

SUZUKI

SERVICE MANUAL

RM250

RM370

SUZUKI

RM250 RM370

SERVICE MANUAL

FOREWORD

This Manual describes Models RM250 and RM370 SUZUKI off-road motorcycles to provide information necessary for servicing the machines of these models at the dealer's level workshop. It is intended for use primarily by the service personnel, but the ultimate users of these machines are not excluded from readership. In many places of this Manual, the user is directly addressed to — in hope that our servicemen will convey the same message to the users of RM250 and RM370 machines whenever occasion calls for it.

Model RM250 differs from Model RM370 only in a limited number of respects. Those differences are specifically indicated to make this Manual fully applicable to the two models.

It is with the best wishes for the motorcycle racers mounting RM250 and RM370 machines that this Manual has been prepared. Our servicemen are assured that by adhering to the instructions and advices contained herein, they can bring the laurels of high competition within the reach of their customers.

SUZUKI MOTOR CO., LTD.

Service Department
Overseas Marketing Division

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SIDE VIEW

RM250



RM370



GENERAL INFORMATION

GROUP
1

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4 GENERAL INFORMATION

SPECIFICATIONS

RM250 SPECIFICATIONS

DIMENSIONS AND WEIGHT Overall length Overall width Overall height Wheelbase Ground clearance Dry weight	2,140 mm (84.3 in) 935 mm (36.8 in) 1,200 mm (47.2 in) 1,440 mm (56.7 in) 265 mm (10.4 in) 97 kg (214 lbs)
ENGINE Type Intake system Number of cylinder Bore Stroke Piston displacement Corrected compression ratio Carburetor Air cleaner Starter system Lubrication system	Two-stroke cycle, air-cooled gasoline engine Piston and reed valve (SUZUKI "POWER-REED") 1 70.0 mm (2.76 in) 64.0 mm (2.52 in) 246 cc (15.0 cu.in) 7.1 : 1 MIKUNI VM36SS Polyurethane foam element Primary kick Fuel and oil premixture with 20 : 1
TRANSMISSION Clutch Transmission Gearshift pattern Primary reduction Final reduction Gear ratios, Low 2nd 3rd 4th Top Drive chain	Wet multi-plate type 5-speed constant mesh 1-down 4-up 2.727 (60/22) 3.846 (50/13) 2.076 (27/13) 1.750 (28/16) 1.352 (23/17) 1.105 (21/19) 0.913 (21/23) #520TR, 108 links
CHASSIS Front suspension Rear suspension Steering angle Caster Trail Turning radius Front brake Rear brake Front tire Rear tire	Telescopic, oil dampened Swinging arm, gas/oil dampened, 3-way adjustable 45° (right & left) 60° 126 mm (5.0 in) 2.3 mm (7.5 ft) Mechanical, internal expanding Mechanical, internal expanding 3.00-21-4PR, Full-knobby 4.50-18-4PR, Full-knobby
ELECTRICAL Ignition type Ignition timing Standard spark plug	SUZUKI "PEI" (Point-less Electronic Ignition) 23° B.T.D.C. at 6,000 rpm NGK B-9EV
CAPACITIES Fuel tank Front fork oil Transmission oil	8 lit. (2.1/1.7 US/Imp gal) 245 cc (8.3/8.6 US/Imp oz) Each leg 900 cc (1.9/1.6 US/Imp pt) When changing

RM370 SPECIFICATIONS

DIMENSIONS AND WEIGHT Overall length Overall width Overall height Wheelbase Ground clearance Dry weight	2,140 mm (84.3 in) 935 mm (36.8 in) 1,200 mm (47.2 in) 1,440 mm (56.7 in) 265 mm (10.4 in) 102 kg (225 lbs)
ENGINE Type Intake system Number of cylinder Bore Stroke Piston displacement Corrected compression ratio Carburetor Air cleaner Starter system Lubrication system	Two-stroke cycle, air-cooled gasoline engine Piston and reed valve (SUZUKI "POWER-REED") 1 77.0 mm (3.03 in) 80.0 mm (3.15 in) 372 cc (22.7 cu.in) 6.9 : 1 MIKUNI VM36SS Polyurethane foam element Kick Fuel and oil premixture with 20 : 1
TRANSMISSION SYSTEM Clutch Transmission Gearshift pattern Primary reduction Final reduction Gear ratios, Low 2nd 3rd 4th Top Drive chain	Wet multi-plate type 5-speed constant mesh 1-down 4-up 2.384 (62/26) 3.846 (50/13) 2.071 (29/14) 1.625 (26/16) 1.263 (24/19) 1.000 (21/21) 0.869 (20/23) # 520TR, 108 links
CHASSIS Front suspension Rear suspension Steering angle Caster Trail Turning radius Front brake Rear brake Front tire Rear tire	Telescopic, oil dampened Swinging arm, gas/oil dampened, 3-way adjustable 45° (right & left) 60° 126 mm (5.0 in) 2.3 m (7.5 ft) Mechanical, internal expanding Mechanical, internal expanding 3.00-21-4PR, Full-knobby 4.60-18-6PR, Full-knobby
ELECTRICAL Ignition type Ignition timing Standard spark plug	SUZUKI "PEI" (Point-less Electronic Ignition) 23° B.T.D.C. at 6,000 rpm NGK B-9EV
CAPACITIES Fuel tank Front fork oil Transmission oil	8 lit. (2.1/1.7 US/Imp gal) 245 cc (8.3/8.6 US/Imp oz) Each leg 1,000 cc (2.1/1.8 US/Imp pt) ... When changing

**All specifications are subject to change without notice.*

6 GENERAL INFORMATION

GENERAL INSTRUCTIONS

FUEL AND ENGINE OIL

Fuel

Use a premium (high-octane) gasoline with an octane number of at least 95 to prepare a fuel-oil mixture with 20 parts of gasoline and 1 part of oil. Before filling up the fuel tank with the mixture, be sure to stir the gasoline and oil in a clean vessel.

The 20-to-1 ratio is by volume. If you measure gasoline by the gallon or litre and oil by the pint or cubic centimeter (cc), these two charts will be useful:

FUEL OIL MIXTURE RATIO OF 20 TO 1

Gallon to pint

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

Litre to cc

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

Engine oil

For the oil to be mixed with gasoline, any of the following brands or its equivalent will do:

CAUTION: Do not allow two different brands to get mixed in the fuel-oil mixture.

SHELL SUPER M

CASTROL R30

GOLDEN SPECTRO SYNTHETIC BLEND

B.P. RACING

BEL-RAY MC-1 Two-cycle Racing Lubricant

TRANSMISSION OIL

A motor oil with a viscosity rating of SAE 20W/40 is prescribed for use in the transmission. Note that a slightly more oil is needed to fill up the transmission after overhauling than in making an oil change.

Oil capacity of RM250 transmission:

For changing oil 900 cc (1.9/1.6 US/Imp pt)

For filling after overhaul 1,000 cc (2.1/1.8 US/Imp pt)

Oil capacity of RM370 transmission:

For changing oil 1,000 cc (2.1/1.8 US/Imp pt)

For filling after overhaul 1,100 cc (2.3/1.9 US/Imp pt)

FRONT FORK OIL

For the oil in the two front forks, use a motor oil of SAE 20W/20. The quantity of oil needed to fill up each fork is:

Oil capacity of front fork (in RM250 and RM370)	245 cc (8.3/8.6 US/Imp oz)
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BREAKING-IN

No programed breaking-in operation is necessary: the only thing is that the machine should not be continuously operated in full-load condition for the first one hour or 30 km (20 miles).

USE OF GENUINE SUZUKI PARTS

To replace any part of the machine, use a genuine SUZUKI replacement part. Immitation parts or parts supplied from any other source than SUZUKI, if used to replace parts of SUZUKI origin in the machine, will lower the inherent capability of the machine and, for worse, could induce costly mechanical trouble.



MATERIALS REQUIRED FOR MAINTENANCE

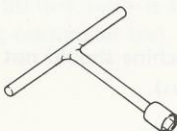
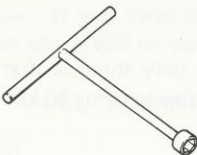
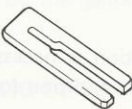
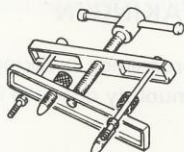



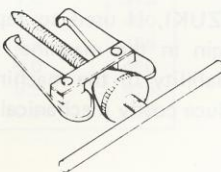

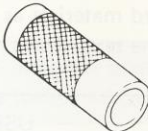
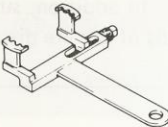
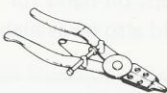
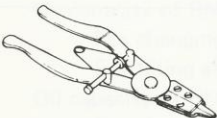
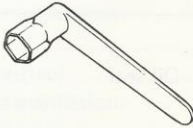
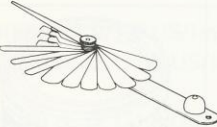
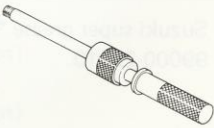
The materials listed below are required for maintenance works on the RM250 and RM370, and should be kept on hand for ready use. In addition, such standard materials as cleaning fluids, lubricants, etc., should also be available. Methods of use are discussed in the text of this manual on later pages.


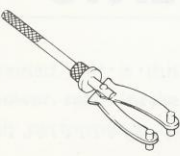

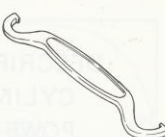

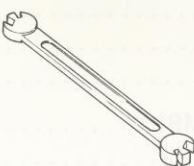


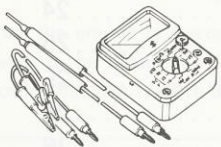
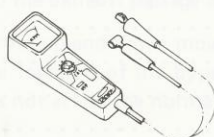

MATERIAL		USE
Thread lock cement 99000-32040		Gear shifting cam guide screw Gear shifting arm stopper screw Kick starter stopper screw Bearing holder screw Reed valve fitting screw Front fork cylinder fixing bolt
Suzuki super grease "A" 99000-25010		Oil seal

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SPECIAL TOOLS

The special tools listed below are used to disassemble, assemble, maintain and service the RM250 and RM370. They have been created to make these jobs easier than would be possible with ordinary tools, and for this reason should be used in all work done on the RM250 and RM370.

1 	2 	3 	4 
8 mm stud installing tool 09910-10710	10 mm stud installing tool 09910-11510	Con-rod stopper 09910-20114	Crankcase separating tool 09910-80113
5 	6 	7 	8 
6 mm hexagon "L" type wrench 09911-70120	8 mm hexagon "L" type wrench 09911-71510	Oil seal remover 09913-50110	Bearing puller 09913-60910
9 	10 	11 	12 
Bearing and oil seal installing tool 09913-70122	Bearing and oil seal installing tool 09913-80111	Clutch sleeve hub holder 09920-53710	Snap ring opener (small) 09920-70111
13 	14 	15 	16 
Snap ring opener (large) 09920-70120	Spark plug wrench 09930-10111	Thickness gauge 09900-20804	Rotor remover shaft 09930-30101

17 	18 	19 	20 
Rotor remover attachment 09930-30210	Engine sprocket and flywheel holder 09930-40113	Timing gauge 09931-00112	Steering stem lock nut wrench 09940-10122
21 	22 	23 	24 
Front fork oil seal installing tool 09940-53111	Spoke nipple wrench 09940-60112	Snap ring opener 09900-06103	Shock driver set 09900-09002
25 	26 	27 	
Pocket tester 09900-25001	Engine tachometer 09900-26002	Electro tester 09900-28104	

GROUP 2

ENGINE

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DESCRIPTION

Unless otherwise indicated, the following description of engine parts applies to both models, RM250 and RM370.

CYLINDER**RM250 cylinder**

Six scavenging ports are provided. It is this feature, coupled with the **power reed intake system**, that explains the high performance of this engine.

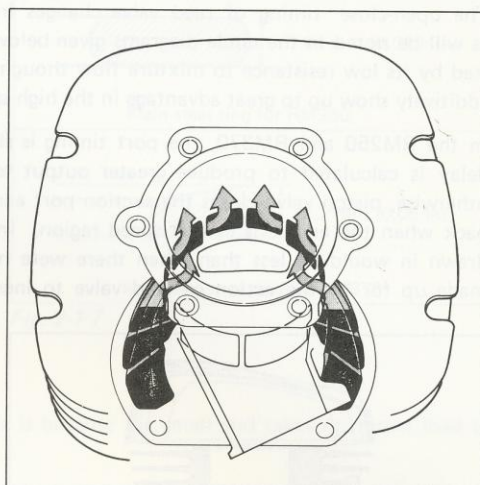


Fig. 2-1-1 Six scavenging ports (RM250)

RM370 cylinder

The number of scavenging ports is four. A **power reed intake system**, similar to the one used in the RM250, is included. A feature of distinction is that, above the exhaust port, a bypass hole is drilled through the cylinder sleeve. This passage makes easier kick starting of the engine because it bleeds the pressure of compression into the exhaust passage at the time of kicking.

After the engine is started, the up-and-down movement of the piston is so fast that the bleeding action ceases to be effective. The location of the bypass port and the size and length of this passage are so chosen that this feature does not affect the normal engine operation at all.

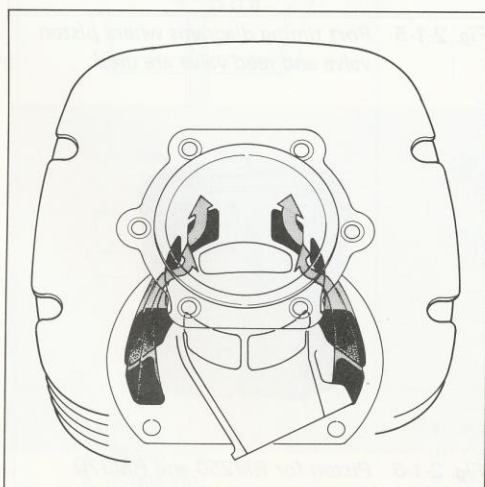


Fig. 2-1-2 Four scavenging ports (RM370)

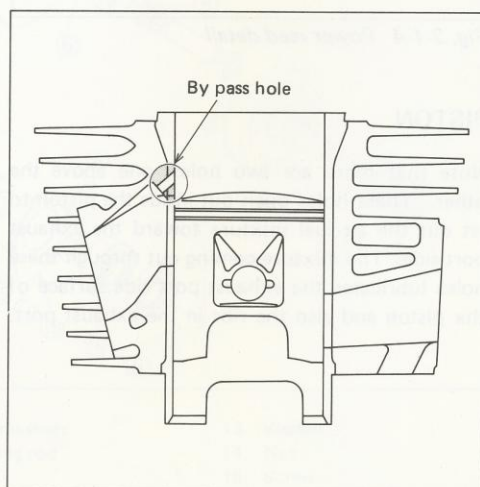


Fig. 2-1-3 Decompressing bypass port (RM370)

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POWER REED INTAKE SYSTEM

POWER REED signifies that the intake system feeds the mixture through two distinct actions; one by the piston valve and the other by the reed valve.

The open-close timing of reed valve changes freely to suit the mixture requirement of the engine, as will be noted in the circle diagrams given below. Against this characteristic, piston valve is characterized by its low resistance to mixture flow though its timing does not change. These two characteristics additively show up to great advantage in the high speed region. Here's how:

In the RM250 and RM370, the port timing is slightly delayed as far as inlet port is concerned. This delay is calculated to produce greater output torque in the low and medium speed region. Stated otherwise, piston valve closes the suction port earlier and thus minimizes the chances of mixture blow-back when the engine is in that speed region. In the high speed region, the amount of mixture being drawn in would be less than when there were no delay in port timing. This deficiency, however, is made up for by the action of reed valve to increase output power and torque in this speed region.

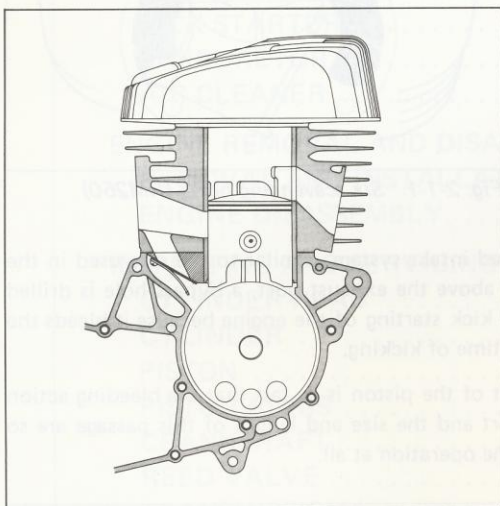


Fig. 2-1-4 Power reed detail

PISTON

Note that there are two holes, one above the other. These holes open out inside the piston to let out the air-fuel mixture toward the exhaust port side. The mixture coming out through these holes lubricates the exhaust port side surface of the piston and also the ribs in the exhaust port.

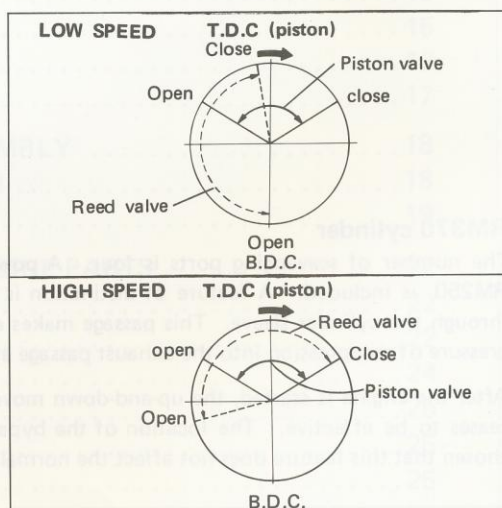


Fig. 2-1-5 Port timing diagrams where piston valve and reed valve are used.

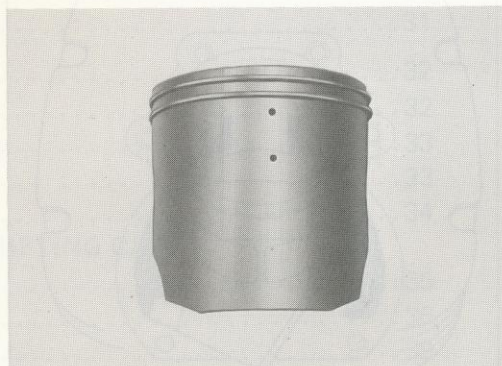


Fig. 2-1-6 Piston for RM250 and RM370 (with two oil holes)

PISTON RINGS

The two piston rings, 1st and 2nd, of the RM250 are thin steel rings of plain type, whereas those of the RM370 are thin steel rings of keystone type. The use of thin rings is calculated to up the engine horsepower output: they seal the sliding clearance but with reduced friction.

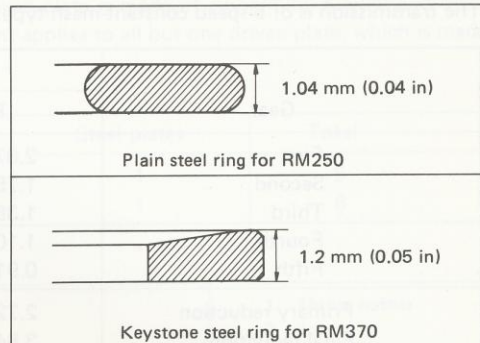


Fig. 2-1-7

CRANKSHAFT

The big end of the connecting rod is durable. This is because the small end takes up thrust load to reduce the load on the big end.

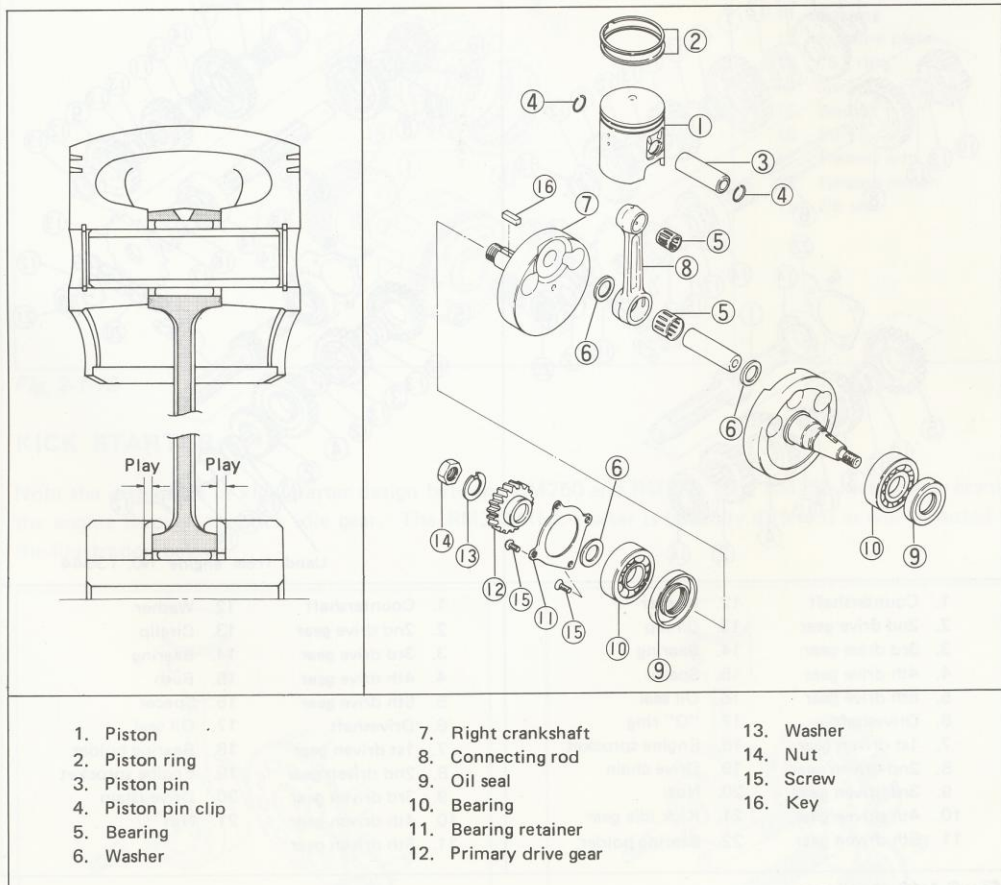


Fig. 2-1-8

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TRANSMISSION

The transmission is of 5-speed constant-mesh type.

Gear	Models	
	RM250	RM370
First	2.076 (27/13)	2.071 (29/14)
Second	1.750 (28/16)	1.625 (26/16)
Third	1.352 (23/17)	1.263 (24/19)
Fourth	1.105 (21/19)	1.000 (21/21)
Fifth	0.913 (21/23)	0.869 (20/23)
Primary reduction	2.727 (60/22)	2.385 (62/26)
Final reduction	3.846 (50/13)	3.846 (50/13)

Fig. 2-1-9 Transmission gear ratios

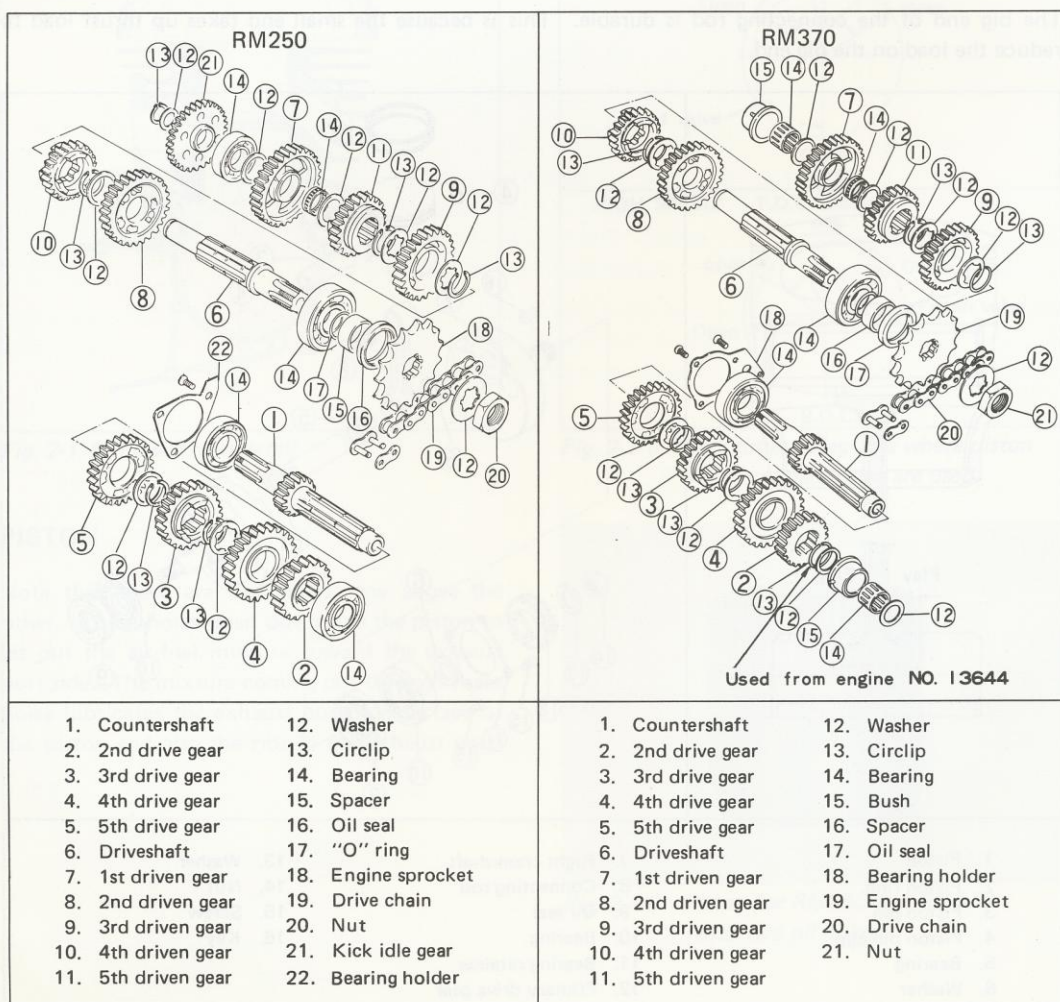


Fig. 2-1-10

CLUTCH

In the wet multi-plate clutch, the light-in-weight driven plate is made of an aluminum alloy and dissipates the heat of friction more readily. This statement applies to all but one driven plate, which is made of steel.

Model	Al-alloy plates	Steel plates	Total
RM250	4	1	5
RM370	5	1	6

Fig. 2-1-11 Number and materials of driven plate

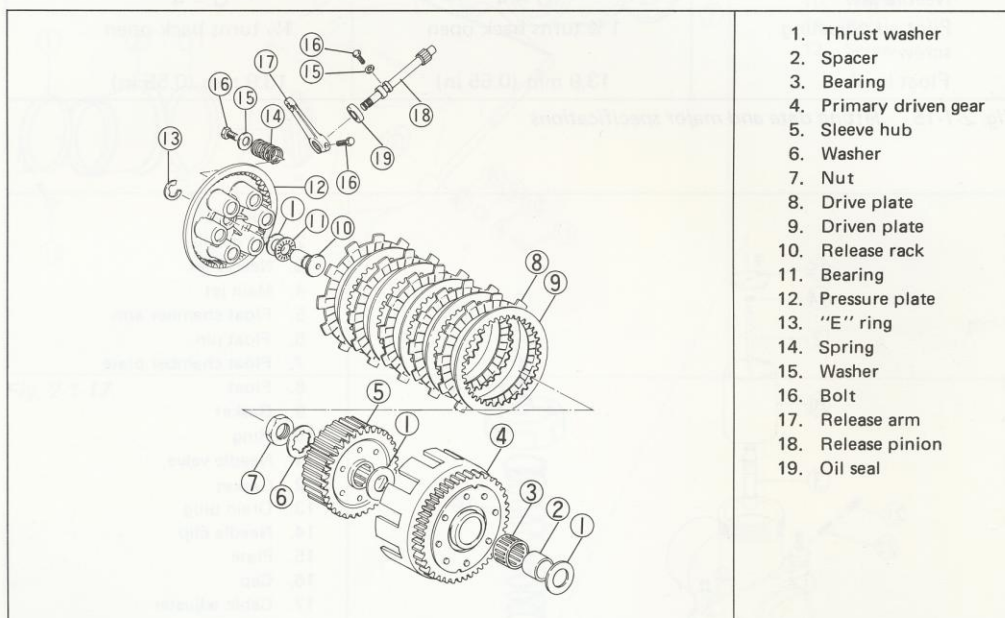


Fig. 2-1-12

KICK STARTER

Note the difference in kick starter design between RM250 and RM370. The RM250 kick starter cranks the engine through the kick idle gear. The RM370 kick starter is basically different as will be noted in the illustration below.

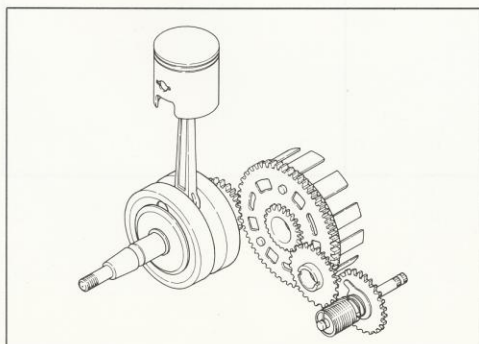


Fig. 2-1-13 RM250 kick starter

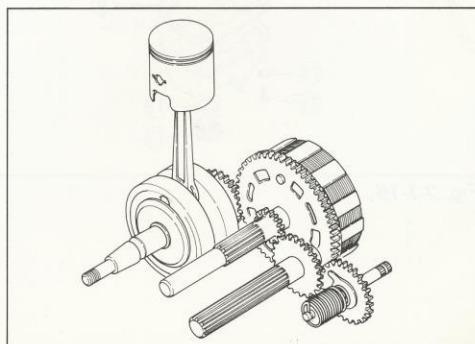


Fig. 2-1-14 RM370 kick starter

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CARBURETOR

A VM36SS carburetor is used in both models. The difference is in carburetor jetting.

Item	RM250	RM370
Carburetor type	VM36SS	VM36SS
Main jet	#300	#310
Pilot jet	#45	#50
Jet needle	6FJ6-4	6FJ6-3
Cut-away	1.5	1.5
Main bore diameter	36 mm (1.415 in)	36 mm (1.415 in)
Needle jet	Q - 4	Q - 4
Pilot air adjusting screw	1 ½ turns back open	1 ½ turns back open
Float level	13.9 mm (0.55 in)	13.9 mm (0.55 in)

Fig. 2-1-15 Jetting data and major specifications

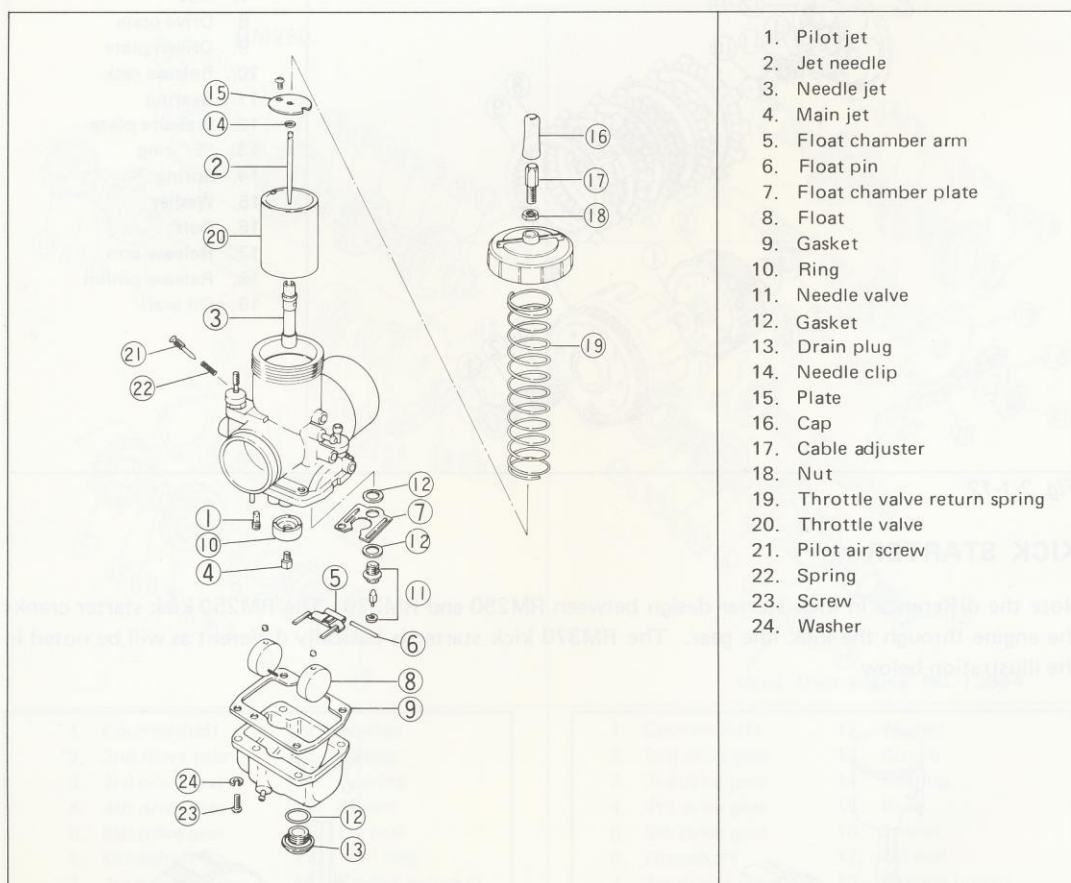


Fig. 2-1-16

AIR CLEANER

A polyurethane foam element, large in size and high in dust-catching efficiency, is used in the air cleaner.

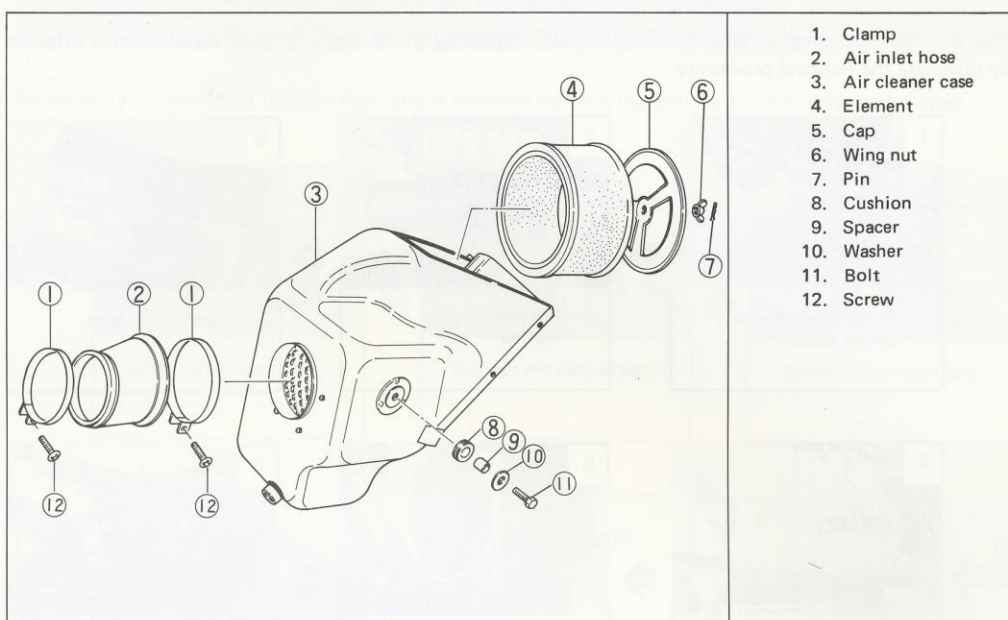


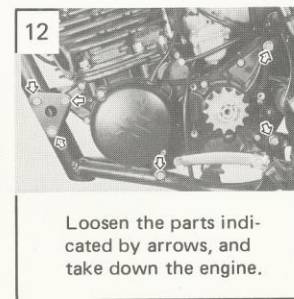
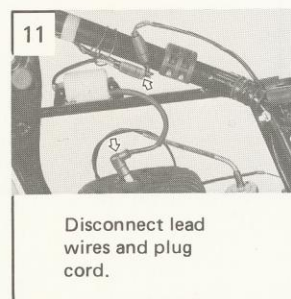
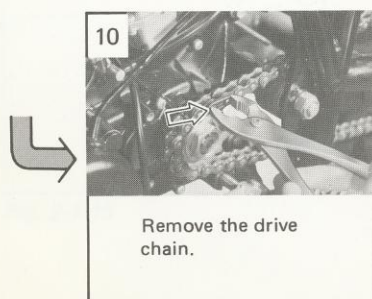
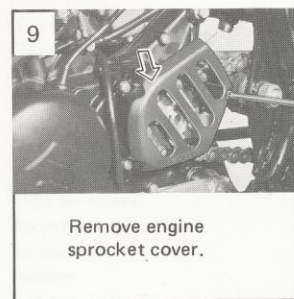
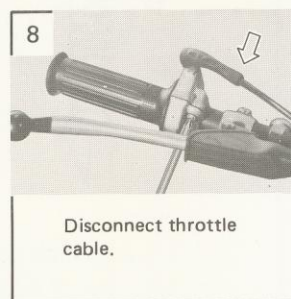
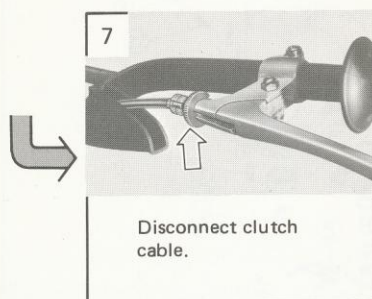
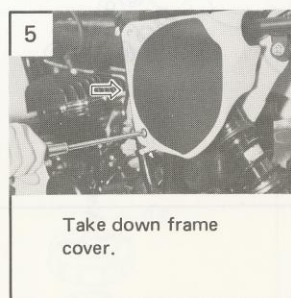
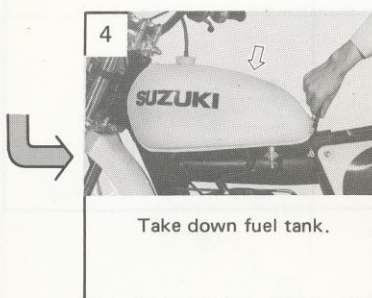
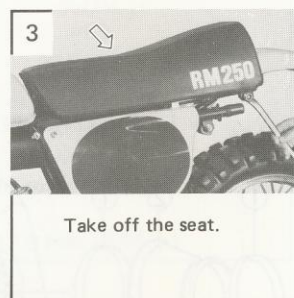
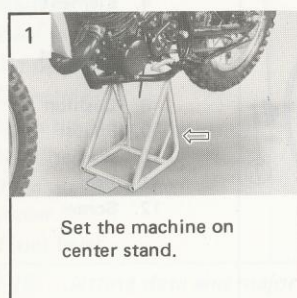
Fig. 2-1-17

18 ENGINE

ENGINE REMOVAL AND DISASSEMBLY

REMOVAL AND INSTALLATION

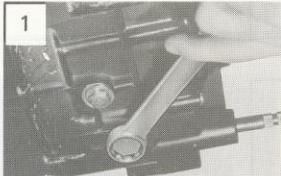
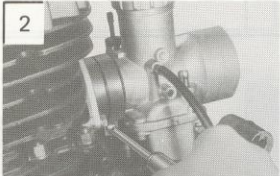
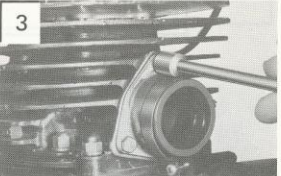
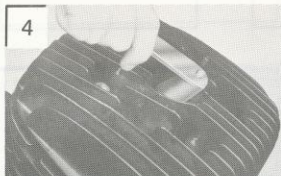
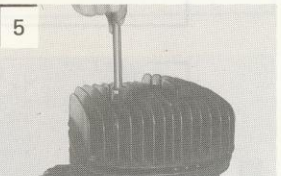



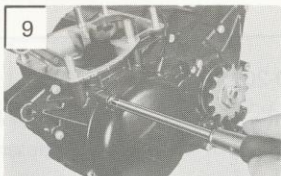
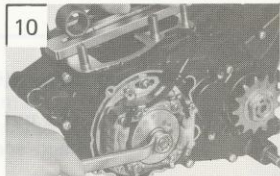
The procedure of engine removal is sequentially explained in 12 steps. Engine installation is effected by reversing the removal procedure.



ENGINE DISASSEMBLY

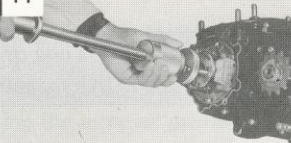
IMPORTANT: The primary drive gear nut is threaded for left-hand screw. This is one of the features differentiating this engine from those of other SUZUKI machines.

Reassembly is reverse of disassembly, and is effected by carrying out the following steps the other way around:

<p>1</p>  <p>Drain out gear oil.</p>	⇒	<p>2</p>  <p>Remove the carburetor.</p>	⇒	<p>3</p>  <p>Disconnect intake pipe.</p>	
⤵	<p>4</p>  <p>Remove the plug.</p>	<p>Use Spark plug wrench (09930-10111).</p>		⇒	<p>5</p>  <p>Remove cylinder head.</p>
⤵	<p>6</p>  <p>Remove cylinder.</p>	⇒	<p>7</p>  <p>Remove piston pin clip.</p>	⇒	<p>8</p>  <p>Draw out piston pin and take off piston.</p>
⤵	<p>9</p>  <p>Remove magneto cover.</p>	⇒	<p>10</p>  <p>Loosen rotor nut.</p>	<p>Use special tool (09910-20114), Con-rod stopper.</p>	

20 ENGINE

11



Take out the rotor.

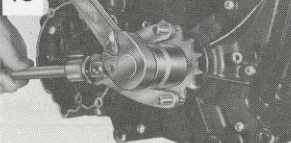
Use these special tools:
Rotor remover shaft
(09930-30101), and
rotor remover attachment
(09930-30201).

12



Take down the stator.

13



Remove engine
sprocket.

Use **engine sprocket and
flywheel holder** (09930-
40113).

14



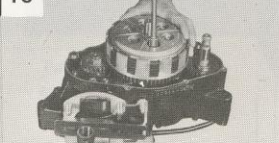
Pick out collar.

15



Remove clutch cover.

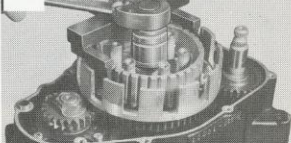
16



Lift out clutch plates.

Use **con-rod stopper**
(09910-20114).

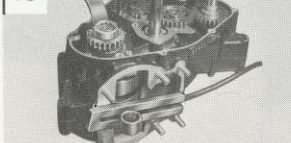
17



Remove clutch sleeve
hub and primary driven
gear.

Use **clutch sleeve hub holder** (09920-53710)

18



Remove primary drive
gear.


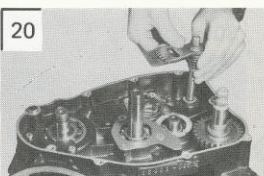
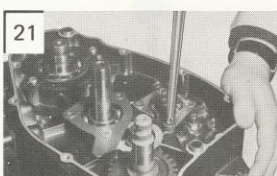

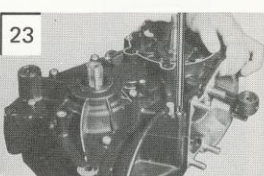
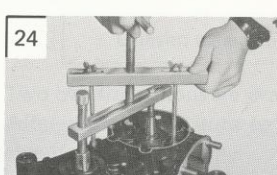
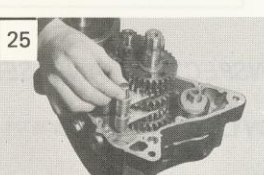
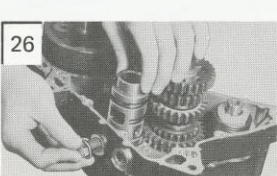
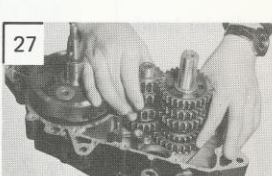


Use **con-rod stopper** (09910-20114).

CAUTION: The nut securing the gear is threaded for left-hand screw. Turn it clockwise to loosen it.

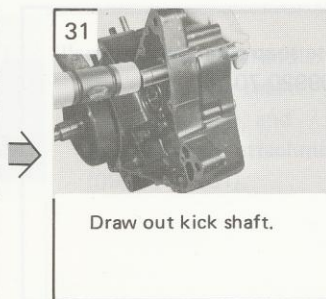
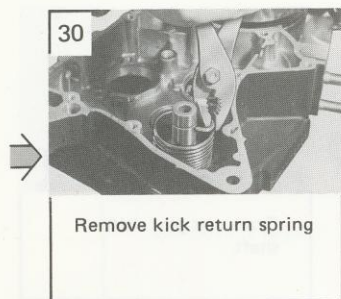
Tighten



Loosen

<p>19 RM250 Only</p>  <p>Take out kick idle gear.</p>	<p>Use snap ring opener (small) (09920-70111).</p>	<p>20</p>  <p>Draw out gear shift shaft.</p>
<p>21</p>  <p>Remove gear shifting cam guide.</p>	<p>22</p>  <p>Remove gear shifting cam driven gear.</p>	<p>23</p>  <p>Loosen crankcase securing screws.</p>
<p>24</p>  <p>Split crankcase.</p>	<p>Use crankcase separating tool (09910-80113)</p>	<p>25</p>  <p>Remove gear shift fork.</p>
<p>26</p>  <p>Draw out cam.</p>	<p>27</p>  <p>Remove gears.</p>	<p>NOTE: Take out the gears altogether, without disturbing their order, so that gear installation in reassembly will be facilitated.</p>
<p>28</p>  <p>Remove circlip on kick starter shaft.</p>	<p>Use snap ring opener (small) (09920-70111).</p>	<p>29</p>  <p>Remove kick shaft spring guide.</p>

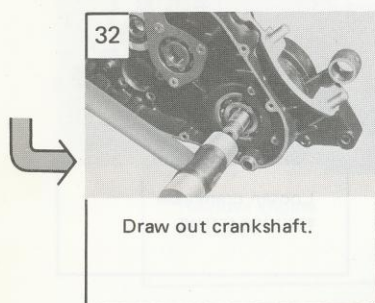
22 ENGINE



NOTE:

This photo shows RM250 kick shaft.

In the case of RM370, remove circlip on the outer side of crankcase, and drive on outer end of kick shaft to take the shaft from inside the crankcase.



INSPECTING AND SERVICING ENGINE PARTS

CYLINDER HEAD

Observe the combustion chamber surface, on which more or less carbon will be found, and evaluate the amount and the shade of color of the carbon as a basis for diagnosing the fuel combustion.

Remove the carbon and clean the cylinder head.

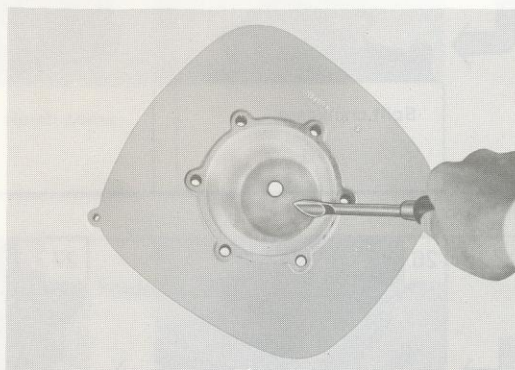


Fig. 2-3-1

CYLINDER

Decarbon the exhaust ports and the upper part of the cylinder, taking care not to damage the cylinder wall surface.

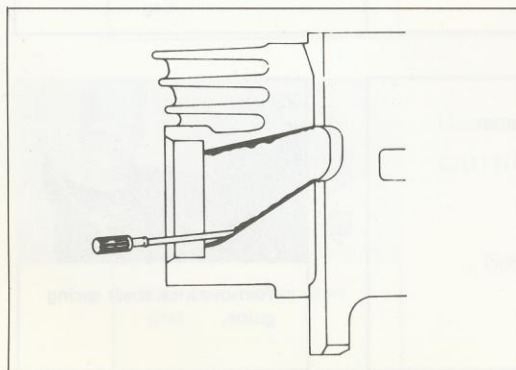


Fig. 2-3-2

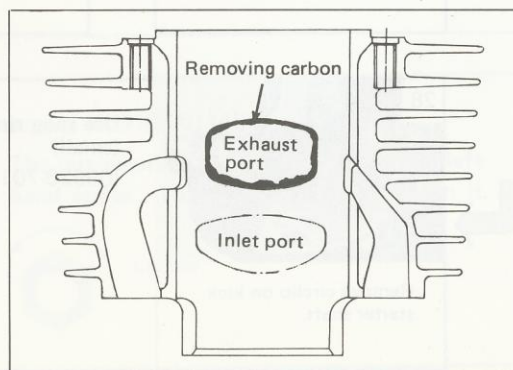


Fig. 2-3-3

Check the cylinder for wear, and determine the piston-to-cylinder clearance, as follows:

Using a cylinder gauge, take a total of six diameter readings on the cylinder, at three elevations, shown, in two directions at each elevation: one direction parallel and the other direction transverse to the axis of piston pin.



Fig. 2-3-4

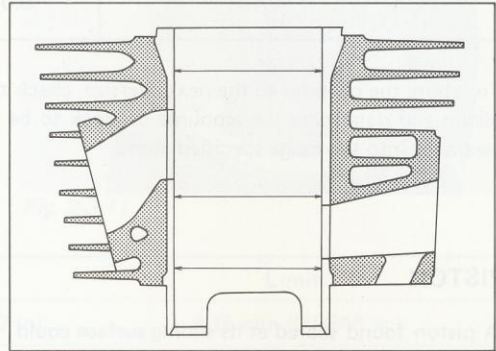


Fig. 2-3-5

Of the six readings, compute the difference between the largest and the smallest reading. If this difference exceeds the limit, stated below, rebore the cylinder to the next oversize or replace it by a new one:

Uneven wear limit:	0.1 mm (0.004 in.)
--------------------	--------------------

NOTE: Two oversize pistons are available: 0.25 and 0.5 mm.

After reboring, be sure to lightly chamfer the port edges with a scraper and smoothen the chamfers with sandpaper.

Piston-to-cylinder clearance is the difference between two diameter readings, one taken on the piston at the height "A" in the direction transverse to the axis of piston pin hole and the other taken on cylinder bore at about 5 mm (0.4 in.) above the exhaust port in the fore-aft direction.

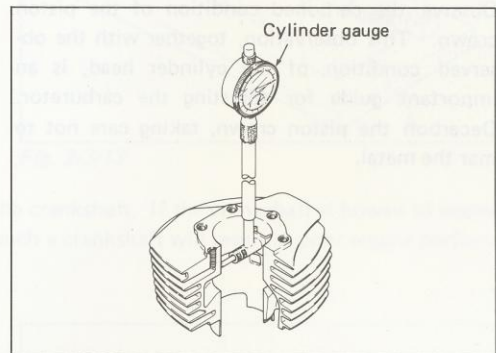


Fig. 2-3-6

Height "A"

26 mm (1.02 in.) for RM250

27 mm (1.06 in.) for RM370

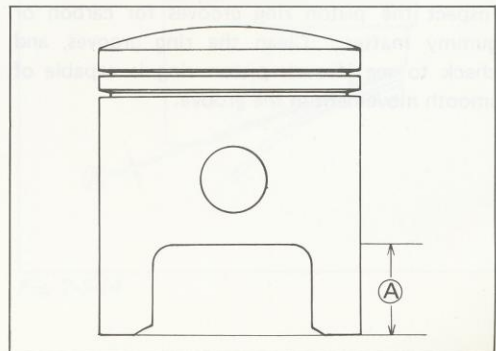


Fig. 2-3-7

24 ENGINE

The clearance is prescribed to be within the following range:

Piston-to-cylinder clearance	0.060 - 0.070 mm (0.0024 - 0.0028 in.) for RM250
	0.070 - 0.080 mm (0.0028 - 0.0031 in.) for RM370.

To rebores the cylinder to the next oversize, check the available clearance with the replacement (oversize) piston and determine the amounts of stock to be removed by boring and honing to bring the resultant clearance into the range specified above.

PISTON

A piston found scored at its sliding surface could lower engine performance or roughen the cylinder wall. Such scores, if any, must be eliminated by grinding; for this purpose of smoothening a scored surface, # 400 sandpaper may be used.

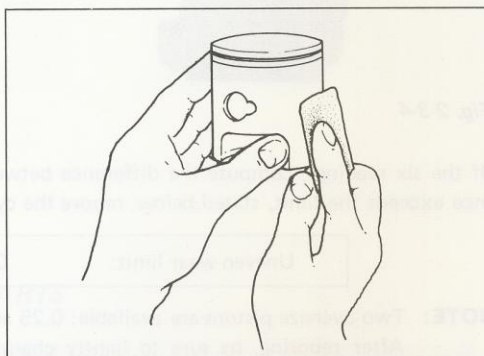


Fig. 2-3-8

Observe the carboned condition of the piston crown. This observation, together with the observed condition of the cylinder head, is an important guide for adjusting the carburetor. Decarbon the piston crown, taking care not to mar the metal.

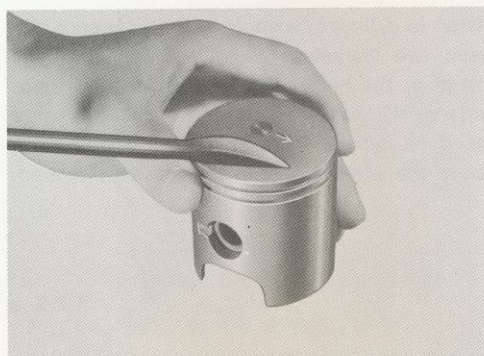


Fig. 2-3-9

Inspect the piston ring grooves for carbon or gummy matter. Clean the ring grooves, and check to see if each piston ring is capable of smooth movement in the groove.

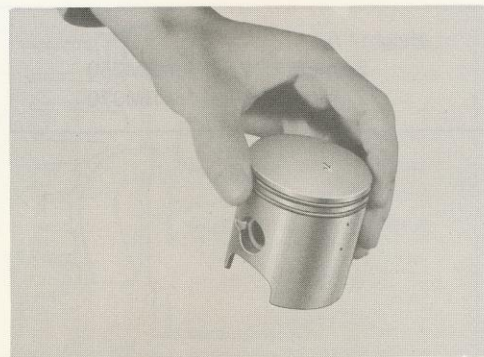


Fig. 2-3-10

PISTON RINGS

To check the piston rings for wear, fit each ring around the skirt part of the cylinder and measure the end gap in this condition of the ring, as shown. If the reading taken exceeds the limit, replace it by a new one.

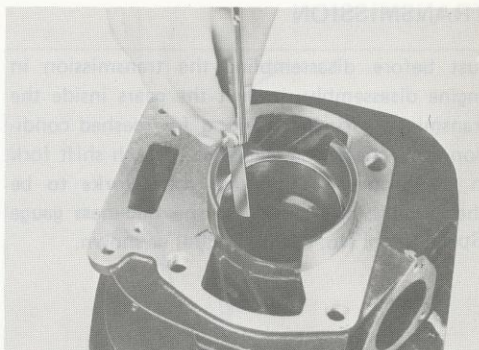


Fig. 2-3-11

Model	Standard	Limit
RM250	1.4 - 1.7 mm (0.055 - 0.067 in.)	2.15 mm (0.0846 in.)
RM370	0.20 - 0.40 mm (0.0079 - 0.0157 in.)	0.85 mm (0.0335 in.)

Fig. 2-3-12. Piston ring endgap specification.

CRANKSHAFT

Set the crankshaft on "V" blocks, as shown, and, with a dial gauge arranged in the manner indicated, take a runout reading on the shaft on each side. This reading is the crankshaft deflection, which is required to be within this limit:

Crankshaft deflection limit
0.05 mm (0.002 in.)

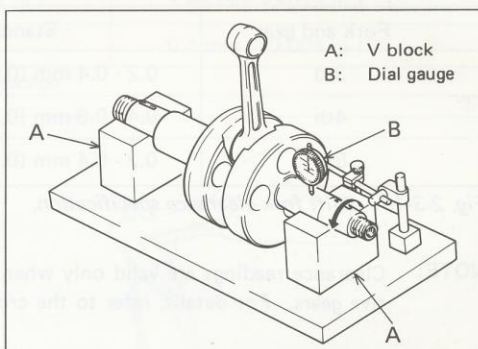


Fig. 2-3-13

A deflection reading is a measure of straightness of the crankshaft. If the crankshaft is bowed to exceed the limit, it must be replaced by a new one. Using such a crankshaft will result in poor engine performance or, for worse, in an engine failure.

REED VALVE

Using a thickness gauge, check the clearance between the reed and its seat: the clearance is indicated as (A). If the clearance read is in excess of 0.2 mm (0.008 in.), replace the reed valve assembly.

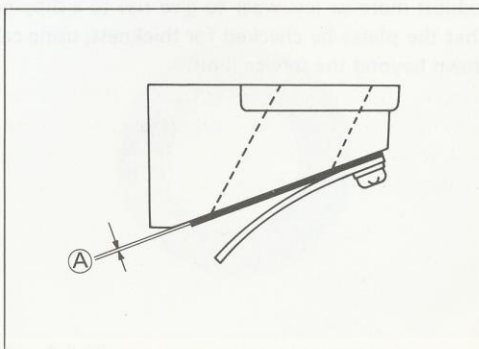


Fig. 2-3-14

26 ENGINE

TRANSMISSION

Just before disassembling the transmission in engine disassembly, inspect the gears inside the transmission for damage and for meshed condition, and check the clearance of each shift fork in the groove. There are three forks to be checked for clearance: use the **thickness gauge** (Special Tool No. 09900-20804) as shown.

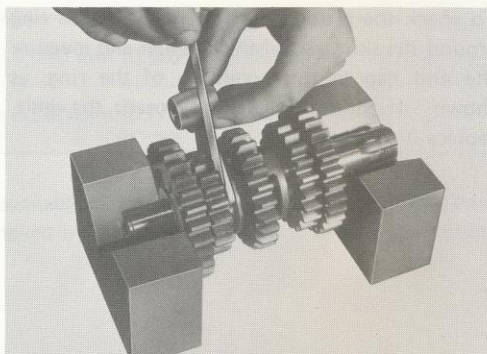


Fig. 2-3-15

If a shift fork exhibiting an excessive clearance is re-used, the gear will tend to come off the engagement in the subsequent service, and therefore must be replaced. If the clearance with the replacement shift fork is noted to be still too large to come within the standard range, then the gear too must be replaced.

Fork and gear	Standard	Limit
3rd	0.2 - 0.4 mm (0.008 - 0.016 in.)	0.6 mm (0.024 in.)
4th	0.4 - 0.6 mm (0.016 - 0.024 in.)	0.8 mm (0.031 in.)
5th	0.2 - 0.4 mm (0.008 - 0.016 in.)	0.6 mm (0.024 in.)

Fig. 2-3-16 Shift fork clearance specification.

NOTE: Clearance readings are valid only when the shift forks are checked as fitted into their respective gears. For details, refer to the cross sectional view of the transmission given in page 14.

CLUTCH

Because the clutch plates remain wet with oil in the normal operating condition of the clutch, the plates removed in disassembly will be found with little or no wear. After long use, however, the plates might exhibit more or less wear to give rise to a slipping tendency in the clutch. For this reason, it is essential that the plates be checked for thickness, using calipers, as shown, and be replaced if found to have worn down beyond the service limit.



Fig. 2-3-10

Drive plates

Standard:	3.4 - 3.6 mm (0.134 - 0.142 in.)
Service limit:	3.2 mm (0.126 in.)

Fig. 2-3-17

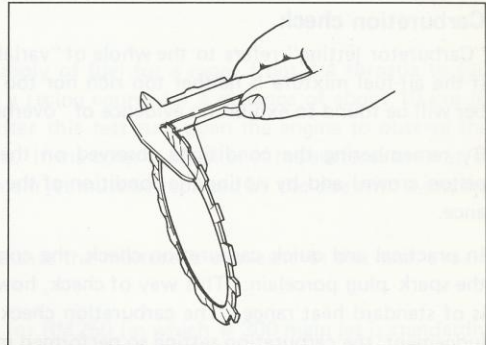


Fig. 2-3-18

Driven plates

Check driven plates for flatness and thickness. Flatness readings are taken with a thickness gauge on the plate placed on the surface plate.

	Standard	Service limit
THICKNESS	2.00 mm (0.079 in.)	1.85 mm (0.073 in.)
FLATNESS		0.1 mm (0.004 in.)

Fig. 2-3-19 Driven plate flatness and thickness specification

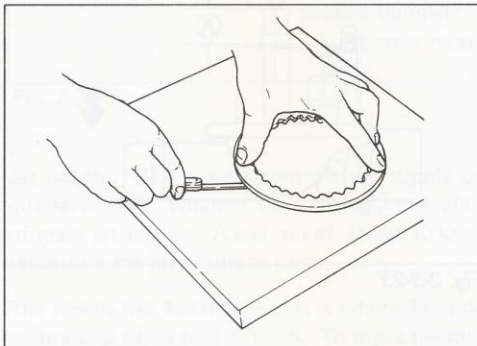


Fig. 2-3-20

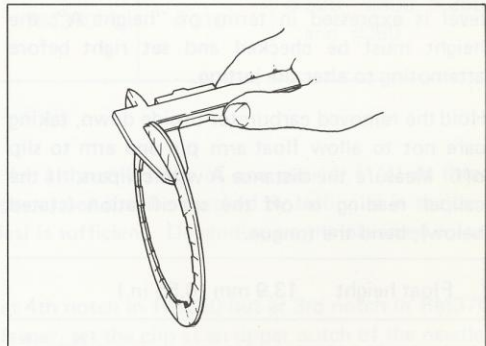


Fig. 2-3-21

Clutch release rack bearing

Smooth engaging and disengaging actions presume that the release bearing is in good condition. With this in mind, inspect the bearing for damage and, as necessary, replace it by a new one.



Fig. 2-3-22

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CARBURETOR

Carburetion check

"Carburetor jetting" refers to the whole of "variables" in the carburetor mechanism. A jetting is proper if the air-fuel mixture is neither too rich nor too lean; and, with such a mixture, the combustion chamber will be found to exhibit no evidence of "overheating" or "wetting."

By remembering the conditions observed on the combustion chamber surfaces (of cylinder head and piston crown) and by noting the condition of the spark plug removed, evaluate the carburetion performance.

In practical and quick carburetion check, the combustion condition is determined by shade of color on the spark plug porcelain. This way of check, however, can be performed only when the spark plug used is of standard heat range. The carburetion check by a spark plug other than standard may deceive the judgement; the carburetion setting so performed may lead to engine seizure for worst.

Carburetion adjustments

The jetting can be altered for adjustment by changing the main jet, jet needle and others. Before effecting these changes, the float level must be checked against the specification, and the overflow pipe, inlet hose and air cleaner must be confirmed to be in normal condition.

Float level adjustment: Proper carburetion for the entire range of engine speeds assumes first that the float is set for the prescribed level. This level is expressed in terms of "height A"; the height must be checked and set right before attempting to alter the jetting.

Hold the removed carburetor upside down, taking care not to allow float arm pin and arm to slip off. Measure the distance A with calipers. If the caliper reading is off the specification (stated below), bend the tongue.

Float height	13.9 mm (0.55 in.)
--------------	--------------------

Overflow pipe: Be sure that the pipe is clear, free of any dirt. Have the pipe routed through between the upper and lower bolts of rear engine mounting, as shown.

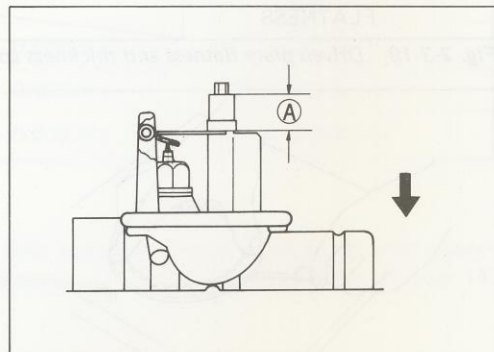


Fig. 2-3-23

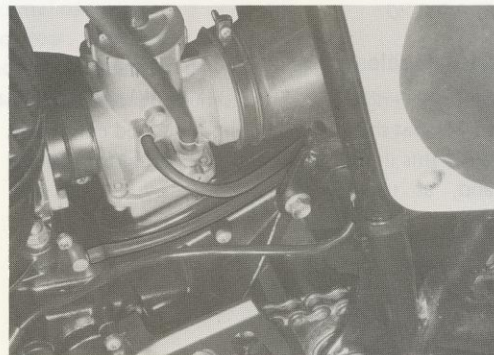


Fig. 2-3-24

Inlet hose and air cleaner: Check to be sure the inlet hose is in good condition, free of any rupture. Have the air cleaner element cleaned thoroughly.

Main jet: During operation, this jet controls the supply of fuel for a range from 3/4 throttle to full throttle. To test the main jet, drive the machine on a racing course for a distance of about 10 km (6 miles), with the throttle kept open in that range; after this test run, open the engine to observe the carboned color of spark plug, cylinder head and piston. If the color is black or if the surfaces are wet, it means that the mixture is too rich: in this case, the main jet must be replaced by the one with a smaller number.

If a grey-brownish or whitish color is noted, it means that the mixture is too lean: in this case, a main jet with a larger number is needed.

For this purpose, three sizes of main jet are available for RM250 (in which # 300 main jet is standardly used), and four sizes for RM370 (in which # 310 main jet is standardly used).

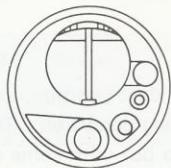

	Main Jet	Main jet sizes	
		Standard	Option
	 Larger number: Richer mixture Smaller number: Leaner mixture	RM250:	# 300 # 290, #320 and #330
		RM370 :	# 310 # 320, #330, # 350 and #360

Fig. 2-3-25

Jet needle: The needle controls the supply of fuel for a throttle range of one quarter (1/4) to three quarters (3/4). Whether the existing jet needle is proper or not is to be checked by testing as in the case of main jet testing. A test run of about 10 km (6 miles) is sufficient. Depending on the observed color, reposition the jet needle in place.

The needle has five notches. It is retained standardly at 4th notch in RM250 but at 3rd notch in RM370 with a clip fitted to the notch. To make the mixture leaner, set the clip at an upper notch of the needle, and vice versa.



	Jet needle	Standard jet needle setting	
		RM250:	4th notch
		RM370:	3rd notch

Fig. 2-3-26

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Jet needle setting influences carburetion for the throttle range from quarter (1/4) down. To compensate this range for the effect of the change made in jet needle setting, the pilot air screw must be repositioned in place. In other words, if the jet needle has been repositioned to enrich the mixture (for 1/4-to-3/4 throttle range), then the screw must be loosened slightly to make the mixture leaner (for up-to-1/4 range).

Pilot Air Adjusting Screw	Standard pilot air screw setting
<p>to leaner to richer</p>	<p>RM250 and RM370: Backed away 1 and 1/2 rotations from fully run-in position</p>

Fig. 2-3-27

NOTE: In both models of machine, the pilot air screw should be left in the standard position, that is, in a position at which the screw will not support the engine in self-idling condition. This is because, when the throttle is opened quickly, engine speed will pick up but with some delay due to a momentarily richer mixture, if the screw is set to sustain engine idling.

Matching the jetting to the race

Drive the machine on the racing course, making several laps and noting the pattern of throttle variation required to cover the lap for best clocking. Then, open the engine to observe the spark plug, cylinder head and piston crown. On the basis of this observation and also the throttle range in which the machine had to be driven in the test run, set the main jet, jet needle and pilot air screw, by referring to the diagram below.

	THROTTLE			
	1/4	1/2	3/4	Full
Main jet				
Jet needle				
Pilot air screw				

Fig. 2-3-28

NOTE: The length of each shaded pattern represents the effective range, and the width represents the intensity of carburetion.

AIR CLEANER

How to clean the element

1. Fill a washing pan of a proper size with gasoline. Immerse the element in the gasoline and wash it clean.
2. Squeeze gasoline off the washed element by pressing it between the palms of both hands: do not twist and wring the element or it will develop fissures.
3. Immerse the element in a pool of motor oil, and squeeze the oil off the element to make it slightly wet with motor oil.

NOTE: Before and during the cleaning operation, examine the element to see if it has a rupture or fissure. A ruptured or fissured element must be replaced.

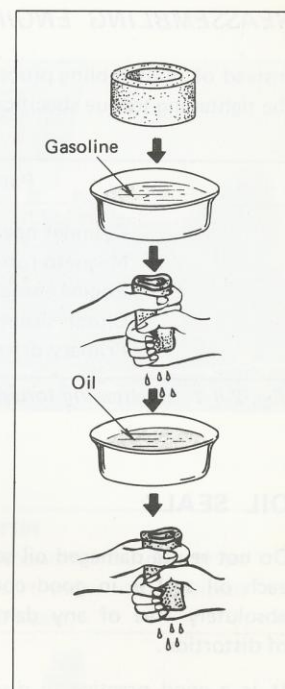


Fig. 2-3-29

How to install the washed element

1. Before fitting the element, bend it into the shape shown.

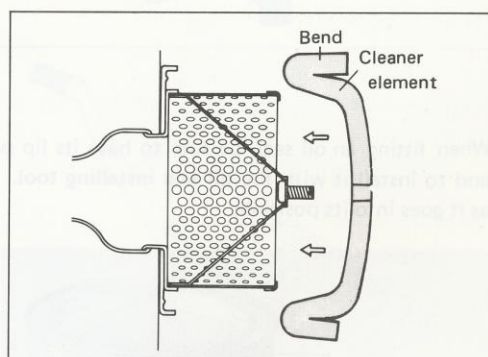


Fig. 2-3-30

2. Unbend the element and fit its rim neatly into the rib formed of the guide stopper. Put on the cover and secure it by tightening wing nut good and hard.

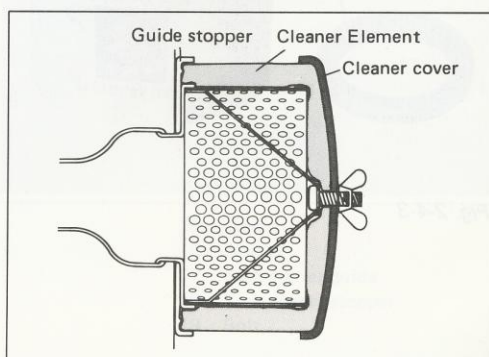


Fig. 2-3-31

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REASSEMBLING ENGINE PARTS

Instead of reassembling procedures, important or critical assembling steps will be set forth, starting with the tightening torque specification for the five kinds of nut:

Part	kg-cm	lb-ft
Cylinder head nut	190 - 230	14 - 16
Magneto rotor nut	300 - 400	22 - 28
Engine sprocket nut	400 - 600	29 - 43
Clutch sleeve hub nut	400 - 600	29 - 43
Primary drive gear nut	500 - 700	37 - 50

Fig. 2-4-1 Tightening torque

OIL SEALS

Do not re-use damaged oil seals. Make sure that each oil seal is in good condition, with its lip absolutely free of any damage or of evidence of distortion.

It is a good practice to discard all oil seals removed in engine disassembly and use new oil seals in engine reassembly.

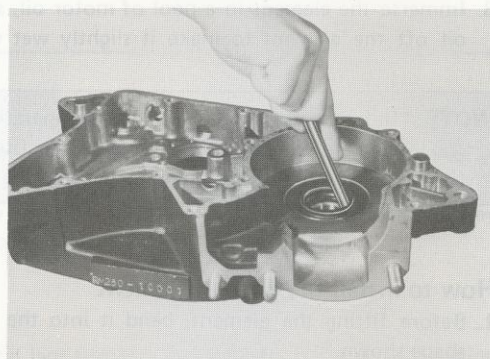


Fig. 2-4-2

When fitting an oil seal, be sure to have its lip part lightly coated with **SUZUKI SUPER GREASE "A"** and to install it with the **oil seal installing tool**. With this tool, the oil seal can be held true and square as it goes into its position.



Fig. 2-4-3

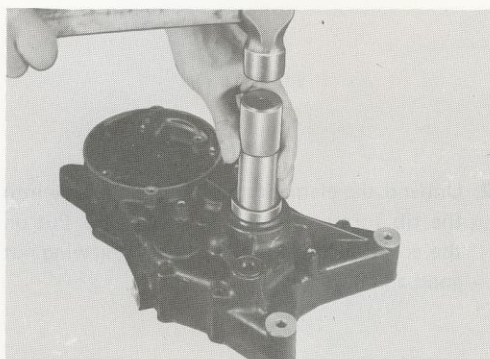


Fig. 2-4-4

CRANKSHAFT

Use a plastic or soft-metal hammer to drive the crankshaft into its position. Be sure to deliver light blows to the end of crankshaft in order to force it into the right-hand half of crankcase, as shown.

NOTE: Bear in mind that this crankshaft does not require any shim (or washer) between crank journal bearing and itself.

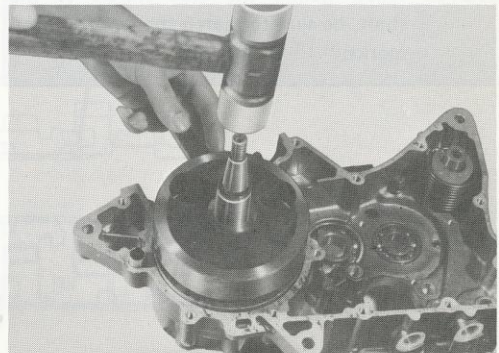
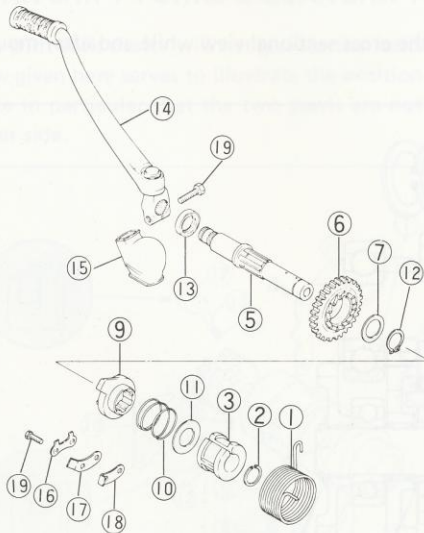
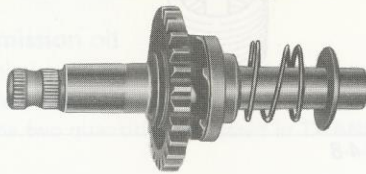


Fig. 2-4-5

KICK STARTER

RM250 kick starter

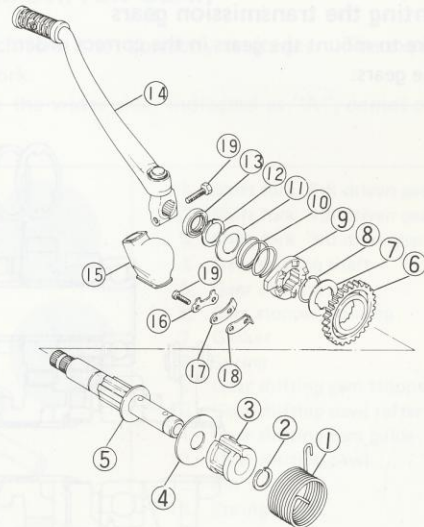
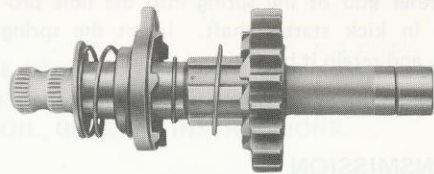
Mount the parts (shown in the photo) on the shaft and then insert them into the crankcase.



- | | |
|------------------------------------|------------------------|
| 1. Spring | 8. Circlip |
| 2. Circlip | 9. Kick starter |
| 3. Kick starter shaft spring guide | 10. Spring |
| 4. Washer | 11. Washer |
| 5. Kick starter shaft | 12. Circlip |
| 6. Kick starter drive gear | 13. Oil seal |
| 7. Washer | 14. Kick starter lever |

RM370 kick starter

Mount the parts (shown in the photo) on the shaft, and insert them into position from inside the crankcase.



- | |
|--------------------------|
| 15. Cover |
| 16. Washer |
| 17. Kick starter guide |
| 18. Kick starter stopper |
| 19. Bolt |

Fig. 2-4-6

34 ENGINE

NOTE: When fitting the kick starter to the shaft, be sure to match the two punched marks.

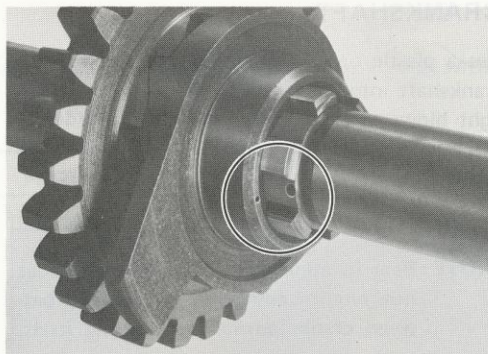


Fig. 2-4-7

The kick starter return spring is to be installed after setting the shaft in the crankcase. To install this spring, hitch the inner end of the spring to the stopper provided on the crankcase, turn the shaft clockwise as viewed from kick lever side end until the shaft will not turn any further, and then rotate the spring about 180 deg. to insert the other end of the spring into the hole provided in kick starter shaft. Insert the spring guide, and retain it by fitting a circlip.

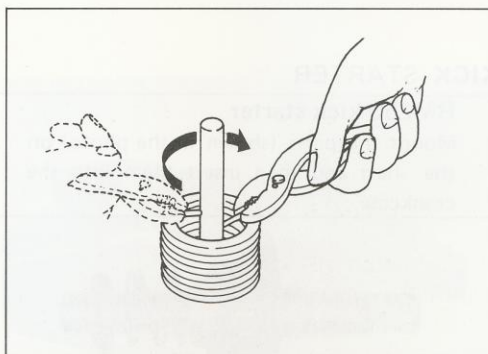


Fig. 2-4-8

TRANSMISSION

Mounting the transmission gears

Be sure to mount the gears in the correct order. Refer to the cross sectional view while and after mounting the gears:

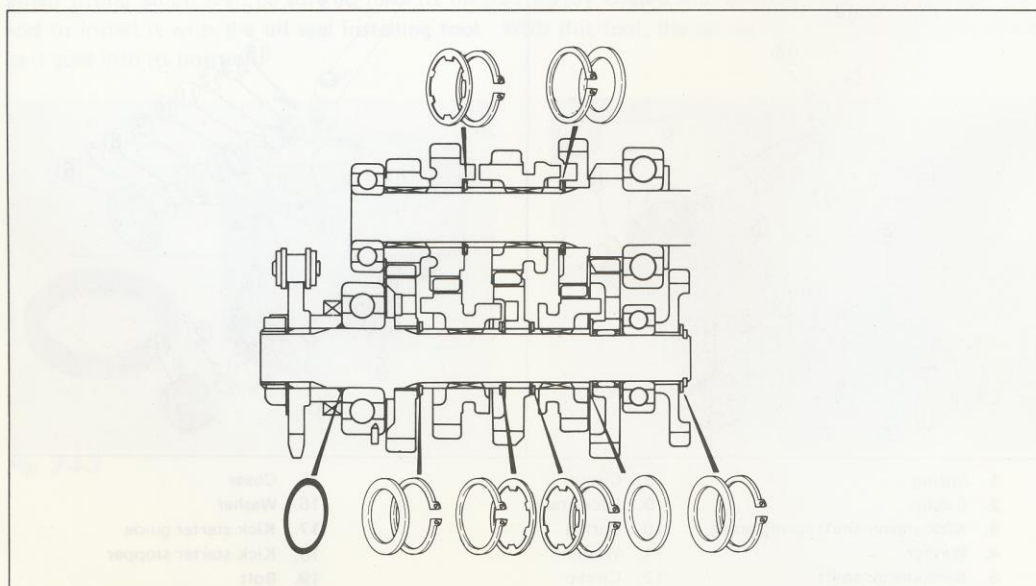


Fig. 2-4-9 RM250 transmission

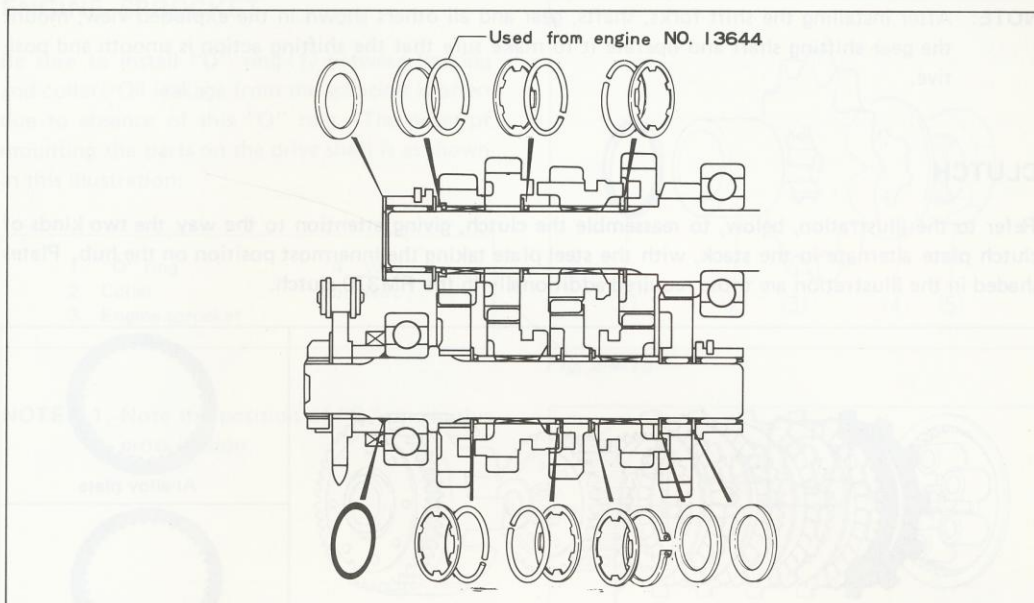


Fig. 2-4-10 RM370 transmission

Transmission oil

Transmission oil is prescribed to be a motor oil of SAE 20W/40. The quantity of oil needed to change oil differs slightly from that which is needed to fill up a completely dry transmission as after overhauling. The two quantities are stated in **TRANSMISSION OIL, GENERAL INSTRUCTIONS**.

GEAR SHIFT FORKS & GEAR SHIFTING CAM DRIVEN GEAR

The shift fork shafts will not go into the forks unless each fork is set correctly on its gear. The exploded view given here serves to illustrate the position of each fork.

Note in particular that the two pawls are not identical: the wider side, indicated as "A", comes on the outer side.

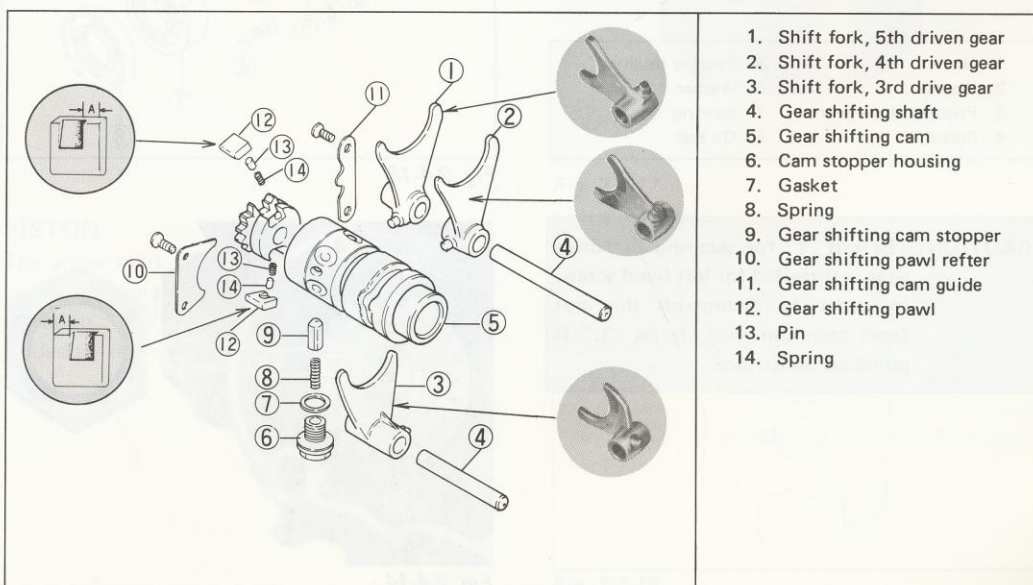


Fig. 2-4-11

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NOTE: After installing the shift forks, shafts, gear and all others shown in the exploded view, mount the gear shifting shaft and operate it to make sure that the shifting action is smooth and positive.

CLUTCH

Refer to the illustration, below, to reassemble the clutch, giving attention to the way the two kinds of clutch plate alternate in the stack, with the steel plate taking the innermost position on the hub. Plates shaded in the illustration are those required additionally in the RM370 clutch.

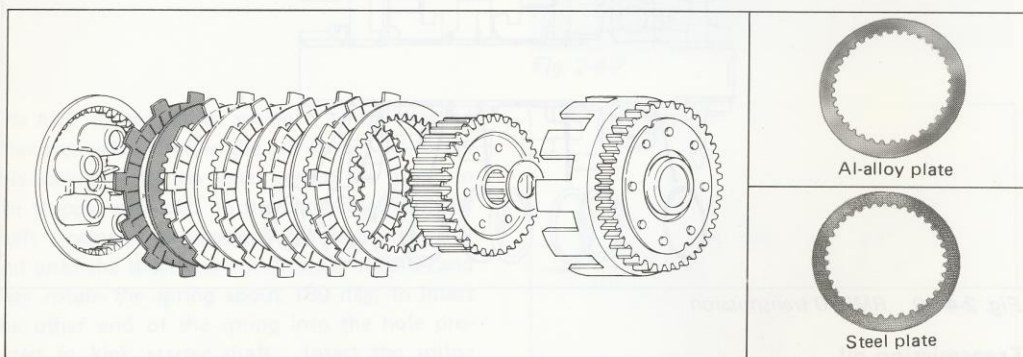


Fig. 2-4-12

PRIMARY DRIVE GEAR

The relative positions of parts associated with the primary drive gear are as shown in this exploded view:

- | | |
|-----------------------|---------------------|
| 1. Nut | 5. Bearing retainer |
| 2. Washer | 6. Washer |
| 3. Primary drive gear | 7. Bearing |
| 4. Screw | 8. Oil seal |

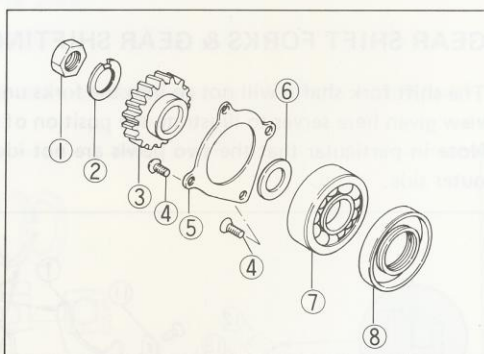


Fig. 2-4-13

CAUTION: The nut ① for securing the drive gear is threaded for left-hand screw. In order to distinguish this nut from common nuts, letter "L" is punched on its face.

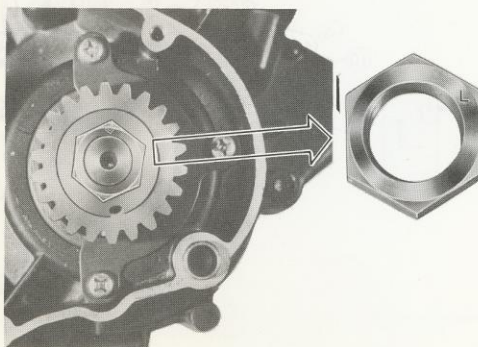


Fig. 2-4-14

ENGINE SPROCKET

Be sure to install "O" ring ① between bearing and collar. Oil leakage from the sprocket is often due to absence of this "O" ring. The order of mounting the parts on the drive shaft is as shown in this illustration:

- | | |
|--------------------|-----------|
| 1. "O" ring | 4. Washer |
| 2. Collar | 5. Nut |
| 3. Engine sprocket | |

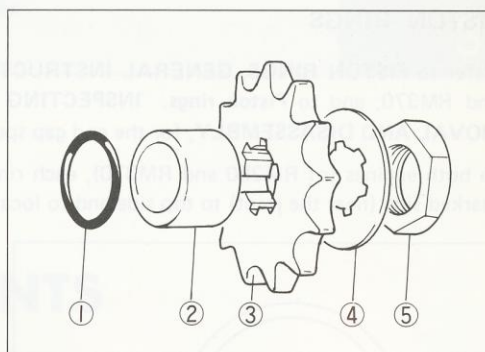


Fig. 2-4-15

NOTE: 1. Note the position of "O" ring in this cross section.

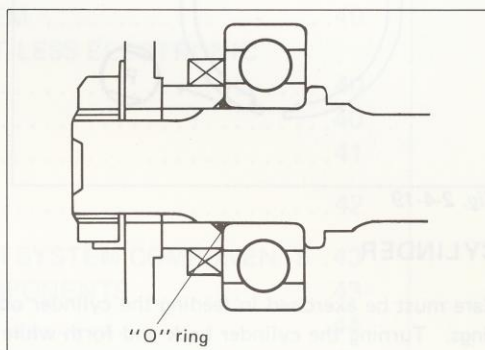


Fig. 2-4-16

2. The collar has its one end chamfered: the chamfered end comes on transmission side.

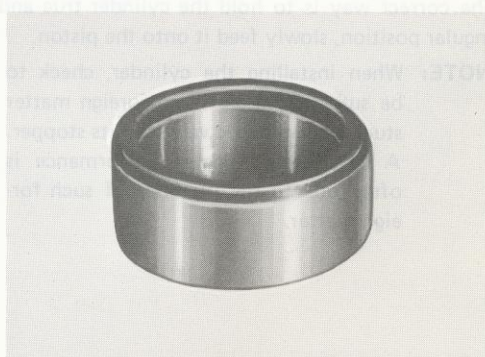


Fig. 2-4-17

PISTON

The arrow mark on the piston crown is meant to point to exhaust port side, that is, in the forward direction. Be sure to position the piston as guided by this mark.

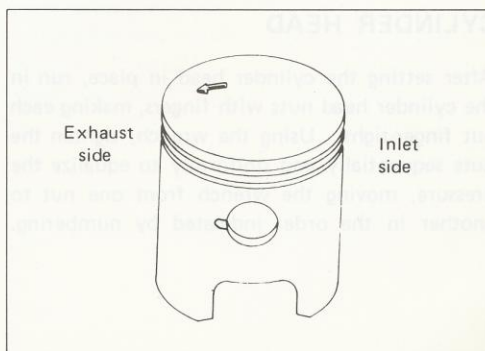


Fig. 2-4-18

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PISTON RINGS

Refer to **PISTON RINGS, GENERAL INSTRUCTIONS**, for the shapes of piston rings used in RM250 and RM370; and to **Piston rings, INSPECTING AND SERVICING ENGINE PARTS, ENGINE REMOVAL AND DISASSEMBLY**, for the end gap specification.

In both engines (of RM250 and RM370), each ring must be so positioned in the groove as to bring its marked side (near the joint) to top side and to locate the joint over the locating pin.

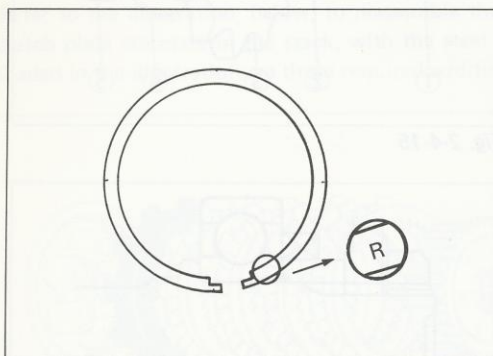


Fig. 2-4-19

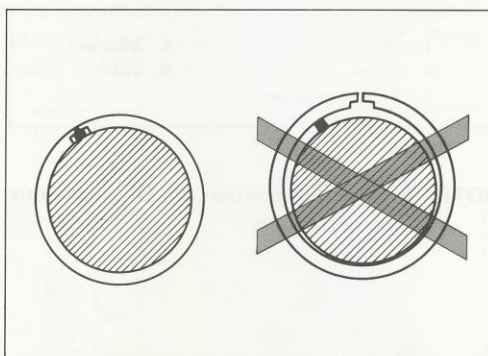


Fig. 2-4-20

CYLINDER

Care must be exercised in feeding the cylinder onto the piston in place so as not to damage the piston rings. Turning the cylinder back and forth while lowering it along the piston will cause the inlet port to catch the ring joint and, if the cylinder is then forced down, the ring will break.

The correct way is to hold the cylinder true and square relative to the piston and, while adjusting its angular position, slowly feed it onto the piston.

NOTE: When installing the cylinder, check to be sure that there is no foreign matter stuck between reed valve and its stopper. A deteriorated engine performance is often due to the presence of such foreign matter.

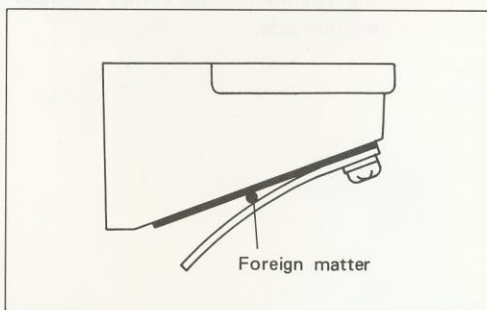


Fig. 2-4-21

CYLINDER HEAD

After setting the cylinder head in place, run in the cylinder head nuts with fingers, making each nut finger-tight. Using the wrench, tighten the nuts sequentially and uniformly to equalize the pressure, moving the wrench from one nut to another in the order indicated by numbering.

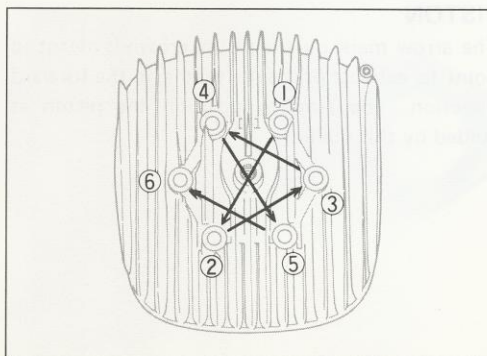
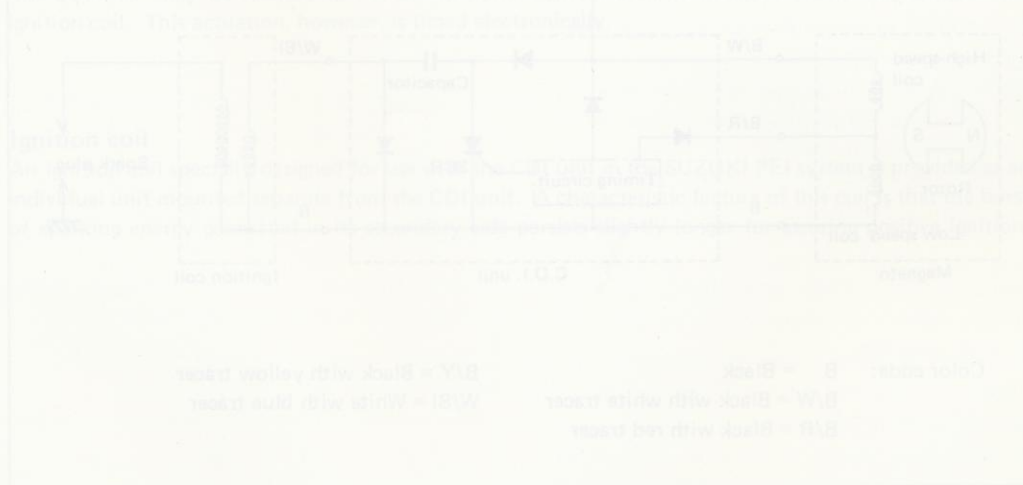


Fig. 2-4-22

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40 ELECTRICAL

DESCRIPTION OF SUZUKI PEI SYSTEM

ADVANTAGES OF SUZUKI "POINT-LESS ELECTRONIC IGNITION" SYSTEM

In both RM250 and RM370, igniting energy is supplied to the spark plug through electronically triggered capacitor discharge in a system comprising the magneto, CDI unit, ignition coil and spark plug. Three outstanding advantages of this proprietary system are:

1. High voltage induced in the secondary winding of the ignition coil is stable over the entire range of engine speeds, so that the igniting performance of the plug is dependable, regardless of whether the engine is running fast or slow.
2. There is no need of so frequently checking and adjusting the ignition system components as in the conventional system based on a breaker mechanism for make-break contacting action. Make-break action is electronic in the SUZUKI PEI system.
3. Ignition timing is automatically advanced in a manner best suited to the operating characteristic of the engine.

PEI SYSTEM CIRCUIT DIAGRAM

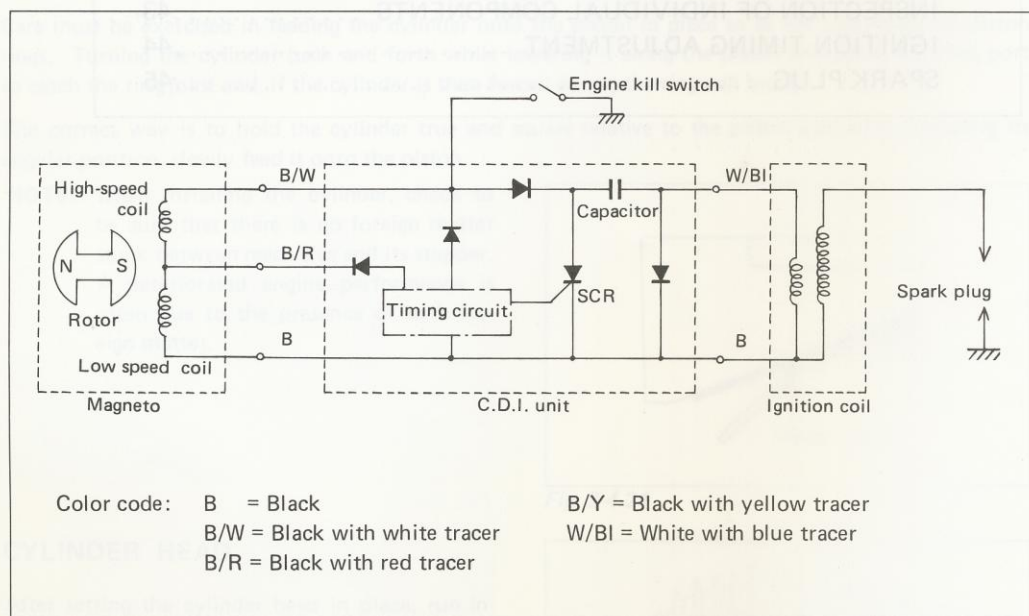


Fig. 3-1-1

DESCRIPTION

Magneto

The magneto is of two-pole type, with its rotor mounted on the end of engine crankshaft. The stator, on which coils are mounted, surrounds the rotor. Of the two coils, one is a low-speed coil (with a greater number of coil turns) and the other is a high-speed coil (with a less number of coil turns).

- | | |
|--------------------|-----------|
| 1. Stator | 5. Key |
| 2. High-speed coil | 6. Washer |
| 3. Low-speed coil | 7. Nut |
| 4. Rotor | 8. Screw |

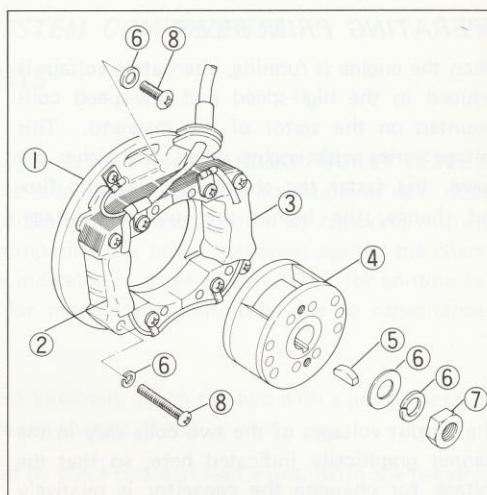


Fig. 3-1-2

CDI unit

The main components of this unit are: 1) capacitor, 2) an SCR (silicon controlled rectifier) element, and 3) timing circuit for triggering the gate of the SCR. The capacitor gets charged with the current supplied from the magneto, and discharges the stored current through the primary winding of the ignition coil when its gate is triggered by a pulse issuing forth from the timing circuit.

The CDI unit may be likened to the conventional contact breaker in that it electrically actuates the ignition coil. This actuation, however, is timed electronically.

Ignition coil

An ignition coil specially designed for use with the CDI unit in the SUZUKI PEI system is provided as an individual unit mounted separate from the CDI unit. A characteristic feature of this coil is that the burst of sparking energy generated in its secondary side persists slightly longer for assuring positive ignition.



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OPERATING PRINCIPLES

When the engine is running, alternating voltage is induced in the high-speed and low-speed coils mounted on the stator of the magneto. This voltage varies with engine speed: the higher the speed, the faster the change of magnetic flux and, hence, the higher the induced voltage.

The output voltages of the two coils vary in the manner graphically indicated here, so that the voltage for charging the capacitor is relatively constant over the greater part of the engine speed range.

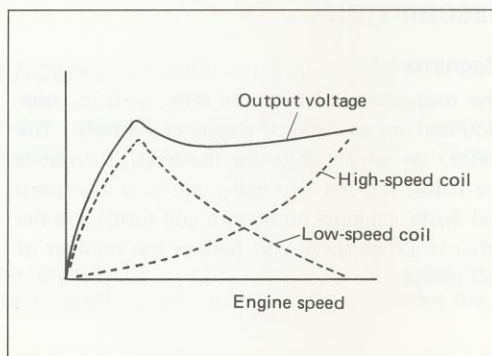


Fig. 3-2-1

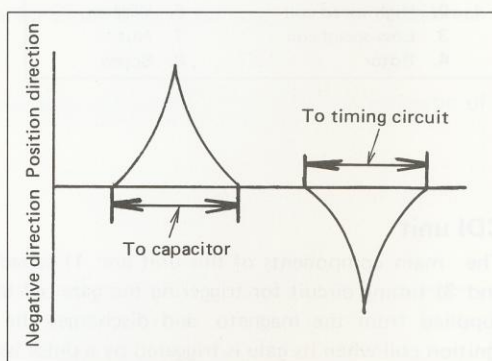


Fig. 3-2-2

Consider one cycle of alternating voltage. This voltage peaks in positive direction and then in negative direction. Because of the diodes (D1, D2, D3, D4), the positive half applies to the capacitor, and the negative half to the timing circuit. This circuit responds to the negative half to produce a trigger pulse. The pulse applies to the gate of the SCR element, making this element conductive. Consequently, the capacitor discharges through the SCR element and the primary winding of ignition coil to complete one cycle of operation.

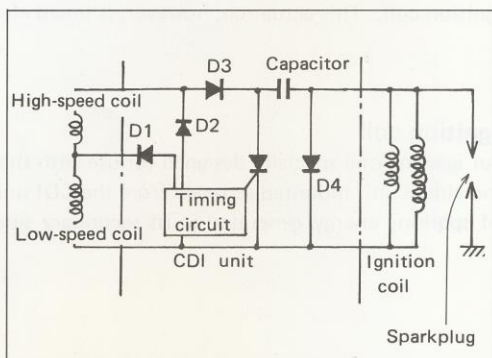


Fig. 3-2-3

The moment (expressed in terms of crank angle) the spark plug receives the burst of energy from the secondary side of ignition coil varies with engine speed because of characteristic of timing circuit.

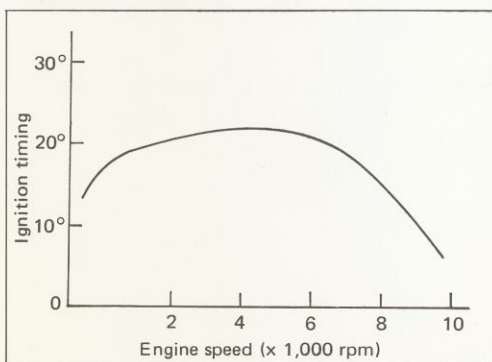


Fig. 3-2-4

INSPECTION AND SERVICING OF PEI SYSTEM COMPONENTS

INSPECTION OF INDIVIDUAL COMPONENTS

CDI unit

Check the CDI unit, removed and placed on the bench, with a circuit tester (**SUZUKI POCKET TESTER** No. 09900-25001) to determine whether the CDI unit is in sound, operable condition or not. This determination is to be made by noting the response of the tester to each continuity checking with its selector knob switched to "RX100" range, and by comparing the noted responses against the chart, given below, in which what the tester should show are indicated in three forms: "ON" for continuity, "OFF" for non-continuity or infinity, and "CON" for momentary continuity due to capacitance.

Use the circuit tester in this manner:

1. Before putting the probe pointers of the tester to two terminals, touch the two with a jumper lead to form a momentary short-circuit in order to neutralize the charges, if any.
2. In the chart, below, CDI unit terminals are identified by color codes of lead wires. With the negative (—) probe pointer put a terminal listed in the vertical column, touch the corresponding terminal listed in the horizontal column with the positive (+) pointer.
3. In the chart, "*OFF" means that the indicating hand of the tester should not deflect at all (to indicate "infinity," that is, "non-continuity"). But, if a tester with $M\Omega$ range is used, the indicating hand should deflect to indicate a resistance of 5 megohms.

CDI unit is in good condition only when these responses are noted with SUZUKI Pocket Tester

		Positive (+) probe pointer to touch:			
		B/W, B/Y	B/R	B (two)	W/BI
Negative (—) pointer to touch:	B/W, B/Y		OFF	OFF	CON
	B/R	OFF		OFF	*OFF
	B (two)	ON	ON		CON
	W/BI	ON	ON	ON	

Fig. 3-3-1

- NOTE:**
1. "CON" means a momentary continuity. The indicating hand should deflect once and then swing back to the end of the scale (infinity).
 2. A circuit tester contains a battery, whose positive side is connected to the negative (—) terminal and negative side to the positive (+) terminal when the tester is switched for resistance or continuity checking.
 3. Color codes:
B = black; B/W = black with white tracer; B/Y = black with yellow tracer; B/R = black with red tracer; and W/BI = white with blue tracer.

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Ignition coil

Whether the ignition coil is in good condition or not can be checked more accurately with the use of **SUZUKI Electro-tester**. How to hook up the test circuit for checking the coil is shown below.

IMPORTANT: Do not place the tester, test circuit parts and cords on a conductor plate. Carry out the checking operation on wooden top of a table, in order to avoid high-voltage shock.

With the cords connected to the ignition coil, as shown, move the electro-tester knob to the "ignition coil" range, and then turn on the switch. With a good ignition coil, a spark will be seen through the glass window on the right-hand part of the electro-tester upon turning on the switch: no spark means that the coil is defective and needs replacement. The sparking electrodes should be set 8-mm apart before turning on the switch.

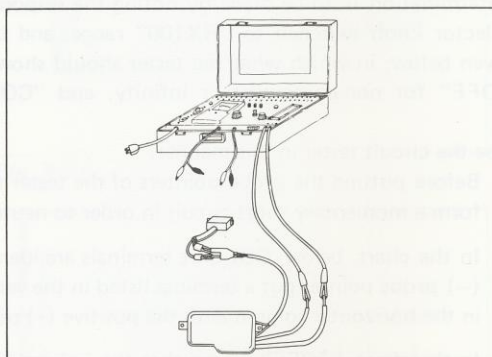


Fig. 3-3-2

The **SUZUKI** pocket tester mentioned before, or an ohmmeter, may be used to check the ignition coil. With the tester or ohmmeter, however, only ohmic resistance of the primary and secondary windings of the coil can be checked. A good ignition coil will exhibit the following ohmic values:

Primary winding (BLACK - WHITE/BLUE)	Several ohms
Secondary winding (plug cord - BLACK)	Ten and some kilohms

Magneto

Using the circuit tester, check the high-speed and low-speed coils for ohmic resistance. Coils in good condition will exhibit these values:

Low-speed coil (BLACK - BLACK/RED)	Several hundred ohms
High-speed coil (BLACK/RED - BLACK/WHITE)	Several ten ohms

IGNITION TIMING ADJUSTMENT

Unlike conventional contact-breaker ignition systems, the PEI system maintains its original ignition timing until the system becomes disturbed as in engine overhauling: ignition timing does not change at all as long as the system remains undisturbed.

The following adjusting procedure is actually a procedure to be followed in remounting the magneto stator to re-establish the specified ignition timing:

1. Install the **timing gauge** (Special Tool No.09931-00112) in the spark plug hole, as shown.
2. Turn the rotor while observing the gauge indication to bring the piston to Top Dead Center position. Set the gauge indicating hand to "0" mark on its scale.
3. Turn the rotor clockwise to bring the piston to a position **3.31mm (for RM250)** or **4.14mm (for RM370)** below T.D.C. position on upward stroke.
4. Displace the stator angularly by rotating it one way or the other to align the engraved line "B"(on stator) to line "A"(on rotor), and secure the stator in that position by tightening its securing screws.

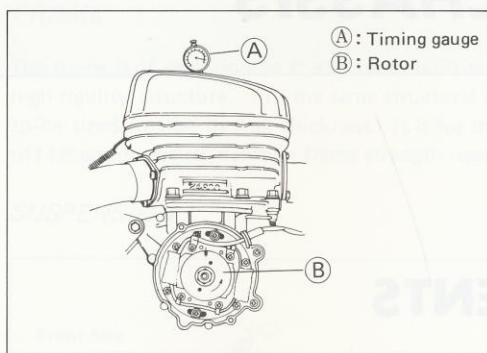


Fig. 3-3-3

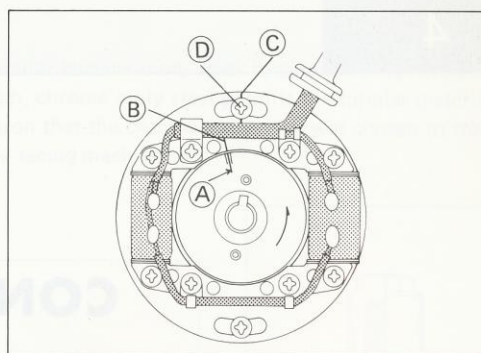


Fig. 3-3-4

- NOTE:** 1. If the timing gauge is not available, the foregoing procedure may be substituted for by a simplified method, which differs essentially in that the engraved line "C" (on stator) be aligned to the center of screw "D" and the stator be secured in that position.
2. Visual checking of the ignition timing in a running engine even with a timing light is not possible. In other words, the crank angle at which ignition is taking place cannot be visually confirmed. A timing light can be used to check whether the ignition goes to advance.

SPARK PLUG

Spark plug selection

Be more conscious about "carburetion" than about the "heat range" of the spark plug. Try to change the "heat range" only when the racing conditions are so unusual that the best carburetion obtained by altering the carburetor jetting for the race favors at a hot or cold plug. For this purpose, three types of spark plug can be taken up.

HOT TYPE	STANDARD TYPE	COLD TYPE
NGK B-8EV	NGK B-9EV	NGK B-10EV

Spark plug gap

Use a thickness gauge to check the spark gap and, as necessary, adjust it to a value within this range:

Spark gap specification:

0.5 - 0.6 mm (0.020 - 0.024 in.)

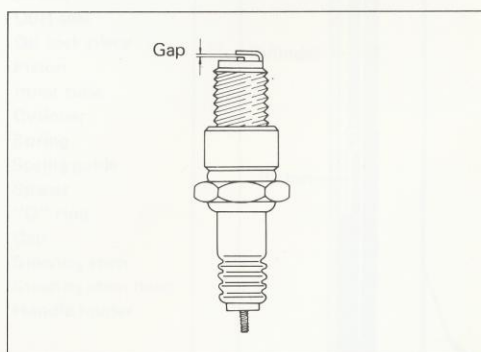


Fig. 3-3-5

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FRAME

The frame is of semi-double cradle type, built with tubular chrome-moly steel to provide a lightweight, high-rigidity structure. For the same structural strength, chrome-moly steel permits the tubular material to be sized smaller in wall thickness. It is for this reason that the chrome-moly steel was chosen to trim off fat and to secure the high frame strength needed by racing machines.

SUSPENSION

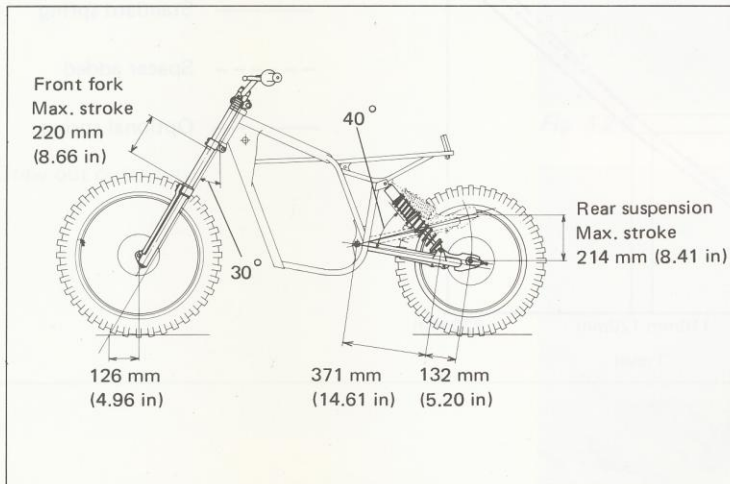


Fig. 4-2-1

FRONT SUSPENSION

For greater steering stability, the front axle is offset from fork axis to enable the inner tube to operate through a longer range of stroke. The fork outer tube is a lightweight aluminum forging.

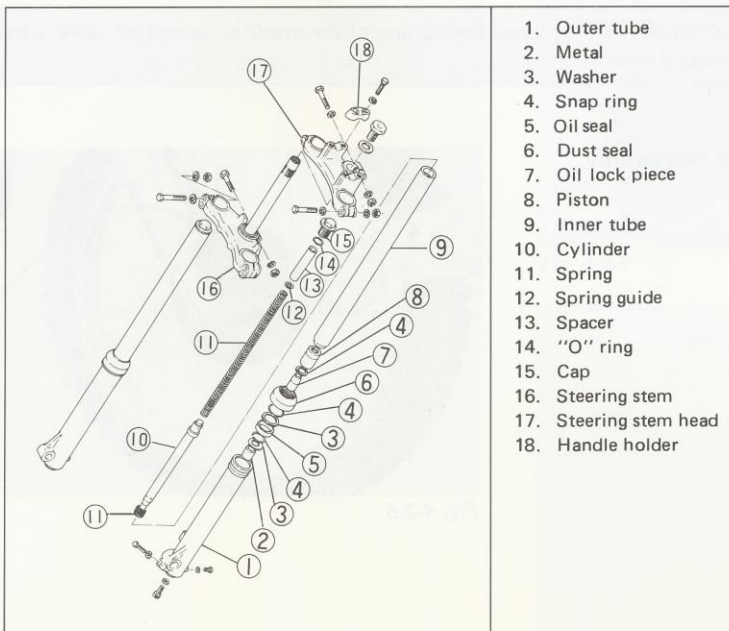


Fig. 4-2-2

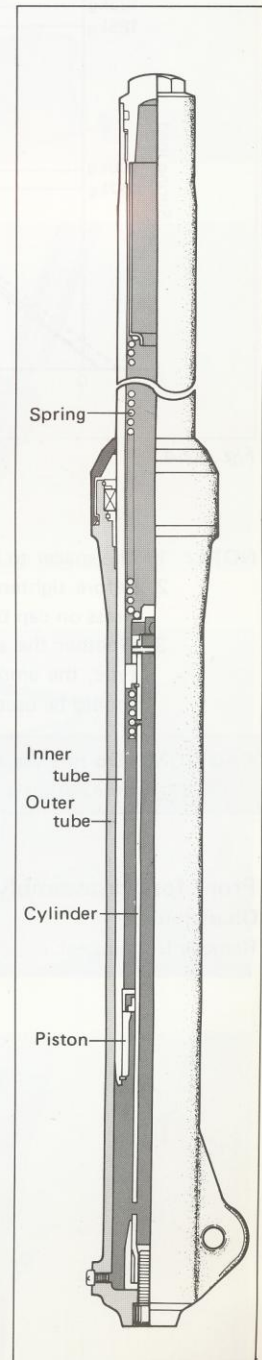


Fig. 4-2-3

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Front fork spring characteristic

In both RM250 and RM370, the spring rate of front fork springs can be modified slightly. There are two ways to do so: 1) by adding a spacer, and 2) by replacing the existing spring by an optional spring. How the spring rate changes is illustrated graphically:

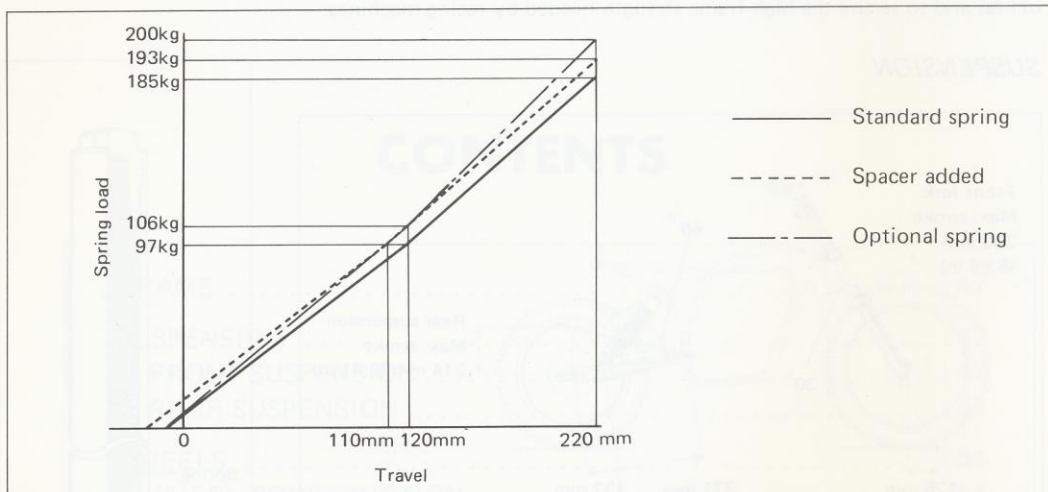


Fig. 4-2-4

- NOTE:**
1. The spacer to be added comes immediately below the cap bolt.
 2. Before tightening or loosening the cap bolts, be sure to loosen the pinch bolt in order to ease stress on cap bolt threads.
 3. Whether the spacer is added or not, or whether the spring is of standard type or of optional type, the amount of oil needed to fill the fork is the same, but a motor oil of SAE 10W/30 should be used instead of the specified motor oil where the spacer is added.

CAUTION: Do not use the spacer with the optional spring: use of the spacer is permitted only where the spring is of standard type.

Front fork disassembly and reassembly

Disassembly:

Remove front wheel.

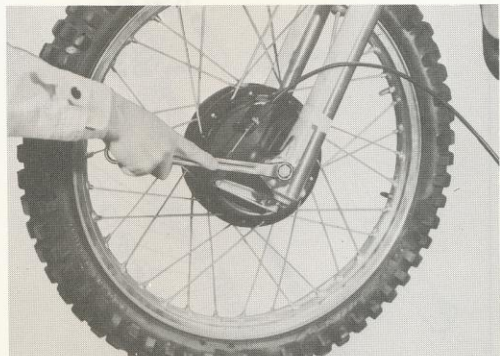


Fig. 4-2-5

Remove cylinder fixing bolt.

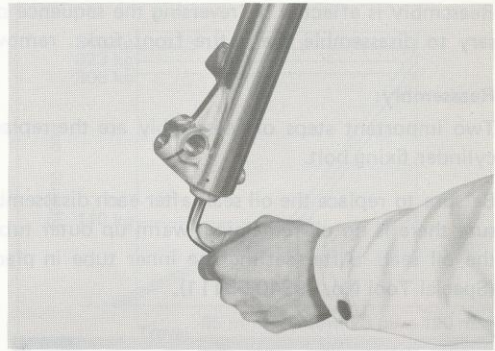


Fig. 4-2-6

Draw out outer tube.

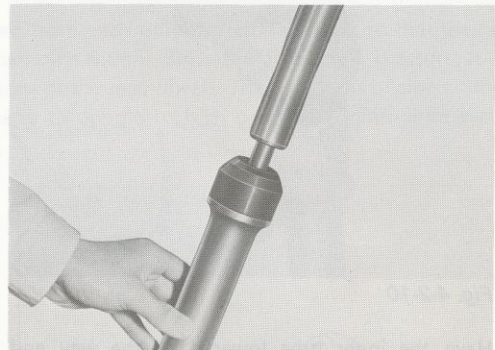


Fig. 4-2-7

Loosen upper and lower clamp bolts and remove fork tube.

NOTE: To facilitate the remaining work, have fork cap bolt loose.



Fig. 4-2-8

Remove inner tube cap bolt, and take out the spring.



Fig. 4-2-9

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Reassembly is effected by reversing the sequence of disassembly. To replace the springs, it is not necessary to disassemble the entire front fork: removal of the cap bolt allows the spring to be taken out.

Reassembly:

Two important steps of reassembly are the replacement of oil seals and the method of tightening the cylinder fixing bolt.

Be sure to replace the oil seals after each disassembly. This is effected as follows: Remove circlip; make sure there is no oil remaining; warm up outer tube by applying heat to its outer surface; and draw out the oil seal. After setting the inner tube in place, install the new oil seal with **oil seal installing tool** (Special Tool No. 09940-53111).

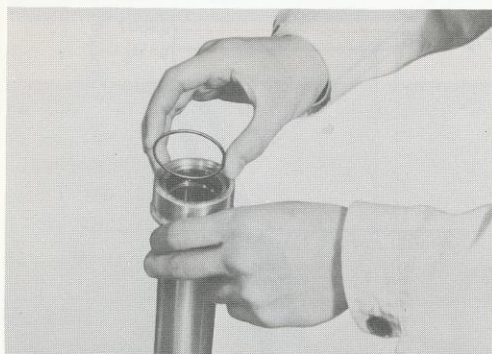


Fig. 4-2-10

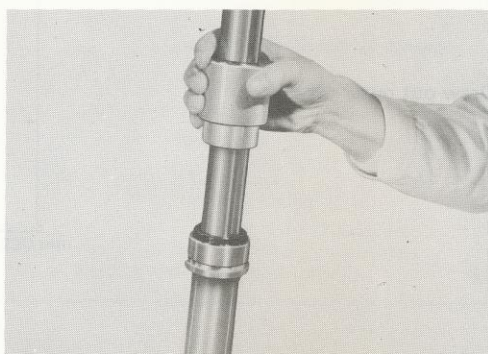


Fig. 4-2-11

Have the inner tube lowered all the way and tighten the cylinder fixing bolt, keeping the cylinder centered in the inner tube.

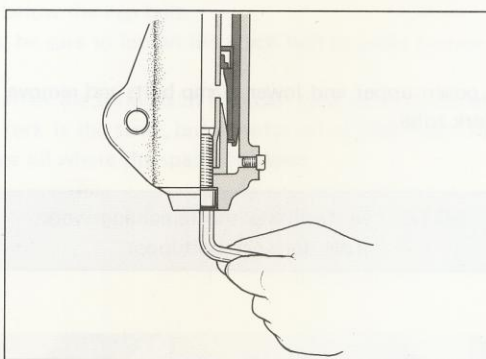


Fig. 4-2-12

For the fork oil, a motor oil of SAE 20W/20 is specified. The oil capacity of each side (in both RM250 and RM370) is 245 cc (8.3/8.6 US/Imp oz).

REAR SUSPENSION

Description

The rear shock absorbers have two fluids: oil and nitrogen gas. The gas is pressurized and so is the oil. The shock unit is angled down forwardly, presenting a large angle of tilt: this feature allows the rear wheel to move up and down through a longer cushioning stroke. Two springs, differing in spring rate, are included in the unit to make the unit responsive more sensitively to road shocks.

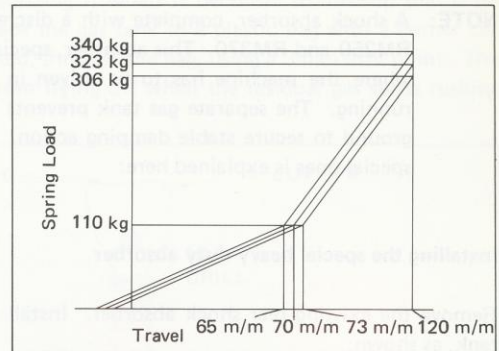


Fig. 4-2-13

Advantage of the gas-filled shock absorber

Inside the damper, oil space and gas space are isolated from each other by a free piston, so that the oil is free from bubbling and hence contribute to stable damping action. Since the oil is under pressure, it is sensitive even to small-amplitude up-and-down motions of the rear wheel. The damper is of single tube type, so that the heat generated in it quickly dissipates to uphold its high damping performance even for a continuous run of many hours on rough ground.

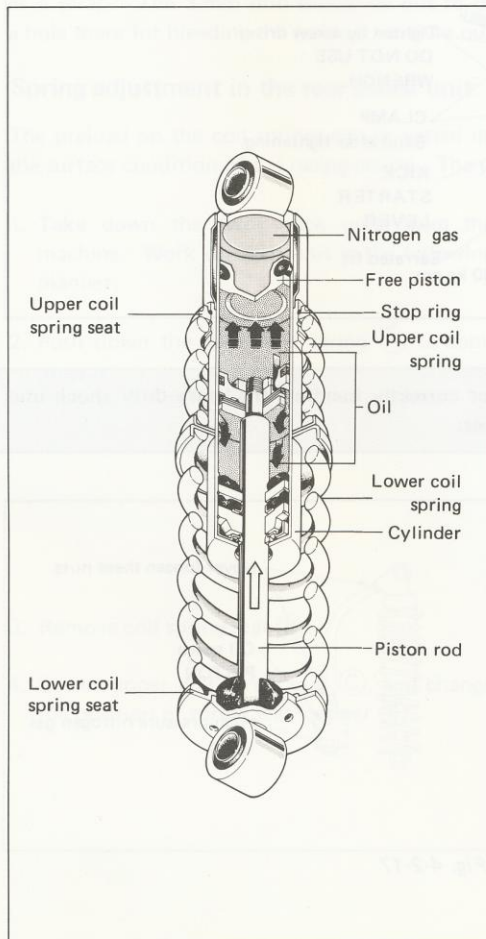


Fig. 4-2-14

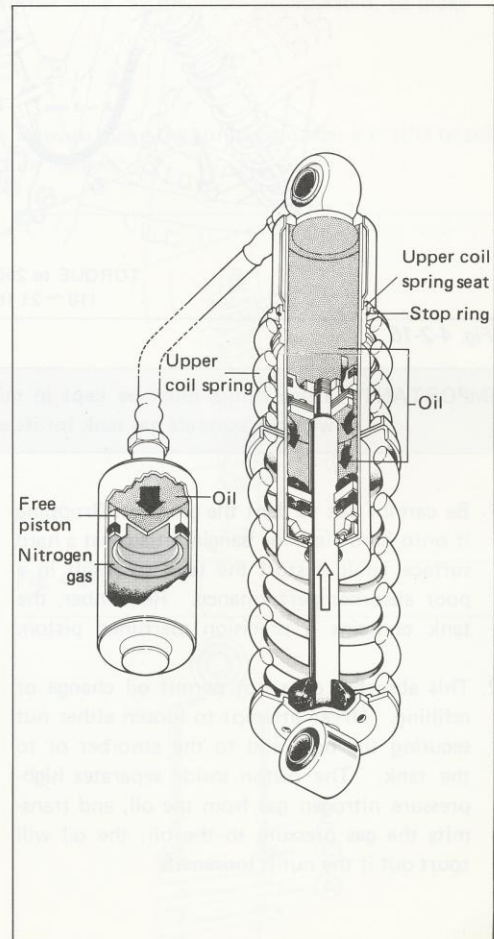


Fig. 4-2-15

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NOTE: A shock absorber, complete with a discrete gas tank, is available as an optional item for both RM250 and RM370. This absorber, specially designed for these two models, is intended for use where the machine has to be driven in severe competitions involving many hours of rough running. The separate gas tank prevents the gas from getting hot in a sustained run on rough ground to secure stable damping action. How to replace the existing shock absorbers by these special ones is explained here:

Installing the special heavy-duty absorber

Remove the existing rear shock absorber. Install this absorber in the same position, and attach its gas tank, as shown:

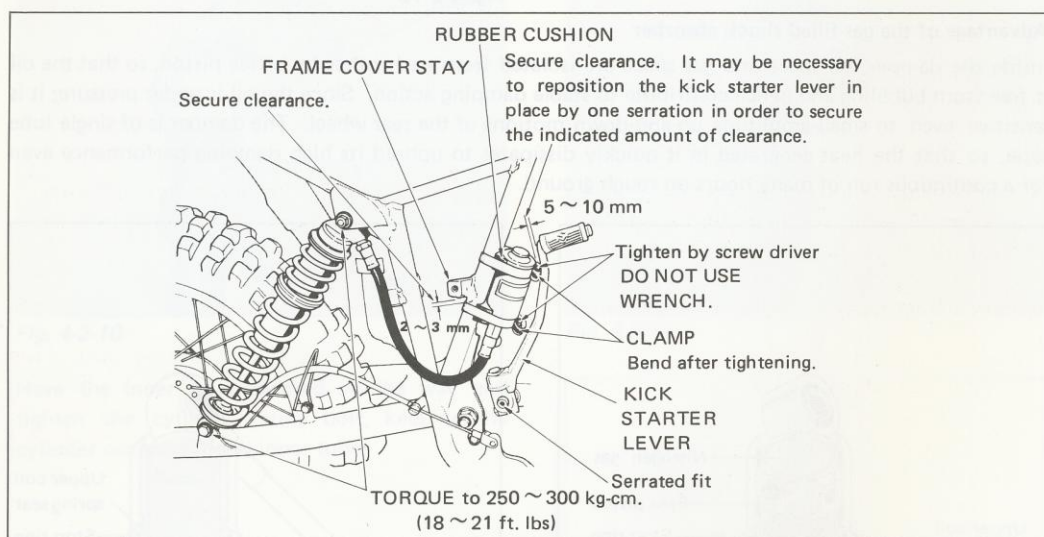


Fig. 4-2-16

IMPORTANT: Three things must be kept in mind for correctly handling the heavy-duty shock unit with the separate gas tank for its absorber:

1. Be careful not to dent the gas tank. Dropping it onto hard floor or banging it against a hard surface could distort the tank to result in a poor absorber performance. Remember, the tank contains a precision machined piston.
2. This absorber does not permit oil change or refilling. Never attempt to loosen either nut securing the hose end to the absorber or to the tank. The piston inside separates high-pressure nitrogen gas from the oil, and transmits the gas pressure to the oil: the oil will spurt out if the nut is loosened.

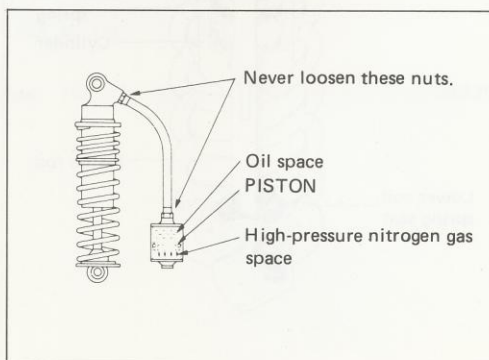


Fig. 4-2-17

3. Never throw away this absorber without de-pressurizing it when it becomes so used-up that it no longer serves the purpose. To de-pressurize it, place the gas tank in a plastic bag with a corner cut off, and drill into the tank, at the location indicated, through the bag, using a 3-mm drill point. The bag is for protection; it prevents the drill chips from flying off when the residual gas starts rushing out.

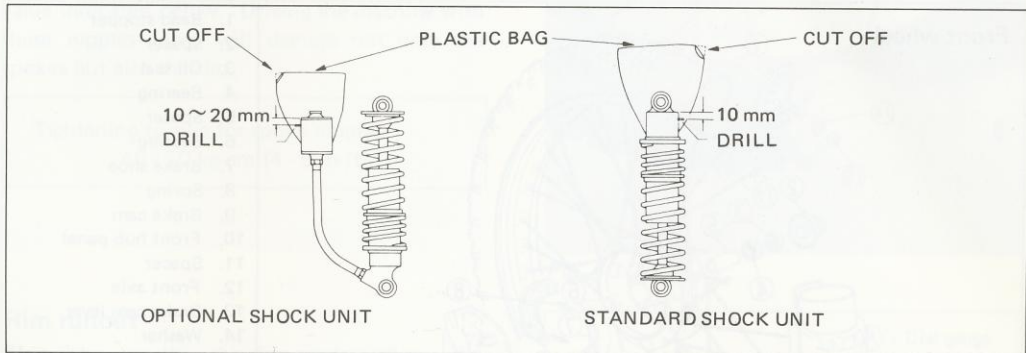


Fig. 4-2-18

The same precaution must be taken on a used-up standard shock absorber before it is thrown away as a scrap. The 3-mm drill should be put to the absorber head, at the position indicated, to make a hole there for bleeding the residual pressure out.

Spring adjustment in the rear shock unit

The preload on the coil springs can be varied in three steps to make the springs more or less stiff to suit the surface condition of the racing course. The procedure follows:

1. Take down the two shock units from the machine. Work on each unit in the following manner:
2. Push down the lower coil spring (A) to compress it.
3. Remove coil spring seat (B).
4. Lower upper coil spring seat (C), and change the position of spring seat stopper (E).

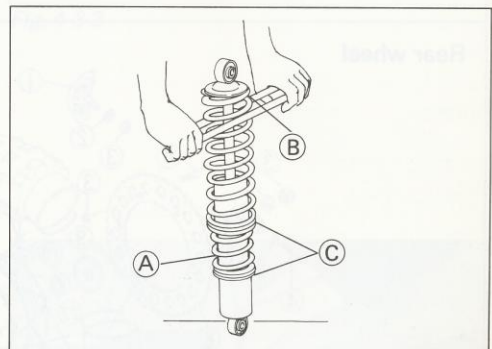


Fig. 4-2-19

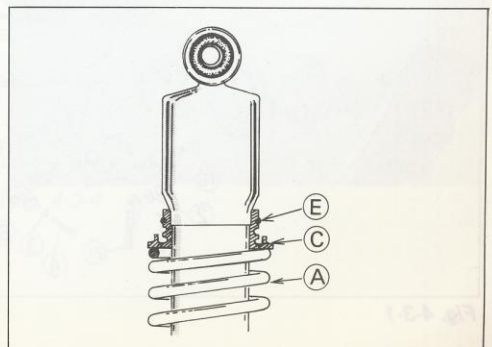


Fig. 4-2-20

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WHEELS

WHEEL CONSTRUCTION

Both front and rear wheels have their rims and hubs made of a high-strength aluminum alloy.

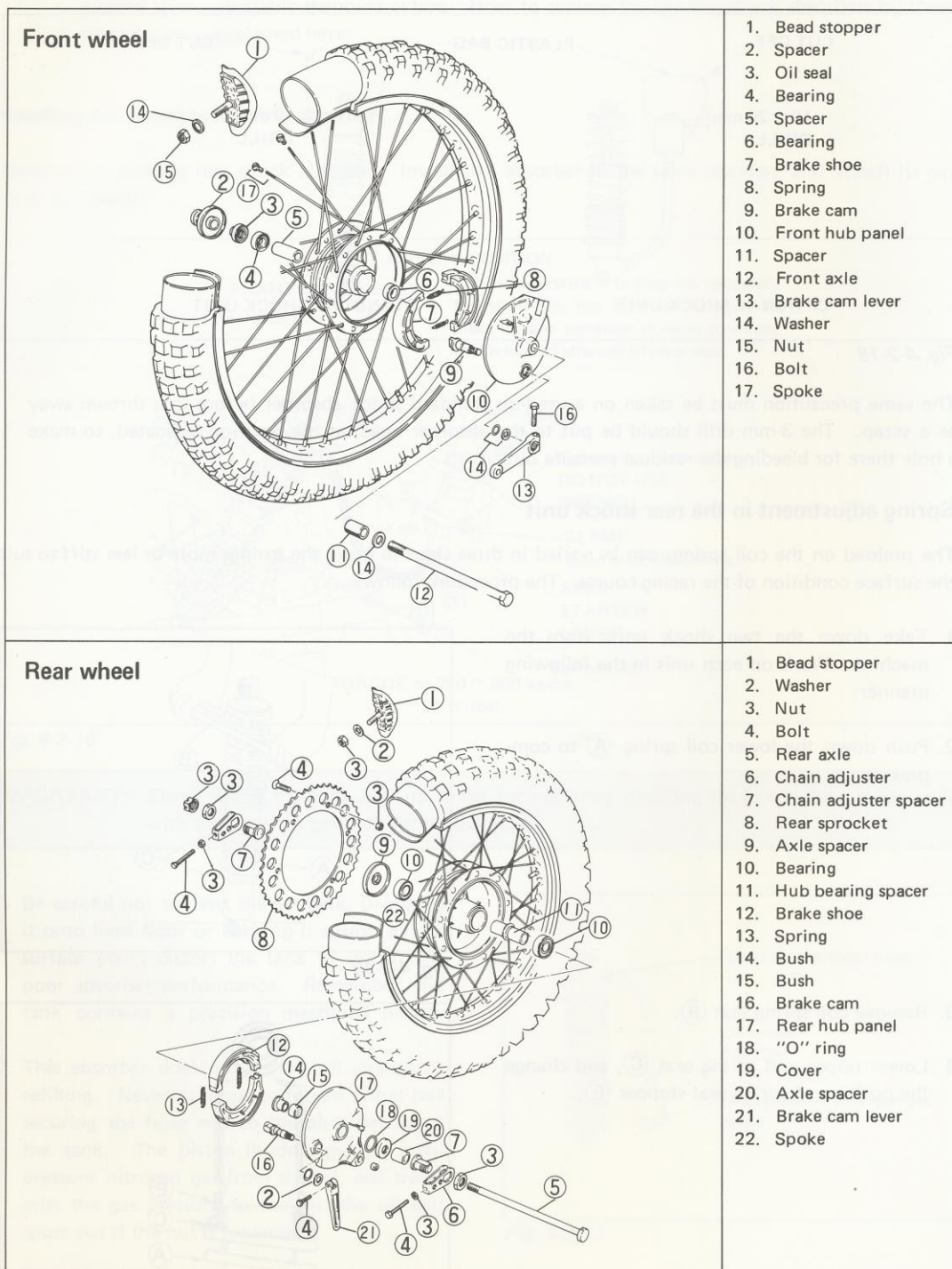


Fig. 4-3-1

CARE OF WHEELS

Retightening spoke nipples

After each race, check the nipples for tightness and, as necessary, retighten them to the torque value indicated below. Driving the machine with these nipples loose will damage not only the spokes but also the rim.

Tightening torque for spoke nipples:
40 - 50 kg-cm (4 - 5 lb-ft)

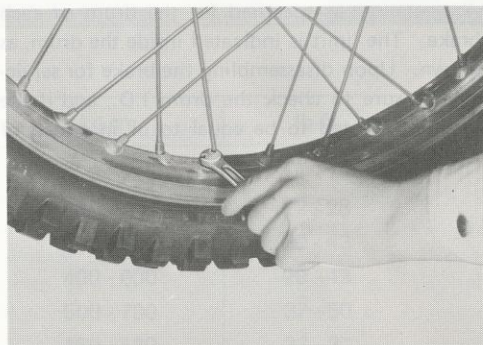


Fig. 4-3-2

Rim runout

Always be sure that the rims are free of any runout exceeding the limit indicated below. To check the rim for runout, use a dial gauge (A) with its spindle pointed squarely to the vertical flat of the rim, as shown.

Excessive runout is usually due to a worn-down wheel bearing. If replacement of the bearing does not reduce the runout, try to correct the wheel by adjusting spoke tension and, if this should prove ineffective, then the rim must be replaced.

Standard rim runout: 1 mm (0.039 in.)
maximum
Runout limit: 2 mm (0.079 in.)

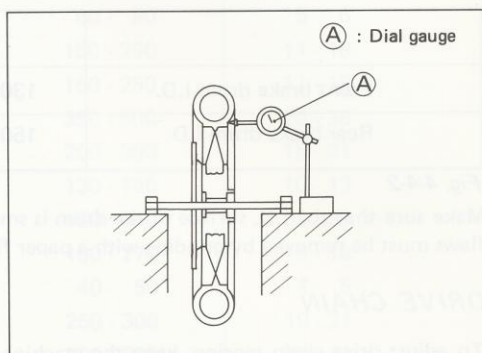


Fig. 4-3-3

Retightening the rear sprocket screw

After each race, retighten the rear sprocket screw to this torque value:

Tightening torque for rear sprocket screw:
200 - 300 kg-cm (15 - 21 lb-ft)

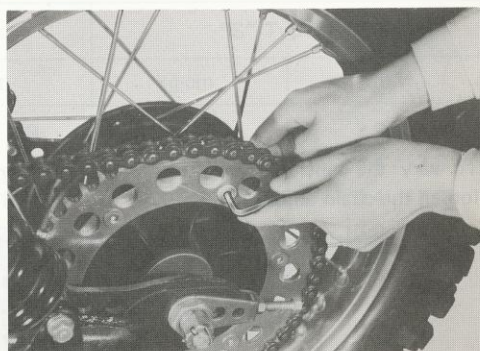


Fig. 4-3-4

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BRAKES

A wear limit is specified for the drum of each brake. The limit is indicated inside the drum, as shown. Upon disassembling the brake for servicing, be sure to check the drum I.D., and if the reading is noted to be equal to or in excess of the limit, replace the drum.

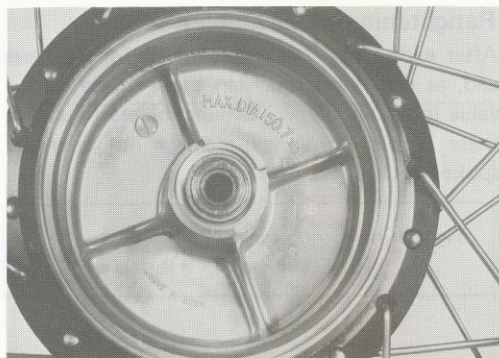


Fig. 4-4-1

	Standard	Wear limit
Front brake drum I.D.	130 mm (5.12 in.)	130.7 mm (5.15 in.)
Rear brake drum I.D.	150 mm (5.91 in.)	150.7 mm (5.93 in.)

Fig. 4-4-2

Make sure that the I.D. surface of the drum is smooth and free of score marks. Such marks or any other flaws must be removed by grinding with a paper file.

DRIVE CHAIN

To adjust drive chain tension, keep the machine in vertical position by its side stand, and measure the amount of deflection the chain exhibits when pushed at a halfway point between the two sprockets. This deflection, indicated as **A**, is prescribed to be within this range:

Drive chain sag: 40 - 45 mm (1.6 - 1.8 in.)

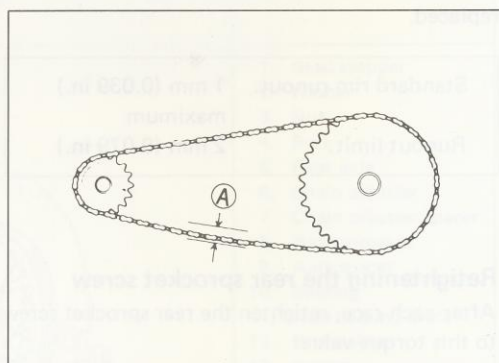


Fig. 4-5-1

To vary the tension for adjustment, tighten or loosen the chain adjusters.

IMPORTANT: Be sure to have the two adjusters set identically, that is, the tensioning mark of each adjuster located at the same position on the graduated range provided on the swing arm.

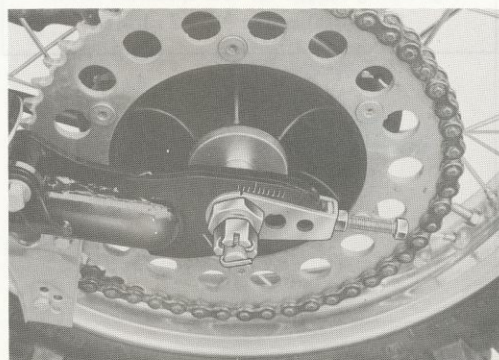


Fig. 4-5-2

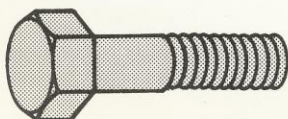
TIGHTENING TORQUE

GROUP
5

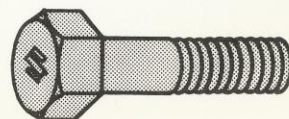
	kg-cm	lb-ft
Cylinder head nut	190 - 230	14 - 16
Magneto rotor nut	300 - 400	22 - 28
Engine sprocket nut	400 - 600	29 - 43
Clutch sleeve hub nut	400 - 600	29 - 43
Primary drive gear nut	500 - 700	37 - 50
Front axle	450 - 520	33 - 37
Front axle clamp bolt	150 - 250	11 - 18
Front brake cam lever nut	60 - 80	5 - 6
Front fork cylinder fixing bolt	150 - 250	11 - 18
Front fork upper clamp bolt	150 - 250	11 - 18
Steering stem head bolt	350 - 500	26 - 36
Front fork lower clamp bolt	200 - 300	15 - 21
Handlebar clamp bolt	130 - 190	10 - 13
Steering stem nut	450 - 550	33 - 39
Front fork cap bolt	180 - 270	14 - 19
Spoke nipple	40 - 50	4 - 5
Swinging pivot nut	250 - 300	19 - 21
Rear torque link nut, front & Rear	200 - 300	15 - 21
Rear axle	520 - 780	38 - 56
Rear axle sleeve nut	700 - 900	51 - 65
Rear brake cam lever nut	60 - 80	5 - 6
Rear sprocket screw	200 - 300	15 - 21

Bolt Diam. (mm)	Tightening Torque			
	Normal Bolt		"S" Type Bolt	
	kg-cm	lb-ft	kg-cm	lb-ft
5	20 - 40	1.5 - 2.9	30 - 60	2.2 - 4.4
6	40 - 70	2.9 - 5.1	60 - 100	4.4 - 7.3
8	90 - 140	6.5 - 10.2	130 - 230	9.4 - 17.0
10	180 - 280	13.0 - 20.5	250 - 400	18.0 - 29.0

Normal Bolt



"S" Type Bolt



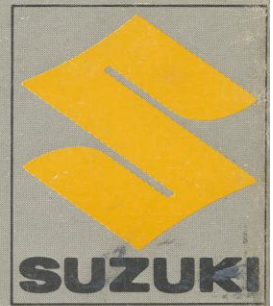
GROUP 6

PERIODIC INSPECTION

RECOMMENDED REPLACEMENT AND RELUBRICATION SCHEDULE

So that you'll never get behind others at the start of each race and that the machine will give you all that it's capable of giving at your command, its critical parts should be replaced and relubricated at such regular intervals as will ensure the best possible economy of maintenance. Such a schedule has been worked out by SUZUKI on the basis of experience with SUZUKI machines that have many glories in international competitions; it is here for your guidance:

	Every race or 100 km (60 miles)	Every 2 races or 200 km (120 miles)	Every 3 races or 300 km (180 miles)	Every 5 races or 500 km (300 miles)
Piston rings		Replace		
Engine sprocket				Replace
Rear sprocket			Replace	
Drive chain	Apply oil		Replace	
Drive chain buffer			Replace	
Drive chain guide roller	Apply oil		Replace	
Kick starter lever	Grease or oil			
Brake pedal	Oil or grease			
Brake camshaft (front & rear)				Grease
Throttle grip			Grease	
Throttle, brake & clutch cables	Apply oil		Replace	
Transmission		Change oil		



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