

**SUZUKI**

A70



OWNER'S MANUAL

1975

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## FOREWORD

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*Welcome to the world of Suzuki motorcycles.*

*The confidence you have shown by the purchase of our products is very much appreciated. Each Suzuki motorcycle backs this confidence by a long record of manufacturing and engineering excellence. The same excellence that has produced a long history of world-championship racing successes at the famous Isle of Man as well as the motocross tracks of Europe.*

*Suzuki now presents the new RM250, a competition proved racing machine, capable of competing on any race course in the world.*

*This handbook is presented as a means whereby you can maintain your RM250 in top working condition at all times. Your riding skill and the maintenance steps outlined in this manual will assure you of top performance from your machine under any type of competition conditions.*

*We sincerely wish you and your Suzuki motorcycle a successful partnership for many years of happy riding.*

**SUZUKI MOTOR CO.,LTD.**

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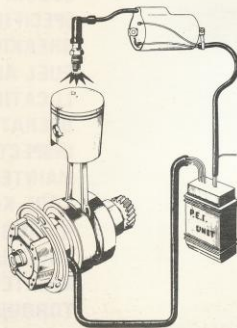
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## SUZUKI "PEI" SYSTEM

The RM250 employs an electronic ignition system (PEI) which requires no mechanical contact breaker points.

In this system special circuit is used to charge a condenser with high tension voltage. This electric charge is electronically released to the ignition coil by a triggering circuit incorporating a built in automatic timing advance.

This totally electronic system produces an extremely hot spark at the spark plug at precisely the most efficient moment for optimum combustion, regardless of engine speed or load. The PEI system provides maximum ignition efficiency without the maintenance of adjusting ignition timing or mechanical contact points usually associated with conventional ignition systems.



# SPECIFICATIONS

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## DIMENSIONS & WEIGHT

Overall length	84.3 in (2,140 mm)
Overall Width	36.8 in ( 935 mm)
Overall height	47.2 in (1,200 mm)
Wheelbase	56.7 in (1,440 mm)
Ground clearance	10.4 in ( 265 mm)
Dry weight	214 lbs (97 kg)

## PERFORMANCE

Maximum horse power	36 HP at 8,000 rpm (SAE, NET)
Maximum torque	25.2 ft-lb (3.48 kg-m) at 6,500 rpm

## ENGINE

Type	Two-stroke, air cooled gasoline engine
Intake system	Piston valve and reed valve
Number of cylinders	1

Bore x Stroke	70 x 64 mm (2.76 x 2.52 in)
Piston displacement	246 cc (15.0 cu.in)
Corrected compression ratio	7.1
Carburetor	VM36SS
Air cleaner	Wet polyurethane filter
Starter system	Primary kick
Lubrication system	Fuel and oil premixture with 20:1

### TRANSMISSION SYSTEM

Clutch	Wet multi-plate type
Transmission	5-speed, constant mesh
Gearshift pattern	1-down 4-up, return type
Primary reduction	2.727 (60/22)
Final reduction	3.846 (50/13)
Gear ratios	2.076 (27/13)
	1.750 (28/16)
	1.352 (23/17)

4th 1.105 (21/19)  
top 0.913 (21/23)  
Drive chain #520TR, 108 links

### CHASSIS

Front suspension Telescopic fork with hydraulic damper  
Rear suspension Swinging arm with hydraulic damper,  
3-way adjustable  
Front brake Right hand operated, internal expanding  
Rear brake Right foot operated, internal expanding  
Front tire size 3.00-21-4PR  
Rear tire size 4.50-18-4PR  
Steering angle 45° (right and left)  
Castor 60°  
Trail 5.0 in (126 mm)  
Turning radius 7.5 ft (2.3 m)

## ELECTRICAL SYSTEM

Ignition type	PEI
Ignition timing	23°/6,000 rpm (B.T.D.C.)
Spark plug	NGK B-9EV

## CAPACITIES

Fuel tank	2.1/1.7 US/Imp gal (8 lit)
Transmission oil	900 cc (1.9/1.6 US/Imp pt)
Front fork oil	245 cc (8.3/8.6 US/Imp oz)

\* The specifications subject to change without notice.

\* This vehicle is designed and manufactured for competition use only and is not equipped with such devices as lamps, speedometer, etc. for operation on public streets, roads, or highways.



## BREAKING-IN

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The RM250 is manufactured using the latest know-how relating to two-stroke engine and thus requires a relatively short break-in period. However, it is advisable that the machine be operated for the first 30 minutes using only half-throttle. This practice will help all moving parts to break in and will assist in acquainting you with the machine. Once the machine is fully broken in, you can be assured of high performance in competition.

## FUEL AND OIL RECOMMENDATION

The RM370 engine is of the two-stroke design, which requires a lubricating oil to be mixed with the gasoline for proper engine component lubrication.

### ENGINE OIL

The following brands are highly recommended for use in this competition machine.

- \* Castrol R30
- \* Golden Spectro Synthetic Blend
- \* Shell Super M
- \* B.P. Racing
- \* Bel-Ray MC-1 Two-cycle Racing Lubricant

### MIXING RATIO

**20 parts gasoline to 1 part oil** is the correct gas to oil mixture ratio for your engine. For proper engine performance, it is essential that the above gas/oil mixture be maintained.

#### Caution:

**A mixture containing too little oil will cause overheating of the engine. Too much oil will cause excessive carbon formation resulting in pre-ignition, fouled spark plug and loss of power.**

### FUEL MIXTURE RATIO OF 20 : 1

GASOLINE (gal)	OIL (pt)	GASOLINE (gal)	OIL (pt)
0.5	0.2	5.5	2.2
1.0	0.4	6.0	2.4
1.5	0.6	6.5	2.6
2.0	0.8	7.0	2.8
2.5	1.0	7.5	3.0
3.0	1.2	8.0	3.2
3.5	1.4	8.5	3.4
4.0	1.6	9.0	3.6
4.5	1.8	9.5	3.8
5.0	2.0	10.0	4.0

### FUEL MIXTURE RATIO OF 20 : 1

GASOLINE (lit)	OIL (cc)	GASOLINE (lit)	OIL (cc)
0.5	25	5.5	275
1.0	50	6.0	300
1.5	75	6.5	325
2.0	100	7.0	350
2.5	125	7.5	375
3.0	150	8.0	400
3.5	175	8.5	425
4.0	200	9.0	450
4.5	225	9.5	475
5.0	250	10.0	500

### FUEL MIXING PROCEDURE

To mix the gasoline and oil, always use a separate, clean container. Pour the full amount of oil required for the total mixture into the container, add approximately half the amount of gasoline to be mixed and shake thoroughly. Add the remainder of the gasoline and again thoroughly agitate the container.

### TRANSMISSION OIL

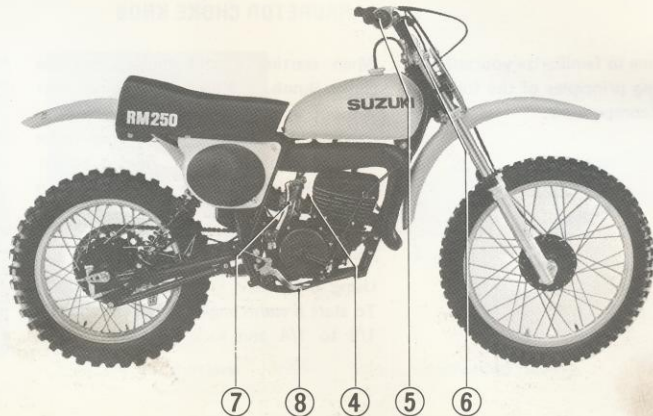
Use of Suzuki Transmission Oil is highly recommended, but if it is not available, a good quality SAE 20W/40 multi-grade motor oil should be used.

## LOCATION OF PARTS



- ① Clutch lever
- ② Fuel cock
- ③ Gearshift lever
- ④ Carburetor choke knob

- ⑤ Throttle grip
- ⑥ Front brake lever
- ⑦ Kick starter lever
- ⑧ Brake pedal



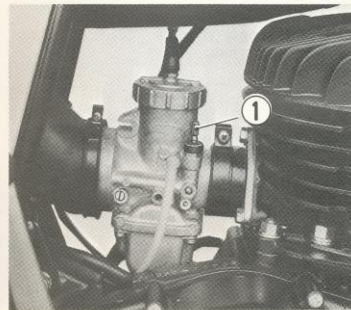
## OPERATION OF PRINCIPAL COMPONENTS

Take the time to familiarize yourself with the operating principles of the following motorcycle components.

### CARBURETOR CHOKE KNOB

When starting a cold engine, pull the choke knob. Kick the engine over without opening the throttle grip. Even opening the throttle slightly may make the engine hard to start. Always return the choke knob to the original position when the engine warms up.

\* When the engine is warm using the choke knob is not necessary. To start a warm engine, open the throttle 1/8 to 1/4 and kick start the engine.

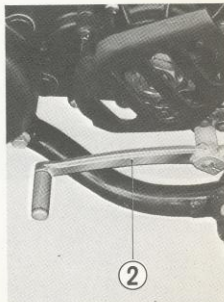


① Choke knob

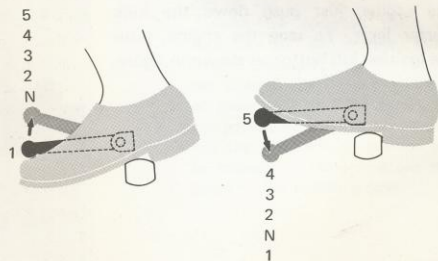
## GEARSHIFT LEVER

The RM250 is equipped with a 5-speed transmission which operates as shown in figure.

Neutral is located between low and 2nd. Low gear is located by fully depressing the lever from the neutral position. Shifting into succeeding higher gears is accomplished by pulling up on the shift lever once for each gear. When shifting from low to 2nd, neutral is wanted for stopping, depress or raise the lever a half of a stroke between low and 2nd.



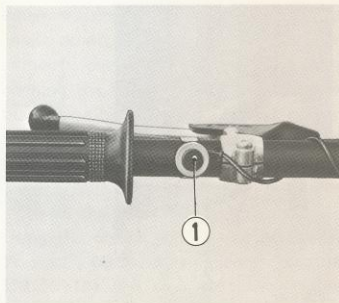
② Gearshift lever



Gearshift sequence

## IGNITION KILL BUTTON

No ignition switch is provided. To start the engine, just push down the kick starter lever. To stop the engine, push the ignition kill button as shown in figure.



① Kill button

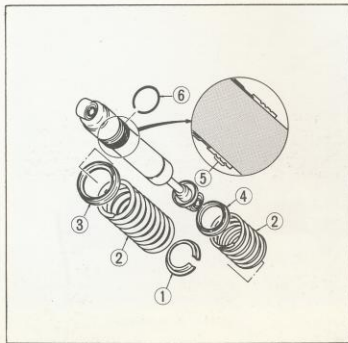
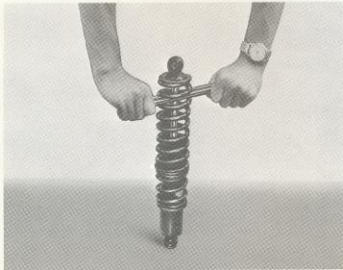
## REAR SHOCK ABSORBER

The rear shock absorber can be adjusted to give three different spring settings.

1. Remove the upper and lower rear shock absorber bolts and dismount the absorber.
2. Compress the shock absorber spring as shown in the right.
3. While compressing the spring, remove the lower spring seat ①.
4. Take out the two springs ②, spring joint ③ and upper spring seat ④ from the unit.
5. Each unit has three grooves for the clip position ⑤. The spring tension



can be varied by changing the position of the clip ⑥. The higher the clip position, the less the spring tension.

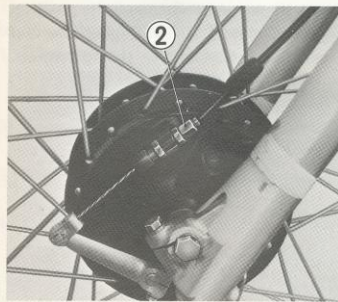
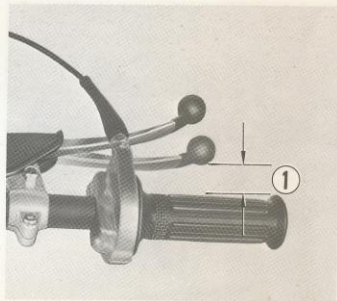


**Note:** In the new shock absorber unit the clip ⑥ has been set at the highest position for optimum shock absorption for an average rider's weight. However, after the machine has covered the running-in mileage of about 500 km (300 miles), the component parts could be adjusted and the optimum clip position will be changed to the groove one step down – the middle groove.

## INSPECTION AND ADJUSTMENTS BEFORE RIDING

### FRONT BRAKE

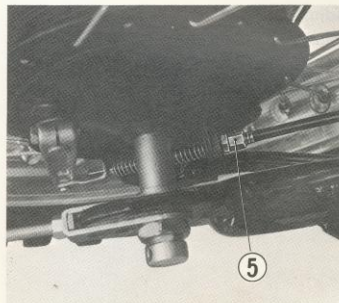
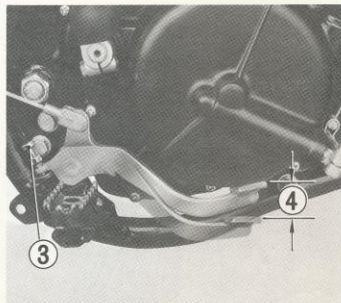
Measure the amount of the front brake lever distance ① between the brake lever end and throttle grip. The distance should be 0.8 ~ 1.2 in (20 ~ 30 mm). If adjustment is necessary, turning the front brake adjuster ② in the counter-clockwise direction will increase the distance.



## REAR BRAKE

Before adjusting the brake pedal travel, adjust the brake pedal position with the brake pedal adjuster ③ until the most suitable position is obtained for quick operation.

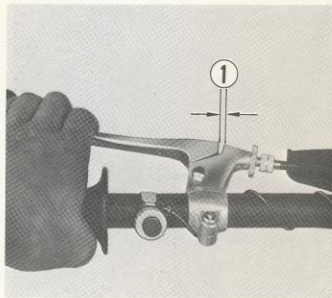
After adjustment of the brake pedal position completed, adjust the brake pedal travel ④ with the brake cable adjuster ⑤ to 0.8~1.2 in (20~30 mm).



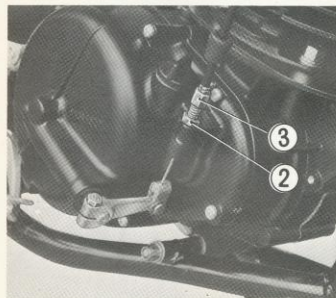
## CLUTCH

Adjust the clutch with the clutch cable adjuster.

The play of the clutch cable should be **0.16 in (4 mm)** measured at the clutch lever holder before pressure can be felt indicating disengagement of the clutch.



① Clutch lever play

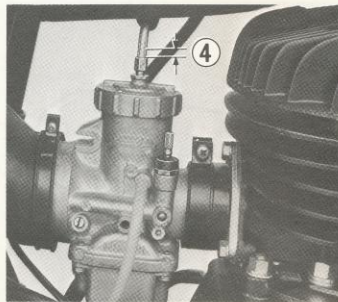


② Lock nut

③ Adjuster

## CARBURETOR

For correct safe throttle operation the throttle cable should be adjusted to have **0.02 in (0.5 mm)** play at the carburetor. This adjustment can be made at the cable adjuster on the carburetor cap. The engine speed at idle can be adjusted by turning the throttle valve stop screw in or out, which raises or lowers the throttle valve slightly.

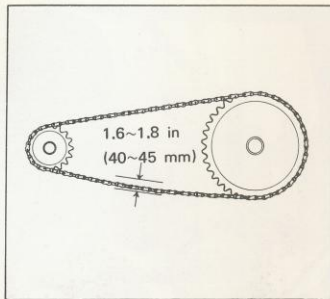


④ Throttle cable play

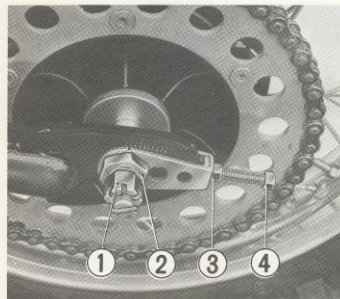
## DRIVE CHAIN

Adjust the drive chain at the rear axle by loosening nuts ① and ② (as shown). Then loosen lock nut ③ and adjust the chain tension by turning bolt ④ in or out. Be sure the marks stamped on the adjuster yoke aligns with the same mark on the swing arm on both sides of the motorcycle.

Proper chain tension adjustment is obtained when there is **1.6 ~ 1.8 in (40 ~ 45 mm)** up and down slack in the chain, at a point midway between the sprockets.



Drive chain slack



## TIRE PRESSURE

If the tire pressure is too high, the machine will tend to bounce up and down. Conversely, if the tire pressure is too low, steering will be adversely affected. Therefore, maintain the correct tire pressure for good roadability or shorter tire life will result.

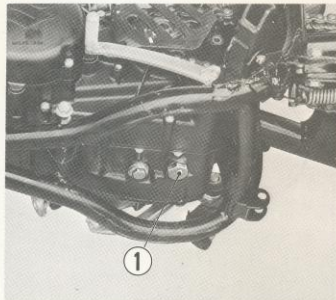
**Front 10 psi (0.7 kg/cm<sup>2</sup>)**

**Rear 10 psi (0.7 kg/cm<sup>2</sup>)**

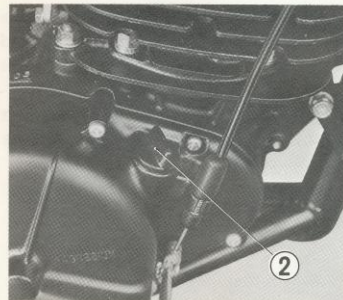
## MAINTENANCE

### TRANSMISSION OIL

To change the transmission oil, remove the filler and drain plug and drain the oil. Install the drain plug and measure **900 cc (1.9/1.6 US/Imp pt)** of Suzuki Transmission Oil or a good quality **SAE 20W/40** multigrade motor oil, then pour it into the transmission slowly.



① Drain plug



② Filler plug



## DECARBONING

Any excessive accumulation of carbon in the combustion chamber, cylinder ports or the exhaust pipe will adversely affect engine efficiency resulting in a loss in power.

Therefore, these areas should have all carbon removed periodically.

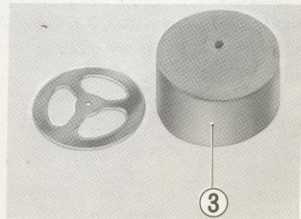
## AIR CLEANER

When the air cleaner is clogged with dust, it affects the engine performance and therefore, it should be cleaned periodically.

- 1) Wash the filter with gasoline.
- 2) After wringing gasoline out of the filter, soak it into the recommended engine oil or motor oil with around SAE 30.
- 3) Wring oil out of the filter and then fit it to the element.

### CAUTION:

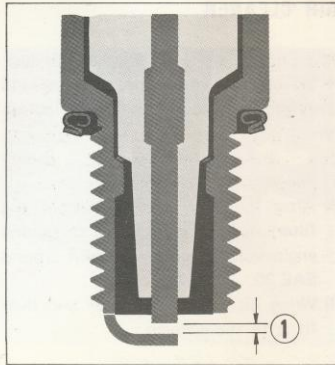
If the element is not installed properly, dirt and dust may enter, resulting in rapid wear of the piston rings and cylinder.



③ Air cleaner element

## SPARK PLUG

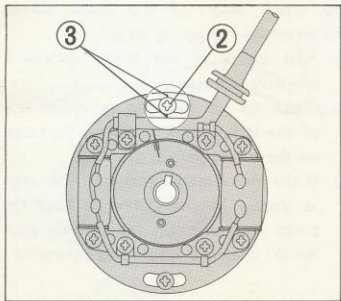
When carbon accumulates on the spark plug, a hot, strong spark will not be produced. Remove carbon deposits with a wire or pin and adjust the spark plug gap to **0.5 ~ 0.6 mm (0.020 ~ 0.024 in)** by measuring with a feeler gauge.



① Spark plug gap

## IGNITION TIMING

Ignition timing is adjusted at the factory and should normally require no adjustment. However, if the stator is removed or tampered with, adjustment may be necessary. In this case the top mounting screw ② should be aligned with the mark ③ stamped on the stator plate.



## DRIVE CHAIN

The drive chain must be kept well lubricated; otherwise it may break due to increased running resistance. Before lubricating the drive chain, wash it with detergent or gasoline, and apply chain oil (molybdenum bisulfide) to it. If no proper chain oil is available, dip it in gear oil for about three hours and allow to drain before installation.



## BRAKE LINING WEAR LIMIT INDICATOR

This motorcycle is equipped with brake lining wear limit indicators on both front and rear brakes. As shown in the *figure A*, at the condition of normal lining wear, the extension line of the index mark on the brake cam shaft should be within the range embossed on the brake panel with brake on.

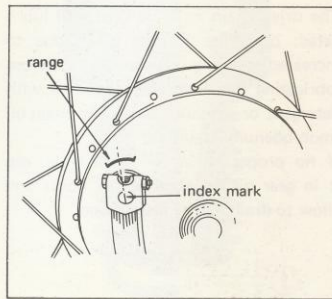


Fig. A The extension line of the index mark is within the range.

To check wear of the brake lining, perform the following steps:

1. First check if the brake system is properly adjusted.
2. Check to see that the extension line of the index mark is within the range on the brake panel.
3. If the index mark is beyond the range as shown in the *figure B*, have the brake shoe assembly replaced by your Suzuki dealer to insure safe operation.

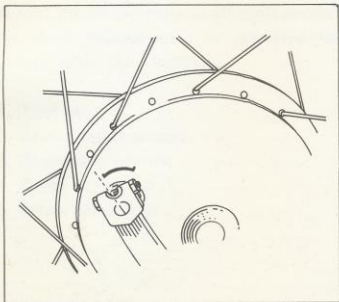


Fig. B The extension line of the index mark is out of the range.

## FUEL FILTER

The fuel filter is incorporated in the fuel cock which is mounted on the bottom of the fuel tank at the left side. Accumulation of dirt in the filter will restrict the flow of the fuel and cause the carburetor to malfunction, therefore, the fuel filter should be serviced periodically.

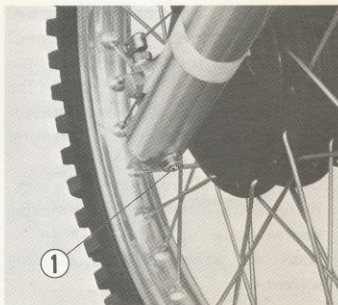
1. Drain the fuel from the fuel tank.
2. Remove the fuel cock by removing the two bolts.
3. Wash the screen filter in cleaning solvent.

## FRONT FORK OIL

The more oil in the front fork the stiffer the suspension becomes, while the less oil in the fork the softer the suspension becomes.

When changing the fork oil with the fork fitted on the steering stem, remove the fork inner tube head bolt and the fork oil drain plug and completely drain the oil from the fork leg.

Pour **245 cc (8.3/8.6 US/Imp oz)** of **SAE 10W/30 motor oil** or **A.T.F. (Automatic Transmission Fluid)** into each inner tube after refitting the drain plug screws.

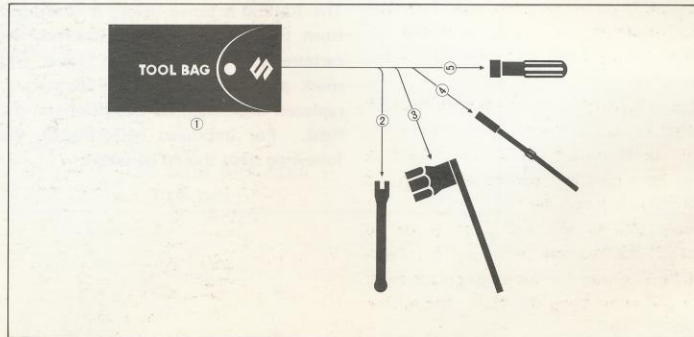


① Oil drain plug

## TOOL KIT

A tool kit which includes all tools needed for daily maintenance is provided together with the machine.

1. Tool bag
2. Spoke nipple wrench
3. Spark plug wrench
4. 6 mm box driver
5. Screw driver grip



## RACING TUNE-UP

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The RM250 is tuned before it is shipped from the Suzuki factory. However, the carburetor, final reduction ratio and spark plug may have to be adjusted or replaced depending on conditions in the field. For improved performance, the following steps should be taken.

### ADJUSTING CARBURETOR

If carburetion is not perfect, the performance of the engine will be adversely affected. Therefore, the carburetor should be set correctly to meet such conditions as weather, race field, etc. First, clean the carburetor thoroughly, and adjust the following parts as necessary:



### Carburetor specifications

Bore	36 mm
Main jet	310
Jet needle	6FJ6-4th
Needle jet	Q-0
Cut-away	1.5
Pilot jet	45
Pilot air adjusting screw	1½ turns back open
Float level	13.9 mm

### How to judge carburetion

Item	Proper	Mixture is rich	Mixture is lean
Spark plug	Porcelain is light brown Porcelain is tan color	Porcelain is sooty Porcelain is oily	Porcelain is whitish Porcelain is burned away
Engine revolution	Engine runs smoothly	Engine does not run smoothly	Engine rpm fluctuates even if the throttle grip is held steady

### Overall carburetor adjustment

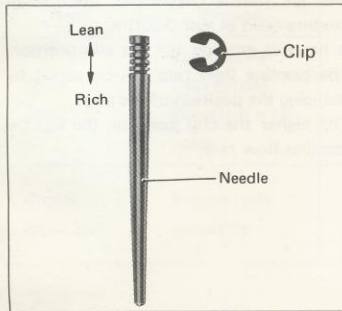
Item	When mixture is rich	When mixture is lean
Engine idling	Screw out pilot air screw	Screw in pilot air screw
Half-throttle	Raise needle clip position	Lower needle clip position
Full-throttliè	Replace with main jet having a smaller calibration number	Replace with main jet having a larger calibration number

### Jet needle

The jet needle determines the fuel-air mixture ratio at half-throttle.

It has five grooves for the clip position. The gasoline flow rate can be varied by changing the position of the clip.

The higher the clip position, the less the gasoline flow rate.

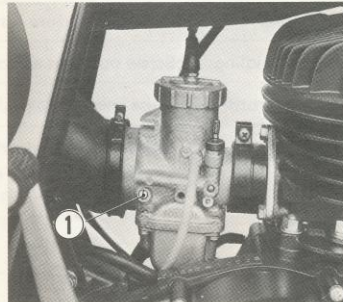


Jet needle position

### Adjusting pilot air screw

Warm up the engine and turn the pilot air screw clockwise until it seats in the carburetor.

Open the pilot air screw  $1\frac{1}{2}$  turns counter-clockwise. Slowly turn the pilot air screw in or out within  $\frac{1}{4}$  turn from the standard setting ( $1\frac{1}{2}$  turns) until the engine runs smoothly.



① Pilot air adjusting screw

## FINAL GEAR RATIO

The final gear ratio must be determined by taking into account the condition of the racing course.

The standard final gear ratio is 50 : 13, but as options, the following sprockets are available.

Engine sprockets . . . . 12 and 14 teeth

## SPARK PLUG

The standard spark plug for this motorcycle is the **NGK B-9EV**. This spark plug is 14 mm(0.55 in) thread diameter with a  $\frac{3}{4}$  in (19.0 mm) reach. This spark plug is the right heat range for normal operation in most locales. If the spark plug shows overheating (whitish appearance at the electrode) or is wet and dirty (black or sooty appearance) this could indicate that the spark plug is of the wrong heat range for the conditions under which the motorcycle is being operated.

Generally, when the spark plug heat range is correct, the plug electrode shows a light brown or tan color.

Spark plugs of a different heat range may be chosen according to the following table.

NGK	Remarks
B-8EV	If the standard plug is apt to get wet, replace with this plug.
B-9EV	<b>Standard</b>
B-10EV	If the standard plug is apt to overheat, replace with this plug.

**Caution:**

- 1) The heat range selection may be made only under the condition that the carburetion is set properly.
- 2) If another brand of spark plug is to be used other than NGK consult your authorized Suzuki dealer.
- 3) When installing the spark plug, screw it in with your fingers to prevent stripping the threads, then tighten with a torque wrench to 18.0 ~ 22.0 ft-lb (2.5 ~ 3.0 kg-m).

## TROUBLESHOOTING

There can be various causes for problems which might occur on the motorcycle. The following procedures may be used to troubleshoot possible trouble spots.

### ENGINE WILL NOT START

#### FUEL SYSTEM

1. Check that there is sufficient gasoline in the fuel tank.
2. Make sure the fuel petcock and fuel tank breather hose are not clogged.

#### SPARK PLUG

1. Check that the spark plug gap has not been bridged and short circuited by

carbon.

2. Check that the plug is not fouled with wet gasoline or oil.
3. Clean the spark plug gap and lay the connected spark plug against the cylinder head. Kick over the engine and see if a spark is produced. If not, replace the spark plug or check your ignition system.
4. To check the ignition system, remove the spark plug cap from the high tension wire and hold it about 7 mm (0.28 in) from the cylinder head (ground). Kick the engine over and see if a spark jumps this gap. If so, the system is functioning and the problem

is probably in the spark plug cap. If this does not produce a spark, have your Suzuki dealer check your ignition system.

### CLUTCH SLIPPAGE

1. If there is no clutch lever play, adjust the cable adjuster for 4 mm (0.16 in) play.
2. The clutch will also slip if the plates are worn or the springs have weakened. If so, these items must be replaced.

### **EXCESSIVE ENGINE VIBRATION**

1. Loose engine mounting bolt.
2. Crack in the frame.

### **ENGINE OVERHEATS**

1. Carburetion is lean caused by the carburetor setting (main jet selection) not being suitable for running conditions and weather.
2. Carbon has collected on the combustion chamber, piston crown, cylinder exhaust port and expansion chamber.

3. The spark plug has too hot a heat range.

### **BAD RUNNING STABILITY**

1. Improper front or rear tire air pressure.
2. Improper front or rear wheel alignment.
3. Improperly tightened front axle nut or steering stem lock nut.

### **ENGINE WILL NOT REV UP OR WILL NOT RUN SMOOTHLY**

1. The carburetor choke knob is not fully returned.
2. Too rich carburetion.
3. Clogged air cleaner element.



## MAINTENANCE SCHEDULE

The following list indicates the items and interval times of preventive maintenance by which the best riding conditions are assured.

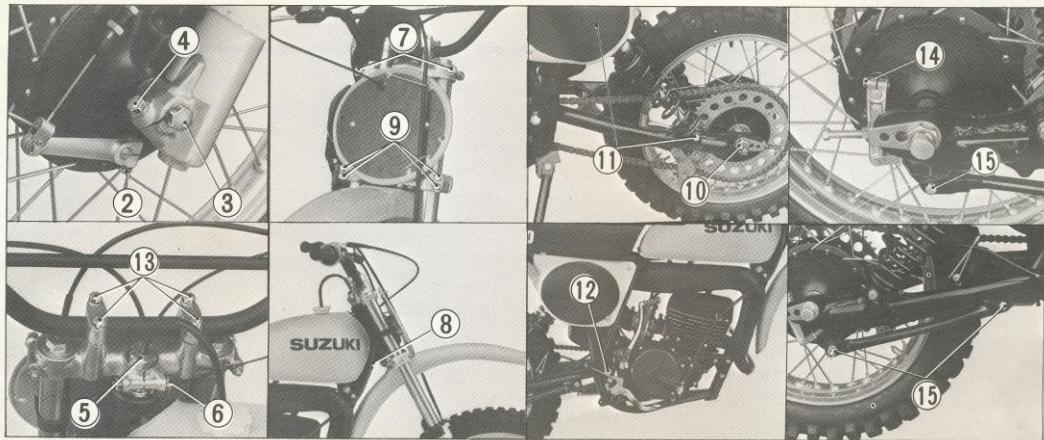
Service Item	Each race Every 100 km (60 miles)	Every 2 races Every 200 km (120 miles)	Every 3 races Every 300 km (180 miles)	Every 5 races Every 500 km (300 miles)	Remarks
Piston ring		Replace			
Transmission oil		Change			Change at initial 100 km
Engine sprocket				Replace	
Drive chain	Cubricate		Replace		Adjust slack every 40 km
Rear sprocket			Replace		
Drive chain buffer			Replace		
Drive chain guide roller			Replace		
Spoke nipple					Within 0 - 50 km retighten every 10 km. After 50 km retighten every 50 km.
Air Cleaner	Clean				
Kick starter lever	Apply grease				
Throttle, brake & clutch cable			Replace		
Bolts and nuts	Retighten (see page 42)				Retighten initial 20 km
Spark plug	Check & clean				

## TORQUE SPECIFICATIONS

Bolts and nuts in a motorcycle must be expected to become loose more or less in the long course of usage because of crucial shocks and vibrations to which the vehicles of this kind are subjected. Thus, it is highly desirable and, for some critical bolts and nuts, mandatory to check and retighten them from time to time.

Bolts and nuts, listed below, are keynotes for safety. They must be retightened to the torque values indicated. Never use ordinary wrenches; use torque wrenches in servicing the listed bolts and nuts.

1.	Cylinder head nuts	190 ~ 250 kg-cm (13.5 ~ 16.5 ft-lb)
2.	Front brake cam lever bolt	60 ~ 80 ( 4.0 ~ 5.5)
3.	Front axle	450 ~ 520 (32.0 ~ 37.5)
4.	Front axle clamp bolt	200 ~ 250 (14.0 ~ 18.0)
5.	Steering stem head bolt	450 ~ 550 (32.0 ~ 39.5)
6.	Steering stem upper clamp bolt	200 ~ 250 (14.0 ~ 18.0)
7.	Front fork upper clamp bolts	200 ~ 250 (14.0 ~ 18.0)
8.	Steering stem lower clamp bolt	250 ~ 300 (18.0 ~ 21.5)
9.	Front fork lower clamp bolts	200 ~ 250 (14.0 ~ 18.0)
10.	Rear axle nut	650 ~ 800 (46.5 ~ 57.5)
11.	Rear shock absorber fitting bolts	250 ~ 300 (18.0 ~ 21.5)
12.	Rear swinging arm pivolt nut	650 ~ 800 (46.5 ~ 57.5)
13.	Handlebar clamp bolts	160 ~ 200 (11.5 ~ 14.0)
14.	Rear brake cam lever bolt	160 ~ 200 (11.5 ~ 14.0)
15.	Rear torque link nuts	120 ~ 150 ( 8.5 ~ 10.5)



MEMO

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Prepared by

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