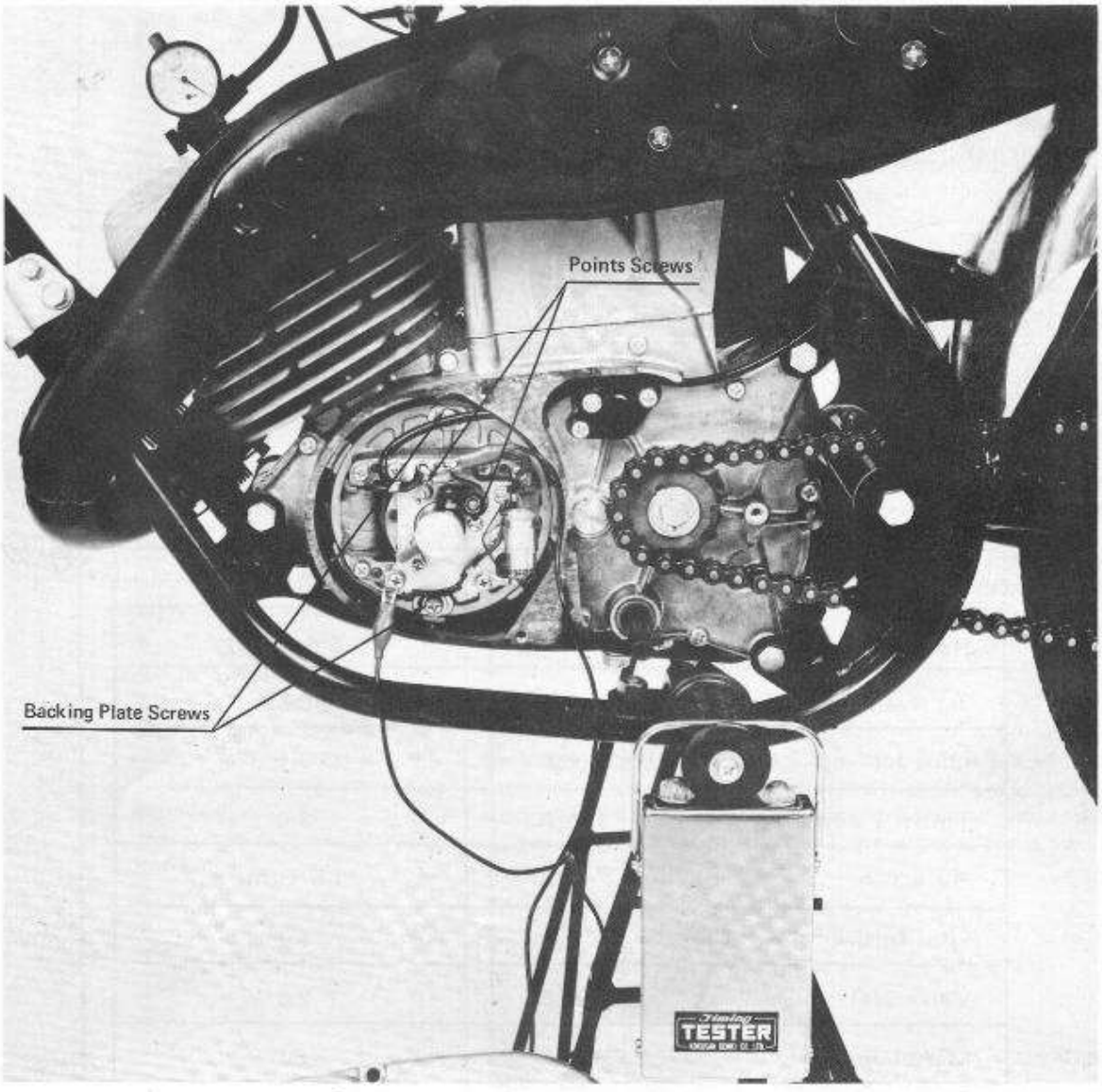
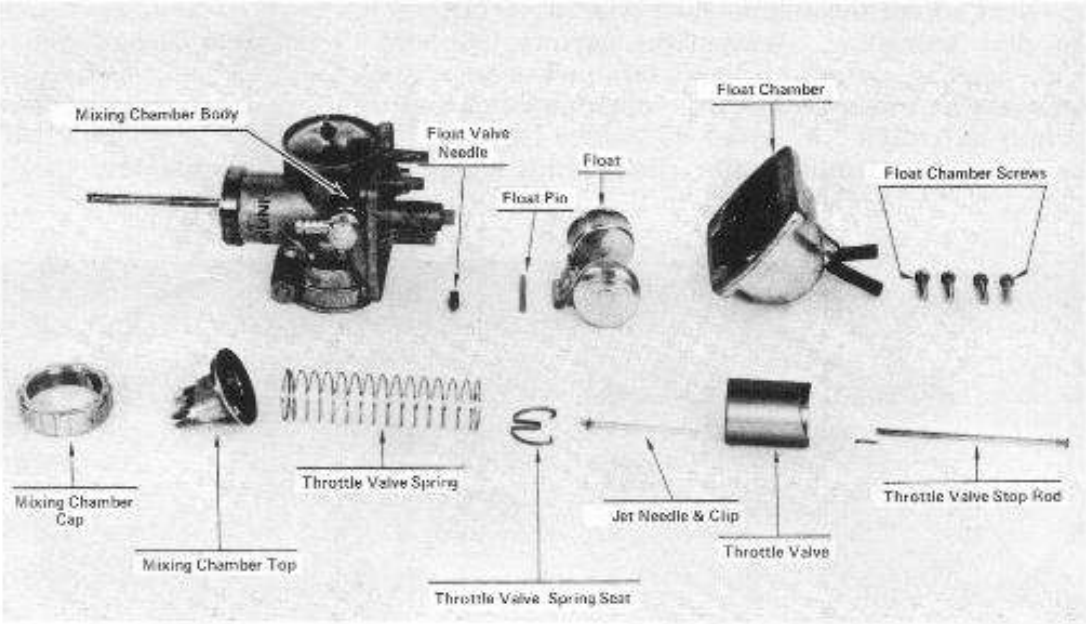


CARBURETION

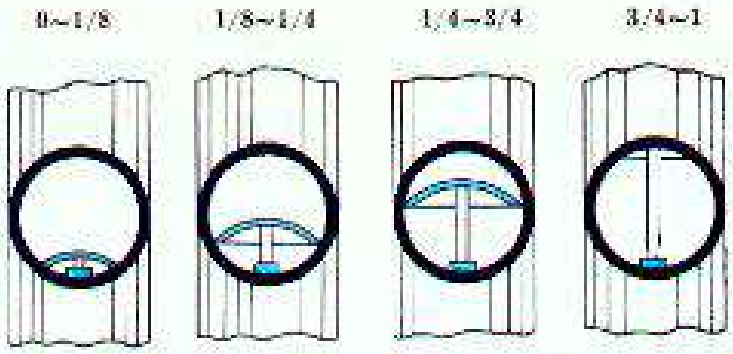
This paragraph deals with the method of adjusting the carburetor to obtain optimum performance. Although most of the information pertains to Mikuni carburetors in general, we have included some actual photographs of the 24mm Mikuni carburetor found on the G31M and of the component parts of this carburetor.

G31M CARBURETOR



CARBURETOR SPECS.

NAME	CODE	SPECIFICATIONS
Main Jet	M.J.	180
Air Jet	A.J.	0.6
Needle Jet	N.J.	0.6 (#147)
Jet Needle	J.N.	406-6
Pilot Jet	P.J.	3.5
Throttle Valve	C.A.	3.0
Air Screw	A.S.	1.5 Turns
Pilot Outlet	P.O.	1.2
Valve Seat	V.S.	2.8
Starter Jet	G.S.	#60



THROTTLE VALVE OPENING

Adjusting Procedure

Opening: 0 ~ 1/8

Condition of operation: Idling speeds

(1) Adjust after warming up engine.

(2) Turn grip back to fully closed position.

(3) Turn throttle stop screw (knob located at top of carburetor) slightly out to increase engine idling speeds.

*(4) Find maximum engine speed by turning pilot air adjusting screw in or out. Picture #12.

(5) Slow down engine speed by turning throttle stop screw in. Picture #13.

(6) Repeat operations (4) and (5) till stabilized lowest engine speed is obtained.

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NOTE: The amount of return of the pilot air adjusting screw is expressed by the number of back turns of the screw from its fully closed position. If the number of back turns of the screw is kept at the standard value, idling speeds usually can be adjusted satisfactorily simply by means of the throttle stop screw.

Opening: 1/8 ~ 1/4

Condition of opening: Accelerating speeds

Gradually open throttle valve from idling speed position. If at this time engine does not pick up speeds, turn pilot air adjusting screw in slightly to enrich air-fuel mixture.

When air-fuel mixture is lean, above adjustment is enough. In case above adjustment is not enough, turn pilot air adjusting screw back to former position and replace throttle valve with one having a smaller cutaway. Reversely if engine runs heavily, use a throttle valve having a larger cutaway.

Opening: 1/4 ~ 3/4

Condition of operation: Normal operating speeds

When air-fuel mixture is too rich, move jet needle one step up (when needle is in normal step,i.e., in 3rd step, lower it to 2nd step) to lower jet needle. Reversely if air-fuel mixture is too lean, move jet needle one step down to raise needle.

Opening: 3/4 ~ 1

Condition of operation: High speeds

If high speeds can be obtained easily by turning on the choke or returning throttle grip slightly (lower throttle valve a little), air-fuel mixture is lean. In such a case, change main jet to one carrying a larger number (for more fuel flow). Reversely if you feel engine is operating heavily, or if exhaust smoke are excessively thick, change main jet to one carrying a smaller number. See Picture #14.

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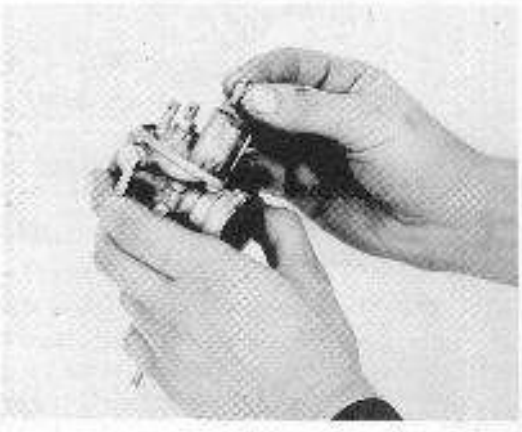


The Float has been removed and a New Main Jet is being installed.

Cautions on Adjustment

(1) To reduce low-speed fuel consumption more than the standard value, turn the pilot air adjusting screw slightly back from the standard position. In this case, do not unscrew it excessively, or poor acceleration results.

(2) For improving fuel consumption at medium speed, it is effective to change the needle jet clip position to one step higher.
Be careful not to induce engine over-heating due to lean mixture especially at more than 1/2 throttle opening.

(3) At high altitudes, the fuel tends to be about 12% richer at 2,000 meters and about 20% richer at 3,000 meters. Change the main jet to one carrying a smaller number, when necessary. (The fuel flow is nearly proportional to the jet number.)

(4) The main jet has an influence not only on the opening of throttle valve ranging from 3/4 to 1 but also has some influence as far down as 1/2 throttle opening. Therefore, when changing the main jet, take this influence into full account.

How to distinguish proper air-fuel ratio

The driver is required to have special skill in judging the proper air-fuel ratio. The following, however, will give you a good standard for judging the ratio.

Too rich mixture:

- ○ Exhaust smokes are thick.
- ○ Motorcycle gives a feeling of heavy driving and engine operates poorly or misfires.
- ○ Spark plugs become black with carbon.
- ○ Engine performance becomes poorer with the progress of warming-up operation.
- ○ Engine tends to 4-cycle.

Too lean mixture:

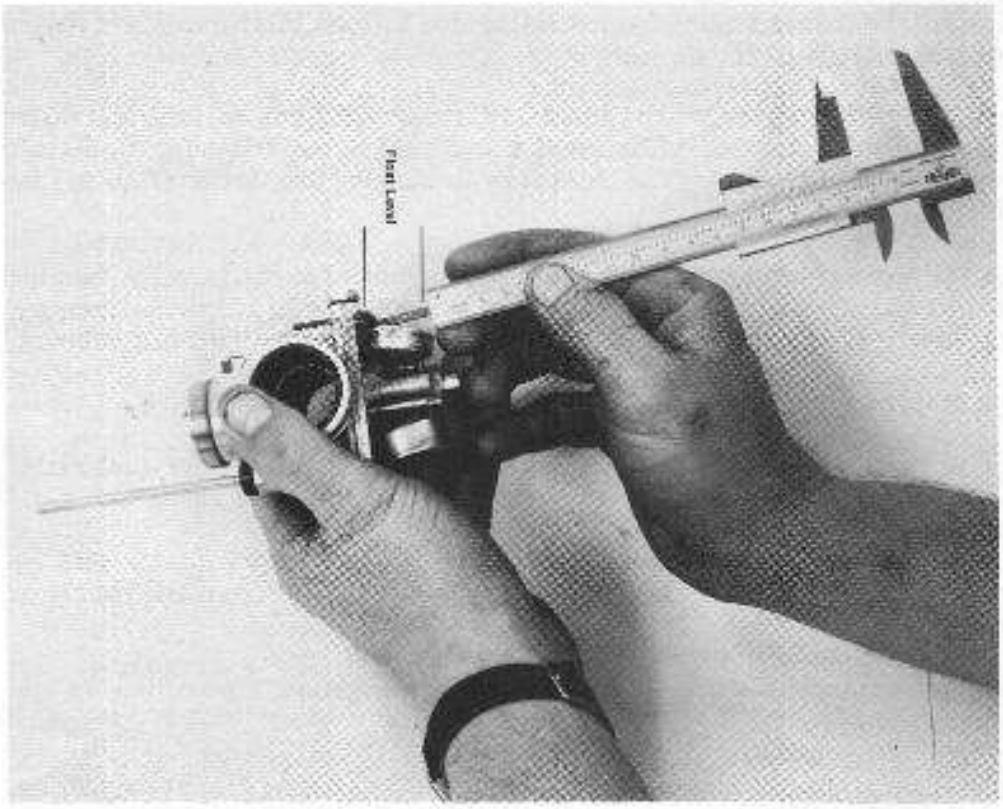
- ○ Engine tends to overheat.
- ○ Low-speed engine performance is poor.
- ○ Engine does not pick up speeds smoothly.
- ○ Engine condition recovers when choke is on.
- ○ Engine speed varies though throttle valve opening is kept fixed.
- ○ Spark plugs become white.

Adjustment chart

Throttle Opening	Adjustment Points	When mixture is too rich:	When mixture is too lean:
0~1/8	Pilot air adjusting screw	Turn out.	Turn in.
1/8~1/4	Throttle cutaway	Change to larger cutaway.	Change to smaller cutaway.
1/4~3/4	Jet needle clip	Move one step up. (Lower needle.)	Move one step down. (Raise needle.)
3/4~1	Main jet	Change to main jet carrying smaller number.	Change to main jet carrying larger number.

FUEL LEVEL ADJUSTMENT

Remove the float chamber and place the carburetor body upside down. Measure the distance between the float chamber gasket surface and the top of the float. See Picture #15. If the float adjustment is incorrect adjust it by bending the metal tab on the float as shown in Picture #16. The normal float setting is 23mm.



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SPARK PLUGS

It is recommended that a NGK B9HN racing plug be used in the G31M. The condition of the insulator and the tip of the plug is one of the best indicators of how well the engine is performing or why it is not performing as it should. The below photographs show the common spark plug condition and the accompanying explanations tell what causes a particular reading. A fundamental knowledge of this information is essential to the success of any tuner.

Normal

Correct heat range. Insulator light tan to gray color. Few deposits present. Electrodes not burned.

Wet Fouling

Damp or wet, black carbon coating over entire firing end. Forms sludge in severe cases.

Wrong spark plug heat range (too cold).
Prolonged low speed operation.
Low speed carburetor adjustment too rich.
Improper ratio of fuel mix.
Worn or defective breaker points resulting in lack of voltage.

Overheating

Electrodes badly eroded. Premature gap wear. Insulator has gray or white "blistered" appearance.

Incorrect spark plug heat range (too hot).
Carburetion too lean (hi-speed adjustment or an air leak.)
Ignition timing overadvanced.
"Sticky" piston rings.
Cooling fins plugged with mud.

Aluminum "Throw-off"

Metallic "gob" of gray pot metal adhering to electrodes and plug bore.

Caused by preignition source within cylinder melting aluminum alloy off piston. Do not install new plugs until source of preignition is determined and piston examined.
Wrong spark plug. Heat range (too hot).

Core Bridging

Electrodes not badly burned. Bottom of side electrode usually coated with ash-like deposits. Insulator nose "peppered" with tiny beads or small chunks fused to firing end. Sometimes have the appearance of glass-like bubbles.

Gap Bridging

Spark gap shorted out by combustion particle(s) wedged or fused between electrodes.

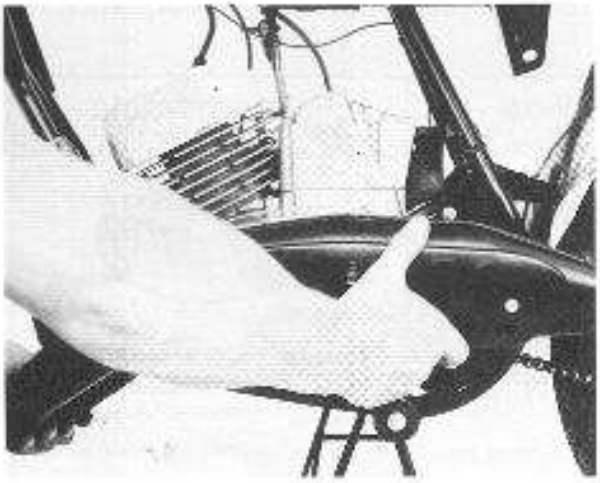
Both "core bridging" deposits and "gap bridging" can be caused by excessive combustion chamber deposits striking and adhering to the spark plug's firing end. They originate from the piston, shedding excessive deposits from its crown. These deposits are cuased by one or a combination of the following:

Excessive carbon in cylinder.
Use of non-recommended oils.
Immediate high-speed operation after prolonged low speed operation.
Improper ratio of fuel mix.

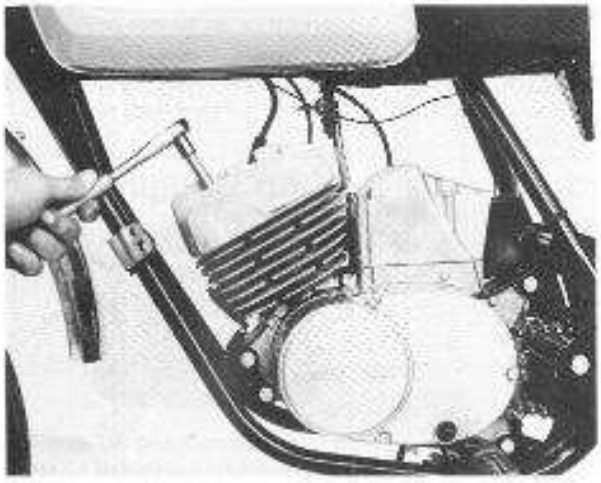
Gap bridging is most commonly caused by dirt or sand getting past the air filter.

TOP END MAINTENANCE

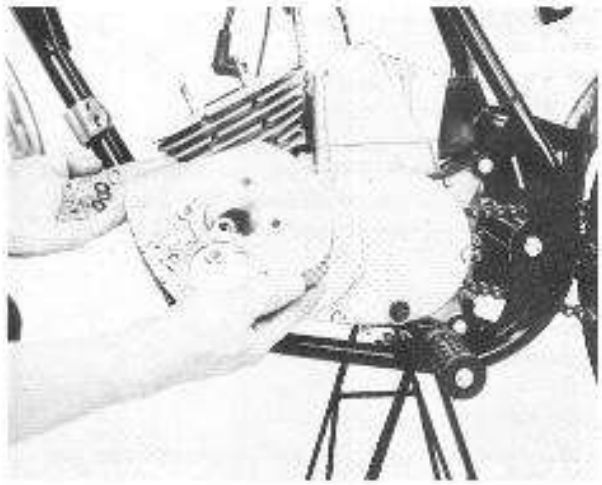
In order to maintain peak performance it is necessary that the top end (the cylinder head, cylinder, pistons and rings) be serviced periodically. The following steps illustrate the correct sequence for removing the top end components.



First remove the expansion chamber.

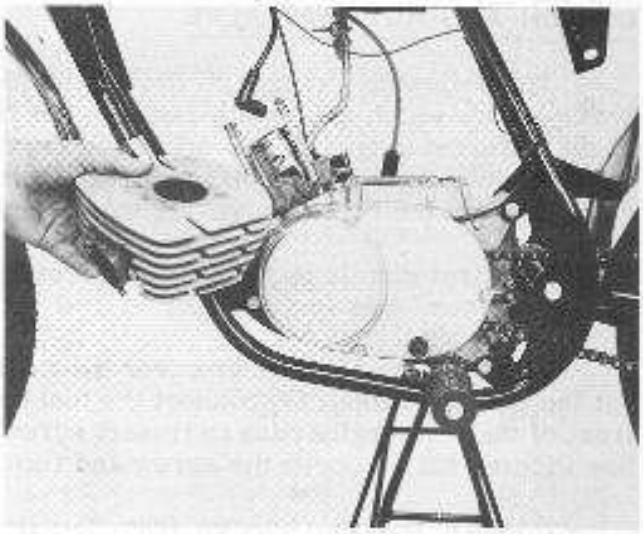


Second remove the four 14mm nuts that hold the head in place.

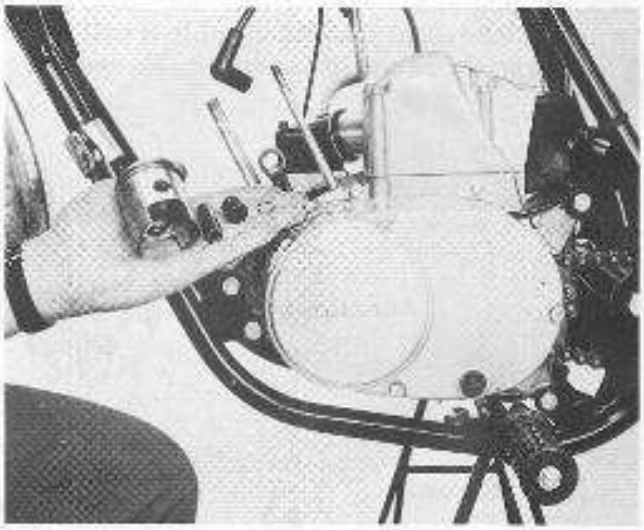


Remove the head and its associated hardware.

Remove the cylinder by pulling it up and off of the four cylinder studs. Sometimes it is necessary to tap the cylinder with a rubber mallet in order to break it loose from the crankcases. NOTE: Immediately upon removal of the cylinder place a rag in the exposed crankcases to keep dirt and other foreign matter out.



Remove the piston pin circlip and tap the piston pin out. Remove the piston, piston pin and upper end needle bearing.



Once the cylinder head, cylinder and piston have been removed the cylinder head and the top of the piston should be completely decarbonized. In addition to top of the piston it is necessary to make certain that the ring grooves are absolutely clean. Before replacing the upper end components you should check the condition of the piston, the rings, and the upper end needle bearing and piston pin. The piston rings are the item most likely to wear, therefore, they should be checked very carefully. Worn rings can usually be detected by a big increase in end gap or by discoloration of the piston skirts caused by blow-by, or they can be checked before disassembly by the use of a cylinder compression gauge.

If it is found that the cylinder walls have been damaged then it will probably be necessary to replace the cylinder. The cylinder has been chromed, thereby, making it impossible to rebore for an oversized piston. However, in case there are small amounts of aluminum stuck to the cylinder bore from a seizure it is possible to salvage the barrel by a very light honing. DO NOT REMOVE ANY CHROME FROM THE CYLINDER WALLS.

When reassembling the upper end make absolutely certain that all the gasket surfaces are clean and dry. Also, you should be sure to lubricate the bearings and cylinder to protect them when the engine is first started.

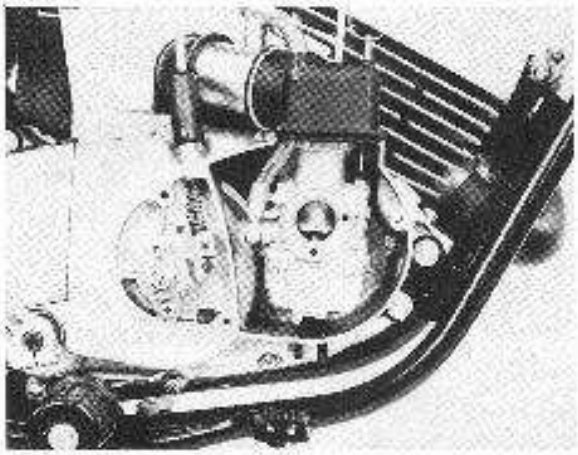
CLUTCH AND ROTARY VALVE

The following paragraph deals with the removal and service of the clutch and rotary valve which are both located on the right side of the engine. The photographs of the different stages of this operation show the work being done with the engine still in the frame. Bear in mind that the engine could be removed from the frame and these steps done on the bench, however, the procedure would remain the same.

The first step is to remove the three screws in the carb cover and then remove the carb cover. See Picture #20.

Next pull up the rubber cover over carb. Unscrew the carburetor top and pull out the throttle valve. Disconnect the fuel line. Remove the small rubber plug in the front of the R. H. engine case and insert screwdriver into the carburetor clamp screw. See Picture #21. Loosen the screw and remove the carburetor.

Remove the ten screws from the R. H. Engine cover and remove the cover. See Picture #22. NOTE: It is not necessary to remove the clutch cable. If the cover is left attached to the clutch cable it will not interfere with the following steps. NOTE: There are three seals for the R. H. engine cover. See Picture #22.



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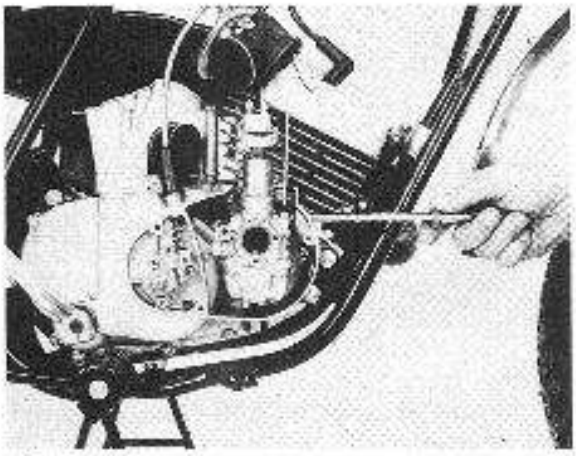
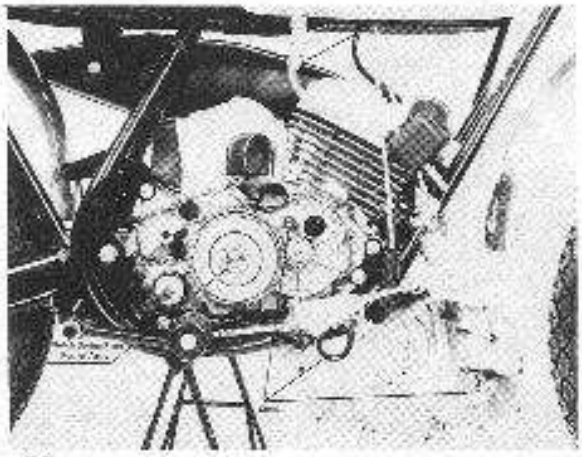
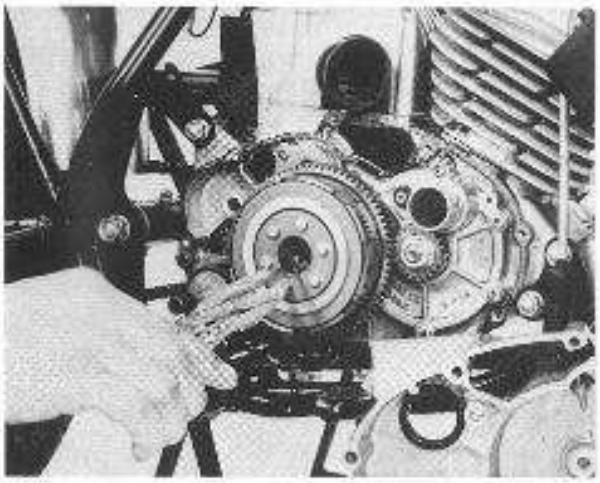


21

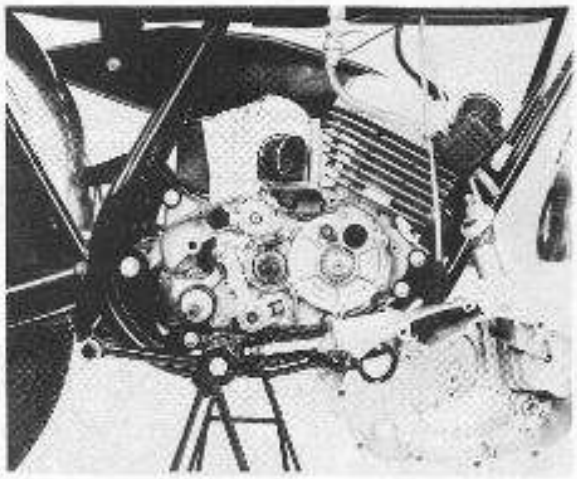


22

To remove the clutch assembly remove the clutch spring plate pusher assembly. Picture #23. Remove the circlip that holds the clutch mechanism in place. Picture #24. Then remove the clutch mechanism. Picture #25 shows the clutch components in the order they come from the engine.



23



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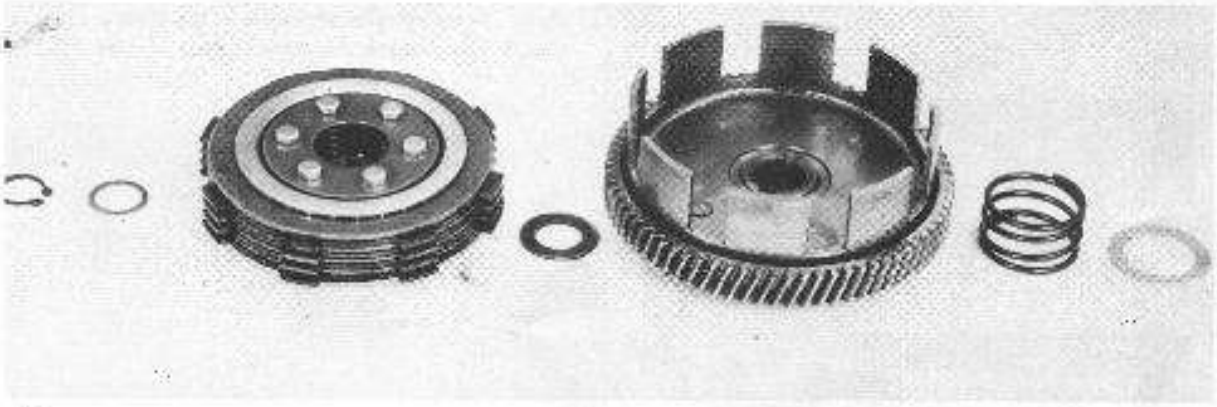
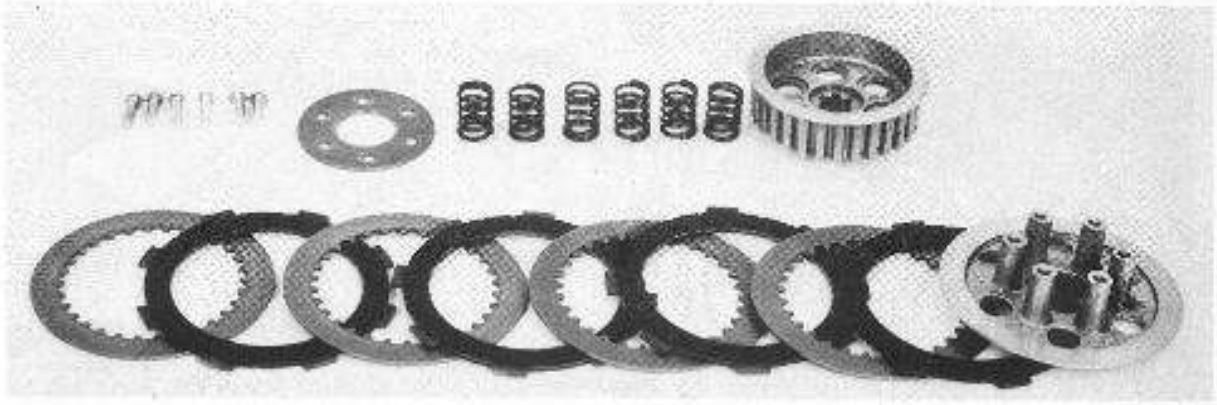
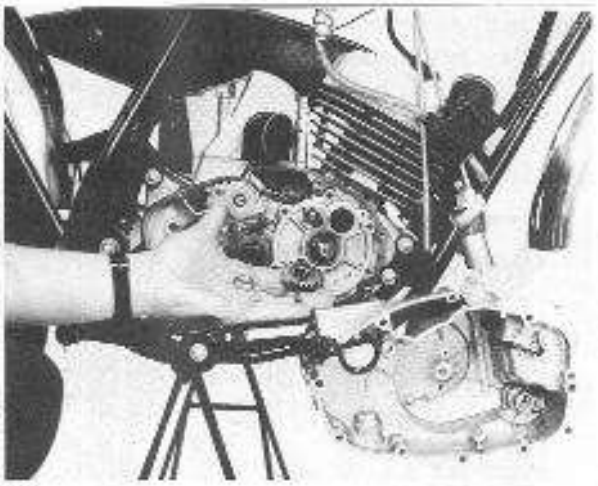


25



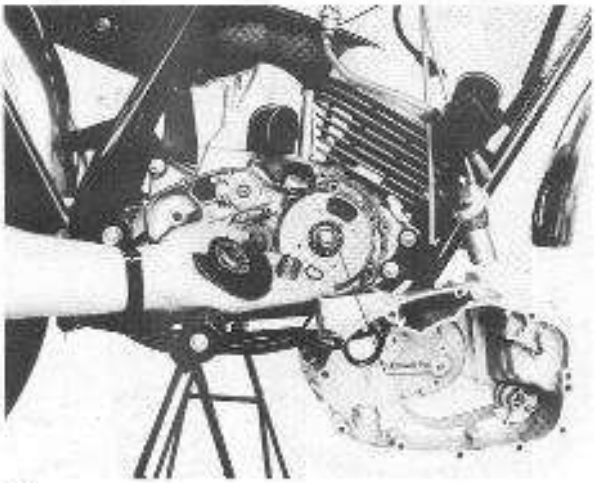
26

Picture #26 showing the inner clutch assembly after disassembly.



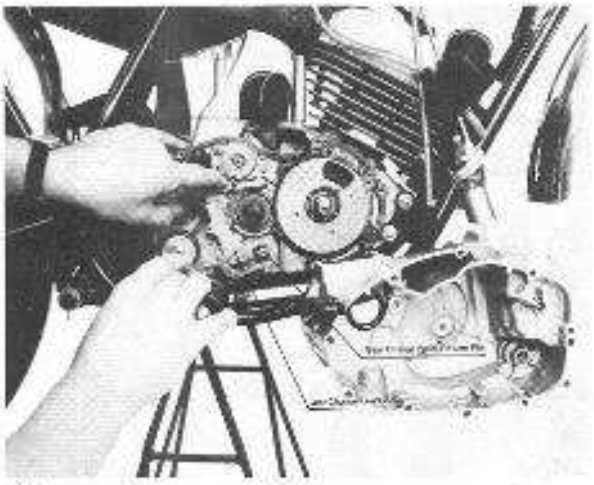
27

Next remove the nut that holds the primary gear. Picture No. 27. Remove the primary gear and associated hardware.



28

Remove the six screws in the rotary valve cover and remove the cover. Slip off the rotary valve, the "O" ring and the crankshaft collar. Picture No. 28. NOTE: The dowel pin that drives the rotary valve will remain in the crankshaft.



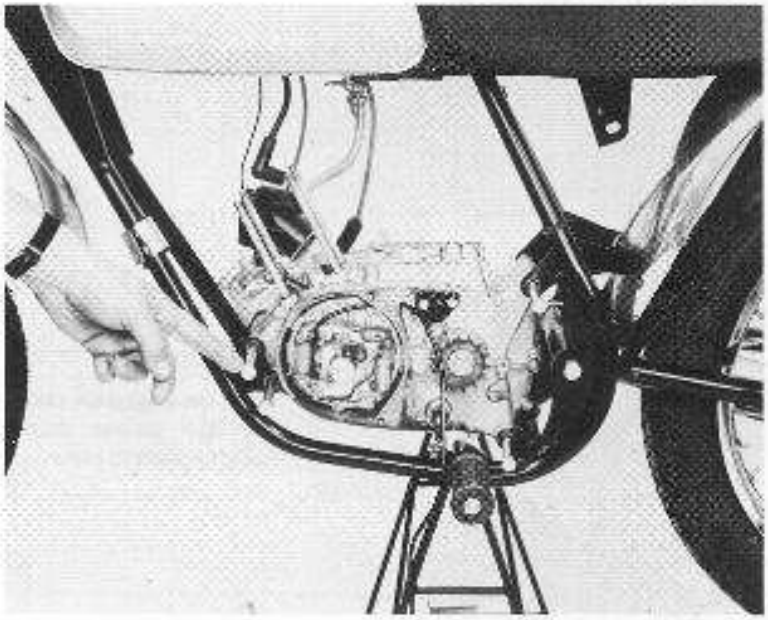
29

While the R.H. engine case and the clutch are removed be sure to check the gear change pedal return spring and pin to make sure they are tight. Picture No. 29. If they are loose it will result in an overshifting condition.

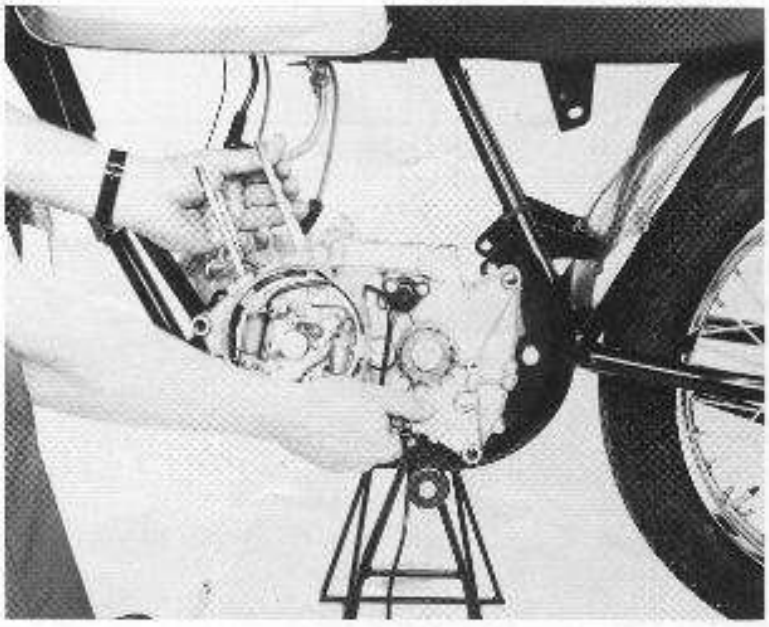
NOTE: If the gear shift lever is removed from the shifter shaft the gear change lever assembly and the shifter shaft may be removed at this time. Be certain the shaft is clean and free of burrs so it will not damage its oil seal when you pull it through the cases.

ENGINE REMOVAL & DISASSEMBLY

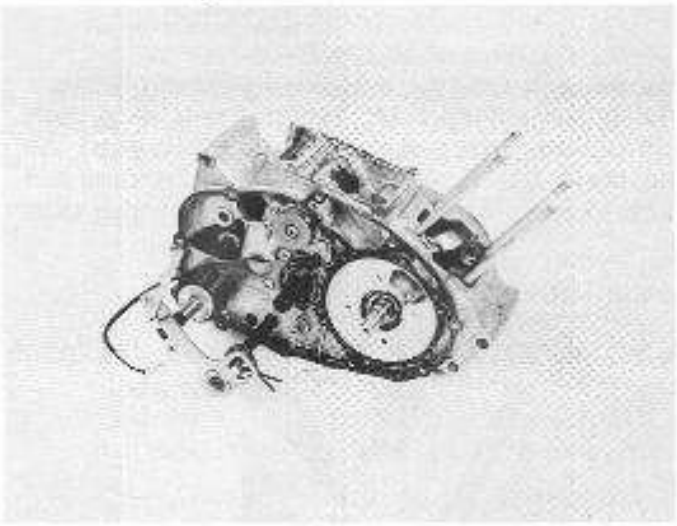
In order to save time and space, we will assume that the disassembly steps listed under top end maintenance and clutch and rotary valve have already been performed. If the engine is removed before these steps are completed then start the engine disassembly by carrying out the steps listed under top end maintenance and then the steps under Clutch and Rotary Valve. After completing these steps then proceed according to the following steps.



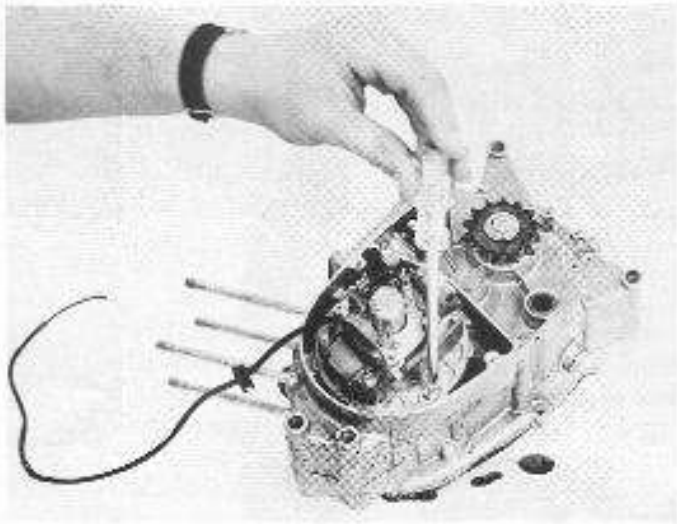
Remove the four engine mounting bolts and disconnect the low tension lead from the magneto to the coil.



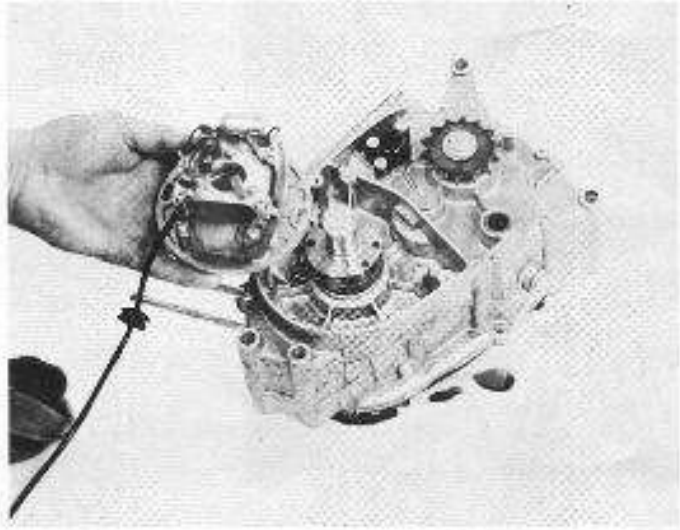
Lift up on the front of the engine and pull it out of the frame.



With the R.H. side of the engine facing you remove the gear change lever assembly.

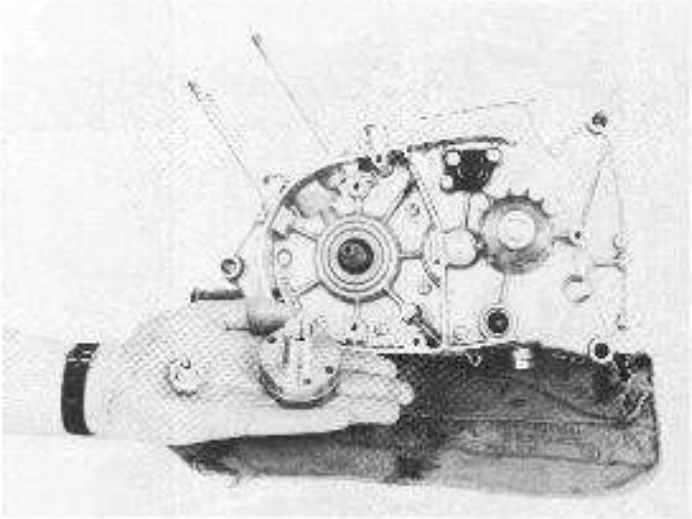


Place the engine on the R.H. side and remove the two screws that hold the magneto backing plate in place.

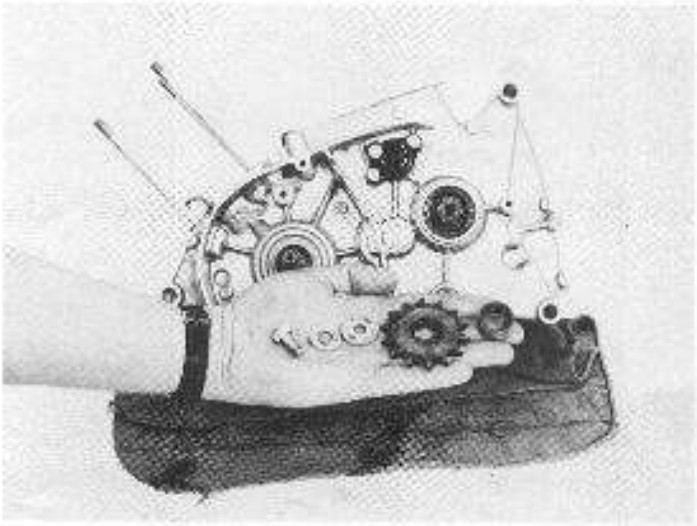


Remove the magneto.

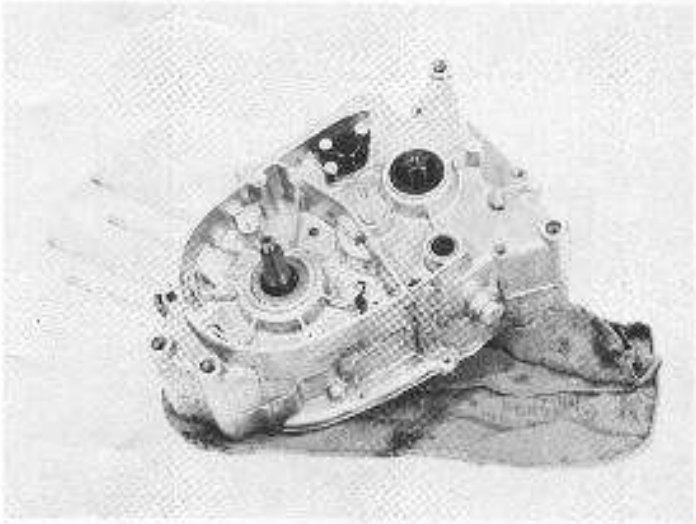
Using a small gear puller remove the rotor. NOTE: Do not hit, drop, or otherwise mistreat the rotor or it will lose magnetism which will lower the efficiency of the magneto.

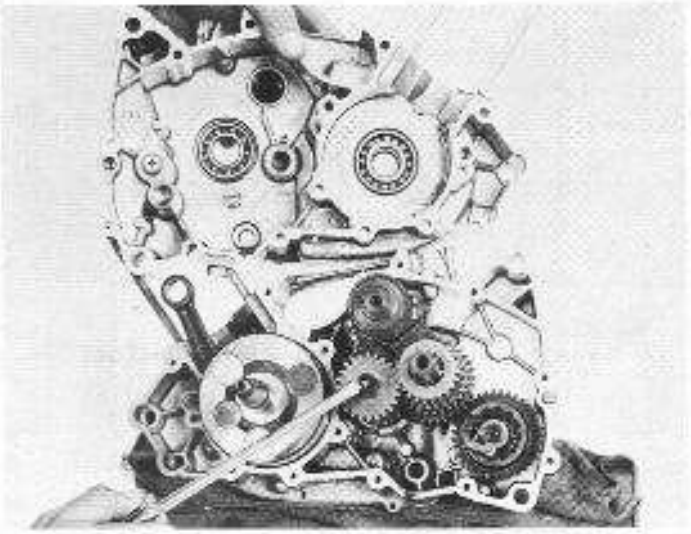


Remove the countershaft sprocket and associated hardware.

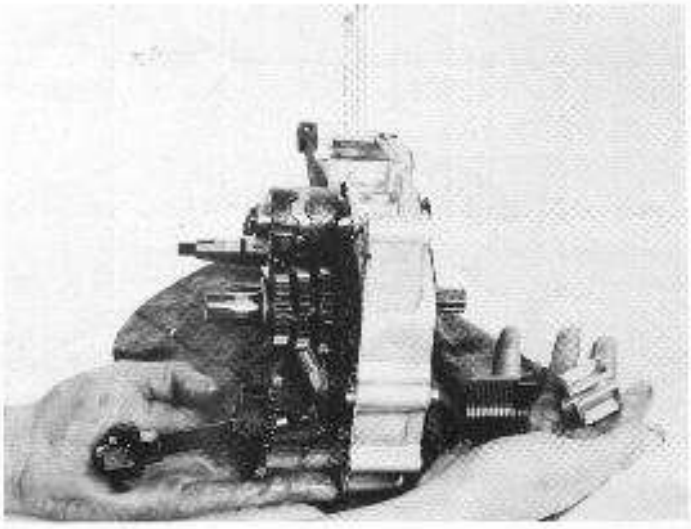


Remove the 13 case screws.

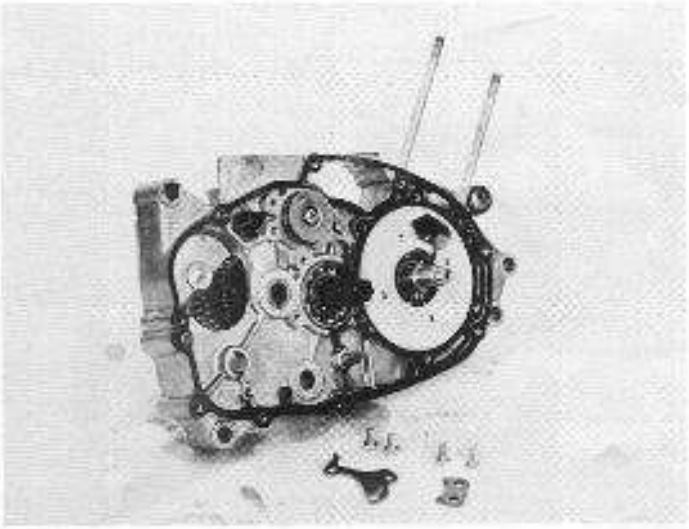




Tap the cases apart by gently applying a plastic hammer. NOTE: There is a 7/32 ball that goes on the end of the drive shaft. Be careful not to lose or misplace this bearing. NOTE: It is usually easier to work on the engine if the L.H. case is removed and all of the components are left in the R.H. case as shown.

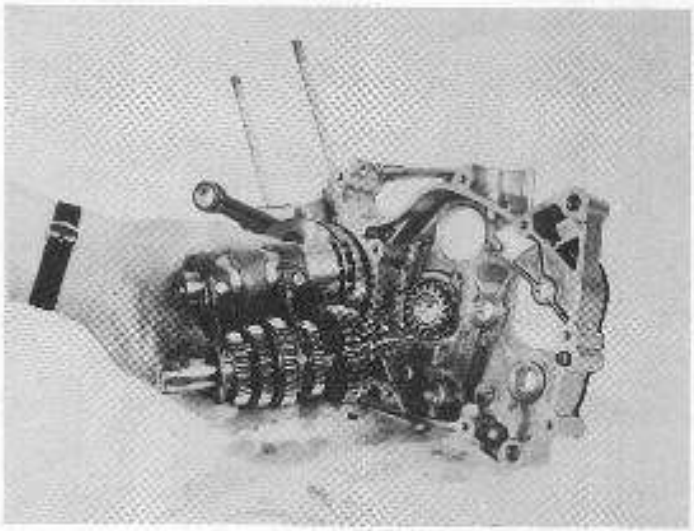


Remove the kickstarter mechanism.

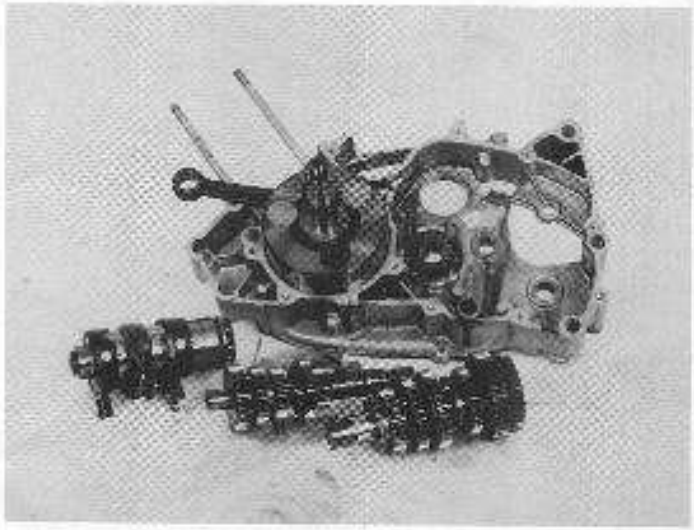


R.H. Side of Engine – Remove the transmission bearing holder and the gear change drum positioning plate.

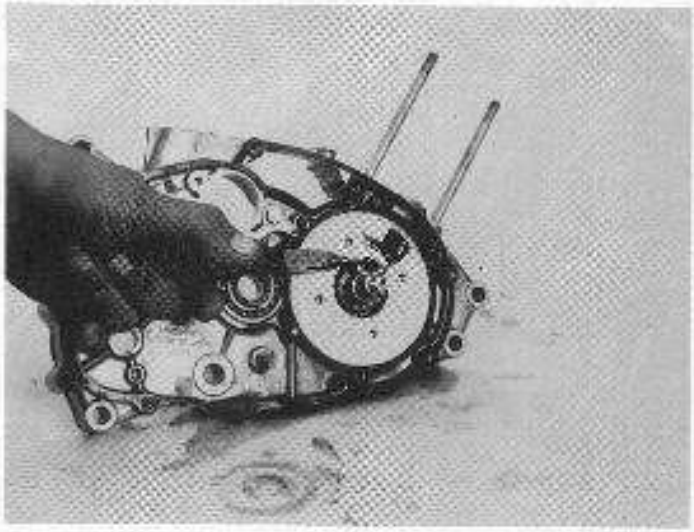
Remove both shafts and the shifter drum.

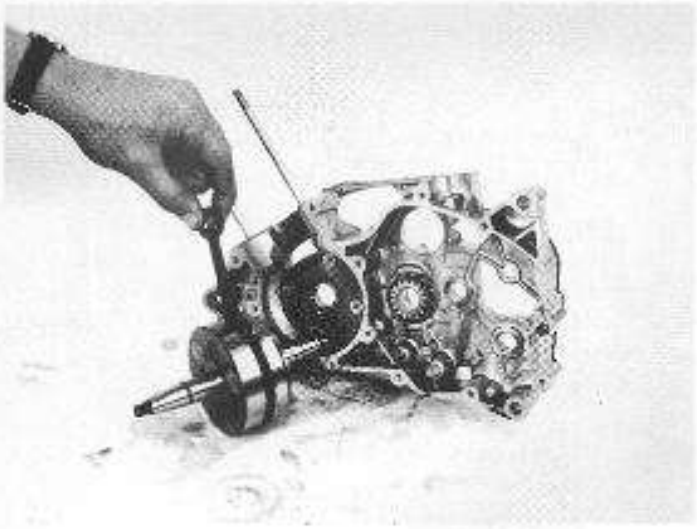


This is a layout of the transmission gears and shifter shaft.

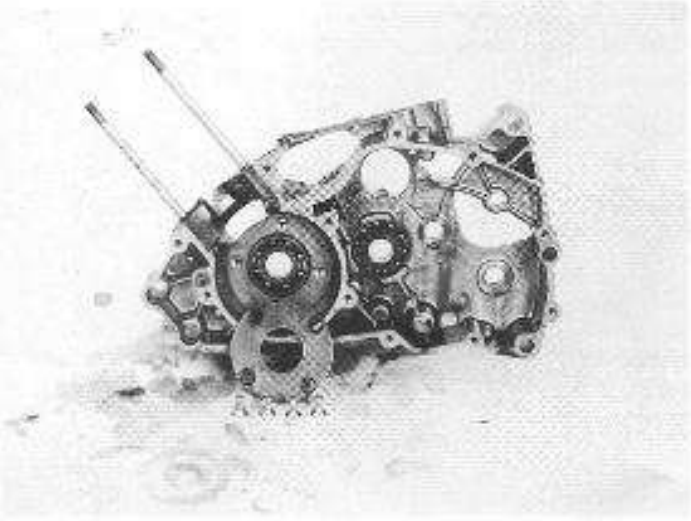


Remove the dowel pin from the R.H. end of the crankshaft.

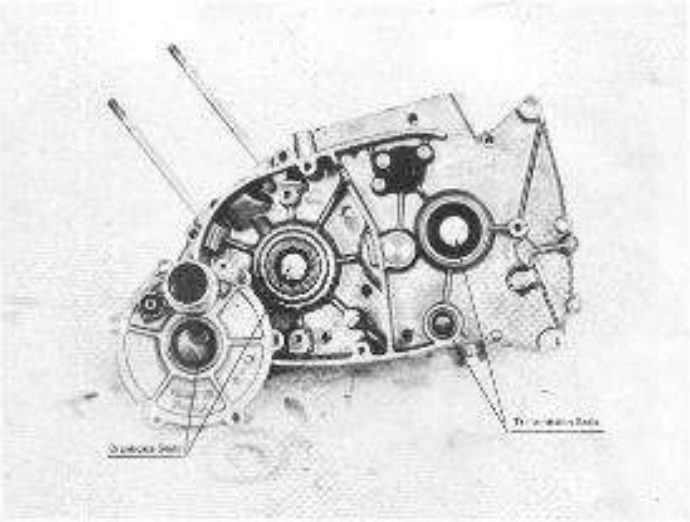




Remove the crankshaft. NOTE: The crank will generally come out if you tap it with a plastic or brass hammer.



In order to remove the crank bearings, the bearing retainer must be removed. The bearings are an interference fit in the case. The only safe way to remove the bearing is to preheat the case to about 250° to 300°F.



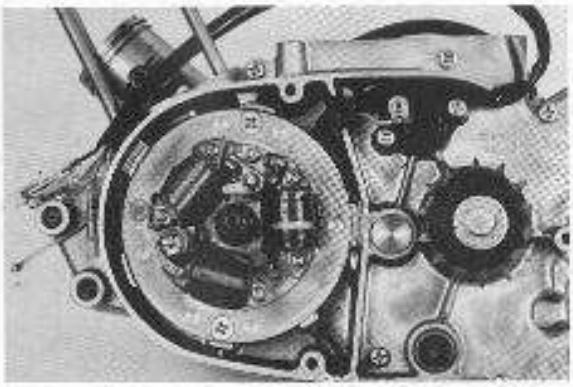
There are two seals that are responsible for sealing the crankshaft. One is in the rotary valve cover and one is in the L.H. crankcase. Also, shown are two external seals for the transmission.

The KAWASAKI engine is very precisely manufactured and because of this it is very seldom necessary to apply any great amount of force in order to remove or replace parts. If you are having difficulty with a particular part, stop and inspect things very closely. The use of force only damages precision parts and decreases engine life and reliability. In reassembling any engine there are certain items to be very careful of. Make certain that the seals are in good condition. Check each one to make sure there are no nicks or scratches in the wiper portion. Check all gasket surfaces to make sure they are clean, dry and free of tool marks. Most gaskets will work the best if you do not use any gasket cement. However, because the crankcase halves do not have a gasket it is recommended that you use a light application of a good sealer between the case halves before you reassemble the engine. Be particularly careful to make sure that all bearings are absolutely clean before reassembly. Even the smallest amount of foreign materials can greatly reduce the life of a bearing. NOTE: Because some bearings are liable to turn several revolutions before becoming lubricated (especially crankshaft bearings)it is necessary that you lubricate these bearings before reassembly. Use a few drops of engine oil.

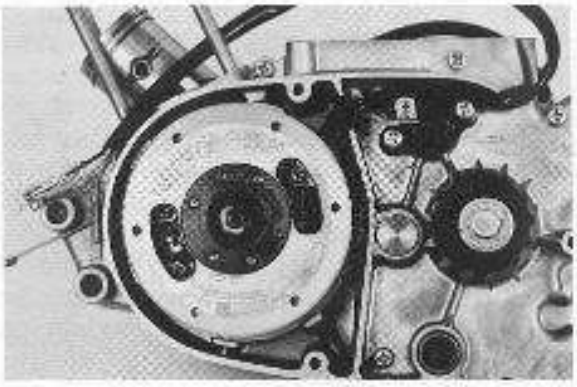
Because reassembly is essentially the reverse of disassembly, this manual will not go into step-by-step reassembly. However, be reminded that there is no substitute for care and patience. Also, it is important in reassembly that you check each step as carefully as possible. (For instance, after the crankcases have been reassembled you should check to make sure that the crankshaft and the transmission shafts rotate freely and after you have installed the shifter shaft and the gear change lever assembly you should check to see if the transmission will shift through the gears). Also, remember that after the engine has been disassembled it is necessary to time the engine before running it.

NOTE: Although it may seem time consuming, the use of a good torque wrench is recommended throughout reassembly. Remember that many of the bolts, studs and screws involved are threaded directly into the aluminum and can very easily be stripped.

G31M Lighting System. By adapting parts from a standard G3 motorcycle, it is possible to install lights on the G31M. The following photographs show the components needed in order to have a generating system on the G31M.



Flywheel Magneto Ass'y
725 100-8100



Flywheel Magneto Completely Installed

Two screws part No. 221B0614 are required for the backing plate plus a wiring harness clamp part No. 2010-8115-2.

It is suggested that you use a standard G3 headlight ass'y (725 614-7111 Head Lamp Case and 725 618-7101 Head Lamp Unit) and a standard tail light assembly (C2320-7200)for your lighting system. NOTE: It will be necessary to fabricate some brackets in order to mount the head lamp case on the forks.

The following wiring diagram shows how to hook up the flywheel magneto in order to have ignition and lights. The diagram shows a head lamp dimmer switch and a brake light switch but these can be eliminated if so desired.