No Sales

SUZUKI

SERVICE MANUAL

$10.95

RM100
RM125

SUZUKI RM100&RM125 SERVICE MANUAL

FOREWORD

This Service Manual contains servicing information for and describes the functional features of these off-the-road SUZUKI MOTORCYCLES:

Models RM100A, RM125M, RM125S and RM125A

In almost all respects, the procedures and methods of inspection and servicing are the same for these four models, but the context of this Manual is based primarily on Model RM125A.
Those items and topics not common to all the four models are made distinct by indicating the applicable model designations. Absence of such designations may be construed to mean that the information is common to all.
The readership for which this Manual has been prepared is the persons related to servicing and maintenance work on SUZUKI motorcycles. It is hoped that this Manual be made full use of by those to whose attention the machines of these off-the-road models will come.

SUZUKI MOTOR CO., LTD.
Service Department
Overseas Marketing Division.

Covered specifically in this Manual are the following machines:

Model RM125M	1975 model machines earlier than Frame No. 22193 and Engine No. 22250
Model RM125S	1975 model machines equipped with Engine Hop-Up Kit
Model RM100A	1976 model machines introduced as bore-down version of Model RM125M
Model RM125A	1976 model machines beginning with Frame No. 30001 and Engine No. 30001

VIEW OF SUZUKI RM100&RM125

RM100A

RM125M, RM125S

RM125A

GROUP INDEX

GENERAL INFORMATION

GROUP 1

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2 GENERAL INFORMATION

SPECIFICATIONS

RM100A Specifications

DIMENSIONS AND WEIGHT	
Overall length	2,035 mm (80.1 in)
Overall width	840 mm (33.1 in)
Overall height	1,095 mm (43.1 in)
Wheelbase	1,360 mm (53.5 in)
Ground clearance	200 mm (7.9 in)
Dry weight	84 kg (185 lbs)
ENGINE	
Type	Two-stroke cycle, air-cooled
Intake system	Piston valve
Number of cylinder	1
Bore	50.0 mm (1.97 in)
Stroke	50.0 mm (1.97 in)
Piston displacement	98 cc (5.98 cu.in)
Corrected compression ratio	8.1 : 1
Carburetor	VM28SS
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Fuel and oil premixture of 20 : 1
TRANSMISSION SYSTEM	
Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1 down 4 up
Primary reduction	3.388 (61/18)
Final reduction	4.571 (64/14)
Gear ratios, Low	2.143 ((30/14)
2nd	1.588 (27/17)
3rd	1.250 (25/20)
4th	1.045 (23/22)
Top	0.913 (21/23)
Drive chain, size	DAIDO 428TM
number of links	128 links
CHASSIS	
Front suspension	Telescopic, oil dampened
Rear suspension	Swinging arm, gas/oil dampened, spring 5-way adjustable
Steering angle	45° (right & left)
Caster	60°
Trail	130 mm (5.12 in)
Turning radius	2.2 m (7.22 ft)
Front brake	Mechanical, internal expanding
Rear brake	Mechanical, internal expanding
Front tire size	3.00-21-4PR
Rear tire size	3.50-18-4PR
ELECTRICAL	
Ignition type	Suzuki "PEI" (Pointless Electronic Ignition)
Ignition timing	22° B.T. D.C. at 6,000 rpm
Spark plug	NGK B-9EV
CAPACITIES	
Fuel tank	5 lit (1.3/1.1 US/Imp gal)
Front fork oil	123 cc (4.2/4.3 US/Imp oz)
Transmission oil	Oil bath, 550 cc (1.2/1.0 US/Imp pt)

Specifications are subject to change without notice.

RM125S, RM125M Specifications

DIMENSIONS AND WEIGHT	
Overall length	2,040 mm (80.3 in)
Overall width	860 mm (33.9 in)
Overall height	1,140 mm (44.9 in)
Wheelbase	1,360 mm (53.5 in)
Ground clearance	245 mm (9.6 in)
Dry weight	86 kg (190 lbs)
ENGINE	
Type	Two-stroke cycle, air-cooled
Intake system	Piston valve
Number of cylinder	1
Bore	56.0 mm (2.20 in)
Stroke	50.0 mm (1.97 in)
Piston displacement	123 cc (7.5 cu.in)
Corrected compression ratio	7.4 : 1
Carburetor	MIKUNI VM34SS (RM125S) VM28SS (RM125M)
Air cleaner	Polyurethane foam element
Starter system	Primary kick
Lubrication system	Fuel and oil premixture of 20 : 1
TRANSMISSION SYSTEM	
Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down 4-up
Primary reduction	3.388 (61/18)
Final reduction	4.285 (60/14)
Gear ratios, Low	2.142 (30/14)
2nd	1.588 (27/17)
3rd	1.250 (25/20)
4th	1.045 (23/22)
Top	0.913 (21/23)
Drive chain, size	DAIDO #428TM
number of links	126 links
CHASSIS	
Front suspension	Telescopic, oil dampened
Rear suspension	Swinging arm, gas/oil dampened, spring 5-way adjustable
Steering angle	45° (right & left)
Caster	61°
Trail	123 mm (4.8 in)
Turning radius	2.2 m (7.2 ft)
Front brake	Mechanical, internal expanding
Rear brake	Mechanical, internal expanding
Front tire size	3.00-21-4PR
Rear tire size	3.50-18-4PR
ELECTRICAL	
Ignition type	SUZUKI "PEI" (Pointless Electronic Ignition)
Ignition timing	22° B.T.D.C. at 6,000 rpm (RM125S) 29° B.T.D.C. at 6,000 rpm (RM125M)
Spark plug	NGK B-9EV
CAPACITIES	
Fuel tank	5.0 lit (1.3/1.1 US/Imp gal)
Front fork oil	210 cc (7.1/7.4 US/Imp oz)
Transmission oil	Oil bath, 550 cc (1.2/1.0 US/Imp pt)

Specifications are subject to change without notice.

RM125A Specifications

DIMENSIONS AND WEIGHT	
Overall length	2,075 mm (81.7 in)
Overall width	840 mm (33.1 in)
Overall height	1,125 mm (44.3 in)
Wheelbase	1,395 mm (54.9 in)
Ground clearance	265 mm (10.4 in)
Dry weight	86 kg (190 lbs)
ENGINE	
Type	Two-stroke cycle, air-cooled
Intake system	Piston and reed valves
Number of cylinder	1
Bore	56.0 mm (2.20 in)
Stroke	50.0 mm (1.97 in)
Piston displacement	123 cc (7.5 cu.in)
Corrected compression ratio	7.6 : 1
Carburetor	MIKUNI VM32SS
Air cleaner	Polyurethane foam element
Starter system	primary kick
Lubrication system	Fuel and oil premixture of 20 : 1
TRANSMISSION SYSTEM	
Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down 5-up
Primary reduction	3.705 (63/17)
Final reduction	4.071 (57/14)
Gear ratios, Low	2.333 (28/12)
2nd	1.750 (28/16)
3rd	1.411 (24/17)
4th	1.190 (25/21)
5th	1.045 (23/22)
Top	0.956 (22/23)
Drive chain, size	DAIDO #428TM
number of links	130 links
CHASSIS	
Front suspension	Telescopic, oil dampened
Rear suspension	Swinging arm, gas/oil dampened, spring 3-way adjustable
Steering angle	45° (right & left)
Caster	60°
Trail	130 mm (5.1 in)
Turning radius	2.2 m (7.2 ft)
Front brake	Mechanical, internal expanding
Rear brake	Mechanical, internal expanding
Front tire size	3.00-21-4PR
Rear tire size	4.10-18-4PR
ELECTRICAL	
Ignition type	SUZUKI "PEI" (Pointless Electronic Ignition)
Ignition timing	8° B.T.D.C. at 11,000 rpm
Spark plug	NGK B-9EV
CAPACITIES	
Fuel tank	6.0 lit (1.6/1.3 US/Imp gal)
Front fork oil	223 cc (7.5/7.9 US/Imp oz)
Transmission oil	Oil bath, 800 cc (1.7/1.4 US/Imp pt)

Specifications are subject to change without notice.

GENERAL INSTRUCTIONS

Fuel

For the fuel, use a mixture of 20 parts of gasoline of premium grade with an octane number of at least 95 (generally known as High-Octane Gas) and 1 part of engine oil, specified below. Have the mixture thoroughly stirred in a receptacle before filling up the fuel tank.

Two quick-reference charts given here eliminate the bother of computing the needed amounts of gasoline and oil for preparing the 20-to-1 mixture:

20-to-1 ratio in metric units

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

20-to-1 ratio in English units

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

Engine oil

Use any of the following brands or their equivalents:

(a) **B.P. RACING**
(b) **SHELL SUPER M**
(c) **CASTROL R30**
(d) **GOLDEN SPECTRO SYNTHETIC BLEND**
(e) **BEL-RAY MC-1 Two-cycle racing lubricant**

NOTES: * The above-named engine oils are sold as two-cycle racing lubricants.
*** Do not allow two or more brands of oil to become mixed.**

Transmission oil

For the transmission oil, be sure to use a multi-grade motor oil of SAE 20W/40. The quantity needed to fill up the transmission is as follows:

Models	For periodical oil change	For filling up the transmission which has just been overhauled
RM100A, RM125M, RM125S	550 cc (1.2/1.0 US/Imp pt)	650 cc (1.4/1.2 US/Imp pt)
RM125A	800 cc (1.7/1.4 US/Imp pt)	

Front Fork Oil

For the oil in the front fork, use a motor oil of SAE 20W/20.

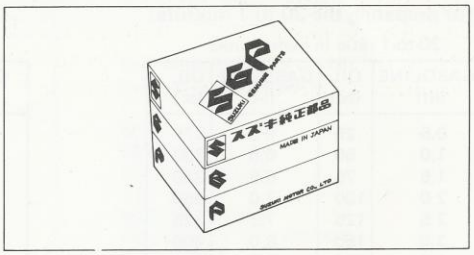
Models	Front fork oil capacity (each side)
RM100A	123 cc (4.2/4.3 US/Imp oz)
RM125M & RM125S	210 cc (7.1/7.4 US/Imp oz)
RM125A	223 cc (7.5/7.9 US/Imp oz)

Breaking-in

No programmed Breaking-in operation is necessary for new machines of the models covered in this manual: the only thing is that the new machine should **not** be operated in full-load condition for the first one hour or 30 km (20 miles). Immediately after this initial operation, check and retighten bolts and nuts, adjust drive chain tension, and listen into the machine for abnormal noise. Corrections, if any, to be made at this stage are simple.

Replacement and Spare Parts

It is safe, economical and convenient to use replacement parts supplied from SUZUKI. Any economy achieved by using imitation parts is only imaginary; they often prevent the machine from giving its full performance or give rise to trouble. Always insist on GENUINE SUZUKI REPLACEMENT AND SPARE PARTS.



REQUIRED MATERIALS

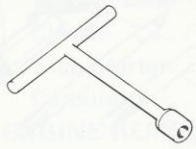
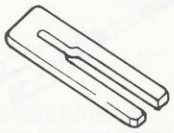
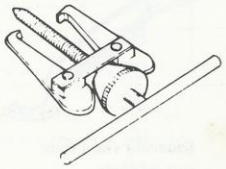
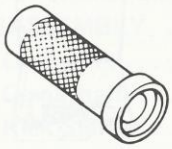
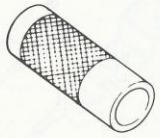
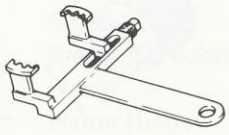
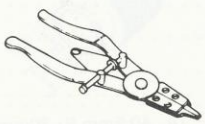
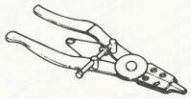
The materials listed below are needed for maintenance work on the four models covered in this manual, and should be kept on hand for ready use. In addition, such standardly used materials as cleaning fluids, lubricants, etc. should be made available. How and when to use the materials will become clear in the text of this manual in later pages.

Ref. No.		Material	Use
1	THREAD LOCK CEMENT (99000-32040)		For locking all screws inside the transmission case For locking reed valve fitting screws (RM125A) For locking front fork spring sheet bolts
2	SUZUKI SUPER GREASE "A" (99000-25010)		For lubricating oil seal lips
3	SUZUKI LOCK SUPER "103Q" (99000-32030)		For locking the retaining part of press-fitted 2nd drive gear

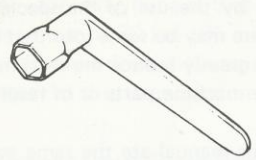
SPECIAL TOOLS

Proper and speedy disassembly, reassembly and inspection is ensured by the use of the special tools – tools designed to perform specific jobs on specific models. True, there may be some jobs that can be carried out with common tools, but the special tools even for such jobs greatly reduce the working time and, what is more important, eliminate the possibility of damaging the machine parts or of resulting in poor workmanship.

Most of the special tools listed for the four models dealt with by this manual are the same as those prescribed for Model TM125. It should be noted that, among the listed tools, **connecting rod stopper** (09910-20114), formerly called "piston holder," and **rotor remover** (09930-30211) are the ones created exclusively for Model RM125A, one of the four.

1  8 mm stud installing tool (09910-10710)	2  Con-rod stopper (09910-20113) *(09910-20114)	3  Crankcase separating tool (09910-80113)
4  8 mm hexagon L type wrench (09911-71510)	5  Oil seal remover (09913-50110)	6  Bearing puller (09913-60910)
7  (ID: 40.5 mm, OD: 50 mm) Bearing and oil seal installing tool (09913-70122)	8  (ID: 25.2mm, OD: 34mm) Bearing and oil seal installing tool (09913-80111)	9  Clutch spring hook (09920-20310)
10  Clutch sleeve hub holder (09920-53710)	11  Snap ring opener (small) (09920-70111)	12  Snap ring opener (large) (09920-70120)

13



Spark plug wrench
(09930-10111)

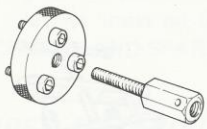
14

Rotor remover shaft set
(09930-30101)

15

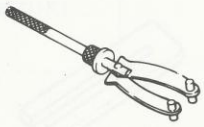
Rotor remover
attachment
(09930-30180)

16



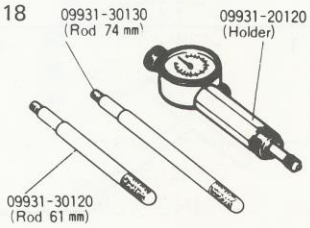
Rotor remover
attachment
(09930-30211)

17



Engine sprocket and
flywheel holder
(09930-40113)

18



Timing gauge
(09931-00112)

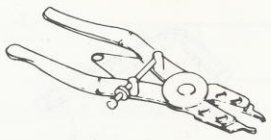
19

Steering stem lock
nut wrench
(09940-10122)

20

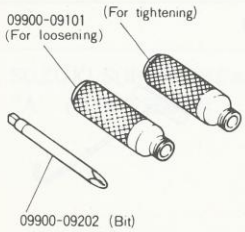
Spoke nipple wrench
(09940-60112)

21



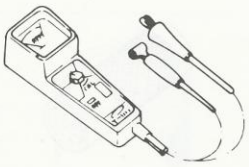
Snap ring remover
(09900-06103)

22



Shock driver set
(09900-09002)

23

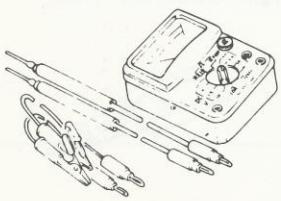


Engine tachometer
(09900-26002)

24

Electro tester
(type SS-II)
(09900-28104)

25



Pocket tester
(09900-25001)

26

(A: 40.5mm B: 30mm)
Front fork oil seal
installing tool
(09940-528 10)

27

(A: 48mm B: 36mm)
Front fork oil seal
installing tool
(09940-53111)

ENGINE

GROUP 2

CONTENTS

DESCRIPTION

Cylinder

The number of scavenging ports in the engines of Models RM100 and RM125 is six. The six-port scavenging assures smooth inflow of the mixture into the cylinder to account for the high horsepower performance that the engines of these models are capable of.

- In the engine of RM100A, the mixture in the crankcase flows into four scavenging openings, from which it is drawn into the cylinder through six scavenging ports.
- In the engines of RM125M and RM125S, the scavenging passage has six entrance openings and six outlet openings.
- In the engine of RM125A, however, its scavenging scheme is similar to that of the engine of RM100A: four openings at the crankcase and six openings at the cylinder.

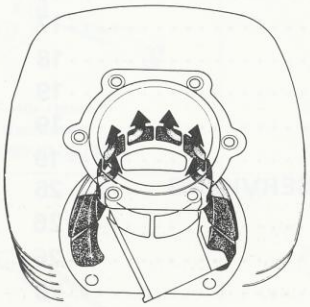


Fig. 1. Scavenging port design (Models RM100A and RM125A)

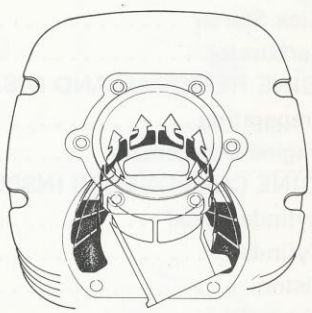


Fig. 2. Scavenging port design (Models RM125M and RM125S)

Power Reed Intake System (Model RM125A)

In the engine of Model RM125A, air-fuel mixture is drawn into the scavenging space of crankcase through two intake paths, one opening into the lower part of the cylinder under the piston, and the other opening direct into the crankcase through a reed valve. The mixture in the former is subject to conventional piston valve action of any two-stroke engine; the mixture in the latter is subject to reed valve action. This feature, illustrated in Fig. 3, is named "POWER REED Intake System."

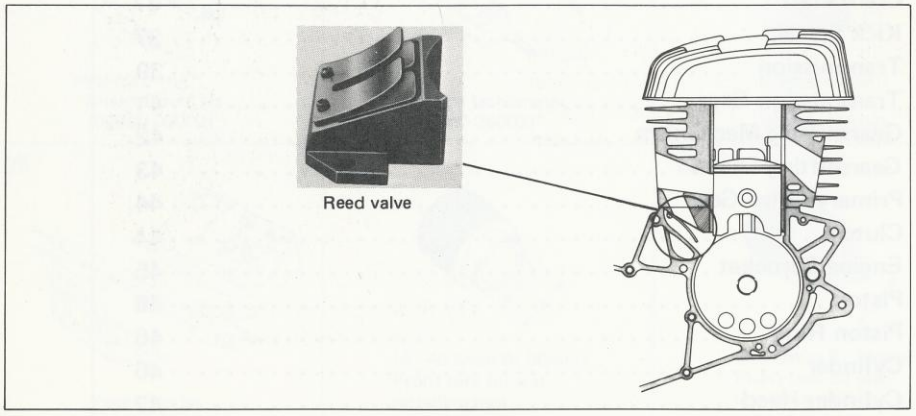


Fig. 3. POWER REED details

Combined action of piston valve and reed valve

The reed valve opens and closes in response to the mixture requirement of the engine. The piston valve opens and closes at given crank angles during each cycle, and its characteristic is that the mixture flowing into under the piston on compression-exhaust stroke encounters little resistance. Refer to Fig. 4 showing the timing of these two valves.

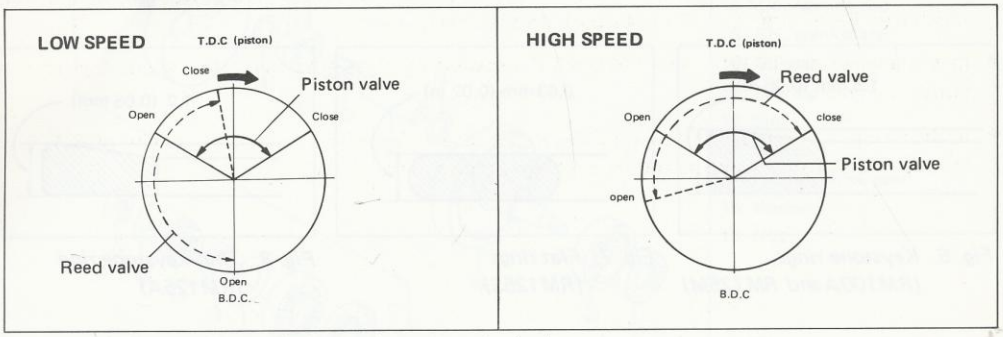


Fig. 4 Port timing diagrams (piston valve and reed valve)

In the engine of Model RM125A, its inlet port (subject to piston valve action) is so located as to open **later** and close **earlier** than in ordinary motorcycle engines. This is calculated to improve torque performance in the intermediate- and low-speed regions. How the improvement is accomplished will be seen in the fact that, by closing **earlier,** the tendency of the mixture (admitted into the scavenging space of crankcase) to blow back into the intake passage in the intermediate- and low-speed regions is minimized.

When the engine is operating in the high-speed region, the inlet port does not admit enough mixture because of its retarded opening. This deficiency is made up for by the reed valve, which opens ahead of the inlet port even when the engine is so operating.

Piston

The piston has two small holes drilled through its wall on the exhaust side to bleed out the mixture. The bled-out mixture cools and lubricates the exhaust-side wall of the piston and also the exhaust port rib formed of the cylinder. During operation, these parts are subject to high heat buildup, so that this cooling and lubrication gives additional durability to the piston and cylinder.

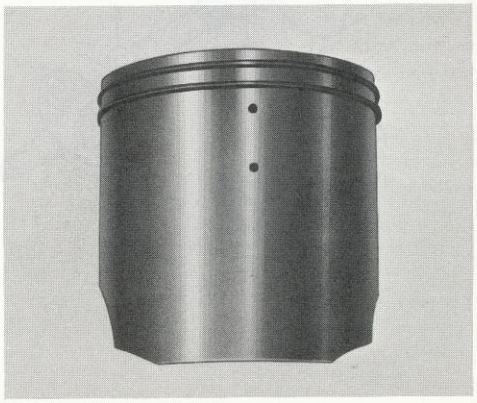


Fig. 5. Mixture bleeding holes in the piston wall

Piston Rings

- Both 1st and 2nd rings for the engines of Models RM100A and RM125M are of keystone type shown in Fig. 6.
- The piston of the RM125S engine is fitted with flat steel rings in its 1st and 2nd grooves. See Fig. 7.
- Keystone-type steel rings, sized thinner, are used in the engine of Model RM125A for its 1st and 2nd rings. See Fig. 8.

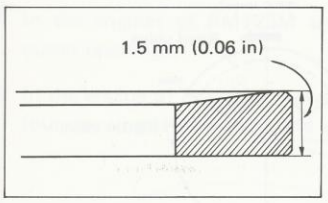


Fig. 6. Keystone rings (RM100A and RM125M)

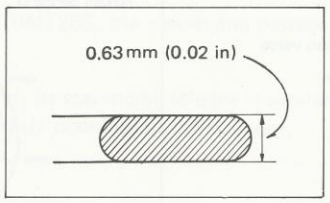


Fig. 7. Flat rings (RM125S)

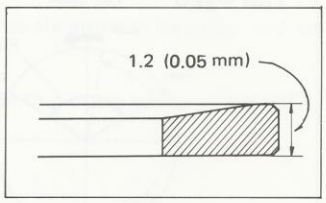
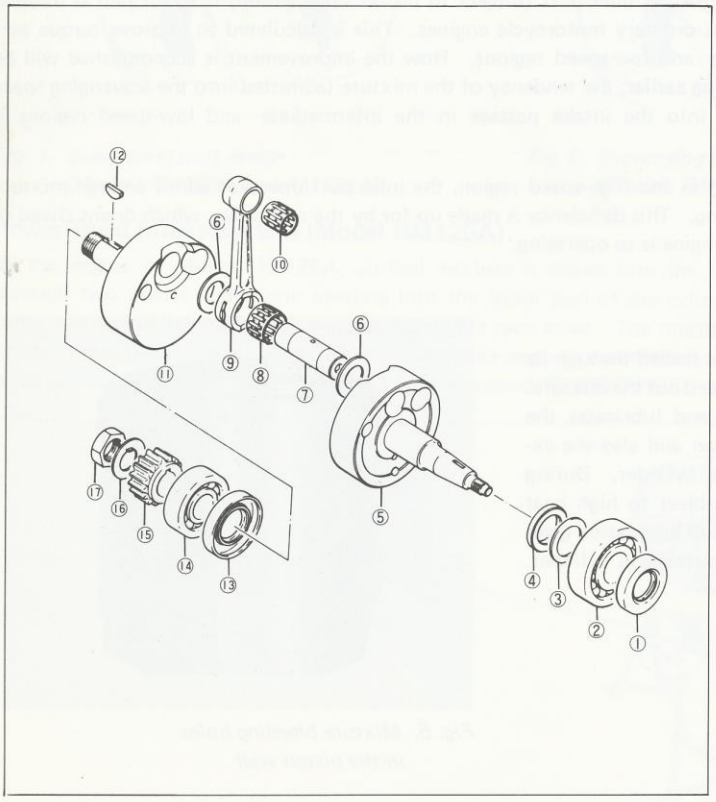


Fig. 8. Thin keystone ring (RM125A)

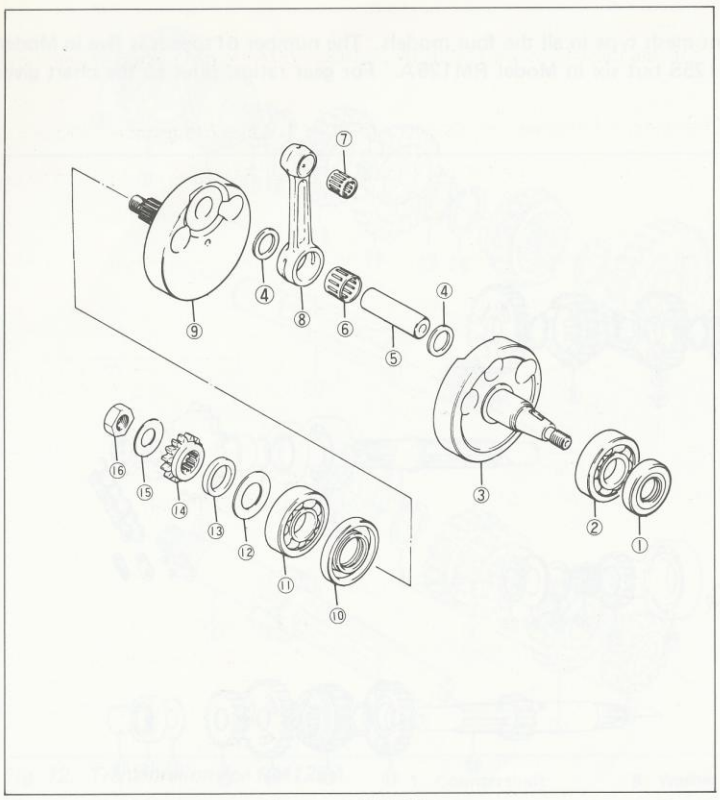
Crankshaft

The crankshaft assembly consists of the parts shown in the following exploded view.



1. Oil seal
2. Bearing
3. Sim
4. Spacer
5. LH. crankshaft
6. Thrust washer
7. Crank pin
8. Bearing
9. Connecting rod
10. Bearing
11. RH. crankshaft
12. Key
13. Oil seal
14. Bearing
15. Primary drive gear
16. Washer
17. Nut

Fig. 9. Crankshaft assembly for RM100A, RM125M and RM125S



1. Oil seal
2. Bearing
3. LH. crankshaft
4. Thrust washer
5. Crank pin
6. Bearing
7. Bearing
8. Connecting rod
9. RH. crankshaft
10. Oil seal
11. Bearing
12. Sim
13. Spacer
14. Primary drive gear
15. Washer
16. Nut

Fig. 10. Crankshaft assembly for RM125A

Transmission

The transmission is of constant-mesh type in all the four models. The number of speeds is five in Models RM100A, RM125M and RM125S but six in Model RM125A. For gear ratios, refer to the chart given below.

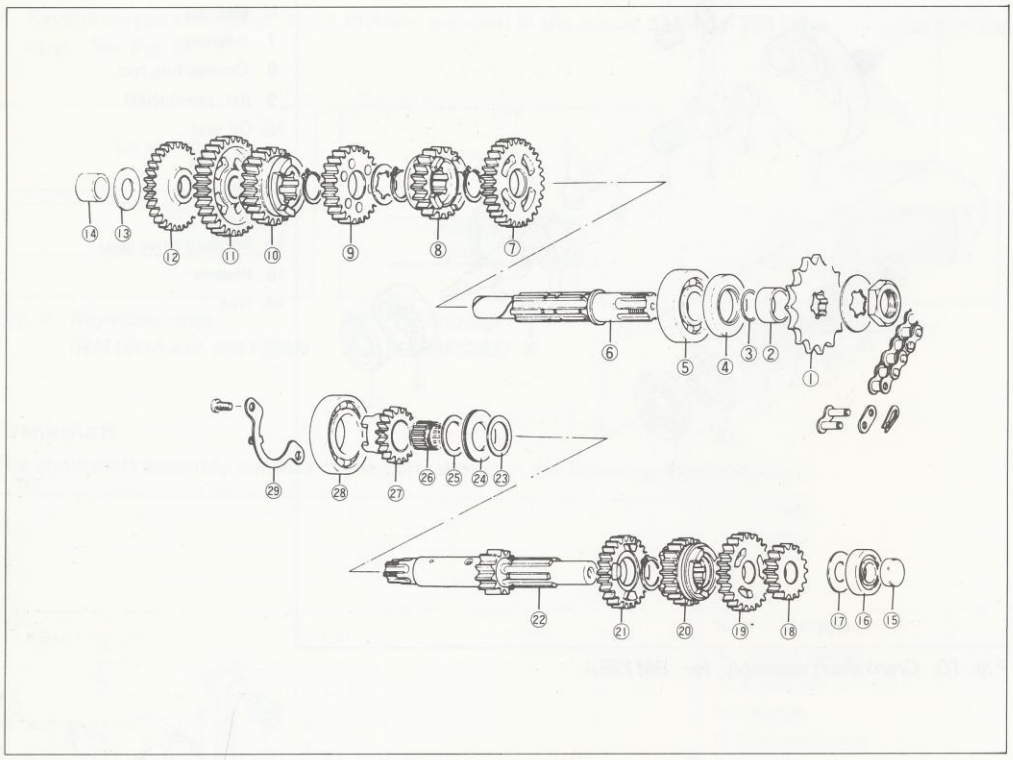


Fig. 11. Transmission for RM100A, RM125M and RM125S

1. Engine sprocket
2. Spacer
3. O ring
4. Oil seal
5. Bearing
6. Drive shaft
7. 2nd driven gear
8. 5th driven gear
9. 3rd driven gear
10. 4th driven gear
11. 1st driven gear
12. Kick starter idle gear
13. Washer
14. Bushing
15. Plug
16. Bearing
17. Washer
18. 2nd driven gear
19. 5th drive gear
20. 3rd drive gear
21. 4th drive gear
22. Countershaft
23. Washer
24. Bearing
25. Washer
26. Bearing
27. Kick starter driven gear
28. Bearing
29. Bearing holder

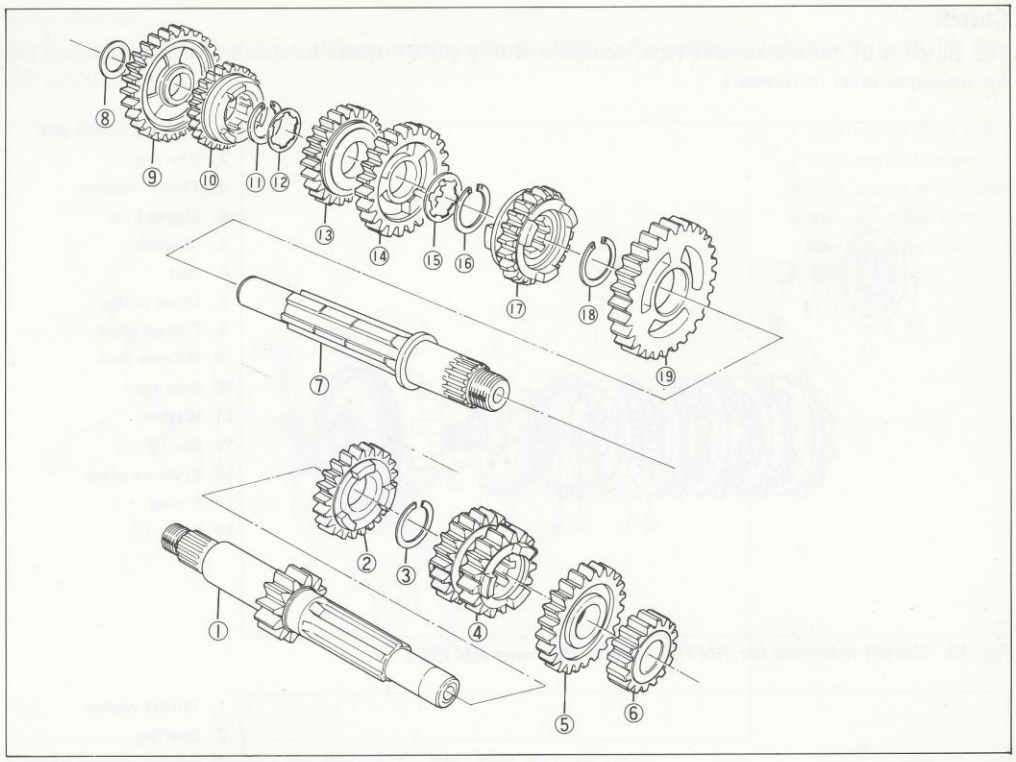


Fig. 12. Transmission for RM125A

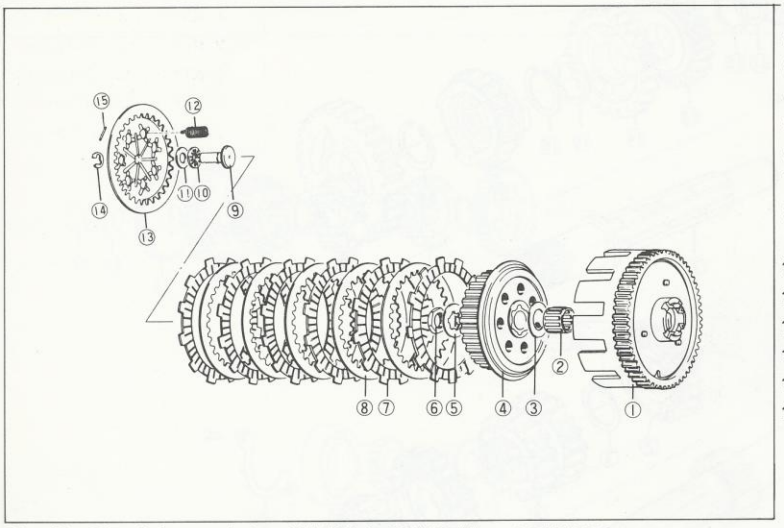
1. Countershaft
2. 5th drive gear
3. Circlip
4. 3rd drive gear
5. 6th drive gear
6. 2nd drive gear
7. Driveshaft
8. Washer
9. 1st driven gear
10. 5th driven gear
11. Circlip
12. Washer
13. 4th driven gear
14. 3rd driven gear
15. Washer
16. Circlip
17. 6th driven gear
18. Circlip
19. 2nd driven gear

Transmission Gear Ratio Chart

Gear	RM100A	RM125M RM125S	RM125A
1set	2.143 (30/14)	2.142 (30/14)	2.333 (28/12)
2nd	1.588 (27/17)	1.588 (27/17)	1.750 (28/16)
3rd	1.250 (25/20)	1.250 (25/20)	1.411 (24/17)
4th	1.045 (23/22)	1.045 (23/22)	1.190 (25/21)
5th			1.045 (23/22)
Top	0.913 (21/23)	1.093 (21/23)	0.956 (22/23)
Primary reduction	3.388 (61/18)	3.388 (61/18)	3.705 (63/17)
Final reduction	4.571 (64/14)	4.285 (60/14)	4.071 (57/14)

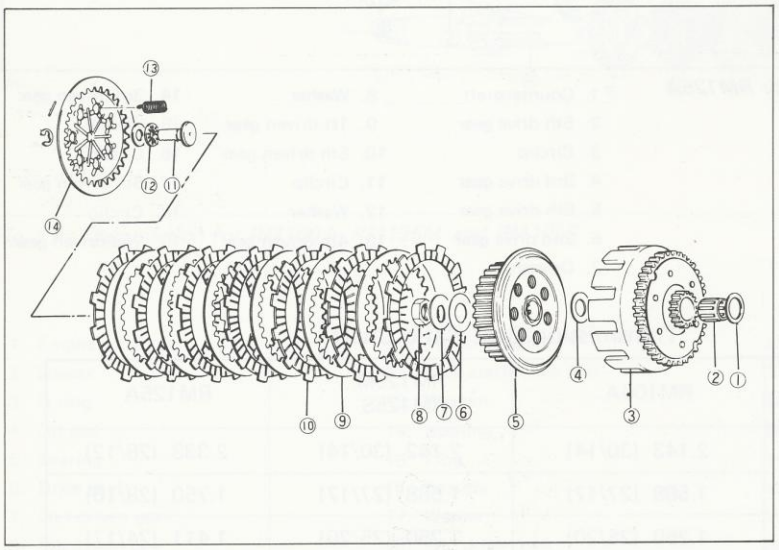
Clutch

The clutch is of multi-plate wet type, complete with a clutch release mechanism of rack & pinion type for smoother lever movement.



1. Primary driven gear
2. Bearing
3. Thrust washer
4. Sleeve hub
5. Washer
6. Nut
7. Drive plate
8. Driven plate
9. Release rack
10. Bearing
11. Washer
12. Spring
13. Pressure plate
14. E ring
15. Pin

Fig. 13. Clutch internals for RM100A, RM125M and RM125S



1. Thrust washer
2. Bearing
3. Primary driven gear ass'y
4. Thrust washer
5. Sleeve hub
6. Washer
7. Lock washer
8. Nut
9. Driven plate
10. Drive plate
11. Release rack
12. Bearing
13. Spring
14. Pressure plate

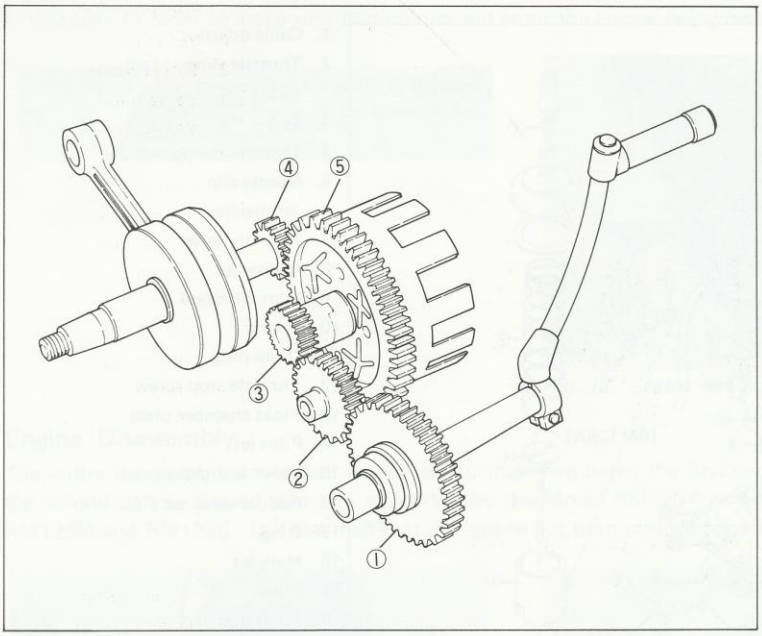
Fig. 14. Clutch internals for RM125A

Clutch plate data

Models	Number of driven plates	Number of drive plates
RM100A, RM125M and RM125S	5	6
RM125A	6	7

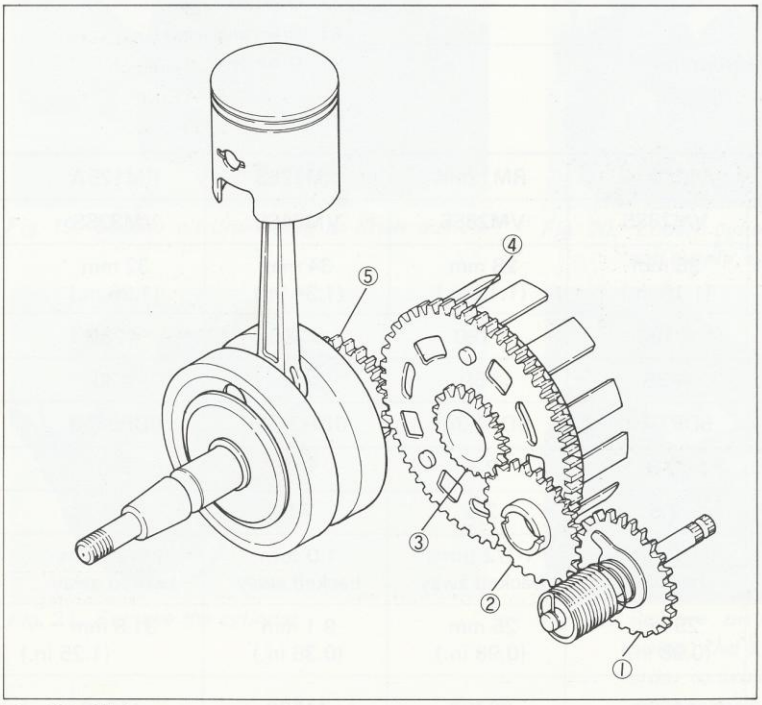
Kick Starter

The kick starter is of primary kick type transmitting the kick to the primary drive gear through idle gear and primary driven gear.



1 Kick starter drive gear
2 Kick starter idle gear
3 Kick starter driven gear
4 Primary driven gear
5 Primary drive gear

Fig. 15. Kick starter system for RM100A, RM125M and RM125S

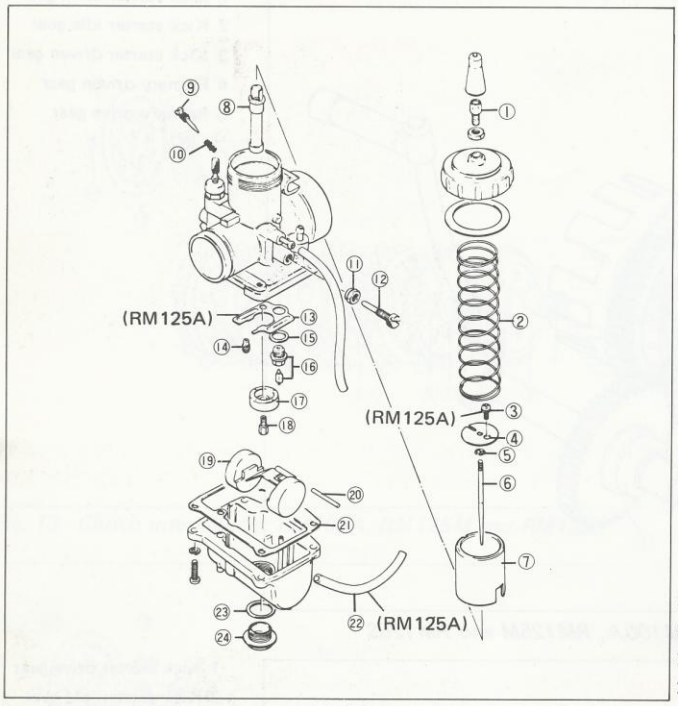


1 Kick starter drive gear
2 Kick starter idle gear
3 Kick starter driven gear
4 Primary driven gear
5 Primary drive gear

Fig. 16. Kick starter system for RM125A

Carburetor

The basic carburetor construction is as shown in the exploded view of Fig. 17 for the four models, RM100A, RM125M, RM125S and RM125A. The only difference is that, in the carburetor of RM125S engine, the float and its arm are two discrete parts.



1. Cable adjustor
2. Throttle valve return spring
3. Screw
4. Throttle spring seat
5. Needle clip
6. Jet needle
7. Throttle valve
8. Needle jet
9. Pilot air screw
10. Spring
11. Drain plug
12. Throttle stop screw
13. Float chamber plate
14. Pilot jet
15. Valve seat gasket
16. Needle valve ass'y
17. Ring
18. Main jet
19. Float
20. Float pin
21. Float chamber gasket
22. Overflow hose
23. Drain plug gasket
24. Drain plug

Fig. 17. Exploded view of carburetor

Carburetor specifications

Items	RM100A	RM125M	RM125S	RM125A
Type designation	VM28SS	VM28SS	VM34SS	VM32SS
Bore	28 mm (1.10 in.)	28 mm (1.10 in.)	34 mm (1.34 in.)	32 mm (1.26 in.)
Main jet	# 160	# 180	# 280	#280
Pilot jet	# 35	#50	# 35	#30
Jet needle	5DP7-4th	5DP7-3rd	6DH3-3rd	6DP5-3rd
Needle jet	O-8	P-4	P-3	R-0
Cut-away	2.5	2.5	2.5	2.5
Pilot air adjusting screw	1-1/2 turns backed away	1-1/2 turns backed away	1.0 turn backed away	1-1/2 turns backed away
Float level	25 mm (0.98 in.)	25 mm (0.98 in.)	9.1 mm (0.36 in.)	31.8 mm (1.25 in.)
Identification number	41600	28720	41700	41310

ENGINE REMOVAL AND DISASSEMBLY

Preparation

Before removing the engine, clean the external surfaces of the engine in place by using steam. This step is necessary in order to make sure that no dirt will enter the engine being removed or disassembled.

NOTE: Engine removal will be easier in the case of RM125A engine if its stator is removed in advance.

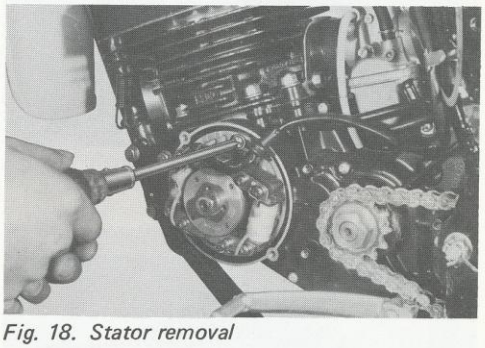


Fig. 18. Stator removal

Engine Disassembly

The entire disassembly procedure will be set forth in two parts: the first part applies to all four models; the second part is divided into two subparts, first for Model RM125A and second for Models RM100A, RM125M and RM125S. It is assumed that the engine has been removed and is set on the bench.

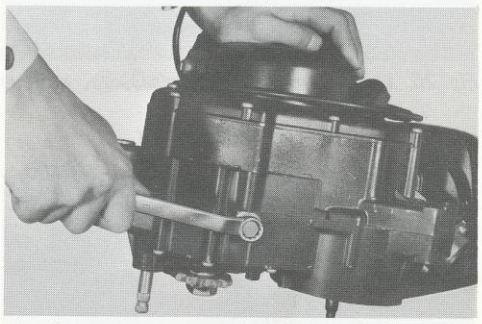


Fig. 19. Loosen oil drain plug to drain out oil.

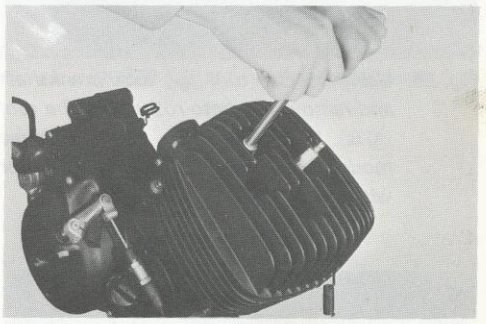


Fig. 20. Loosen cylinder head nuts sequentially and evenly, and remove the head.

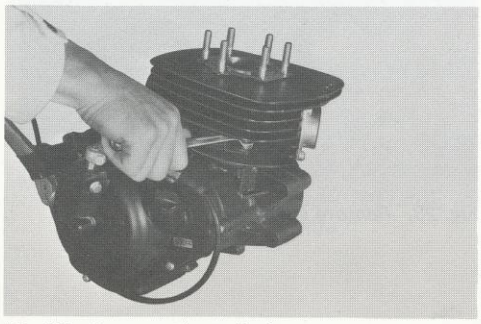


Fig. 21. Remove the cylinder.

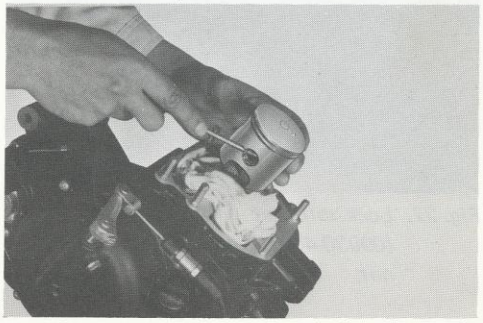


Fig. 22. Remove piston pin circlips from the piston. Use a piece of cloth as shown, in order to avoid dropping the circlips into the crankcase.

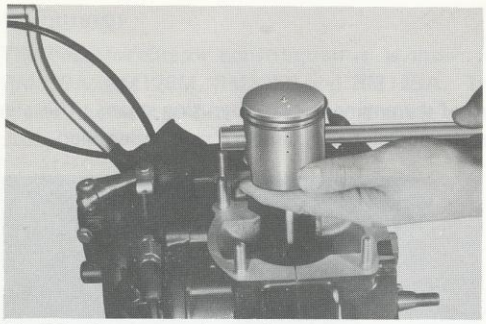


Fig. 23. Draw out piston pin.

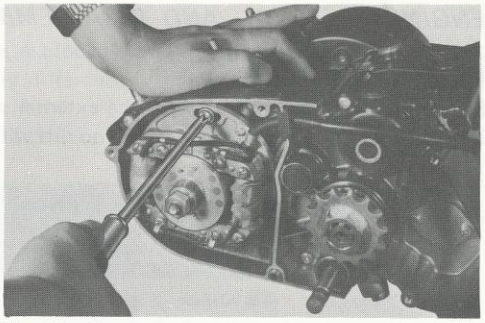


Fig. 24. Remove the stator. This applies to Models RM100A, RM125M and RM125S.

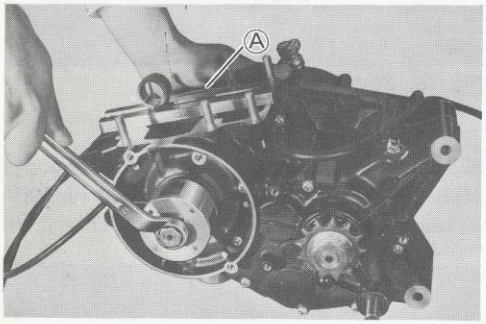


Fig. 25. Using special tool Ⓐ, lock crankshaft and remove magneto rotor nut. The tool Ⓐ is "09910-20113" for all three models other than Model RM125A, for which it is "09910-20114."

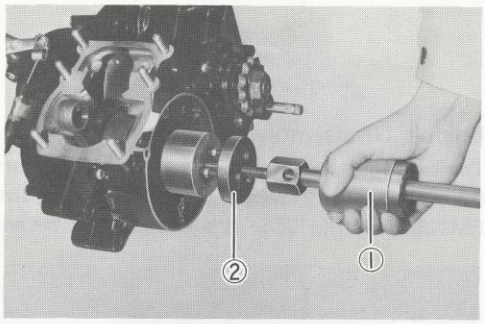


Fig. 26. Using two special tools ①②, remove magneto rotor.
Tool ①: "09930-30101"
Tool ②: "09930-30180" for RM100A, RM125M and RM125S, but "09930-30211" for RM125A

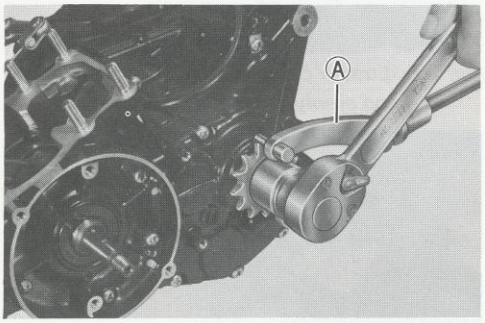


Fig. 27. Lock sprocket with special tool Ⓐ (09930-40113), and remove sprocket nut.

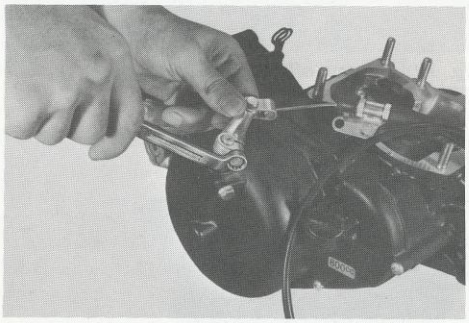


Fig. 28. Remove clutch release arm.

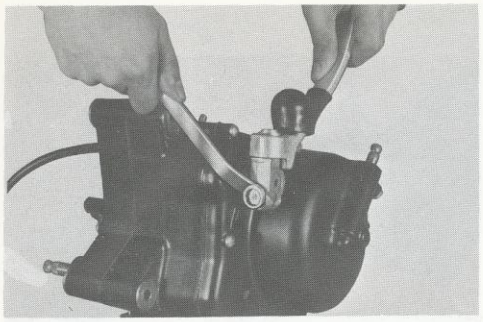


Fig. 29. Remove kick starter lever.

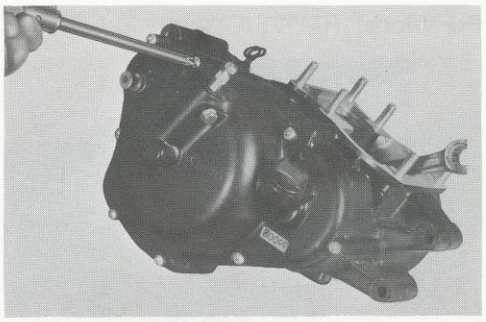


Fig. 30. Remove right-side cover.

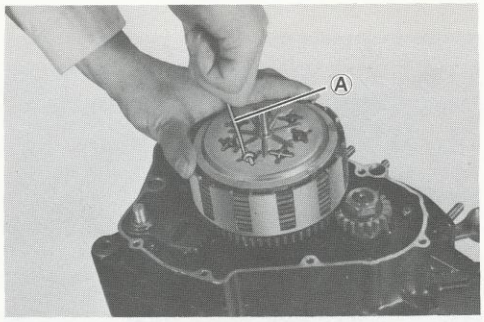


Fig. 31. Using special tool Ⓐ (09920-20310), remove clutch spring pin.

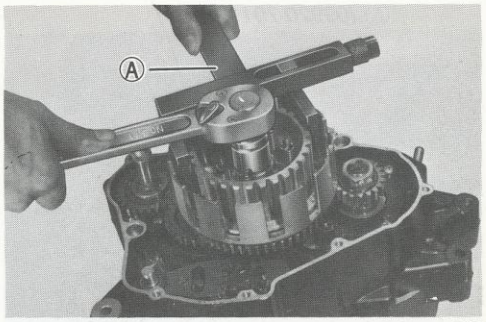


Fig. 32 Lock sleeve hub with special tool Ⓐ (09920-53710), and remove sleeve hub nut.

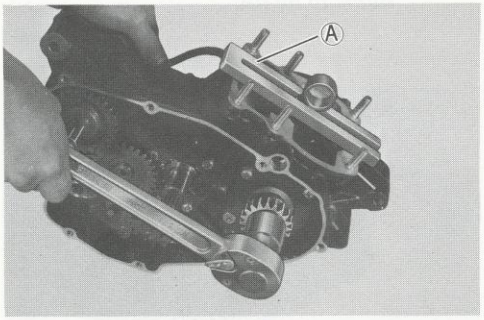


Fig. 33. Remove primary drive gear nut. The special tool Ⓐ to be used in this removal is "09910-20113" for the three models other than Model RM125A, for which it is "09910-20114."

The step of Fig. 33 completes the first part of the procedure. The remaining part differs between RM125A and the other three. The procedure for Model RM125A will be given first, following that for the other three:

For Model RM125A

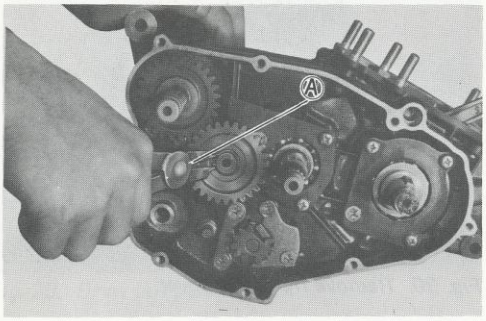


Fig. 34. Remove kick idle gear, using special tool Ⓐ (09920-70111).

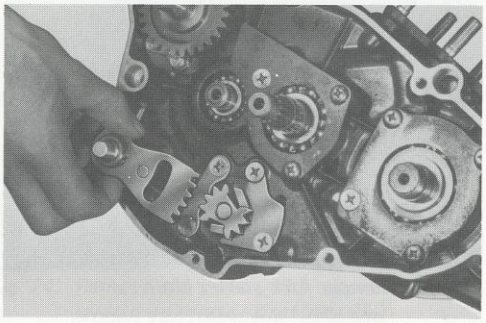


Fig. 35. Remove gearshifting shaft.

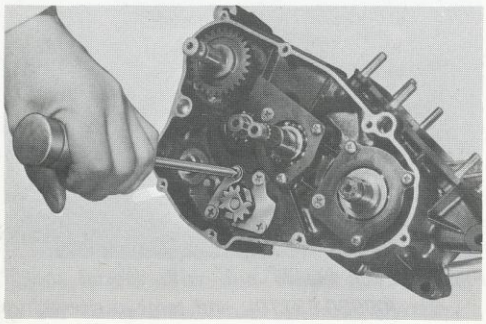


Fig. 36. Remove gearshifting cam guide.

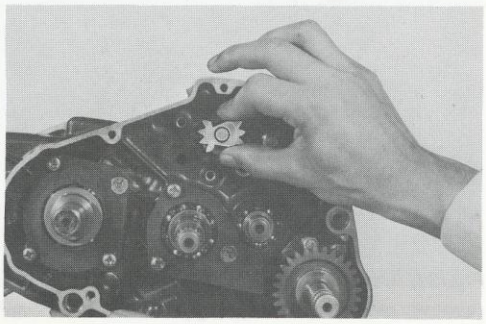


Fig. 37. Remove gearshifting cam driven gear, taking care not to allow the pin and spring to fly off.

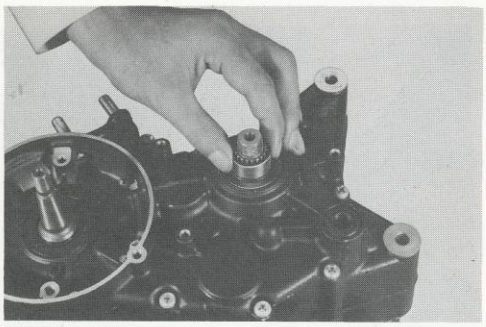


Fig. 38. Remove spacer.

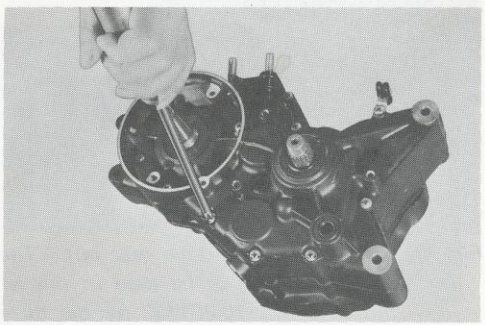


Fig. 39. Remove screws securing the crankcase.

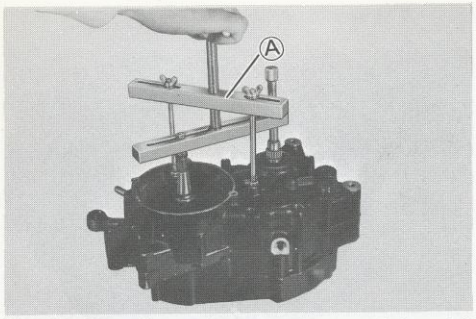


Fig. 40. Detach crankcase, using special tool Ⓐ (09910-80113).

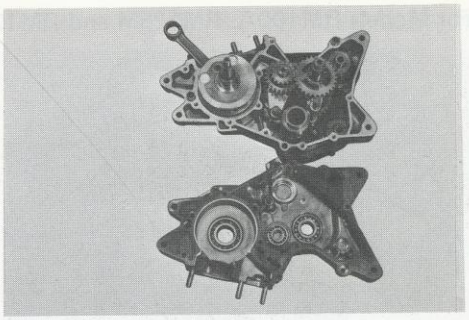


Fig. 41. Separated crankcase

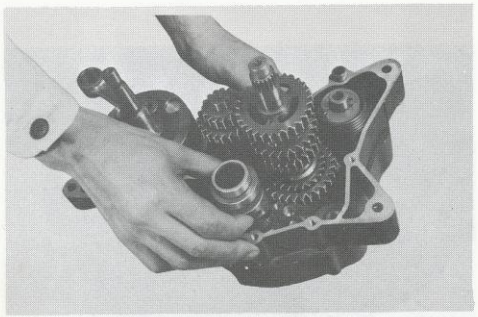


Fig. 42. Remove gearshifting cam, gear and shaft. These three come out together.

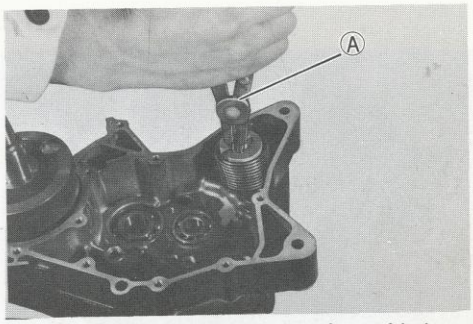


Fig. 43. Remove circlip and spring guide by using special tool Ⓐ, (09920-70111).

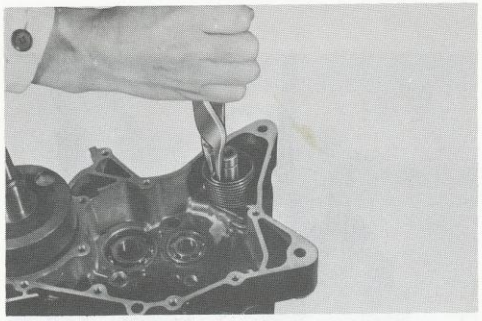


Fig. 44. Remove spring

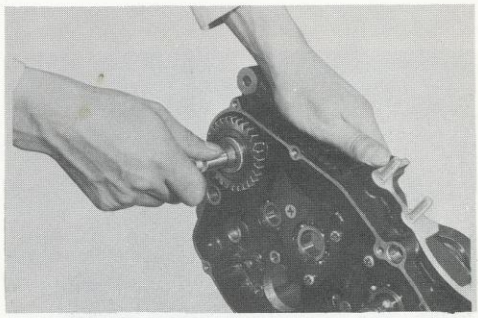


Fig. 45. Remove kick shaft.

For Models RM100A, RM125M and RM125S

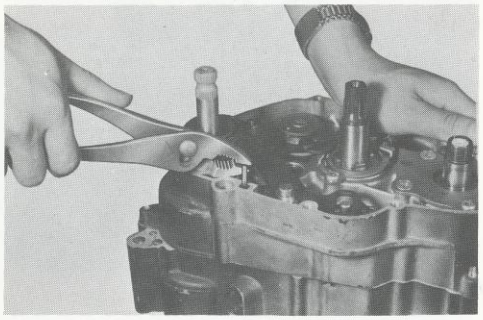


Fig. 46. Remove kick starter shaft spring.

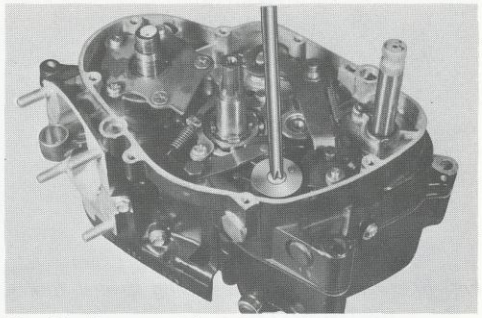


Fig. 47. Remove drive pin retainer.

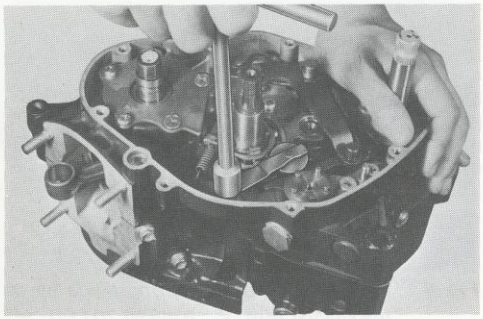


Fig. 48. Remove shifting cam No. 1 stopper.

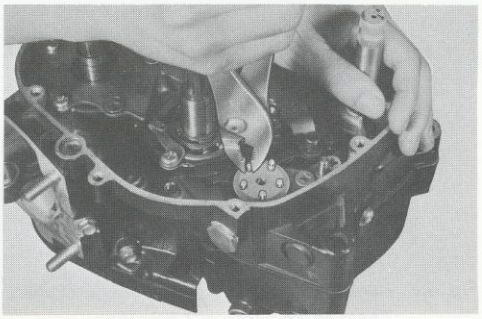


Fig. 49. Remove shifting cam pins.

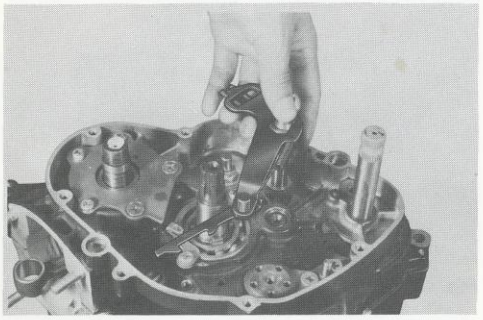


Fig. 50. Remove shifting shaft.

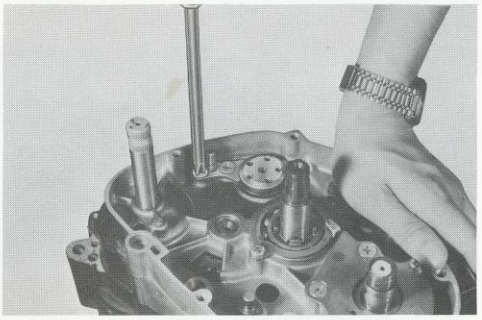


Fig. 51. Remove gearshifting cam guide and cam stopper.

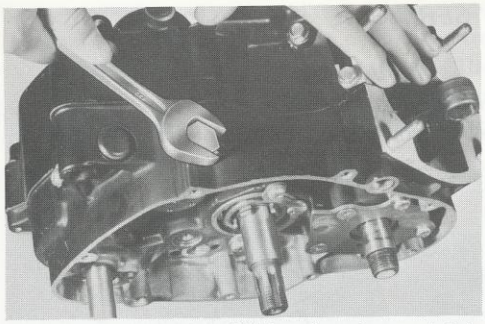


Fig. 52. Remove gearshifting housing and take out shifting cam No. 2 stopper and spring.

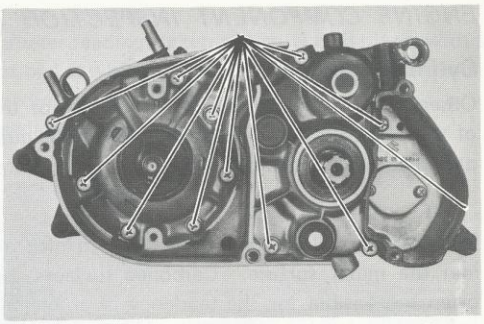


Fig. 53. Remove screws securing the crankcase.

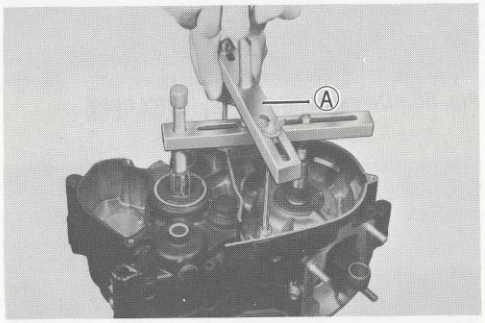


Fig. 54. Detach crankcase by using special tool Ⓐ (09910-80113).

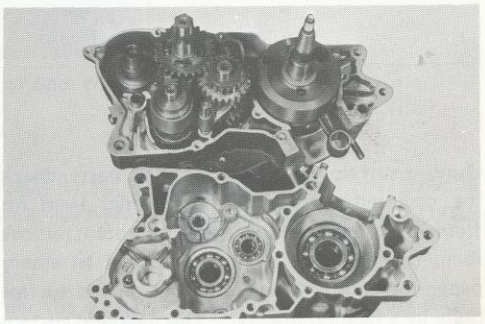


Fig. 55. Separated crankcase

ENGINE COMPONENT INSPECTION AND SERVICING

Cylinder Head

Observe the combustion-chamber surface of the removed cylinder head, noting the amount and color of the carbon deposit as data for telling the quality of fuel combustion: the idea formed by this examination about fuel combustion is one of the references necessary for carburetor adjustment.

Remove the carbon, taking care not to nick or mar the metal surface. Carboned surfaces are often responsible for the tendency of an engine to overheat or to produce less power than it ought to be capable of giving.

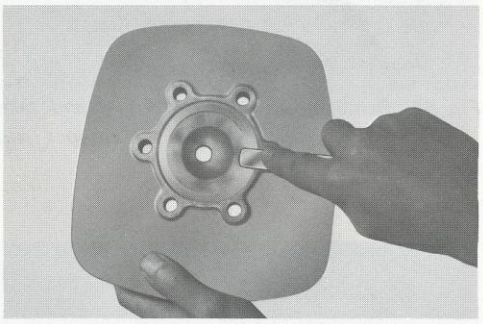


Fig. 56. De-carboning the cylinder head

Using a surface plate and red lead paste, check the gasketed surface of the cylinder head for flatness. If high and low spots are noted, remove them by rubbing the surface against an emery paper (of about #400) laid flat on the surface plate in a lapping manner. The gasketed surface must be smooth and perfectly flat in order to secure a tight joint: a leaky joint can be the cause of reduced power output and increased fuel consumption.

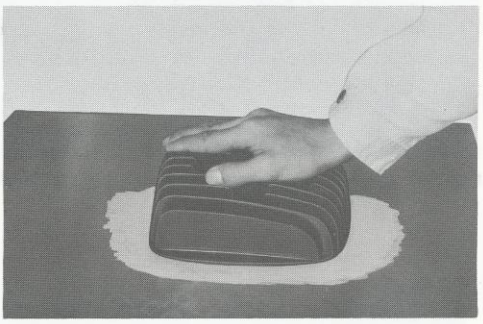


Fig. 57. Repairing warped surface of cylinder head

Cylinder

Carbon is more likely to accumulate in the exhaust port bore as shown. Such accumulations should be removed by scraping with the flat tip of a rod: a plain screwdriver may be used for this purpose.

CAUTION: When de-carboning the exhaust port as shown, be careful not to nick the cylinder wall.

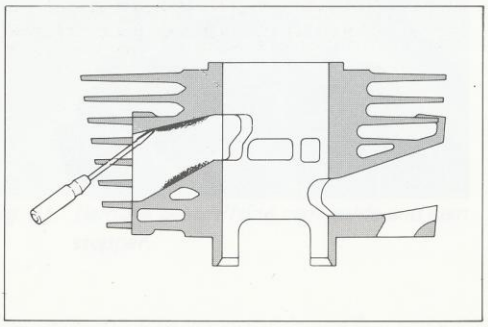


Fig. 58. De-carboning the exhaust port

Measure cylinder wall wear, and determine cylinder-to-piston clearance:
The **wear of cylinder wall** is to be determined from diameter readings taken at a total of 6 places with a cylinder gauge, as shown in Figs. 59 and 60. The elevations at which the bore is to be checked are indicated as ⓐ , ⓑ and ⓒ ; at each elevation, take readings in two directions (Fig. 60).
The **amount of wear** is the difference between largest reading and smallest reading.

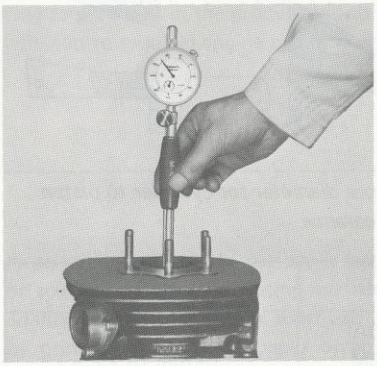


Fig. 59. Checking bore diameter for wear measurement

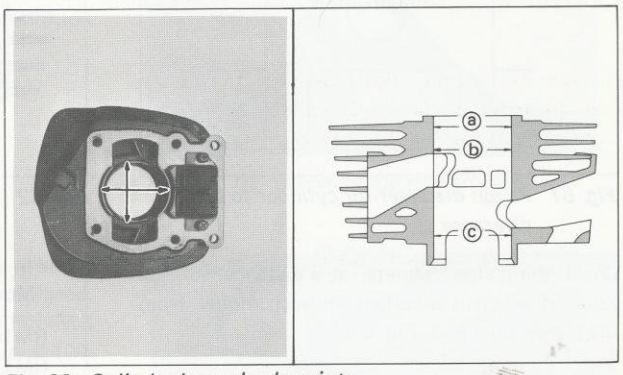


Fig. 60. Cylinder bore check points

If the amount of wear checked exceeds the limit indicated below, grind the bore to the next oversize or replace the cylinder by a new one. Oversize pistons are available in two oversizes: 0.25 mm (0.0098 in.) and 0.5 mm (0.0196 in.).

After grinding the bore to an oversize, be sure to chamfer the edges of ports and smoothen the chamfered edges with sandpaper. To chamfer, use a scraper.

Wear limit on cylinder bore:	0.1 mm (0.004 in.)

NOTE: Minor surface flaws on the cylinder wall, due to seizure or similar malconditions, can be corrected by grinding the flaws off with fine-grain sandpaper. If the flaws are deep grooves, the cylinder must be reworked with a boring machine to remove the grooves.

Cylinder-to-piston clearance is the difference between piston diameter, read at the elevation indicated in Fig. 61, and cylinder diameter, read at the elevation indicated in Fig. 62.

If the cylinder bore is to be reworked by grinding, then the amount of stock to be removed must be determined in advance on the basis of the oversize piston. Be sure that, after finishing the bore by honing, the oversize piston will provide an amount of clearance coming within the specified range indicated below.

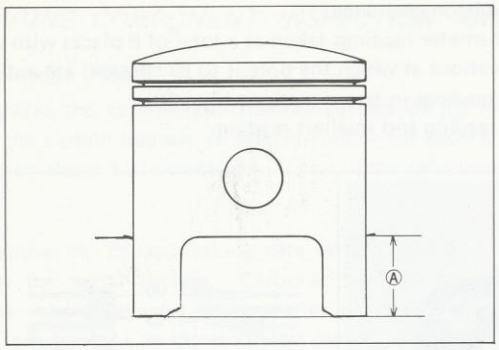


Fig. 61 Piston diameter for cylinder to piston clearance

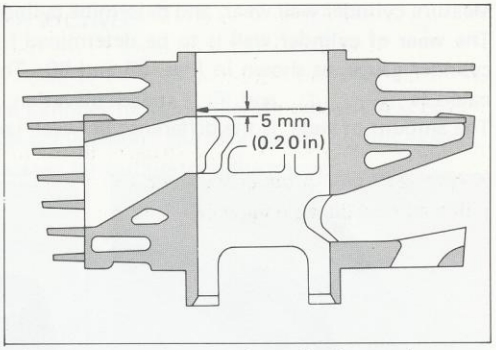


Fig. 62 Bore diameter for cylinder to piston clearance

Check the piston diameter at a distance Ⓐ, the value of which is specified for each model, from the piston skirt end, Fig. 61.

Models	Value of distance Ⓐ
RM100A RM125M RM125S	19 mm (0.75 in.)
RM125A	18 mm (0.71 in.)

Check the bore diameter at an elevation about 5 mm (0.20 in.) above the exhaust port, Fig. 62.

Models	Cylinder-to-piston clearance specification
RM100A RM125M RM125S RM125A	0.060 - 0.070 mm (0.0024 - 0.0028 in.)

Piston

Remove the carbon, if any, on the piston crown by scraping as shown in Fig. 63.

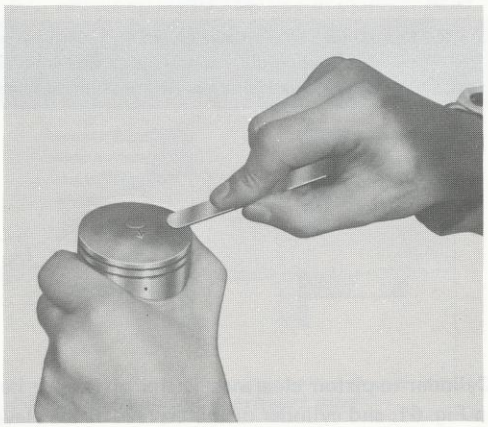


Fig. 63. De-carboning the piston crown

De-carbon the piston ring grooves, as shown in Fig. 64. After cleaning the grooves, fit the rings and rotate them in respective grooves to be sure that they move smoothly.

Carbon in the groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.

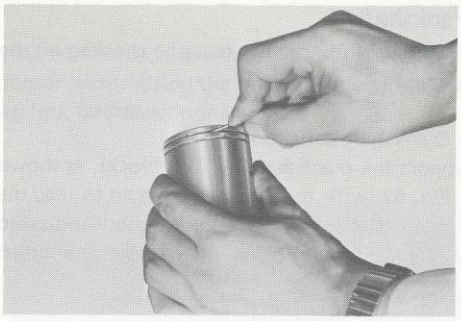


Fig. 64. De-carboning the ring grooves

A piston whose sliding surface is badly grooved or scuffed due to overheating must be replaced. Shallow grooves or minor scuff can be removed by grinding with emery paper of about #400.

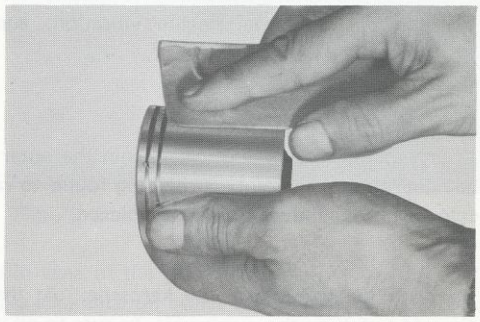


Fig. 65. Smoothing the sliding surface with emery paper

Piston Rings

Check each ring for end gap, reading the gap with a thickness gauge, as shown in Fig. 66. If the end gap is found to exceed the limit, indicated below, replace it by a new one.

The end gap of each ring is to be measured with the ring fitted squarely into the cylinder bore and held at the **least worn part near cylinder top,** as shown in Fig. 66.

As the piston ring wears, its end gap increases to reduce engine power output because of the resultant **blowby** through the enlarged gap. Here lies the importance of using piston rings whose gaps are within the limit.

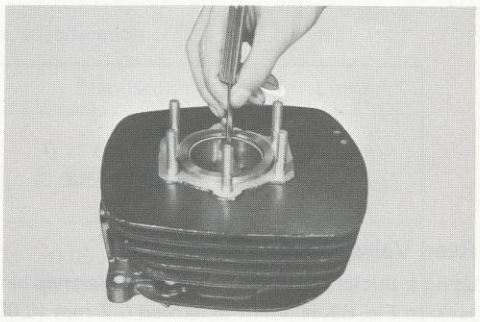


Fig. 66. Measuring the end gap

Piston ring end gap specification

Models	Standard	Limit
RM100A RM125M	0.15 - 0.35 mm (0.006 - 0.013 in.)	0.8 mm (0.032 in.)
RM125S	1.40 - 1.70 mm (0.055 - 0.067 in.)	2.15 mm (0.085 in.)
RM125A	0.15 - 0.35 mm (0.006 - 0.013 in.)	0.8 mm (0.032 in.)

Crankshaft

Two things in particular must be checked on the crankshaft: 1) shaft deflection and 2) condition of ball bearings.

1) Crankshaft deflection

Support the crankshaft by "V" blocks, as shown in Fig. 67, with the dial gauge rigged to read the runout. Deflection is half the runout indicated by the gauge and must not exceed the limit:

Crankshaft deflection limit : 0.05 mm (0.002 in.)

Excessive crankshaft deflection is usually responsible for abnormal engine vibration, and shortens engine life.

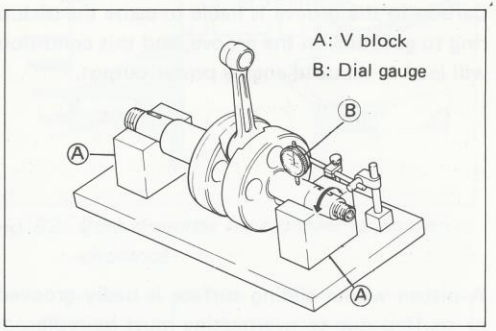


Fig. 67. Checking the crankshaft for deflection

2) Crankshaft ball bearings

After washing the bearings clean, spin the outer race of each bearing to see if it rotates smoothly, without any abnormal noise. A bearing found to rattle, groan or give any abnormal noise or to present a color signifying burning must be replaced.

To wash the crankshaft, use kerosene. At the time of installing the crankshaft, be sure to oil it with the prescribed lubricant.

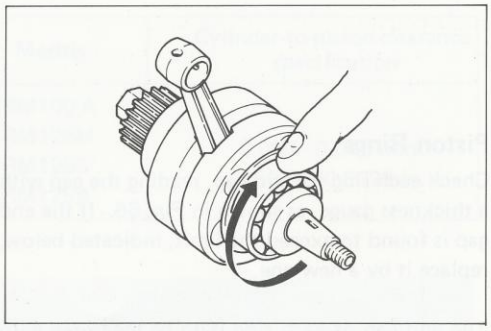


Fig. 68. Bearing inspection

Reed Valve (Model RM125A)

Using a thickness gauge, check the clearance between reed valve and its seat. If this clearance, indicated as ③ in Fig. 69, is noted to exceed 0.2 mm (0.008 in.), replace the whole reed valve assembly.

In the supply of replacement parts, the reed valve assembly is a basic unit: its individual parts are **not** supplies. Of course, the assembly in place, as shown in Fig. 69, may be disassembled for servicing and, if it has to be disassembled, these two rules must be adhered to in reassembling:

(1) Tighten the screws ① to a torque of anywhere between 7 and 9 kg-cm (0.50 - 0.65 lb-ft), with LOCK CEMENT (99000-32040) applied to screw threads.

(2) Check to be sure that the dimension ②, Fig. 69, is at least 1 mm (0.04in.).

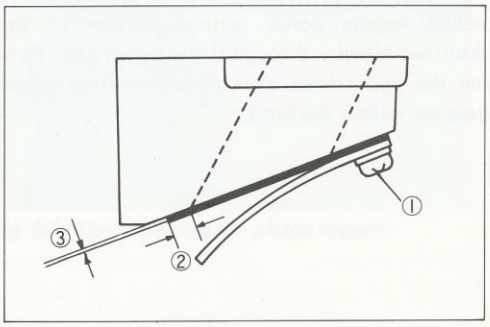


Fig. 69. Reed valve inspection

Transmission

Immediately upon disassembling the engine, inspect the transmission internals, visually examining the gears for damage and checking the meshed condition of gear teeth. Using the thickness gauge Ⓐ (special tool 09900-20804), shown in Fig. 70, check the shifting fork clearance in the groove.

There are three forks to be checked in Model RM125A, two in Models RM125M and RM125S, and one in Model RM100A, for which the clearance specifications are listed below. If the clearance reading taken exceeds the limit, then the shifting fork or its gear, or both, must be replaced to reduce the clearance to the standard value.

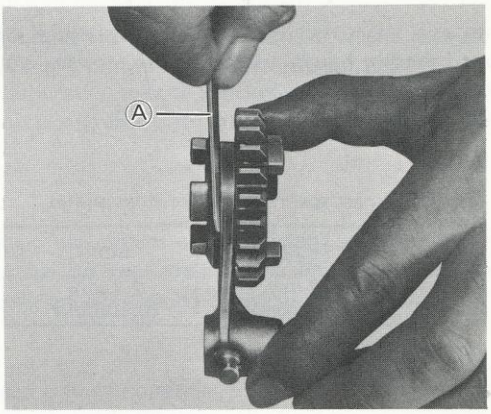


Fig. 70 Shifting fork clearance

The importance of this clearance must be appreciated in view of the gearshifting action. The fork is in sliding contact with the gear in its groove, there being a clearance on either side of the fork; the clearance may be regarded as a sort of play of the fork in shifting (axial) direction. If this play is too large, the fork may not shift the gear all the way and, consequently, the shifted gear may slip out of mesh.

Shifting fork clearance, specification

Model	Fork and gear	Standard	Limit
RM100A RM125M RM125S	3rd drive gear & fork 4th driven gear & fork 5th driven gear & fork	0.2 - 0.4 mm (0.008 - 0.016 in.)	0.6 mm (0.024 in.)
RM125A	3rd drive gear & fork 5th driven gear & fork 6th driven gear & fork	0.05 - 0.25 mm (0.002 - 0.010 in.)	0.45 mm (0.018 in.)

Clutch

1) Drive plates and driven plates

The clutch plates remain in oily condition in the clutch as if they were lubricated with oil. Because of this condition, both drive plates and driven plates are subject to but little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the clutch is operated.

At each engine overhaul, the clutch plates should be taken out and checked for thickness, as shown in Fig. 71, and for distortion, as shown in Fig. 72. Replace them if they are found to exceed the limit on warpage or on thickness.

Thickness specification for drive plates

	Standard	Limit
All models	3 mm (0.118 in.)	2.7 mm (0.106 in.)

Thickness and warpage specifications for driven plates

	Item	Standard	Limit
All models	Thickness	1.6 mm (0.063 in.)	1.5 mm (0.059 in.)
	Warpage	Under 0.1 mm (0.004 in.)	0.1 mm (0.004 in.)

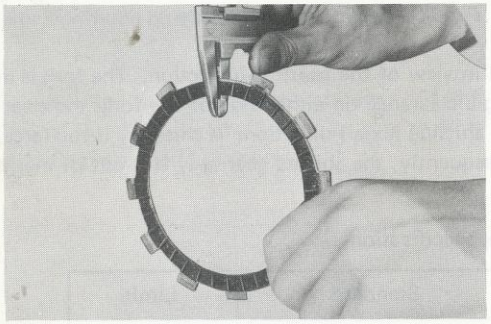


Fig. 71. Checking clutch plate for thickness

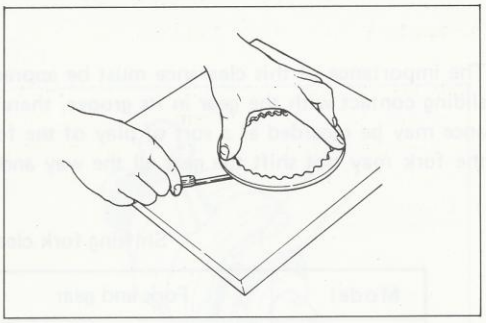


Fig. 72. Checking driven plate for warpage

2) Clutch release bearing

This bearing is thrust type; it should be inspected for breakage upon removing it from the clutch. Smooth engagement and disengagement of the clutch pressupposes that this clutch is in good condition.

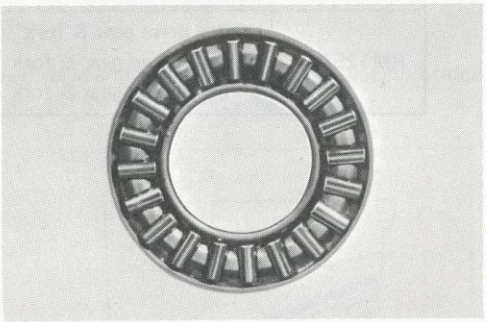


Fig. 73. Thrust-type clutch release bearing

Carburetor

1) Carburetion check

Is the carburetor properly adjusted, set and adapted to provide a right jetting for giving the carburetion performance that the engine demands? This question must be answered by operating the engine with a reference spark plug and by estimating the quality of carburetion from the appearance of internal surfaces forming the combustion chamber, particularly of the reference plug.

For the reference plug, the standard spark plug (NGK B-9EV) is prescribed. If, after a test run conducted just before participating in the competition, the surfaces in question are found **carboned and looking "wet"** or **colored to tell excessive heating,** the carburetion may be concluded to be too rich (producing richer mixture) or too lean (producing leaner mixture), repectively, in that order. In either case, the remedy is to modify the carburetor jetting.

2) Carburetion adjustments

Steps involved in modifying the jetting are for changing the pattern of carburetion, and are effected principally by means of main jet and jet needle. These steps, however, are effective only when float level is set right and the overflow pipe, inlet hose and air cleaner are all in good condition.

a) Float level adjustment

Balanced carburetion at different levels of engine speed is highly essential for satisfactory engine performance; this balance is assured by the float set at a proper level. Whenever the float is replaced or the carburetor jetting is to be modified, be sure to check float level as follows:

Hold the removed carburetor body in inverted position, taking care not to allow the float arm pin to come off. Raise the float arm with a fingertip and lower it gradually until it touches the needle valve. Measure the distance Ⓐ, **Fig. 74** or **75,** with a caliper: this distance must be equal to the specified "float height" indicated below; if not, bend the tongue to increase or decrease the distance to the specification.

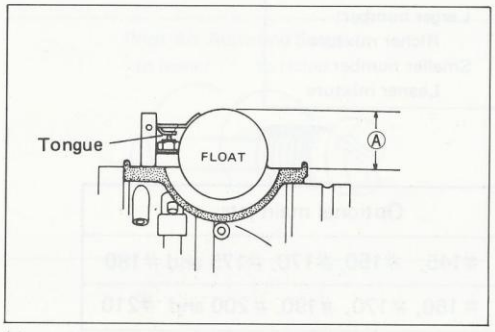


Fig. 74. Float level adjustment (RM100A, RM125M and RM125A)

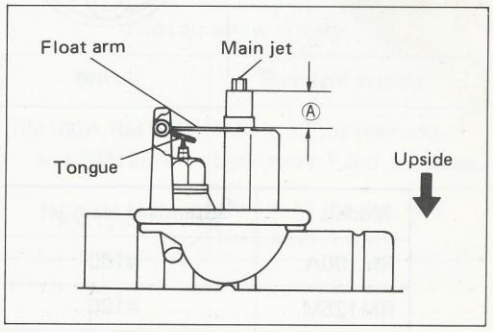


Fig. 75. Float level adjustment (RM125S)

Float height specification

Models	Float height Ⓐ
RM100A, RM125M	25 mm (0.98 in.)
RM125S	9.1 mm (0.36 in.)
RM125A	31.8 mm (1.25 in)

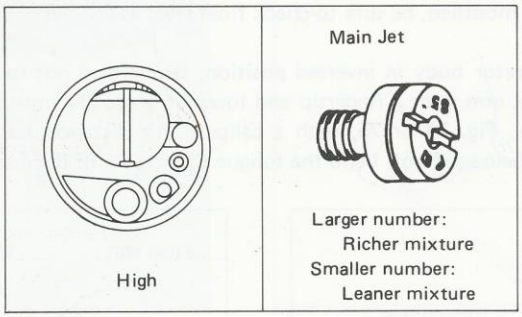
b) Overflow pipe
Check to be sure that the overflow pipe is clear, free of any sign of clogging with dirt.

c) Inlet hose and air cleaner
Inspect the inlet hose for evidence of rupture or cracking. Check to be sure that the element in the air cleaner is in good condition, that is, clean and having no fissures.

d) Main jet selection
The main jet becomes effective in controlling the rate of fuel supply for carburetion when the throttle grip is turned to more than a three-quarters (3/4) open position. To determine whether the existing main jet is just right for the race, drive the machine at three-quarters to full throttle along the racing course for a distance of about 10 km (6 miles) and then open the engine to visually examine the colors of the combustion chamber surfaces (cylinder head and piston crown) and spark plug.

If the surfaces are dark with more or less carbon, presenting a "wet" appearance, it means that the mixture is too rich and that the existing main jet should be replaced by another of a smaller number. On the other hand, if the surfaces are grayish-white to imply excessive heating, it means that the mixture is too lean and the existing main jet be replaced by another of a larger number.

For the purpose of main jet selection, five optional jets are available as shown in this chart:



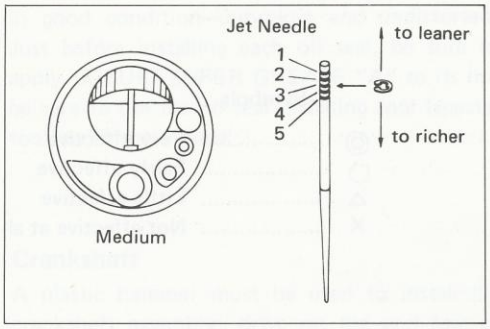
Models	Standard main jet	Optional main jets
RM100A	#160	#145, #150, #170, #175 and #180
RM125M	#180	#160, #170, #190, #200 and #210
RM125S RM125A	#280	#260, #270, #290, #300 and #320

e) Jet needle setting

The rate of fuel supply for carburetion in the interval between one-quarter throttle to three-quarters throttle (1/4 to 3/4) is controlled by the jet needle.

This needle has five notches for selective setting; it is to be set in place by means of a clip fitted to one of these notches. To determine whether the current setting is proper, drive the machine at one-quarter to three-quarters throttle along the racing course for a distance of about 10 km (6 miles) and open the engine to visually examine the colors mentioned above.

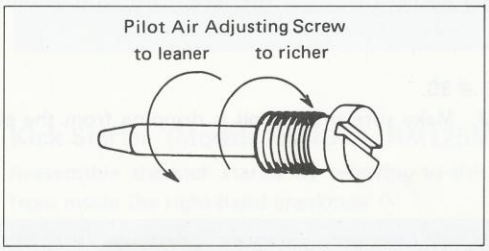
To meke the mixture lean, relocate the clipped position of the needle to a notch closer to the first one; for a rich mixture, clip the needle at a notch closer to the last or fifth one.



Standard jet needle setting

Models	Clipped notch
RM100A	4th notch
RM125M RM125S RM125A	3rd notch

Changing the setting of the jet needle, as above, slightly affects the mixture for the throttle range of up to one quarter (1/4). The pilot air screw is a means of compensating this zero-to-1/4 throttle range for the effect of this change: turning the screw clockwise enriches the mixture for that range, and vice versa.



Pilot air screw setting

Models	Standard setting
RM100A, RM125M and RM125A	Run in all the way and back away 1 and 1/2 turns.
RM125S	Run in all the way and back away 1 turn.

3) Matching the carburetor jetting to the race

With the main jet selected as explained above, the jet needle set according to the above-mentioned method and the pilot air screw properly positioned, the carburetor may be expected to have its jetting adapted to the race. In order to be sure that this is so, it is necessary to drive along the racing course several laps and to re-check the combustion chamber in the manner already described.

While testing the racing course by actually driving the machine, see which throttle grip position is more frequently or continuously used and adapt the three—main jet, jet needle and pilot air screw—to that throttle grip position.

How these three elements show their effectiveness for the entire throttle range is summarized in this quick-reference chart:

Jetting guide for racing

Element	Throttle grip position			
	1/4	1/2	3/4	4/4
Main jet	X	△	○	◎
Jet needle	○	◎	○	△
Pilot air screw	◎	○	△	X

Symbols

◎ ..... Very effective
○ ..... Fairly effective
△ ..... Little effective
X ..... Not effective at all

Air Cleaner Element

Upon taking the element out of the air cleaner, inspect it for evidence of fissure or breakage and replace it as necessary. To clean the element, proceed as follows:

- Prepare a pan or receptacle large enough to wash the element in. Fill the receptacle with gasoline, immerse the element in it and wash it clean.
- Squeeze the gasoline off, and dry the element.
- Dip the dried element into a pool of motor oil of SAE #30.
- Squeeze the oil off, making the element wet with oil. Make sure that no oil is dripping from the element. Install the wet element in the air cleaner.

CAUTION: Do not wring the element as in wringing a wet hand towel with both hands, or the element may fail and develop fissures. Press the elements between the palms of both hands to squeeze the liquid off.

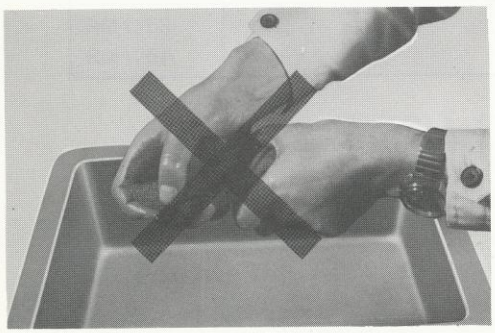


Fig. 76. Wrong squeezing

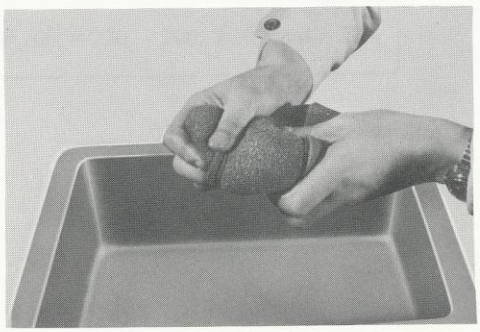


Fig. 77. Correct squeezing

REASSEMBLY

Reassembly is generally reverse of disassembly, but there are a number of reassembling steps that demand or deserve detailed explanation or emphasis. These steps will be hereunder taken up for respective parts and components of the engine.

Oil Seals

It is a wise practice to discard all oil seals removed in engine disassembly and use new oil seals in reassembly: economy gained by re-using the oil seals is imaginary in most cases.

If oil seals removed in disassembly have to be re-used, then make sure that their lip portions are in good condition—unbroken and undistorted. Just before installing each oil seal, be sure to apply SUZUKI SUPER GREASE "A" to its lip; be sure to use the oil seal installing tool (special tool) to fit the oil seal.

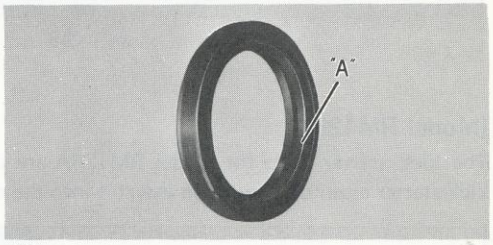


Fig. 78. Oil seal

Crankshaft

A plastic hammer must be used to install the crankshaft assembly: drive on the end face of crankshaft with the plastic hammer, giving light blows to the face, to force the assembly into the right-hand crankcase.

NOTE: Neither shim nor washer is needed between crank journal bearing and flywheel at this time.

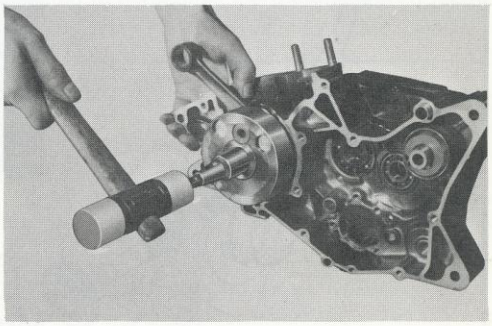
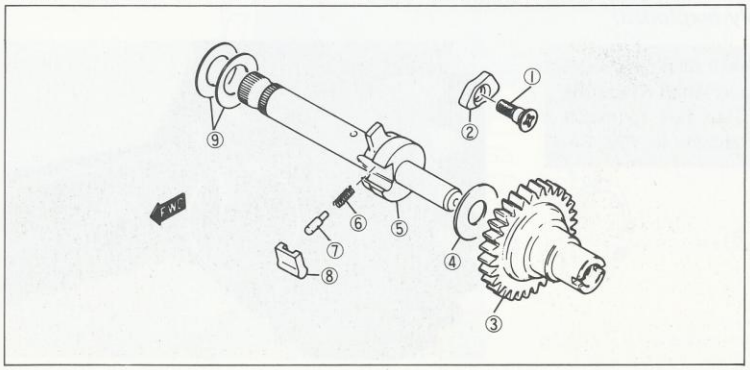


Fig. 79. Crankshaft installation

Kick Starter (Models RM100A, RM125M and RM125S)

Reassemble the kick starter by referring to this exploded view, and install the assembly by inserting it from inside the right-hand crankcase.

NOTE: Just before installing the kick starter assembly, be sure to apply THREAD LOCK CEMENT (99000-32040) to the threads of kick starter pawl lifter screw.



1. Screw
2. Pawl rifter
3. Kick starter drive gear
4. Washer
5. Kick starter shaft
6. Spring
7. Pin
8. Kick starter pawl
9. Washer

Fig. 80. Kick starter assembly (exploded)

After inserting the kick starter into the crankcase, set the starter shaft return spring in place by proceeding as follows: Turn kick starter shaft clockwise as far as it will turn, hitch the end of return spring to the hole provided in the starter shaft, and bring the extended end of the spring to the position, shown in Fig. 81, on the crankcase.

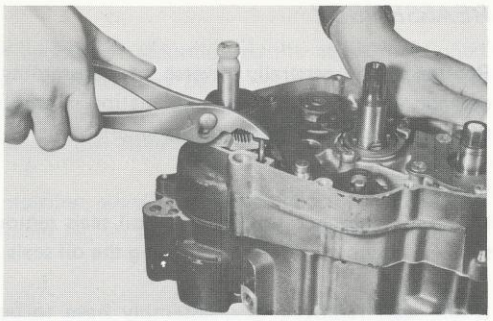
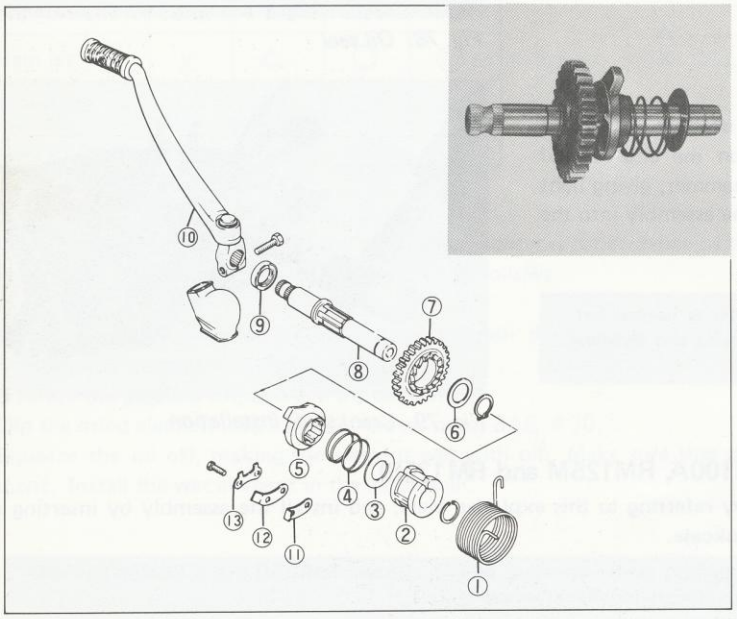


Fig. 81. Return spring setting

(Model RM125A)

The kick starter parts for Model RM125A are shown in Fig. 82. Combine all these parts to form the kick starter assembly, and then insert it into the crankcase from outside.



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

Fig. 82. Kick starter assembly (exploded)

NOTE: The starter has a punch mark; the shaft too has a punch mark. When fitting the starter to the shaft, be sure to match the two marks as shown in Fig. 83.

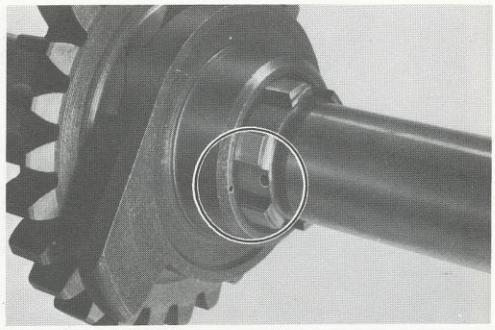


Fig. 83. Punched marks on starter and shaft

After positioning the kick starter assembly in place, the return spring is to be set by proceeding as follows: Hitch the inner end (in the sense of view given in Fig. 84) of return spring to the stopper on crankcase; turn the shaft counter-clockwise (Fig. 84) as far as it will turn; turn the spring about 180 deg. clockwise; insert the other end of return spring into the hole provided in the shaft; fit the spring guide and lock it by inserting the circlip.

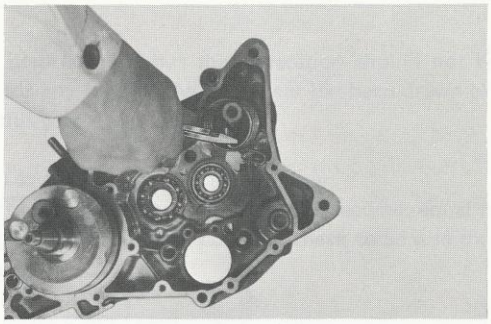


Fig. 84. Return spring setting

Transmission

1) Reassembling sequence

The transmission internals are so many that some graphic reference is needed as a guide for ensuring the mounting of gears, washers, circlips and others on the shafts in correct sequence. This need is met by the cross sectional view, given below: consult the cross section to reassemble the transmission correctly.

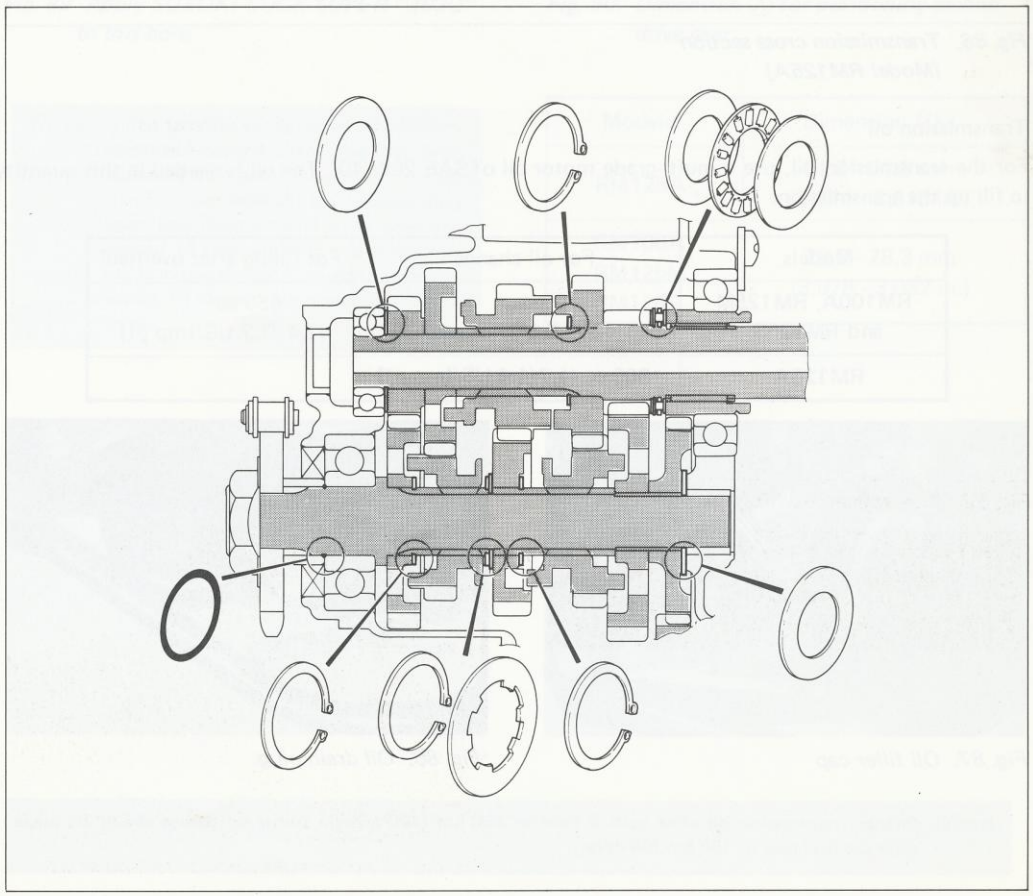


Fig. 85. Transmission cross section (Models RM100A, RM125M and RM125S)

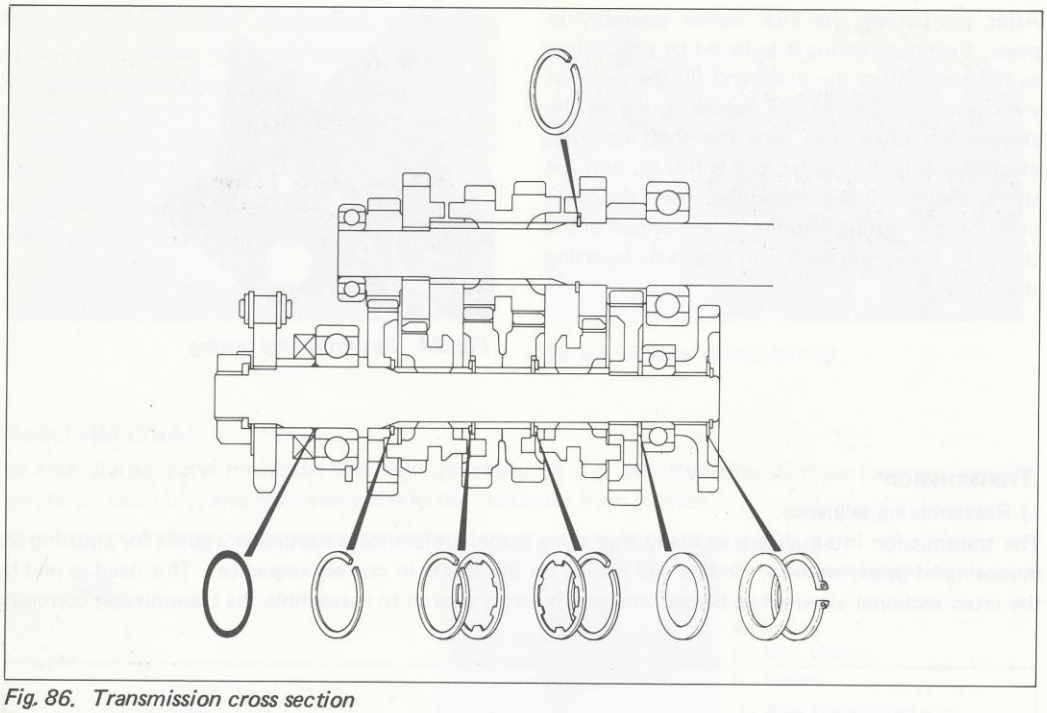


Fig. 86. Transmission cross section (Model RM125A)

Transmission oil

For the transmission oil, use a multi-grade motor oil of SAE 20W/40. The oil is needed in this quantity to fill up the transmission:

Models	For oil change	For filling after overhaul
RM100A, RM125M and RM125S	500 cc (1.2/1.0 US/Imp pt)	650 cc (1.4 /1.2 US/Imp pt)
RM125A	800 cc (1.7/1.4 US/Imp pt)	

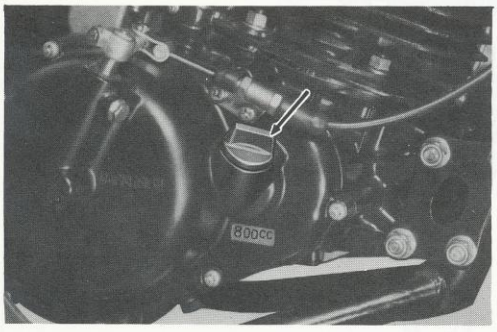


Fig. 87. Oil filler cap

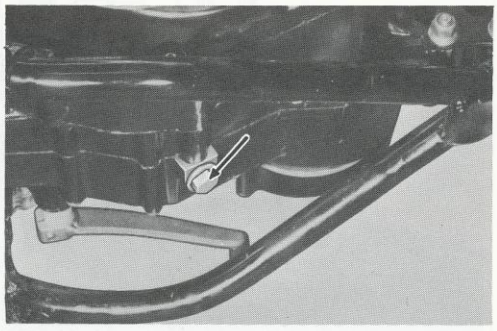


Fig. 88. Oil drain plug

NOTE: Change transmission oil after each 2 races or 200 km (120 miles). Initial oil change should be made after the first race or 100 km (60 miles).

Transmission Gear

It is permissible to remove **second drive gear** from **countershaft,** but this separation should not be attempted in engine disassembly unless necessary. If, for any reason, the drive gear has been drawn off the shaft, the following steps must be taken to mount this gear on countershaft:

Apply SUZUKI LOCK SUPER "103Q" (99000-32030) to the bore of second drive gear.
Press the gear onto the shaft until it comes to the position at which the dimension Ⓐ becomes equal to the value (specified for respective models). After bringing the gear to this position, check to be sure that the gear next to this gear is capable of smooth rotation.

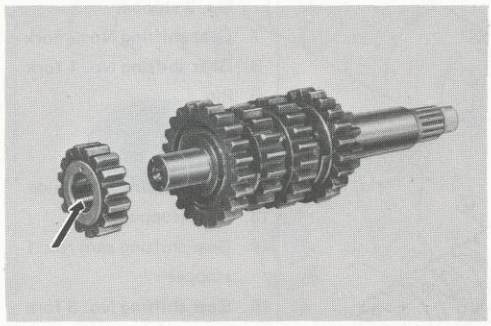


Fig. 89 Apply SUZUKI LOCK SUPER "103Q" to this bore.

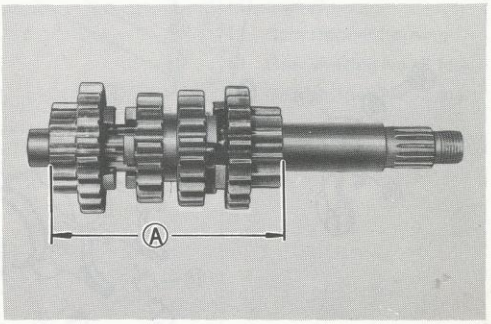


Fig. 90. Dimension Ⓐ for positioning second drive gear

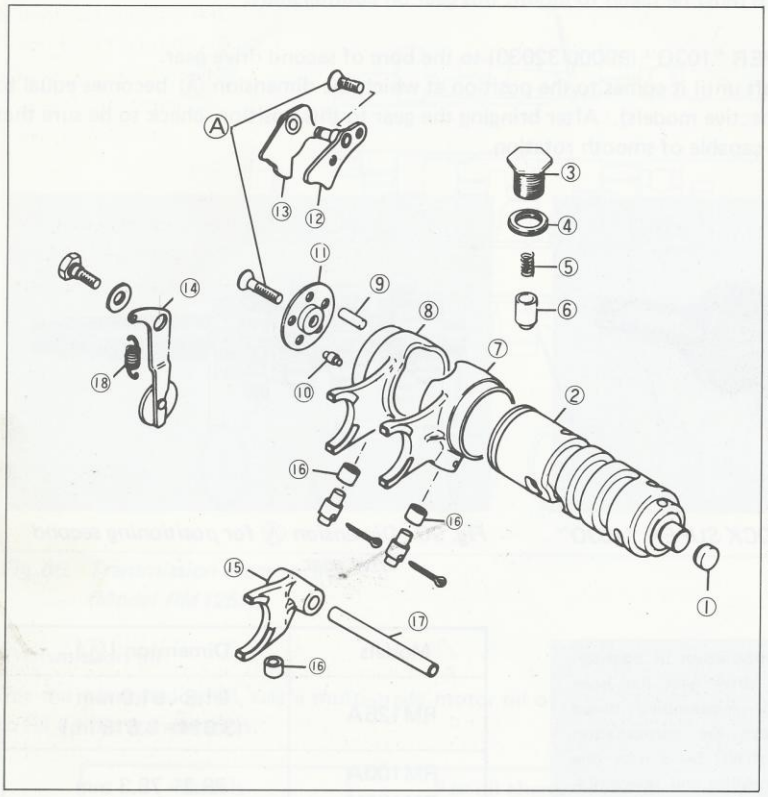
NOTE: If the existing combination of countershaft and second drive gear has been disassembled and reassembled three times, then replace the combination (gear and countershaft) by a new one instead of disassembling and reassembling it in an attempt to re-use it. In other words, its disassembly is permitted three times.

Models	Dimension (Ⓐ)
RM125A	91.8 - 91.9 mm (3.614 - 3.618 in.)
RM100A RM125M RM125S	78.2 - 78.3 mm (3.078 - 3.082 in.)

Gearshifting Mechanism

Reassembly

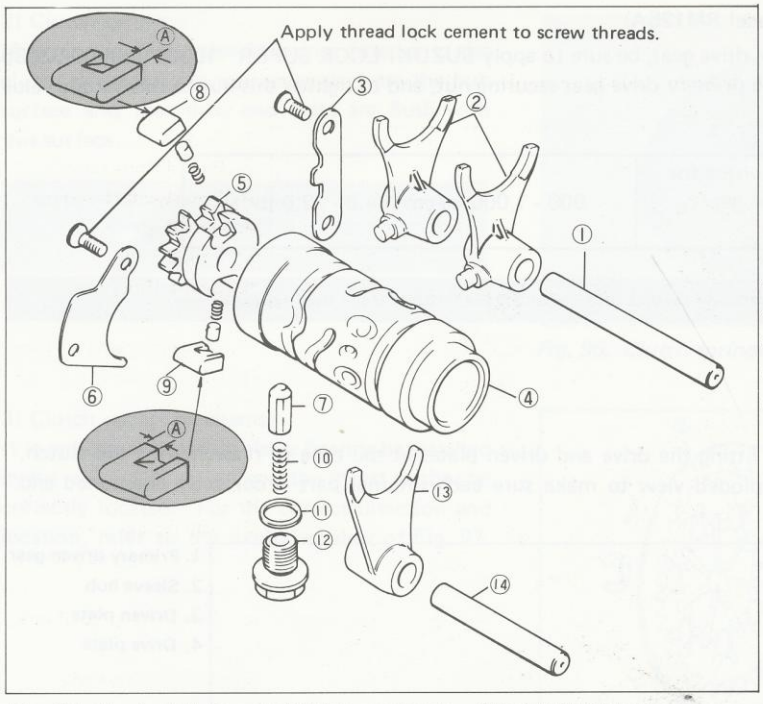
Refer to the following exploded view when reassembling the shifting mechanism:



1. Plug
2. Gear shifting cam
3. Cam stopper housing
4. Gasket
5. Spring
6. Gear shifting cam No. 2 stopper
7. Gear shifting No. 2 fork
8. Gear shifting No. 1 fork
9. Pin
10. Pin
11. Drive pin retainer
12. Gear shifting cam guide
13. Cam stopper pawl
14. Gear shifting cam No. 1 stopper
15. Gear shifting No. 3 fork
16. Roller
17. Gear shifting shaft
18. Spring

Fig. 91. Exploded view of shifting mechanism (Models RM100A, RM125M and RM125S)

NOTE: Be sure to apply THREAD LOCK CEMENT to the threads of screws Ⓐ .



1. Gear shifting No. 1 shaft
2. Gear shifting No. 1 fork
3. Gear shifting cam guide
4. Gear shifting cam
5. Gear shifting cam driven gear
6. Gear shifting pawl rifter
7. Gear shifting cam stopper
8. Gear shifting No. 2 pawl
9. Gear shifting No. 1 pawl
10. Spring
11. Gasket
12. Cam stopper housing
13. Gear shifting No. 2 fork
14. Gear shifting No. 2 shaft

Fig. 92. Exploded view of shifting mechanism (Model RM125A)

NOTES: 1) Two pawls ⑧ ⑨ are not identical. Position each pawl in place in such a way that the wider side Ⓐ comes on outer side.
2) After reassembling, with gearshifting shafts properly fitted, install the mechanism tentatively and check to be sure that it is capable of smooth shifting action.

Gearshifting Shafts (Model RM125A)

When securing the gearshifting shafts to the crankcase at the time of installing the shifting mechanism, be sure to center gearshifting cam gear ① to gear ②. The cam gear has more teeth on one side than on the other: mesh the wider side (with more teeth) with the shifting gear, aligning the two center lines. Satisfactory gearshifting operation presumes that the two ① ② are positioned in this manner in reassembly.

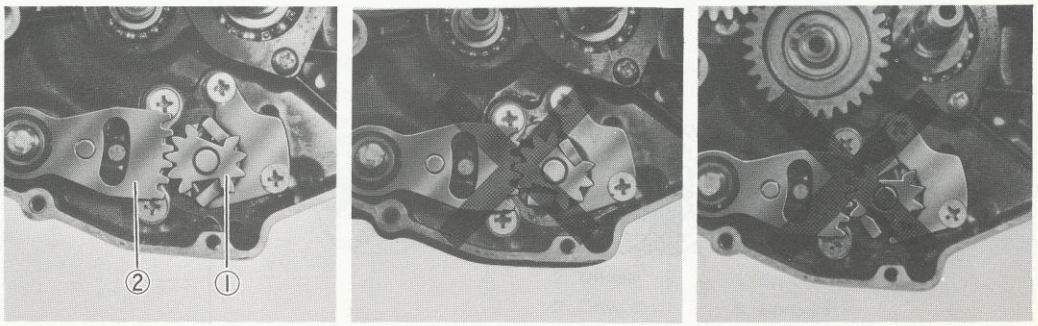


Fig. 93. Positioning the gearshifting shaft

Primary Drive Gear (Model RM125A)

When installing the primary drive gear, be sure to apply SUZUKI LOCK SUPER "103Q" (99000-32030) lightly to the threads of the primary drive gear securing nut, and to tighten this nut to this torque value:

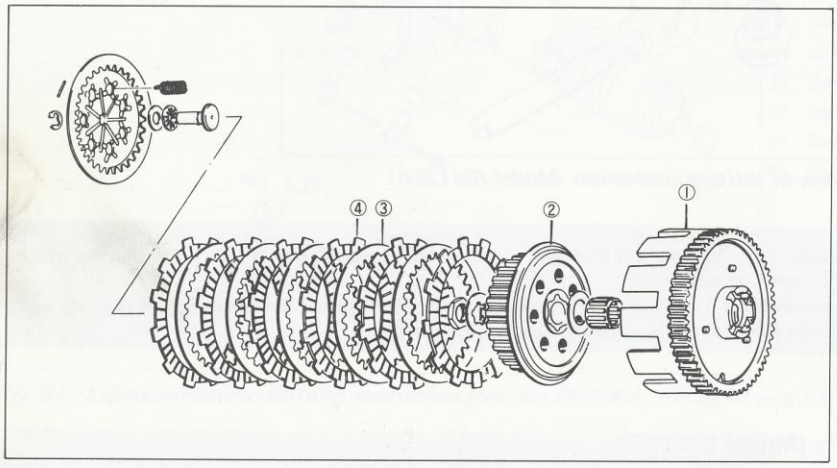
Tightening torque for primary drive gear securing nut	900 - 1,000 kg-cm (64.8 - 72.0 lb-ft)

NOTE: After tightening the nut fully, wipe off the "103Q" dope that has cozed out.

Clutch

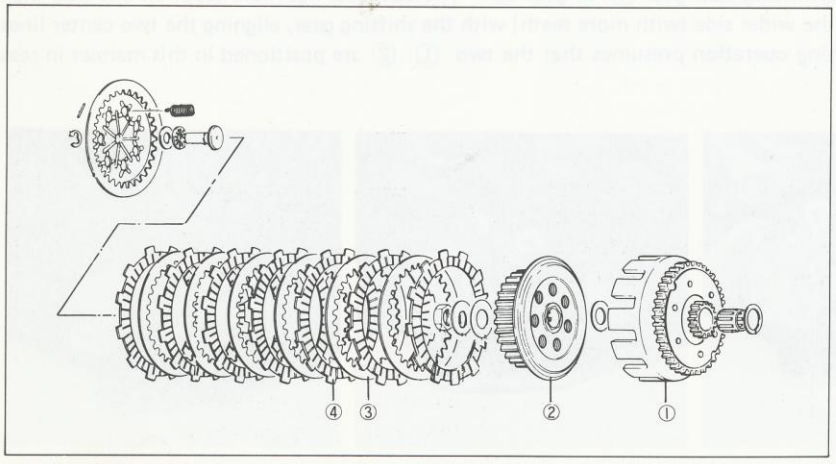
1) Reassembly sequence

Care must be exercised in fitting the drive and driven plates at the time of reassembling the clutch. Refer to the following exploded view to make sure each internal part is correctly positioned and located:



1. Primary driven gear
2. Sleeve hub
3. Driven plate
4. Drive plate

Fig. 94. Exploded view of clutch (Models RM100A, RM125M & RM125S)



1. Primary driven gear
2. Sleeve hub
3. Driven plate
4. Drive plate

Fig. 95. Exploded view of clutch (Model RM125A)

2) Clutch springs
Make sure that the clutch springs fitted into the clutch sleeve hub do not protrude from the hub surface and that their end faces are flush with this surface.

NOTE: The spring Ⓐ shown in Fig. 96 illustrates the case of a spring protruding from the surface.

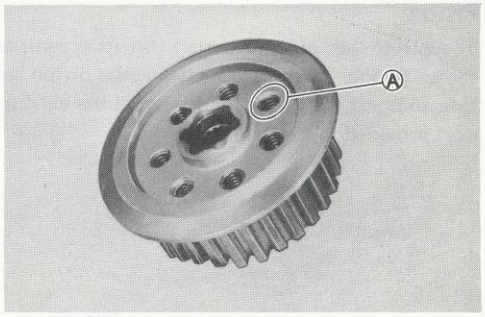


Fig. 96. Clutch springs in the hub

3) Clutch release mechanism
It is important that the release bearing be installed in the correct direction and the thrust washer be correctly located. For the correct direction and location, refer to the exploded view of Fig. 97.

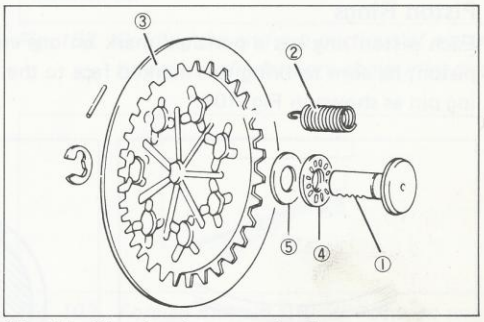


Fig. 97. Clutch release mechanism

1. Release rack
2. Clutch spring
3. Pressure plate
4. Release bearing
5. Thrust washer

4) Clutch sleeve hub securing nut (Model RM125A)
This nut requires the same attention as for the primary drive gear securing nut: apply SUZUKI LOCK SUPER "103Q" (99000-32030) to the threads of this nut, tighten it to the specified torque value, indicated below, and wipe off "103Q" dope that has oozed out:

Tightening torque for clutch release hub securing nut
600 - 700 kg-cm (43.2 - 50.4 ft-lb)

Engine Sprocket

The "O" ring between spacer and ball bearing (see Fig. 98) stems the oil tending to leak out through the clearance between drive shaft and sprocket spacer. Be sure to install and position this "O" ring correctly.

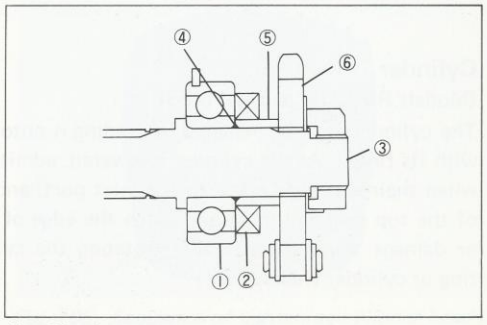


Fig. 98. Position of "O" ring

1. Ball bearing
2. Oil seal
3. Drive shaft
4. "O" ring
5. Spacer
6. Sprocket

Piston

The piston has an arrow mark on its crown, as shown in Fig. 99. When installing the piston, be sure to point this arrow mark toward the exhaust port provided in the cylinder.

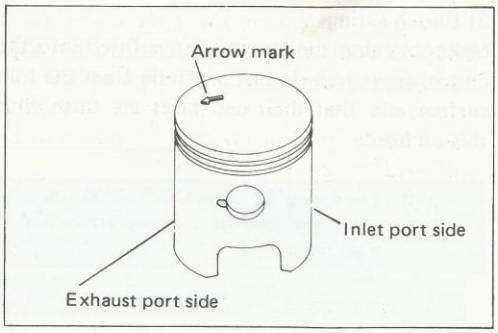
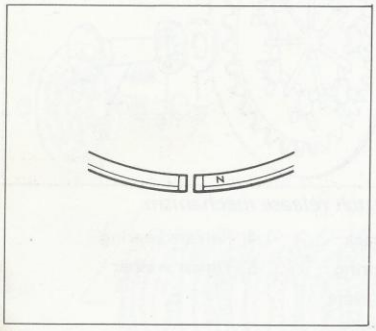


Fig. 99. Arrow mark on piston crown

Piston Rings

Each piston ring has a punched mark on one end as shown in Fig. 100. When installing the rings on the piston, be sure to bring this marked face to the top side and to position the end gap right over the locating pin as shown in Fig. 101.



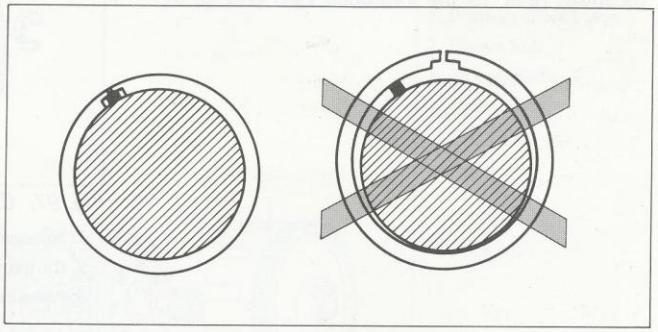


Fig. 100. Punched mark on piston ring *Fig. 101. Positioning the ring in the groove*

NOTE: For each model covered in this manual, the 1st and 2nd piston rings are identical. The rings for the piston of Model RM125S are not marked by punching: there is no distinction between top and bottom.

Cylinder

(Models RM125M and RM125S)

The cylinder is to be installed by feeding it onto the piston in place. The piston at this stage is complete with its rings. As the cylinder is lowered, admitting piston into its bore, the piston rings slightly expand when their end gaps come to the inlet port; and if the cylinder is forcibly lowered, the end gap portion of the top ring will meet and catch the edge of inlet port as shown in Fig. 102 and might break the ring or damage the cylinder wall. Rotating the cylinder under this condition might similarly damage the ring or cylinder wall.

To avoid such damage, use a soft-metal rod: to guide the end gap portions of the two rings into the cylinder bore above the inlet port, push the gap portion with the rod inserted into the inlet port in order to close the gap. An aluminum rod will serve the purpose.

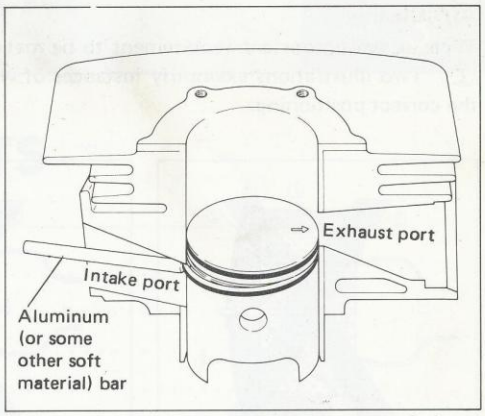


Fig. 102. Guiding the end gap portions of piston ring into cylinder bore above inlet port

(Model RM125A)

The reed valve is located below the cylinder inlet port. Just before installing the cylinder, make sure that there is no foreign matter stuck between the reed and its seat. Such foreign matter could reduce engine output performance.

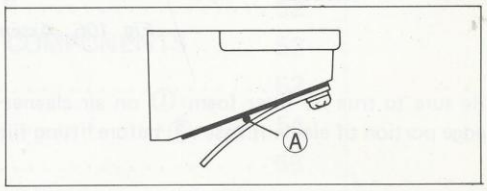


Fig. 103. Foreign matter Ⓐ stuck between reed and seat

Cylinder Head

When securing the cylinder head, tighten the cylinder head nuts in such a way as to fasten down the head evenly with the fastening pressure distributed uniformly. This is to be accomplished by running down all the nuts with fingers and then by tightening each nut just a little at a time with the wrench: move the wrench from one to another diametrally opposite in the pattern illustrated in Fig. 104 (for Models RM100A, RM125M and RM125S) or in Fig. 105 (for Model RM125A).

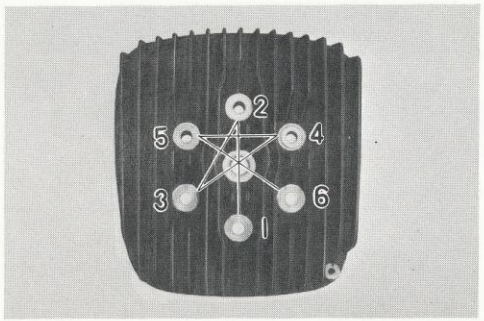


Fig. 104. Sequence of tightening cylinder head nuts (Models RM100A, RM125M and RM125S)

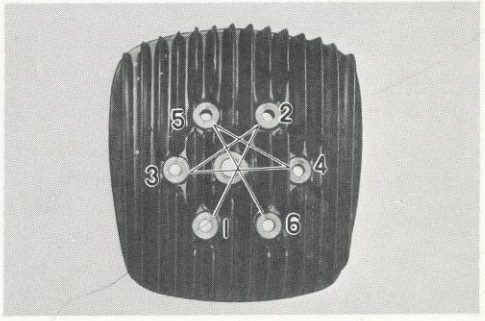


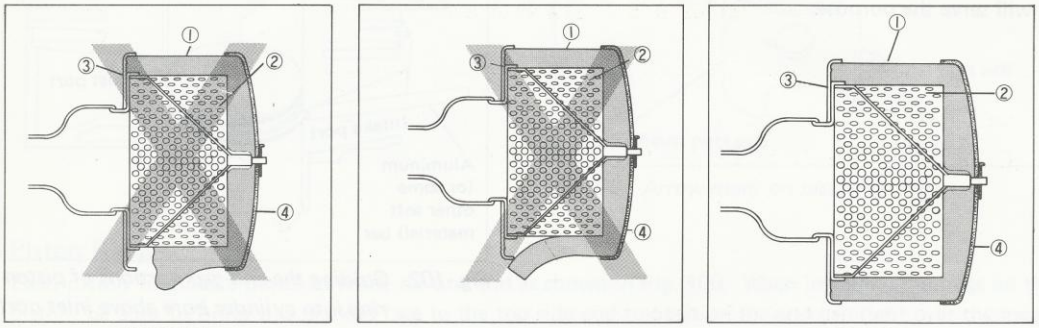
Fig. 105. Sequence of tightening cylinder head nuts (Model RM125A)

In all the four models, tighten each nut to this torque value:

Tightening torque for cylinder head nuts (RM125A)	180 - 230 kg-cm (13.0 - 16.6 lb-ft) [230 - 270 kg-cm (16.6 - 19.4 lb-ft)]

Air Cleaner

There is one important requirement to be met in installing the air cleaner; it concerns the filter foam ①. Two illustrations exemplify instances of wrong filter foam positioning, and one illustration (right) the correct positioning:



WRONG WRONG CORRECT

Fig. 106. Assembling the air cleaner

Be sure to true up filter foam ① on air cleaner element ② and then to tuck the foam into the ribbed edge portion of element base ③ before fitting filter cap ④.

IGNITION SYSTEM

GROUP 3

CONTENTS

DESCRIPTION

The ignition system is formed with these components: magneto, CDI unit, ignition coil and spark plug, all combined according to the concept of SUZUKI "PEI" (Point-less Electronic Ignition).

Electromotive force is induced in the two coils (exciter coil and pulser coil) by rotary permanent magnet in the magneto. At the moment for igniting the air-fuel mixture in the cylinder, a current is supplied by the CDI unit to the primary winding of the ignition coil to make available a surge of high-voltage current from its secondary winding to the spark plug. There is no mechanical contact breaker in the CDI unit: the electronic circuit in this unit operates with the two emf's generated by the magneto to charge and discharge a capacitor. It is the discharge current that is supplied to the ignition coil.

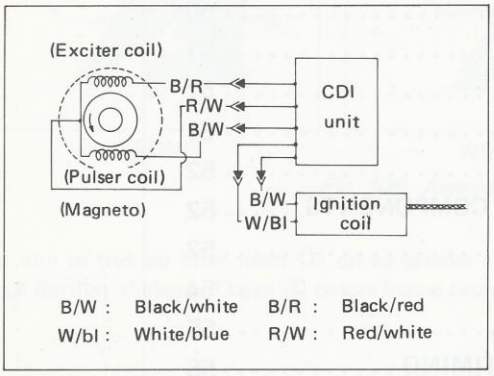


Fig. 107. SUZUKI "PEI" system circuit diagram (Models RM100A, RM125M and RM125S)

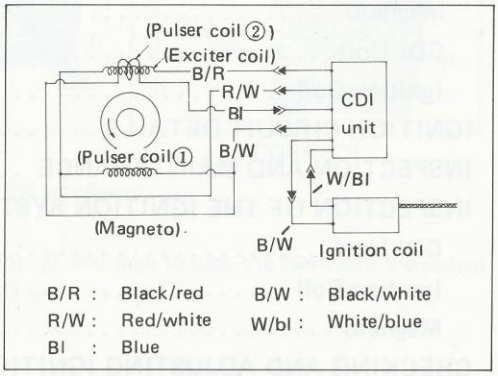


Fig. 108. SUZUKI "PEI" system circuit diagram (Model RM125A)

COMPONENTS OF SUZUKI "PEI" SYSTEM

Magneto

Rotor ⑤ presents two magnetic poles, N and S, to the two coils mounted on the stator. One is exciter coil and the other is pulser coil.

1. Nut
2. Lock washer
3. Washer
4. Key
5. Rotor
6. Stator

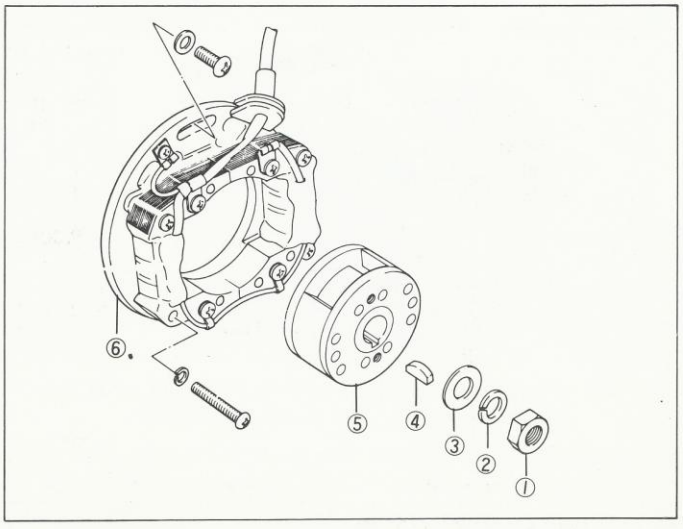


Fig. 109. Two-pole magneto, partially exploded

CDI Unit

The electronic circuit is essentially a timing circuit, whose function is to time the charging and discharging actions of the capacitor. A silicon controlled rectifier (SCR) is included in the capacitor circuit: the SCR acts as if it were an electronic valve.

Ignition Coil

An ignition coil specially designed for use with SUZUKI "PEI" is included in the system. The special functional feature of this coil is that it is capable of maintaining a slightly longer sparking duration.

IGNITION CIRCUIT DETAILS

In the two networks of circuit shown below, the capacitor, whose discharge current flows through the primary winding of ignition coil, is represented by C1, and its electronic valve by SCR1: This valve opens, that is, SCR1 becomes conductive in forward direction when a pulse applies from the timing circuit to its gate.

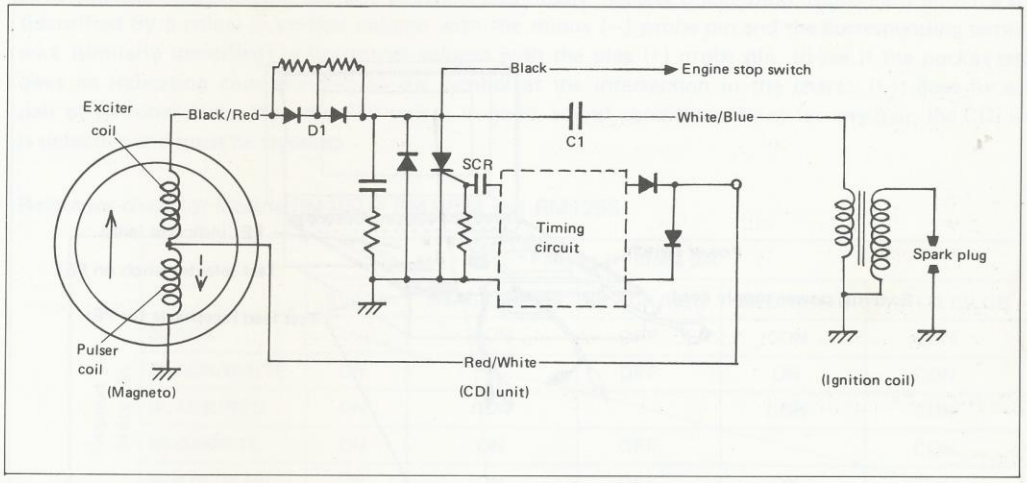


Fig. 110. Ignition circuit network (Models RM100A, RM125M and RM125S)

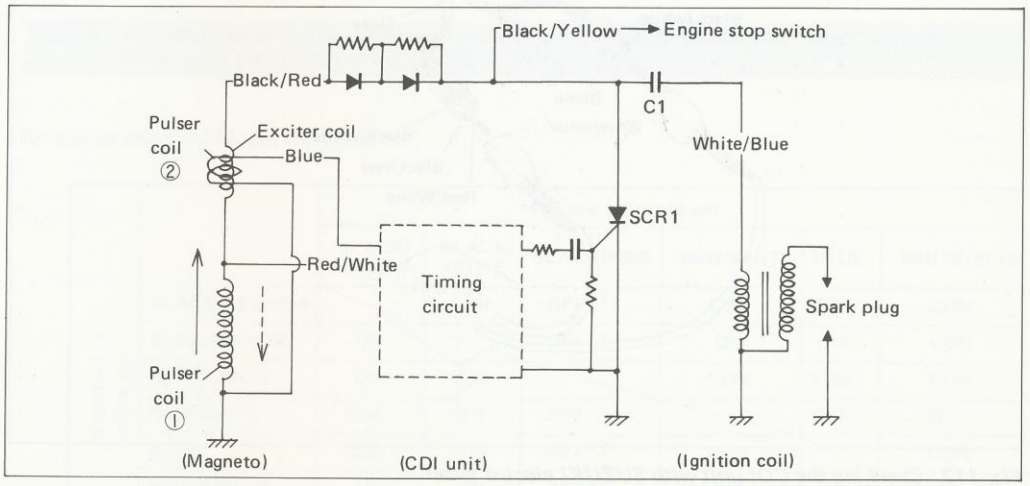


Fig. 111. Ignition circuit network (Model RM125A)

INSPECTION AND MAINTENANCE

INSPECTION OF THE IGNITION SYSTEM COMPONENTS

CDI unit

The purpose of inspecting the CDI unit is to determine whether or not the unit is electrically in good condition. There are two ways to inspect: one is simpler and based on the use of a special tool (09900-28104), which is the Type SS-II SUZUKI electro tester; the other involves the use of another special tool (09900-25001), SUZUKI pocket tester.

CHECKING WITH ELECTRO-TESTER:

Connect the CDI unit to the electro tester, as shown in Fig. 112, turn on the selector knob to "PEI" range, and turn on the power switch. If the turning on of the power switch lights up the "PEI" indicator lamp, it means that the CDI unit is in good, sound condition; if not, the CDI unit must be replaced.

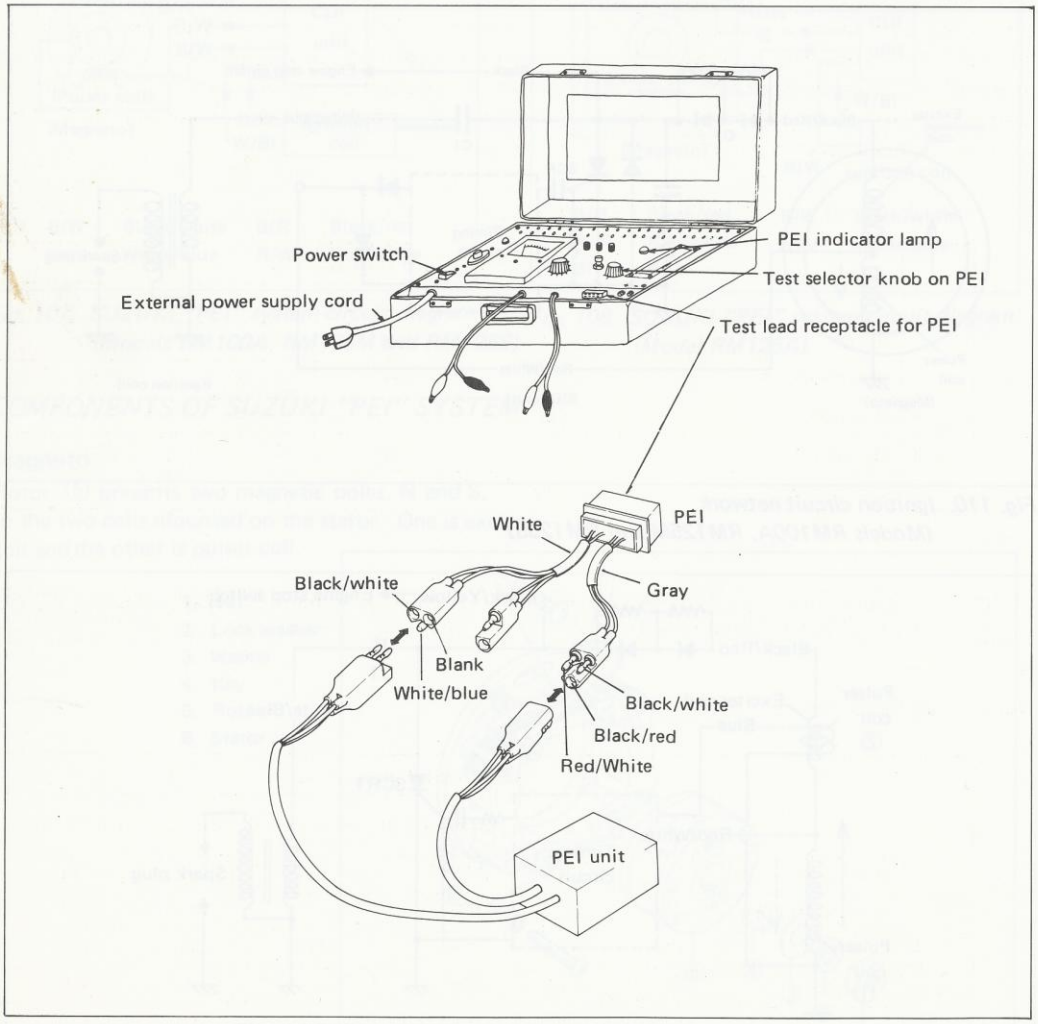


Fig. 112. Checking the CDI unit with SUZUKI electro tester

NOTE: Leave the BLUE lead wire unconnected in the case of CDI unit for Model RM125A.

CHECKING WITH POCKET TESTER:
With this tester, the CDI unit is to be checked in reference to the chart given below, by putting the two probe pins (+ and −) of the tester to each pair of CDI unit terminals.

Have the selector knob of the tester turned to "RX100" range. This is a resistance measuring range, for which each scale reading is to be multiplied by "100" to obtain an ohmic reading. In the present case, the object is not to obtain ohmic readings but to see if the indicating hand shows:

- circuit continuity (ON) by indicating zero or some ohmic value,
- circuit discontinuity (OFF) by remaining standstill at the infinity (∞) end of the scale, due, possibly, to a resistance of about 2 megohms, or
- momentary continuity (CON) by deflecting a little and then quickly swinging back to the infinity end, due to a capacitive element.

With the meanings of symbols "ON", "OFF" and "CON" clearly understood, touch each terminal wire (identified by a color) in vertical column with the minus (−) probe pin and the corresponding terminal wire (similarly identified) in horizontal column with the plus (+) probe pin, to see if the pocket tester gives an indication corresponding to the symbol at the intersection in the chart: if it does for **each** pair of terminal wires, then the CDI unit is in good, sound condition; if not for **any** pair, the CDI unit is defective and must be replaced.

Reference chart for Models RM100A, RM125M and RM125S

Negative (−) probe pin		Positive (+) probe pin				
		BLACK	BLACK/WHITE	BLACK/RED	RED/WHITE	WHITE/BLUE
	BLACK		CON	OFF	CON	CON
	BLACK/WHITE	ON		OFF	ON	CON
	BLACK/RED	ON	CON		CON	CON
	RED/WHITE	ON	ON	OFF		CON
	WHITE/BLUE	ON	ON	OFF	ON	

NOTE: Just before touching a pair of terminal wires for which the tester should give a "CON" indication, short-circuit WHITE/BLUE and BLACK.

Reference chart for Model RM125A

Negative (−) probe pin		Positive (+) probe pin					
		BLACK/ YELLOW	BLACK/ WHITE	BLACK/RED	RED/WHITE	BLUE	WHITE/BLUE
	BLACK/YELLOW		CON	OFF*1	CON	CON	CON
	BLACK/WHITE	ON		OFF*1	ON	ON	CON
	BLACK/RED	ON	CON		CON	CON	CON
	RED/WHITE	OFF	OFF	OFF		OFF	OFF
	BLUE	CON	CON	OFF*2	CON		CON
	WHITE/BLUE	ON	ON	OFF*1	ON	ON	

NOTES: 1) **Just before touching a pair of terminal wires for which the tester should give a "CON" indication, short-circuit BLACK/YELLOW to WHITE/BLUE and BLUE to BLACK/WHITE.**
2) **"OFF*[1]" means that the indicating hand remains at the infinity end of the scale, possibly showing about 2 megohms.**
"OFF*[2]" means that, if an ordinary circuit tester having a kilohm range is used, the indicating hand may deflect a little to show some ohmic value.

Ignition Coil

To check to see if the ignition coil is in sound condition or not, a SUZUKI electro tester (09900-28104) or a SUZUKI pocket tester should be used. The electro tester is more convenient for this purpose.

CHECKING WITH ELECTRO TESTER:
Connect the ignition coil to the tester as shown in Fig. 113. Turn the selector knob to "IGNITION COIL" range, and turn on the power switch. The moment the switch is turned on, a sparking will occur in the window on the right-hand part of the tester. If the sparking electrodes are apart as much as 8 mm to produce the spark, then the ignition coil is in good condition. If no sparking occurs with this much gap, then it is defective and must be replaced.

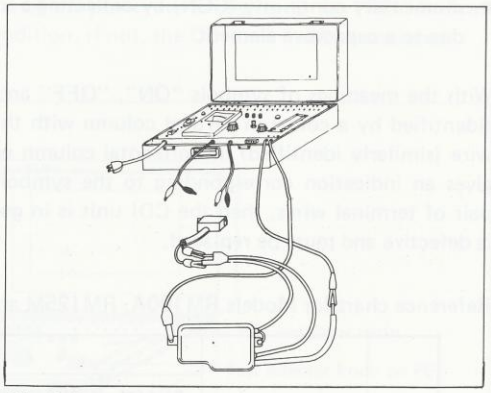


Fig. 113. Checking the coil with SUZUKI electro tester

CHECKING WITH POCKET TESTER:
A SUZUKI pocket tester or an ohm meter may be used instead of the electro tester. In either case, the ignition coil is to be checked for continuity in both primary and secondary windings. Exact ohmic readings are not necessary, but, if the windings are in sound condition, their continuity will be noted with these approximate ohmic values:

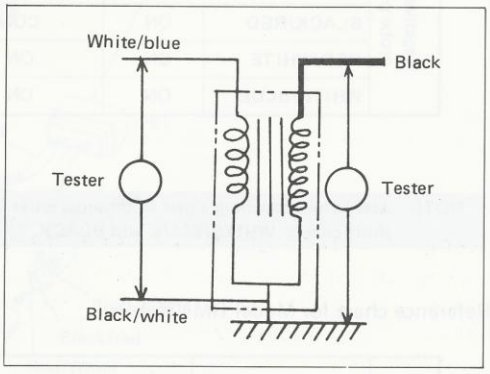


Fig. 114. Ignition coil test circuit for continuity

Primary winding	(between WHITE/BLUE and BLACK/WHITE)	Several ohms
Secondary winding	(between plug cord and BLACK/WHITE)	10 kilohms

Magneto

Check the two coils for continuity. The ohmic values indicated below are for reference only.

Models RM100A, RM125M and RM125S

Exciter coil	(BLACK/RED and RED/WHITE)	Several hundred ohms
Pulser coil	(RED/WHITE and BLACK/WHITE)	A hundred and several ten ohms

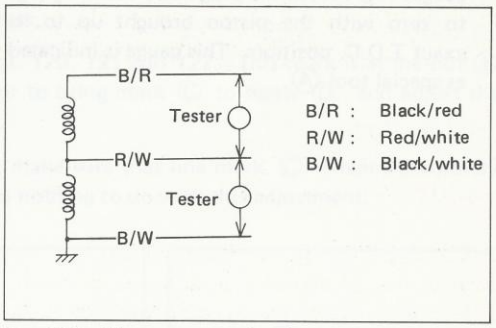


Fig. 115. Magneto test circuit (Models RM100A, RM125M and RM125S)

Model RM125A

Exciter coil	(BLACK/RED and RED/WHITE)	Several ten ohms
Pulser coil	(RED/WHITE and BLACK/WHITE)	Two hundred and several ten ohms
Pulser coil	(BLUE and BLACK/WHITE)	Several ten ohms

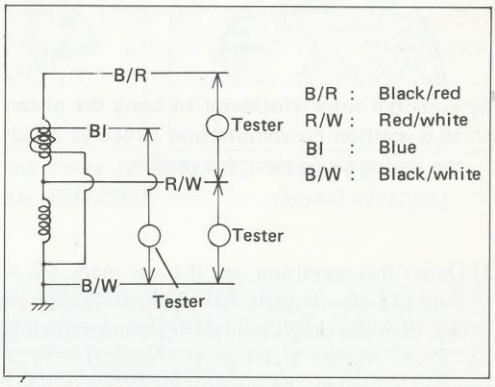


Fig. 116. Magneto test circuit (Model RM125A)

CHECKING AND ADJUSTING IGNITION TIMING

Ignoring the ignition advancing function of the timing circuit in the CDI unit, it may be said that the moment at which the PEI system supplies the sparking energy to the plug is determined by the **relative position** of the magneto stator (on which exciter and pulser coils are mounted) and rotor (in which magnetic poles are formed). Thus, the ignition timing initially established by setting the stator relative to the rotor remains unchanged as long as the stator is **not** positionally disturbed.

Disturbance occurs when the engine is overhauled to involve magneto disassembly or when the stator is removed for some other reason. Upon restoring the stator in such a case, ignition timing must be checked and, as necessary, adjusted to the specification.

NOTE: The expression "checking the ignition timing" is used in a sense slightly different from the conventional sense applicable to ignition systems operating with contact-point breakers.

Here is the method of checking

1) Remove the spark plug, and install the timing gauge, Fig. 117, in the plug hole. Set the gauge to zero with the piston brought up to its exact T.D.C. position. This gauge is indicated as special tool Ⓐ.

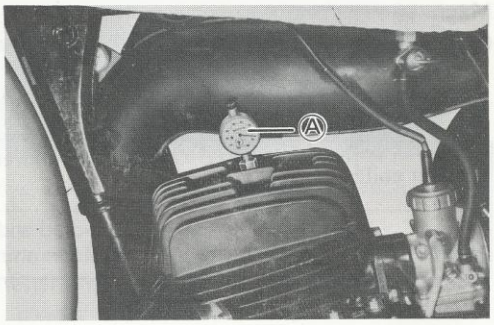


Fig. 117. Timing gauge installed on the cylinder head

Special tool Ⓐ (09931-00112)

2) Turn the rotor clockwise to bring the piston to a position on compression stroke at which the timing gauge gives this reading:

RM100A	2.26 mm (0.089 in.)
RM125S	2.20 mm (0.086 in.)
RM125M	3.80 mm (0.150 in.)
RM125A	0.31 mm (0.012 in.)

3) Under this condition, see if rotor mark Ⓐ and stator mark Ⓑ are perfectly in match as shown in Fig. 118 (for Models RM100A, RM125M and RM125S) or Fig. 119 (for Model RM125A); if they are, then the magneto is set for the specified ignition timing.

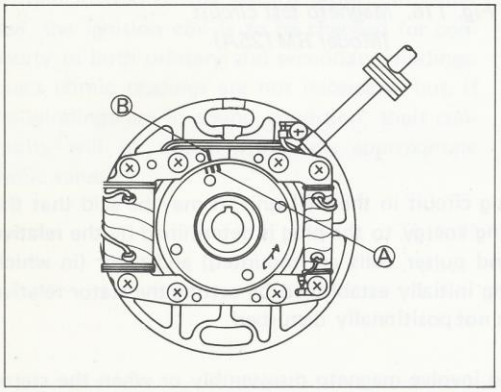


Fig. 118. Ignition timing marks (Models RM100 A, RM125M and RM125S)

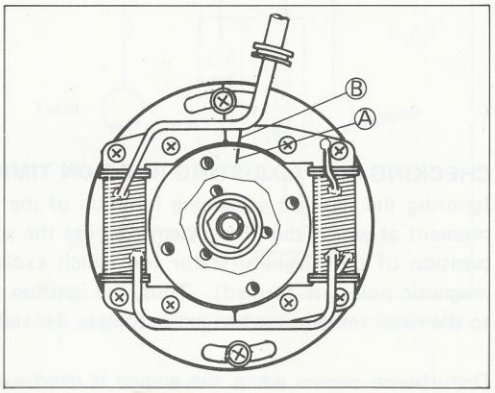


Fig. 119. Ignition timing marks (Model RM125A)

4) If rotor mark Ⓐ is off and away from stator mark Ⓑ, loosen the two screws securing the stator, turn the stator to index its mark Ⓑ to mark Ⓐ, making sure that the piston is held at the specified B.T.D.C. position as before. This step completes the checking and adjusting work.

Where the timing gauge is not available, the following alternate method may be used to establish the ignition timing approximately.

- Loosen the screws securing the magneto stator in place.
- The stator has a line mark designated as Ⓒ in Figs. 120, 121 and 122. This mark is at the slot ① in which the screw Ⓓ is located. Turn the stator to bring mark Ⓒ to screw Ⓓ, and adjust the stator to point this mark to the center of screw Ⓓ.
- When securing the stator by tightening the screws, make sure that line mark Ⓒ remains accurately centered to screw Ⓓ. The position of the rotor has nothing to do with this adjustment.

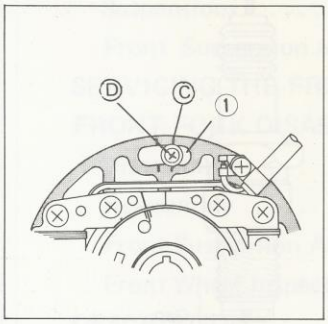


Fig. 120. Timing marks (Models RM100A and RM125S)

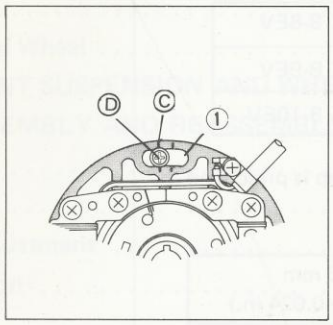


Fig. 121. Timing marks (Model RM125M)

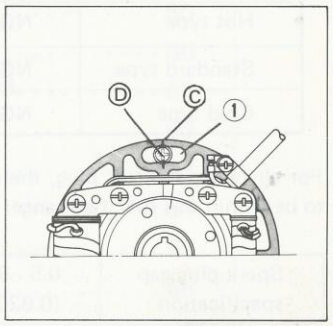


Fig. 122. Timing marks (Model RM125A)

NOTES:
- **The alternate method is good for establishing the ignition timing approximately. The first method, based on the use of the timing gauge, is preferred to the alternate method.**
- **The PEI system does not lend itself to conventional stroboscopic checking of ignition timing. The stroboscope can only reveal whether the ignition goes to advance or retard; it does not tell at which crank angle ignition occurs.**

Ignition timing specification

Models RM100A & RM125S	22° B.T.D.C. @ 6,000 rpm
Model 125M	29° B.T.D.C. @ 6,000 rpm
Model RM125A	8° B.T.D.C. @ 11,000 rpm

SPARK PLUG SELECTION

In the engines of all the four models covered in this manual, an NGK B-9EV spark plug is standardly used. As long as carburetion is satisfactory (as determined by the methods already described in regard to the carburetor), there is no need of replacing the standard plug by another differing in **heat range.**

If however, the carburetor jetting has to be altered substantially or if the machine has to be driven under unusual condition, it may become necessary to change the heat range. In anticipation of these possibilities, two optional spark plugs are made available:

Spark plug selection

Hot type	NGK B-8EV
Standard type	NGK B-9EV
Cold type	NGK B-10EV

For all types of spark plug, the gap is prescribed to be within this specified range:

Spark plug gap specification	0.5 - 0.6 mm (0.020 - 0.024 in.)

Use a thickness gauge to check the gap.

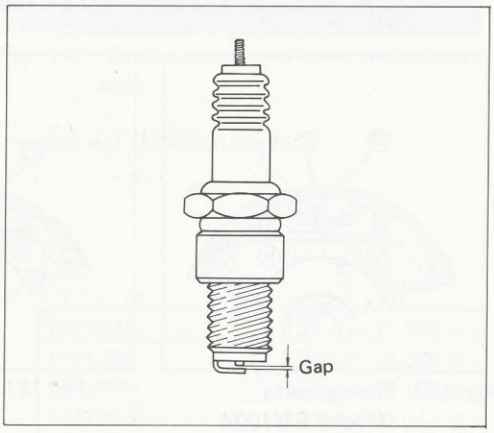


Fig. 123. Spark plug gap

CHASSIS

GROUP 4

CONTENTS

DESCRIPTION

Suspensions

Major dimensions characterizing the front and rear suspensions are as shown in Fig. 124 and the chart which follows:

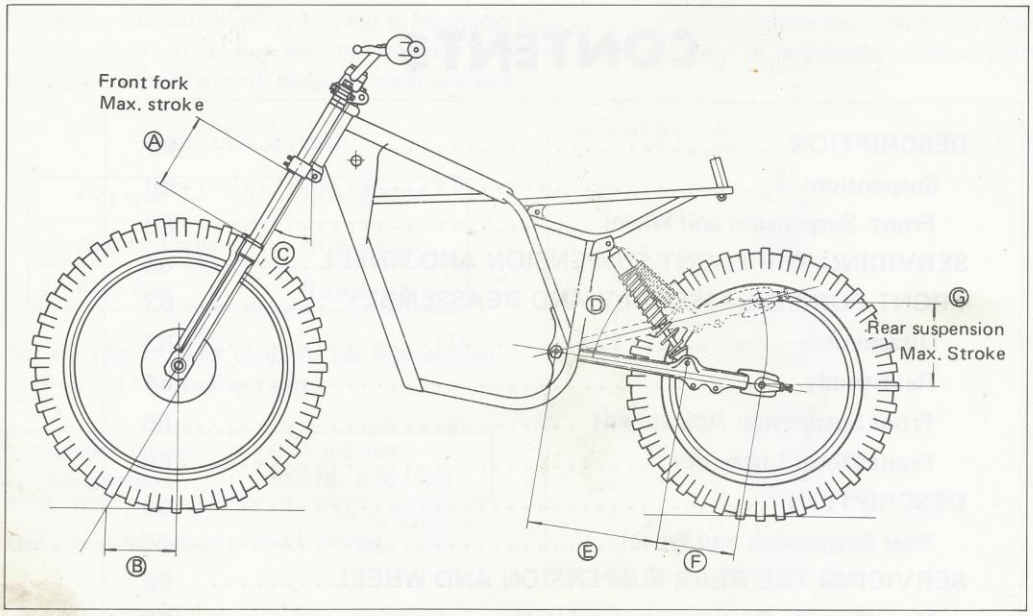


Fig. 124. Configuration of front and rear suspensions

Suspension data

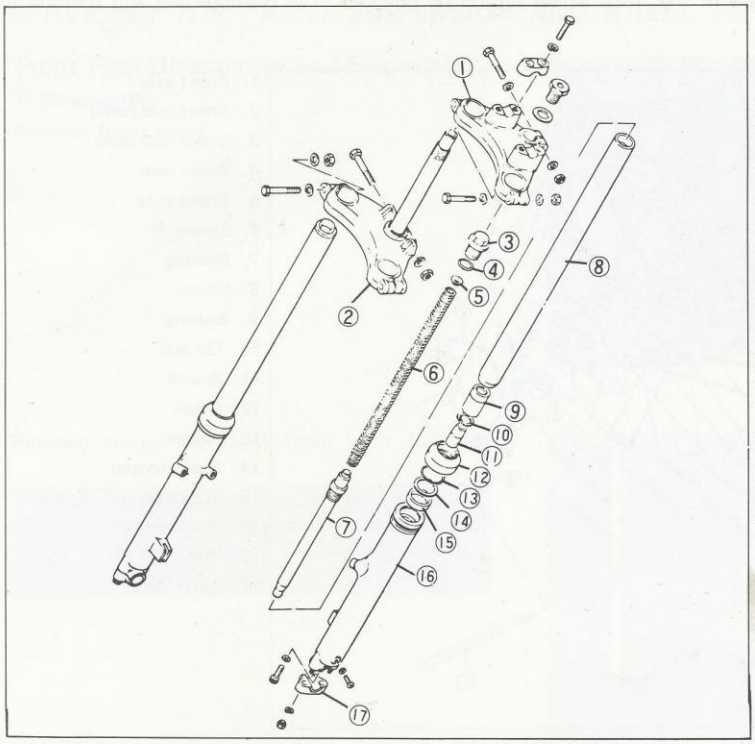
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ
RM100A	160 mm (6.30 in)	130 mm (5.12 in)	30°	41°	294 mm (11.57 in)	151 mm (5.94 in)	158 mm (6.22 in)
RM125M RM125S	190 mm (7.48 in)	123 mm (4.8 in)	29°	36°	292 mm (11.5 in)	152 mm (6.0 in)	200 mm (7.87 in)
RM125A	200 mm (7.87 in)	130 mm (5.1 in)	30°	42°30′	318 mm (12.5 in)	187 mm (7.4 in)	212 mm (8.35 in)

Front Suspension and Wheel

The front fork is of telescopic type with hydraulic dampers. In Models RM100A and RM-125, the front fork has a longer stroke than in other SUZUKI motorcycles of this size class.

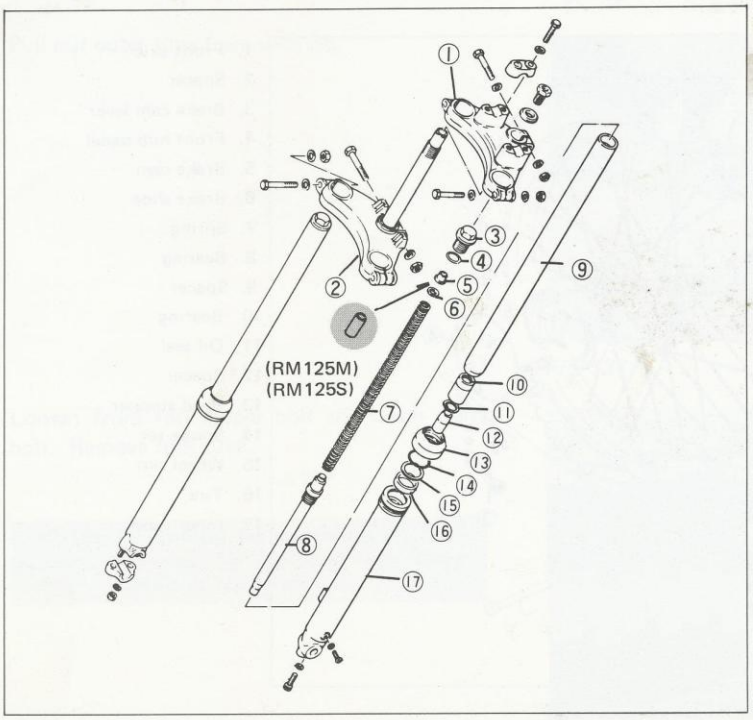
Front fork stroke

Model RM100A	160 mm (6.30 in.)
Models RM125M & RM125S	190 mm (7.48 in.)
Model RM125A	200 mm (7.87 in.)



1. Steering stem head
2. Steering stem
3. Cap
4. O ring
5. Spring guide
6. Spring
7. Cylinder
8. Inner tube
9. Piston
10. Snap ring
11. Oil lock peace
12. Dust seal
13. Snap ring
14. Washer
15. Oil seal
16. Outer tube
17. Axle holder

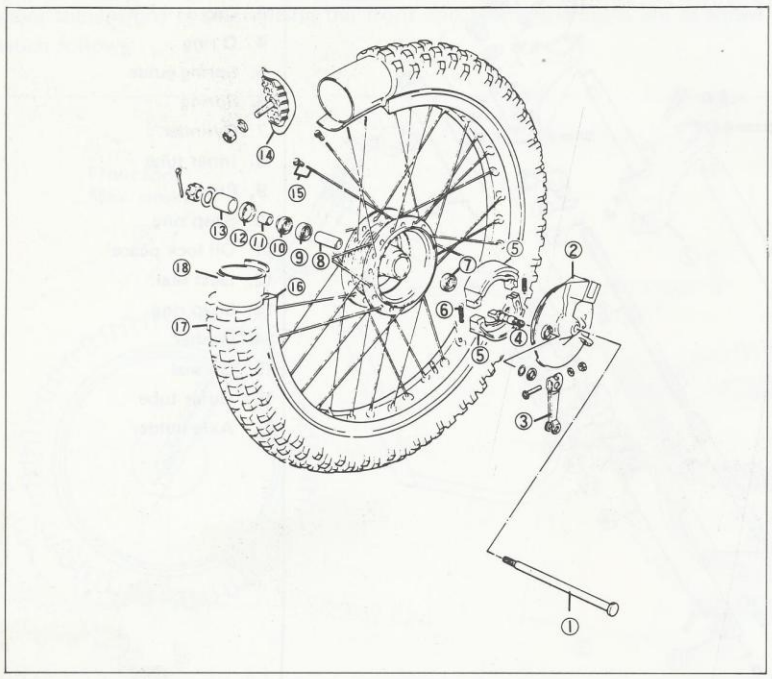
Fig. 125. Exploded view of front fork (Model RM100A)



1. Steering stem head
2. Steering stem
3. Cap
4. O ring
5. Spacer
6. Washer
7. Spring
8. Cylinder
9. Inner tube
10. Piston
11. Snap ring
12. Oil lock peace
13. Dust seal
14. Snap ring
15. Washer
16. Oil seal
17. Outer tube

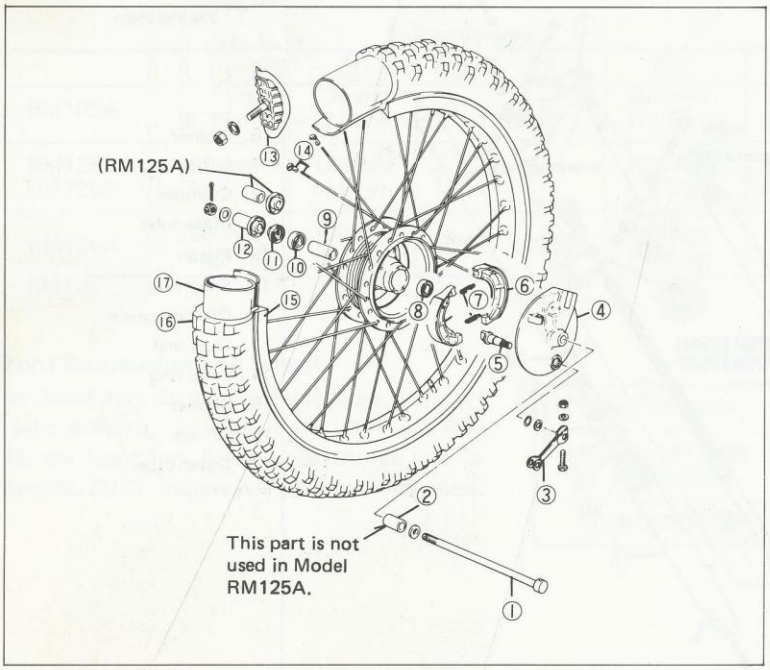
Fig. 126. Exploded view of front fork (Models RM125M, RM125S and RM125A)

The following exploded view of the front wheel should be referred to in dismounting and remounting the front wheel:



1. Front axle
2. Front hub panel
3. Brake cam lever
4. Brake cam
5. Brake shoe
6. Spring
7. Bearing
8. Spacer
9. Bearing
10. Oil seal
11. Spacer
12. Cover
13. Spacer
14. Bead stopper
15. Spoke set
16. Wheel rim
17. Tire
18. Inner tube

Fig. 127. Exploded view of front wheel (Model RM100A)



1. Front axle
2. Spacer
3. Brake cam lever
4. Front hub panel
5. Brake cam
6. Brake shoe
7. Spring
8. Bearing
9. Spacer
10. Bearing
11. Oil seal
12. Spacer
13. Bead stopper
14. Spoke set
15. Wheel rim
16. Tire
17. Inner tube

Fig. 128. Exploded view of front wheel (Models RM125M, RM125S, and RM125A)

SERVICING THE FRONT SUSPENSION AND WHEEL

Front Fork Disassembly and Reassembly

1) **Disassembly**

Remove front wheel.

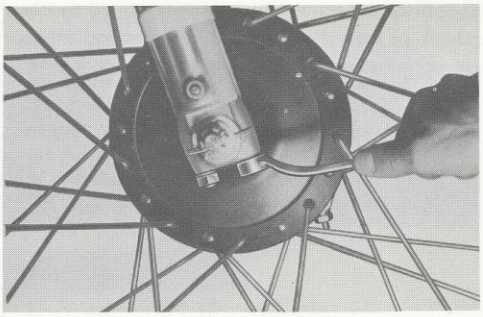


Fig. 129

Remove spring seat bolt from each fork leg.

NOTE: Be sure to apply THREAD LOCK CEMENT (99000-32040) to the threads of each seat bolt just before installing this bolt in reassembly.

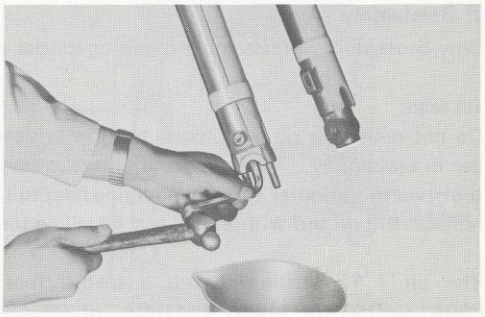


Fig. 130

Pull out outer tube from each leg.

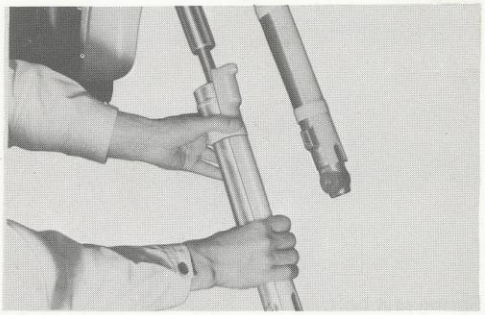


Fig. 131

Loosen front fork upper bolt and lower clamp bolt. Remove fork tube.

NOTE: To facilitate the subsequent job, have fork cap bolt loosened with upper clamp bolt, too, loosened.

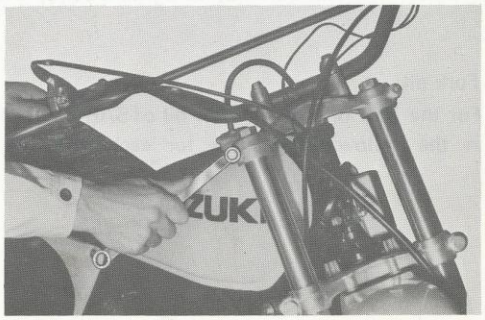


Fig. 132

Remove inner tube cap bolt, and draw out spring.

NOTE: Reassembly is reverse of disassembly. If the purpose of disassembly is to replace the springs, then the only thing to do is just remove the cap bolt. With this bolt removed, the springs come out of the inner tube.

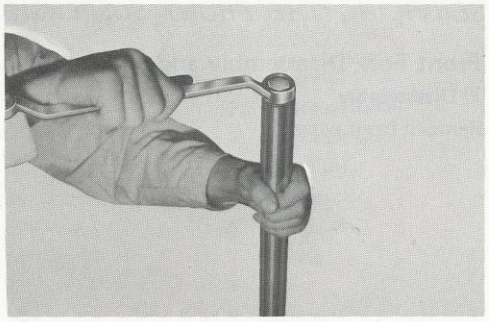


Fig. 133

2) Reassembly

Only those steps of reassembly requiring special attention or detailed explanation will be dealt with.

Oil seals:

Do not re-use the oil seals found to show evidence of oil leakage: have replacement oil seals on hand for use in reassembly. To replace the oil seal, remove circlip, make sure there is no oil remaining in outer tube, warm the outer tube by applying heat to its external surface, and draw the oil seal out. Install the replacement oil seal with the oil seal installing tool after the inner tube has been inserted and set in place.

The oil seal installing tool is a special tool, 09940-52810, for Model RM100A, or 09940-53111, for Models RM125M, RM125S and RM-125A.

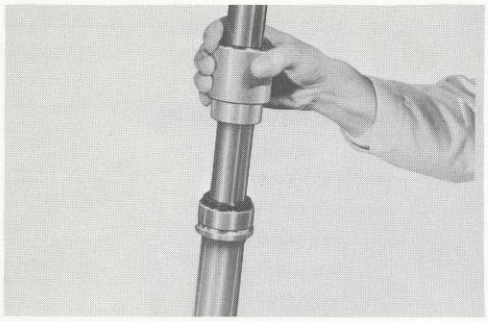


Fig. 134.

Spring seat bolt:

Before running in this bolt, be sure to lower the inner tube all the way in and to center the internal parts in place. The seat bolt may be tightened only when the internals are so positioned.

Fork oil:

For the fork oil, use a motor oil of SAE 20W/20 in the following quantity for each fork leg:

Front fork oil capacity (each fork leg)

Model RM100A	123 cc (4.2/4.3 US/Imp oz)
Models RM125M and RM125S	210 cc (7.1/7.4 US/Imp oz)
Model RM125A	223 cc (7.5/7.9 US/Imp oz)

Front Suspension Adjustment (Model RM125A)

In the front suspension of Model RM125A, spring preload can be increased by displacing the spring seat, as shown in Figs. 135 and 136, in order to make the suspension more resilient. Here is how to displace the seat:

- Remove front fork upper bolt ①.
- Remove spring adjuster spacer ② and invert this spacer as shown in Fig. 136.
- Put on upper bolt ①, and run the bolt in. This lowers spring seat to compress the spring further.

NOTE: This adjustment is to be made on both legs, right and left, of the front fork.

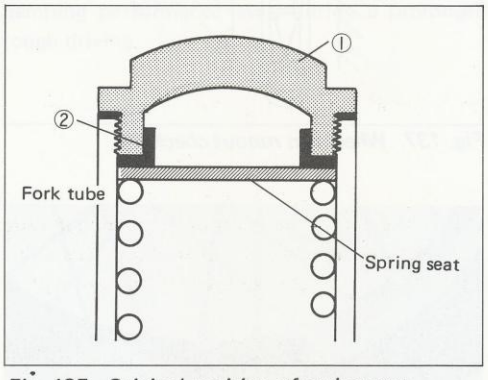


Fig. 135. Original position of spring seat

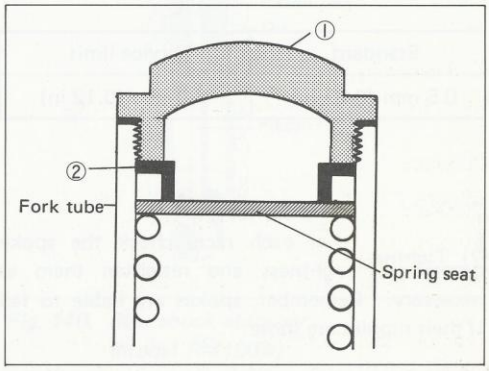


Fig. 136. Spring seat lowered by spacer inversion

Front Wheel Inspection

1) Rim runout

Check the wheel in the manner illustrated in Fig. 137, with a dial gauge rigged to measure the face run-out of the wheel rim. The service limit on rim run out is indicated below.

If the wheel is found to exceed the limit, replace its bearing by a new one and check its rim run-out again. If the runout is still large, replace the rim or reduce the runout by adjusting the tension of wheel spokes.

Wheel rim runout

Standard	Service limit
0.5 mm (0.02 in)	3.0 mm (0.12 in)

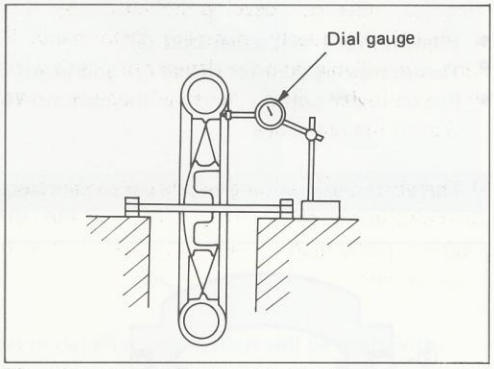


Fig. 137. Wheel rim runout checking

2) Tightness of spoke nipples

Before and after each race, check the spoke nipples for tightness and retighten them as necessary. Remember, spokes are liable to fail if their nipples are loose.

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

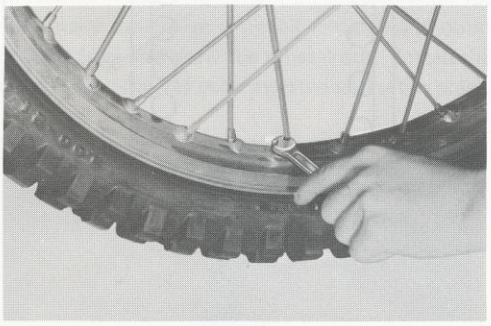


Fig. 138. Retightening spoke nipples

DESCRIPTION

Rear Suspension and Wheel

The shock absorbers mounted on machines of all models dealt with in this manual as major rear suspension components are of combination hydraulic and pneumatic type. Each absorber contains high-pressure nitrogen gas in addition to oil, and is conspicuously angled forward.

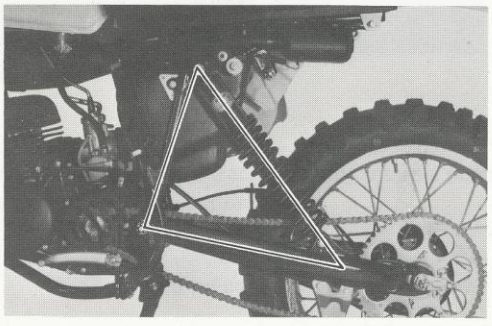


Fig. 139. Rear suspension

Advantages that the hydraulic-pneumatic absorbers provide are as follows:

a) The oil in the damper is under pressure and, therefore, does not develop bubbles. By this non-foaming property, damping performance is stable and reliable; and the damper responds with high sensitivity even to small up-and-down motion of the rear wheel.

b) The absorber is of single-sleeve type: the heat generated in the oil quickly dissipates to keep up damping performance even during a prolonged rough driving.

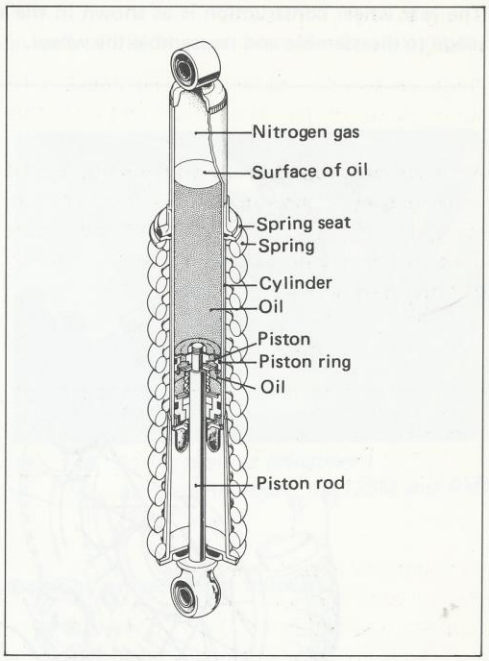


Fig. 140. Rear shock absorber (Model RM100A)

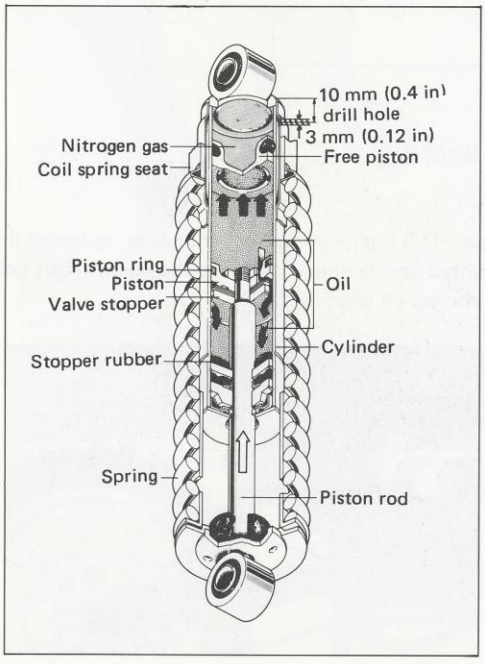


Fig. 141. Rear shock absorber (Models RM125M and RM125S)

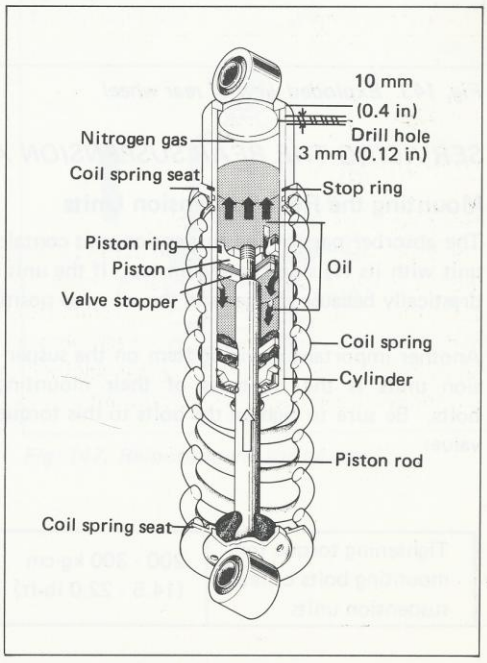
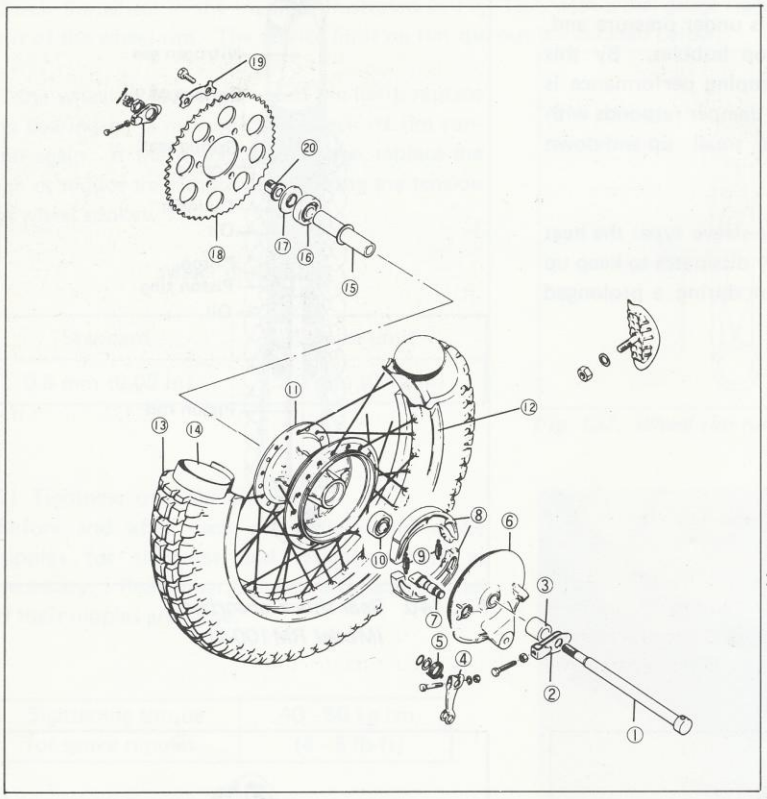


Fig. 142. Rear shock absorber (Model RM125A)

The rear wheel construction is as shown in the exploded view of Fig. 143, to which reference should be made to disassemble and reassemble the wheel.



1. Rear axle
2. Chain adjuster
3. Spacer
4. Brake cam lever
5. Spring
6. Rear hub panel
7. Brake cam
8. Brake shoe
9. Spring
10. Bearing
11. Brake drum
12. Wheel rim
13. Tire
14. Wheel inner tube
15. Hub-bearing spacer
16. Bearing
17. Axle spacer
18. Rear sprocket
19. Washer
20. Chain adjuster spacer

Fig. 143. Exploded view of rear wheel

SERVICING THE REAR SUSPENSION AND WHEEL

Mounting the Rear Suspension Units

The absorber part of the suspension unit contains N_2 gas. It is highly important, therefore, to install the unit with its N_2 side coming on top. If the unit is mounted upside down, its shock-absorbing effect falls drastically because the gas and the oil swap position in the gas-oil chamber.

Another important servicing item on the suspension units is the tightness of their mounting bolts. Be sure to tighten the bolts to this torque value:

Tightening torque for mounting bolts of rear suspension units	200 - 300 kg-cm (14.5 - 22.0 lb-ft)

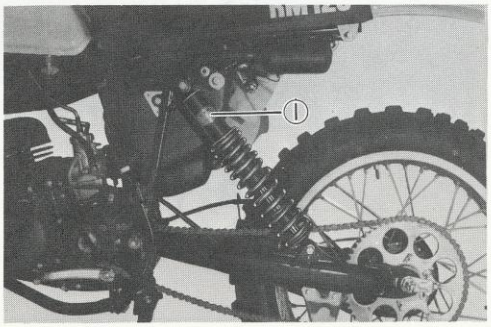


Fig. 144. Rear suspension unit in place
① Gas-oil chamber

Spring Adjustment for Rear Suspension Units

The preload on the coil springs of the rear suspension unit can be changed to make the unit more or less resilient.

(Models RM100A, RM125M and RM125S)

In these three models, the spring preload can be varied in five steps by means of the spring seat indicated as Ⓐ in Fig. 145. Insert a rod into peg hole Ⓑ and turn the seat in one direction to increase or in the other direction to decrease the preload.

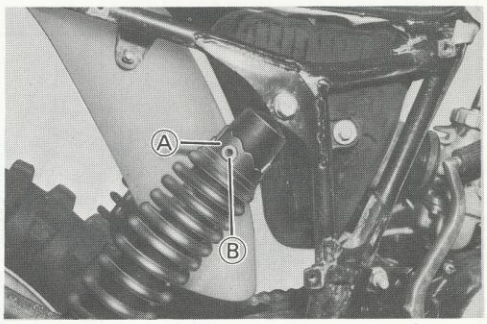


Fig. 145. Spring preload adjustment (Models RM100A, RM125M and RM125S)

(Model RM125A)

In this model, the spring preload can be varied in three steps by proceeding as follows:

- Take down each suspension unit from the machine.
- Using a bar, compress coil spring Ⓐ, as shown in Fig. 146.
- Remove coil spring seat Ⓑ from the lower portion of the unit, Fig. 146.
- Lower coil spring seat Ⓒ, and relocate stopper Ⓓ to the desired position.

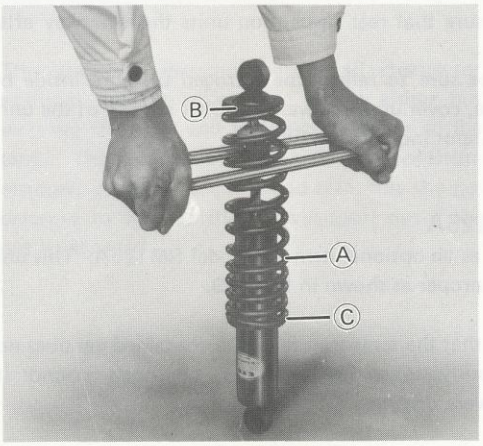


Fig. 146. Compressing lower spring

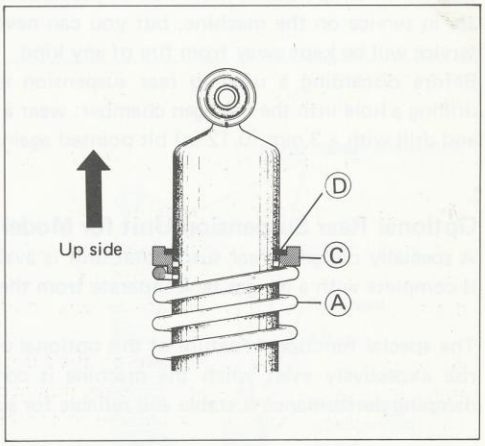
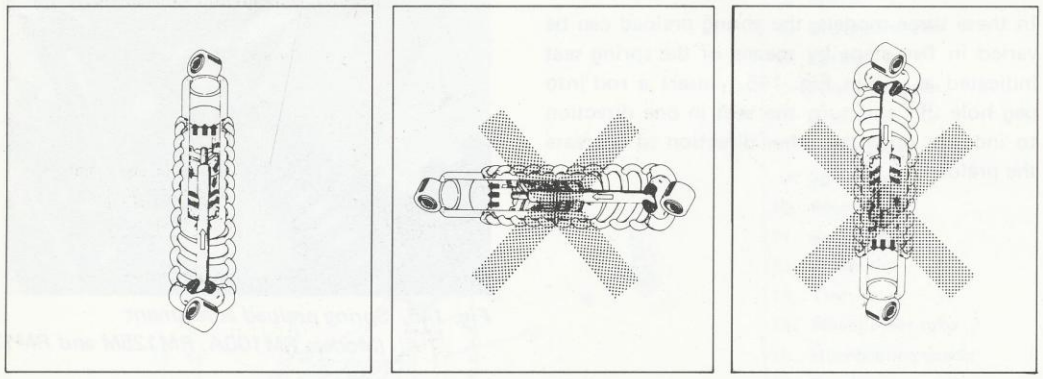


Fig. 147. Relocating the spring seat

Care of Rear Suspension Units

Rear suspension units removed from the machine or kept in storage as spare parts must never be left in laid-down or upside-down erect position or the high-pressure N_2 gas will eventually leak out. of cource, leaving them in such a position for several month is of no consequence.



Correct position | Wrong position | Wrong position

Fig. 148. Position of suspension unit left standing

Precautions for Disposing Rear Suspension Units

The nitrogen gas contained under high pressure in the rear suspension unit presents no fire hazard because nitrogen is an inert gas but the possibility of this unit to explode, if it is allowed to rise extremely in temperature, must not be precluded. Such high temperatures are impossible when the units are in service on the machine, but you can never be sure that rear suspension units thrown away after service will be kept away from fire of any kind.

Before discarding a used-up rear suspension unit, be sure to relieve the nitrogen pressure inside by drilling a hole into the nitrogen chamber: wear a goggle, cover up the lower protector section of the unit, and drill with a 3 mm (0.12 in) bit pointed against the spot indicated in Fig. 142.

Optional Rear Suspension Unit for Model RM125A

A specially designed rear suspension unit is available as an optional item for Model RM125A. This unit is complete with a N_2 gas tank separate from the unit proper as shown in Fig. 149.

The special functional feature of this optional unit is that the temperature of the contained gas does not rise excessively even when the machine is continuously driven for long hours on rough ground: its damping performance is stable and reliable for such severe driving.

To install the special suspension units, remove the existing units, and mount them in the same position as shown in Fig. 149.

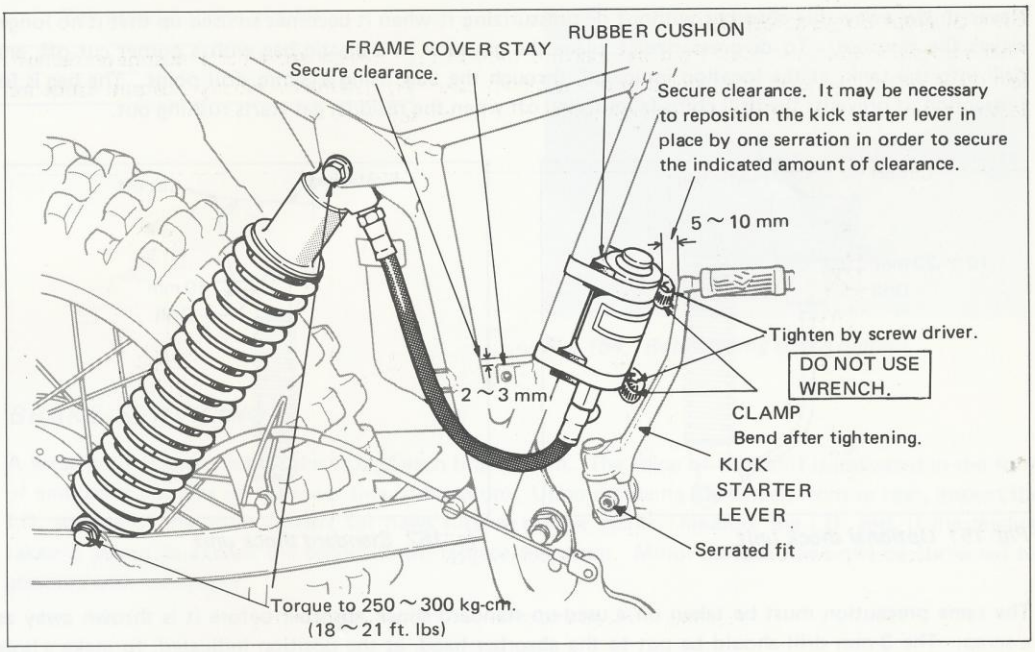


Fig. 149. Installing the special-design suspension unit

CAUTION:

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.

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.

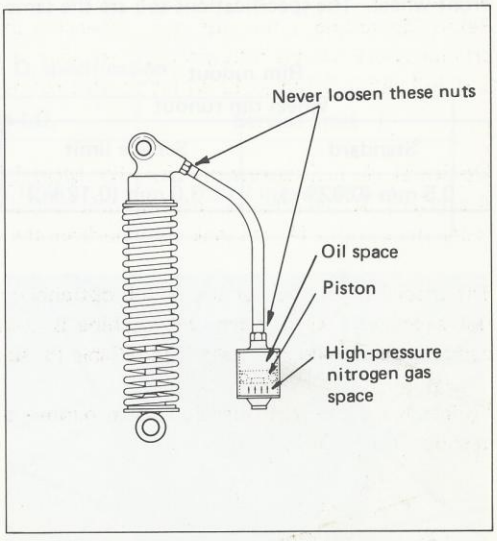


Fig. 150

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.

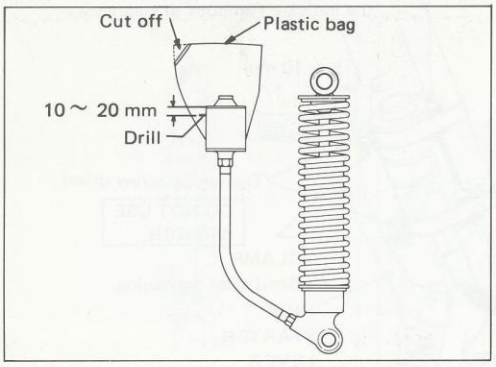


Fig. 151 Optional shock unit

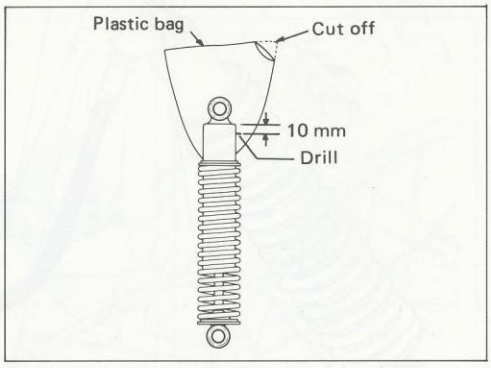


Fig. 152 Standard shock unit

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.

Rear Wheel Inspection

Check the rear wheel for rim runout and tightness of spoke nipples in the same way as for the front wheel. The specifications too are the same.

Rim runout

Wheel rim runout

Standard	Service limit
0.5 mm (0.02 in.)	3.0 mm (0.12 in.)

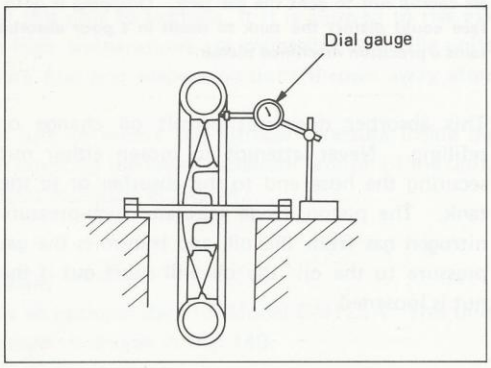


Fig. 153. Wheel rim runout checking

Tightness of spoke nipples

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

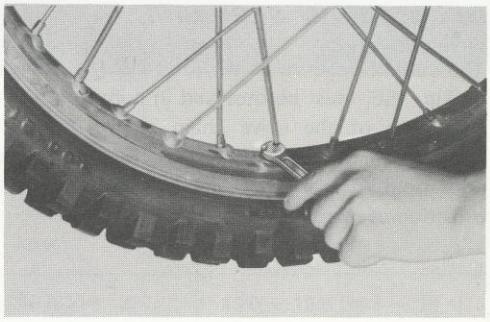


Fig. 154. Retightening spoke nipples

BRAKE SERVICING

A wear limit is specified for the I.D. of each brake drum. The value of this limit is indicated in the form of embossed number on the inner side of the drum. Upon removing the wheel, front or rear, inspect the I.D. surface of the drum visually for flaws such as groove marks. Measure the I.D. and, if the reading taken is found to exceed the service limit, replace the drum. Minor surface flaws can be corrected by grinding with sandpaper.

Front brake drum I.D. specification

Models	Standard I.D.	Service limit
RM100A	110 mm (4.33 in.)	110.7 mm (4.36 in.)
RM125M, RM125S and RM125A	130 mm (5.12 in.)	130.7 mm (5.15 in.)

Rear brake drum I.D. specification

Models	Standard I.D.	Service limit
RM100A, RM125M RM125S and RM125A	130 mm (5.12 in.)	130.7 mm (5.15 in.)

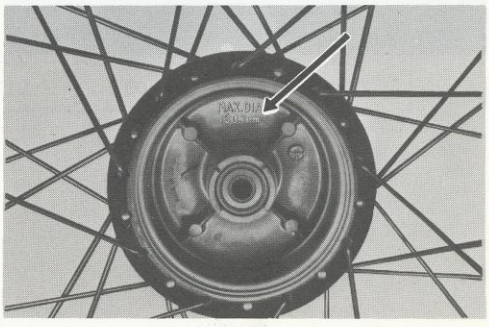


Fig. 155. Wear limit indication on brake drum

DRIVE CHAIN SERVICING

The correct position of the joint clip ① , shown in Fig. 156, must be observed in connecting the two ends of the drive chain at the time of remounting it. Note that each clip ① has its ends pointed rearward, that is, counter to the direction of rear wheel rotation.

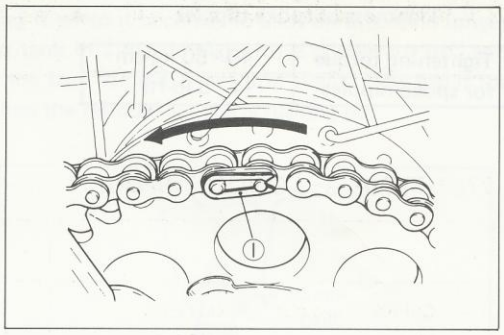


Fig. 156. Chain joint clip position

The slack to be given to the drive chain is slightly larger than in ordinary motorcycles of this size class. This is because the cushioning stroke of rear suspension is longer in the machines of the four subject models.

The slack is specified in terms of the sag the chain exhibits as shown in Fig. 157. Check the amount of sag Ⓐ , when the machine is standing erect by itself without any load, and increase or reduce the sag by repositioning the two adjusters equally, as necessary.

Drive chain sag specification

Model	Chain sag Ⓐ
RM100A	20 - 25 mm (0.8 - 1.0 in.)
RM125 & RM125S	50 - 55 mm (2.0 - 2.2 in.)
RM125A	45 - 50 mm (1.8 - 2.0 in.)

CAUTION:
The position of each chain adjuster is noted by the punched mark on the adjuster as referred to the marking provided on the swing arm. Be sure that the two adjusters are positioned indentically.

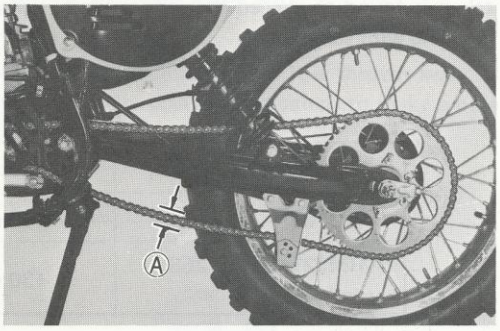


Fig. 157. Drive chain sag

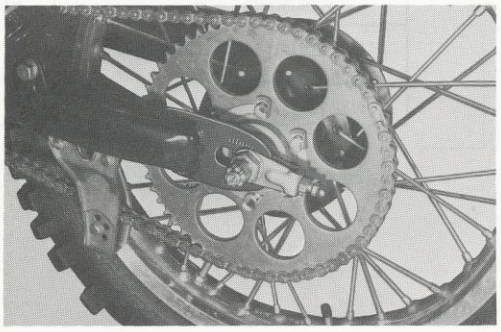


Fig. 158. Identifying the setting of chain adjuster

TIGHTENING TORQUE

GROUP 5

TIGHTENING TORQUE CHART

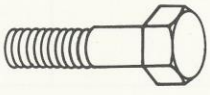
	kg-cm	lb-ft
Cylinder head nut (RM125A)	180 ~ 230 (230~ 270)	13.0 ~ 16.6 (16.6 ~ 19.4)
Magneto rotor nut (RM125A)	230 ~ 280 (300 ~ 400)	17.0 ~ 20.0 (21.6 ~ 28.8)
Engine sprocket nut (RM125A)	800 ~ 1200 (400 ~ 600)	57.6 ~ 86.4 (28.8 ~ 43.2)
Clutch sleeve hub nut	600 ~ 700	43.2 ~ 50.0
Primary drive gear nut	900 ~ 1000	64.8 ~ 72.0
Front brake cam lever bolt	50 ~ 80	4.0 ~ 5.5
Front axle shaft	400 ~ 520	29.0 ~ 37.0
Front axle clamp bolt	150 ~ 250	11.0 ~ 18.0
Steering stem head bolt	400 ~ 550	29.0 ~ 39.5
Steering stem upper clamp bolt	150~ 230	11.0 ~ 16.5
Front-fork upper clamp bolt (Left)	130 ~ 230	9.5 ~ 16.5
Front-fork upper clamp bolt (Right)	250 ~ 350	18.0 ~ 25.0
Steering stem lower clamp bolt	200 ~ 300	14.5 ~ 21.5
Fornt fork lower clamp bolt (L, R)	250 ~ 350	18.0 ~ 25.0
Rear axle nut	400 ~ 520	29.0 ~ 37.0
Rear shock absorber fitting bolt	200 ~ 300	14.5 ~ 21.5
Rear swing arm pivot nut	550 ~ 700	49.5 ~ 50.0
Handlebar clamp bolt	160 ~ 200	11.5 ~ 14.0
Rear brake cam lever bolt	50 ~ 80	4.0 ~ 5.5
Rear torque link nut	120 ~ 150	8.5 ~ 10.5

For other bolts and nuts not listed above, refer to this chart:

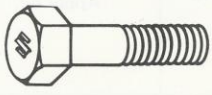
Tightening Torque

Bolt Diameter (mm)	Conventional Bolt		"S" Marked 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	6.6 - 10.0	130 - 230	9.5 - 17.0
10	180 - 280	13.0 - 20.0	250 - 400	18.0 - 29.0

Conventional Bolt



" S " Marked Bolt



GROUP 6 PERIODIC INSPECTION

RECOMMENDED REPLACEMENT AND RELUBRICATION SCHEDULE

The two schedules given here represent the minima of services that the machine needs in order for it to remain in best operable condition. It is recommended that the machine be taken care of by periodically servicing it according to these or better schedules.

Periodical replacement

To be replaced	INTERVALS			
	100 km (60 miles) or after each race	200 km (120 miles) or after each 2 races	300 km (180 miles) after each 3 races	500 km (300 miles) or after each 5 races
Piston rings		Replace		
Drive chain			Replace	
Drive chain buffer			Replace.	
Drive chain guide roller			Replace.	
Rear sprocket			Replace.	
Throttle, brake & clutch cables			Replace.	
Engine sprocket				Replace.
Second muffler (RM125A)				Replace.
Piston (RM125A)				Replace.

Periodical relubrication

To be relubricated	INTERVALS			
	100 km (60 miles) or after each race	200 km (120 miles) or after each 2 races	300 km (180 miles) or after each 3 races	500 km (300 miles) or after each 5 races
Drive chain	Apply oil.			
Kick starter lever	Grease or oil.			
Throttle, brake & clutch cables	Apply oil.			
Throttle grip			Apply grease.	
Brake pedal	Grease or oil.			
Brake camshafts (front and rear)				Apply grease.
Drive chain guide roller	Apply oil.			
Front fork		Change oil.		
Transmission		Change oil.		

NOTE: Machines, change oil in front fork and transmission after initial 100 km (60 miles).

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