



SERVICE STATION MANUAL

FOR

bajaj
Sunny



NOTICE

All information contained in this manual is based on the latest product information at the time of publication. Bajaj Auto Ltd. accepts no liability for any inaccuracies or omissions in this publication, although every possible care has been taken to make it as complete and accurate as possible. All procedures and specifications subject to change without prior notice. The right is reserved to make changes at any time without prior notice and without incurring an obligation to make such changes to product manufactured previously. Contact your authorised bajaj dealer for the latest information on product improvements incorporated after this manual was issued.

FOREWORD

We have pleasure in presenting this Service Manual for Bajaj-Sunny. This manual is designed by bajaj auto ltd., primarily for use by authorised bajaj dealers and their qualified mechanics. However, it contains enough details and basic information to make it useful to the vehicle owner who desires to carry out his own basic maintenance and repair work.

Since a certain basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily; the adjustments, maintenance, and repairs should be carried out only by qualified mechanic. If proper adjustment can not be obtained by following the procedures in this manual, find out the cause and correct as necessary.

In order to perform the work efficiently and to avoid costly mistakes, the mechanic should read the text thoroughly, familiarising himself with the procedures before starting work, and then do the work carefully in a clean area. Wherever special tool or equipment is specified, make shift tool or equipment should not be used. Precision measurements can only be made if proper instruments are used and the use of substitute tools may adversely affect safe operation of the vehicle.

The safety precaution and special instructions have been printed in bold type to draw your attention. These instructions indicates points of particular interest for more efficient, convenient and safe operation. It is essential that you do not neglect these instructions while carrying out repairs so as to avoid any personnel injury and damage to or destruction of equipments and vehicle.

The Research and Development Department of bajaj auto ltd. is continuously striving to further improve all models manufactured by the company. Modifications are therefore inevitable and significant changes in specifications or procedures will be forwarded to all authorised bajaj dealers and will, where applicable, appear in future editions of this manual. This manual consists of following major chapters.

1. "General information" contains general information which will be useful when servicing the vehicle.
2. "Scheduled maintenance" gives the procedures for all maintenance which must be done periodically.
3. "Dismantling" gives teardown sequences required to service major components. Unless specific instructions are given for assembly and installation, they are performed by reversing the removal sequences.
4. "Maintenance" describes the procedures for inspection, adjustment and repair which may become necessary unexpectedly or irregularly. .
5. "Trouble Shooting" lists the problem areas and the remedies to solve the defects.

For any further technical assistance, users of this service manual are welcome to refer to :

The Dy.Gen.Manager (Service)

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Pune - 411 035, INDIA.

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GENERAL INFORMATION

BEFORE SERVICING AND REPAIRS

To understand the condition of the vehicle, note the total kilometers driven and operating conditions, before starting any repairs. Listen to what the customer complaints about the vehicle and note down the defects to be attended. In performing the service work, observe the following precautions to ensure that the vehicle is serviced properly and effectively.

- Understand the trouble spots properly and identify the causes. Determine the repairs to be carried out. If removal and dismantling of some parts are found necessary proceed according to the instructions given in this manual. A careful reading of the relevant section is necessary to eliminate unnecessary work.
- Use genuine bajaj parts and recommended lubricants. Parts that do not meet bajaj design specifications may damage the vehicle.
- Petrol is extremely inflammable and is explosive under certain conditions. Therefore, do not smoke or allow flames or sparks near working area.
- Always work in a well ventilated area. Never run the engine in a closed area because exhaust gases contain poisonous carbon monoxide.
- Always ensure mutual safety when working with a partner.
- Watch for sharp edges, especially during major dismantling and assembly.
- Protect your hands with gloves when lifting the heavy parts or turning it over.
- Before starting servicing be sure that you have the proper tools and cleaning equipment so that you can perform a safe, clean and efficient job.
- Use the special tools designed for this product. Special tools not only facilitate the ease of operation but also take care of your safety and avoid damages to instruments and vehicles.
- Before removal and dismantling, clean the vehicle thoroughly. Any dirt entering the engine or other parts will work as an abrasive and shorten the life of the vehicle. For the same reason, before installing a new part, clean off any dust or metal fillings.
- Generally, when installing a part with several bolts, nuts or screws they should all be seated in their positions and tightened lightly. Then fully tighten them evenly in a criss-cross pattern. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely when loosening the bolts, nuts or screws, first loosen all of them by about a quarter of turn and then unscrew them fully.
- The torque values given in this manual should always be adhered to. Too little or too much torque will cause serious damage. Use a good quality, reliable torque wrench.
- Common sense should guide how much force is necessary in assembly and dismantling. If a part seems especially difficult to remove or install, stop and examine the causes. Whenever tapping is necessary, tap lightly using a wooden or plastic faced mallet. Use an impact driver for removing screws in order to avoid damaging the screw heads.
- Clean parts in cleaning solvent upon dismantling. Lubricate the sliding surfaces before reassembly. Apply proper grease/lubricant wherever so specified. After dismantling place all the parts in trays in order of dismantling. This will speed-up assembly and will help correct installation of parts. After assembly, check all the parts for correct installation and proper operation.
- It is desirable that gaskets and 'O' rings are replaced during overhauls. The mating surfaces around the gasket should be free of foreign matter and perfectly smooth to avoid oil or compression leaks.
- A part installed using a press or driver, such as wheel bearing should first be coated with oil on its outer or inner circumference for snug fitment.
- When installing a ball bearing the bearing race which is affected by friction should be pushed by a suitable driver. This prevents severe stress on the balls and races and thus protects them from damages. Press a ball bearing until it stops at the stopper of its seat. Do not use compressed air to spin the bearings dry. This causes damage to the bearing surface.
- Replace any oil or grease seals that were removed as removal generally damages the seal. Seals should be pressed into place with a driver, having even contact on the surface. Press the seal till it touches its seat.
- Engine wear is generally at its maximum while the engine is warming up and before all the rubbing surfaces have an adequate lubricative film. During assembly, oil or grease should be applied to any rubbing surface which has lost its lubricative film. Old

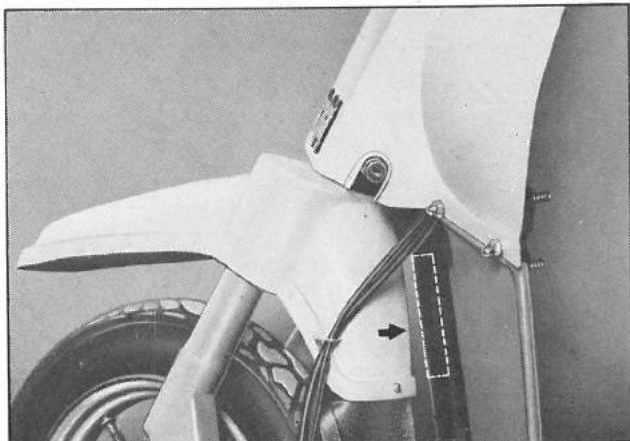
grease or dirty oil should be cleaned off. Deteriorated grease loses its lubricative property and may contain abrasive foreign particles.

- Use only recommended oil/grease for specific applications. Use of wrong type of grease may prove harmful.

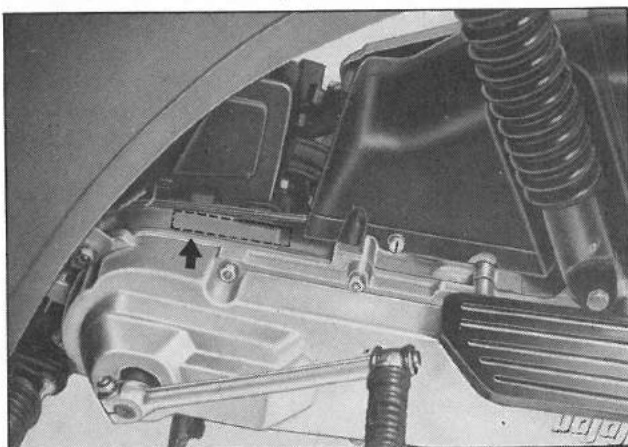
IDENTIFICATION DATA :

The engine and chassis serial numbers are used to register the vehicle. They are the only means of identifying your particular vehicle from others of the same model and type. In the event of theft, the investigating authority will require both numbers as well as the model type and any particular feature of your vehicle that can help them to identify it. The serial numbers may also be needed by your dealer while ordering the spares.

Serial numbers with prefix 18 C and 18 E are stamped on chassis and engine of the vehicle in the position indicated in the figures below.



Stamping on chassis



Stamping on engine

TECHNICAL SPECIFICATION

Engine and transmission

Type	: Two stroke, forced air cooled
Bore	: 40 mm
Stroke	: 39.2 mm
Swept volume	: 49.26 cm ³
Compression - - ratio	: 11 : 1
Maximum net - - power	: 2.06 KW (2.8 HP) at 6500 rpm of engine
Maximum net - - torque	: 3.43 N.m. (0.35 Kgf.m) at 5000 rpm of engine
Intake system	: Reed valve
Ignition system	: Electronic CDI
Ignition timing	: 18 ± 1.5 degrees BTDC
Carburettor	: Side draft 13 mm Ventury Carburettor
Spark plug	: Modi Champion L82C or equivalent
Spark plug gap	: 0.7 to 0.8 mm
Lubrication	: 2% mixture of self mixing oil and petrol
Starting	: Kick start
Clutch	: Wet, Centrifugal
Transmission	: Chain and single gear drive
Overall drive - - ratio	: 10.51 : 1

Chassis and Body

Frame type	: Tubular construction
Suspension	: Front : Leading links with coil springs. Rear : Variable rate coil spring and double acting co-axial shock absorber
Brakes	: Type : Mechanical expanding shoe type Size : 110 mm dia x 25 mmwide
Wheels	: Tyres : Front : 2.75 x 10 Rear : 2.75 x 10 Tyre pressure : Front : solo : 1.25 kg/cm ² (18 psi) Rear : solo : 1.75 kg/cm ² (25 psi) With pillion : 2.5 kg/cm ² (36 psi) Rims : Front - 10 x 1.5 : Rear - 10 x 1.5
Fuel tank - - capacity	: Full : 3.5 ltrs. Reserve : 0.7 ltrs.

Electricals

System	: 12 Volts AC
Head lamp	: 35 / 35 W
Stop lamp/tail lamp	: 21 W / 5 W
Horn	: AC

Dimensions

Length	: 1685 mm
Width	: 635 mm
Height	: 1000 mm
Wheel base	: 1165 mm
Saddle height	: 780 mm
Ground clearance	: 100 mm
Turning circle - - diameter	: 3.54 m min.

Weights

Vehicle dry weight	: 60 kg.
Maximum pay load	: 120 kg.

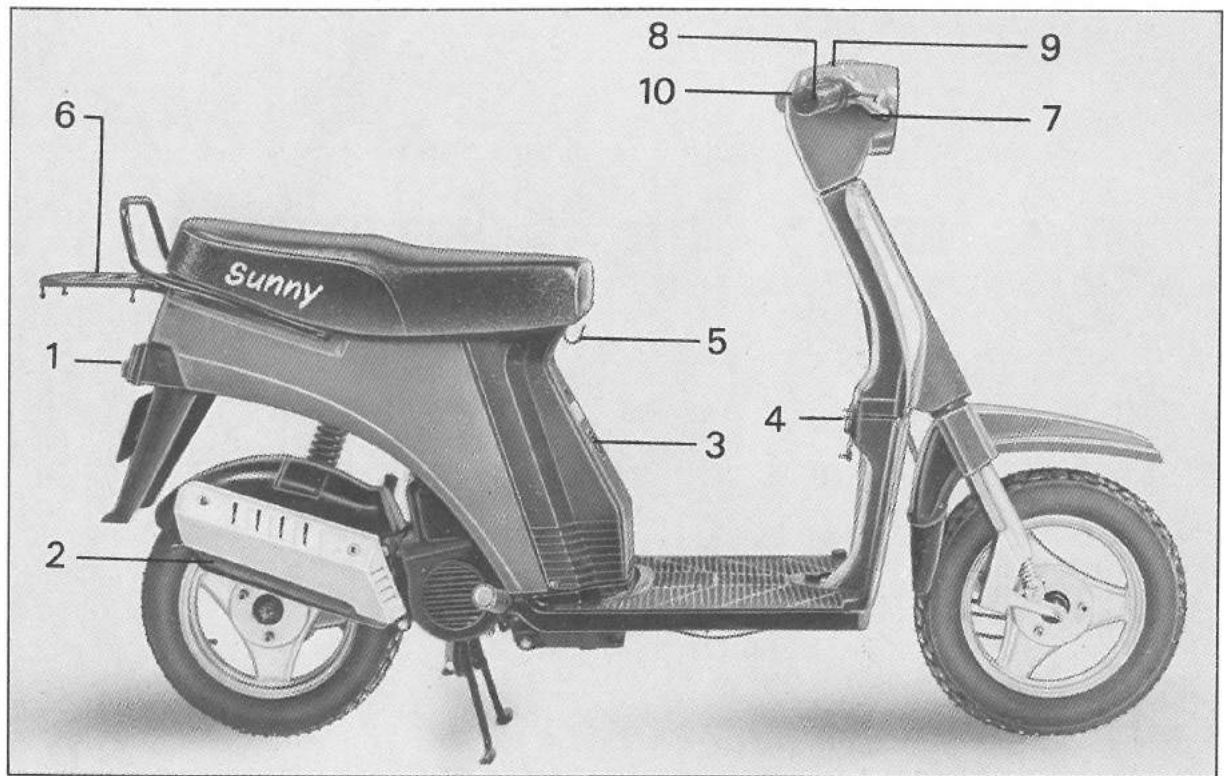
Performance

Maximum speed	: 50 km/h.
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Notes :-

- Values given above are nominal and for guidance only. 15% variation is allowed to cater for production and measurement variation.
- All dimensions are under unladen condition.
- Definitions of terminologies wherever applicable are as per relevant IS/ISO standards.
- Specifications are subject to change without notice.

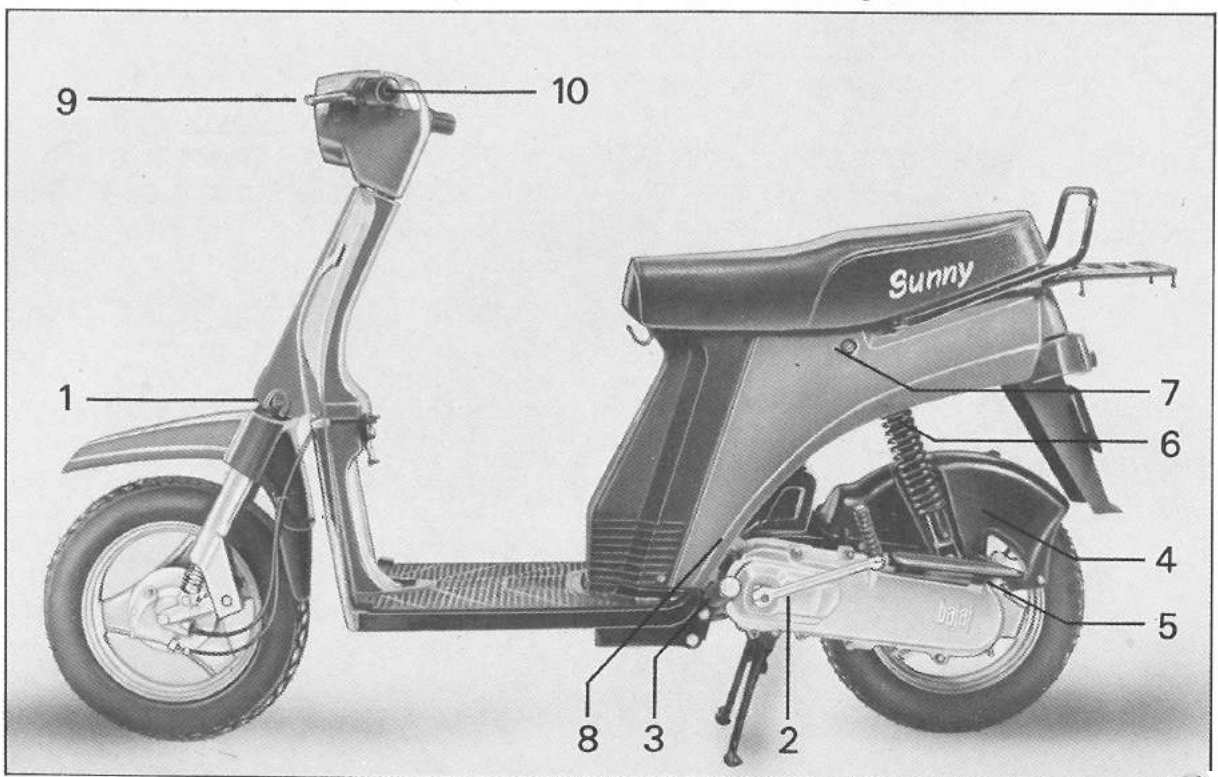
LOCATION OF PARTS :



- 1. Brake/Tail lamp
- 2. Silencer
- 3. Petrol cock lever

- 4. Spare wheel bracket
- 5. Hook
- 6. Light luggage carrier

- 7. Front brake lever
- 8. Accelerator grip
- 9. Speedometer
- 10. Right handle bar switches



- 1. Steering-cum-ignition lock
- 2. Kick start lever
- 3. Pillion foot rest

- 4. Saree guard
- 5. Side foot rest
- 6. Rear shock absorber

- 7. Seat lock
- 8. Choke lever
- 9. Rear brake lever
- 10. Left handle bar switches

LUBRICATION :

For lubricating vital engine parts the petrol lubrication system is used. Lubrication of piston, cylinder, gudgeon pin, connecting rod, needle roller bearing, crankshaft main bearings is attained by 2% of oil mixed into the petrol.

The centrifugal clutch and the drive chain operate in an oil bath of SAE 30 oil.

'If the engine is run without mixing oil in petrol, it will be severely damaged and will not be covered under warranty.'

Recommended lubricants :

Engine oil : 2% of self mixing 2T oil is to be mixed with petrol (20 ml per litre of petrol).

'Adhere to the practice of mixing only 2% oil in petrol'.

'Excess oil will produce unnecessary carbon deposits, spark plug fouling and excess pollution. Too little oil will promote extra wear and tear of moving parts.'

We recommend the use of following oils :

Type of oil	Marketed by
Servo 2T Supreme	I.O.C.
Super 2T	H.P.C.
Bharat Super 2T	B.P.C.
Castrol Super TT	Indrol

Transmission oil :

We recommend the use of SAE 30 oil for transmission.

FUEL SUPPLY :

The petrol oil mixture is supplied from fuel tank to carburettor by gravity feed.

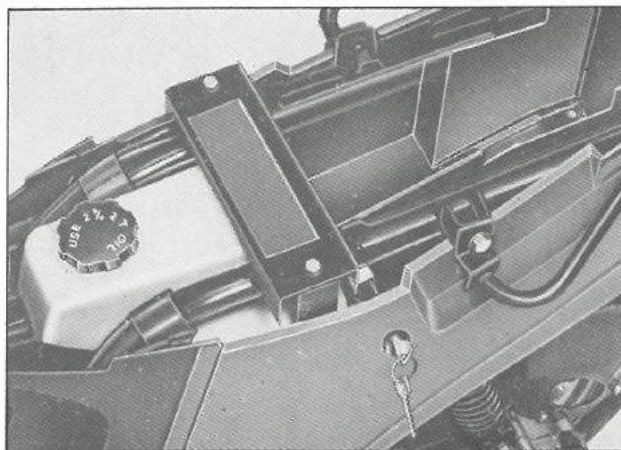
Fuel tank :

The fuel tank capacity is 3.5 litres including reserve of 0.7 litres. The fuel tank cap is accessible for filling the petrol once the seat is lifted up.

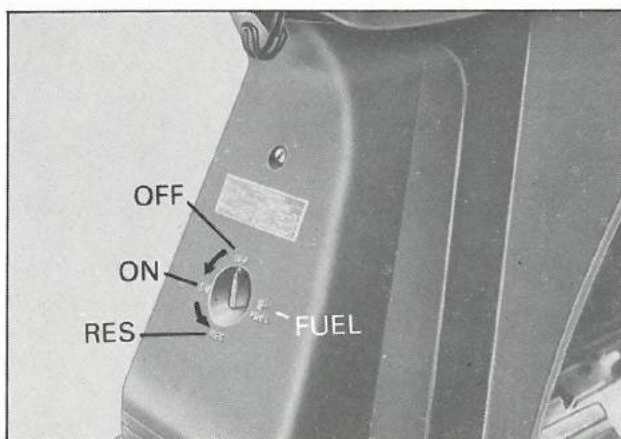
Fuel cock :

The fuel cock lever has 3 positions -

ON	:	The normal operating position for the fuel cock lever.
RESERVE	:	If the fuel level in the tank is too low, turn lever to the reserve position to use 0.7 litres of fuel supply.
OFF	:	Turn the lever to the OFF position whenever the vehicle is parked.



Fuel tank cap.



On Reserve Off

STEERING CUM IGNITION LOCK

The steering-cum-ignition lock is located on the left hand side of the front fork just above the front mudguard. The handle bar will get locked in right position and ignition circuit will cut off when it is locked.

For locking of handle bar :

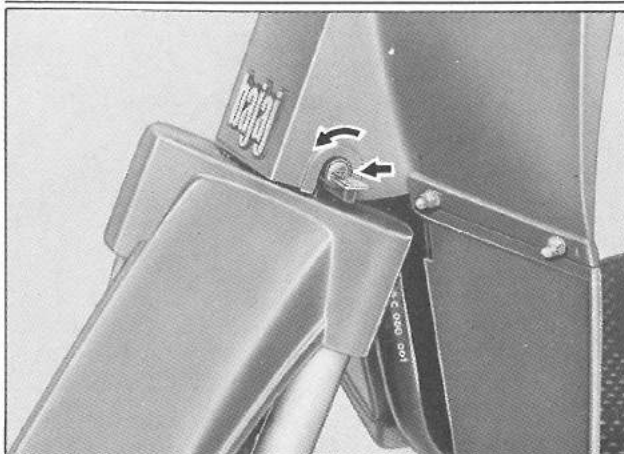
- Turn the handle bar either towards left or towards right side to the extreme position.
- Insert the key into the lock barrel and turn it anticlockwise through 180 degrees.
- Take out the key and confirm that the handle bar is locked.

For unlocking of handle bar :

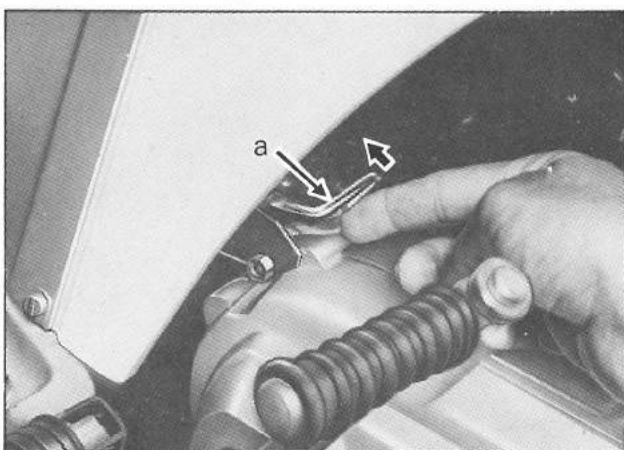
- Insert the key into the lock barrel.
- Release the lock by turning the key clockwise through 180 degrees.
- Take out the key.
- A common key is used for steering-cum-ignition lock and seat lock.

CHOKE

The choke is required while starting, especially when the engine is cold. The choke lever is located below the left hand side cover, near the kick start lever on crankcase. The choke gets released automatically when the accelerator grip is opened more than 1/3rd of its full position.



Steering-cum-ignition lock.



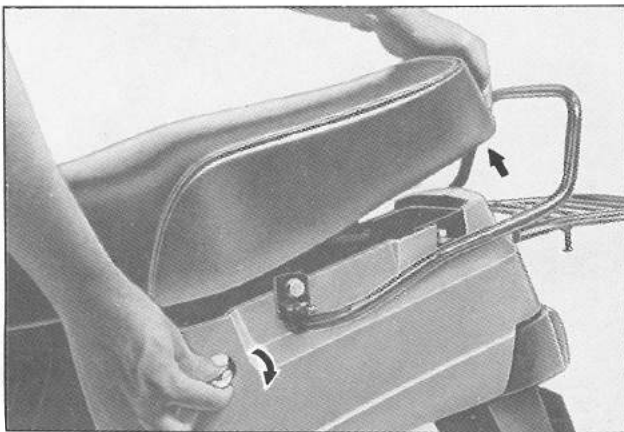
Choke lever

Starting : By means of a kick start lever, provided on the left hand side of vehicle.

SEAT LOCK :

It ensures the safety of tool kit, petrol tank and the contents inside the luggage box. For opening the seat.

- Insert the key into the lock barrel.
- Turn the key in clockwise direction by about 90 degrees.
- While holding the key in this position lift the seat from its rear end.



Opening the seat lock

For locking the seat gently press the rear end of the seat from top.

ELECTRICALS :

For brighter lighting a 12 V, AC system is provided. The lights and horn are supplied with alternating current from flywheel magneto.

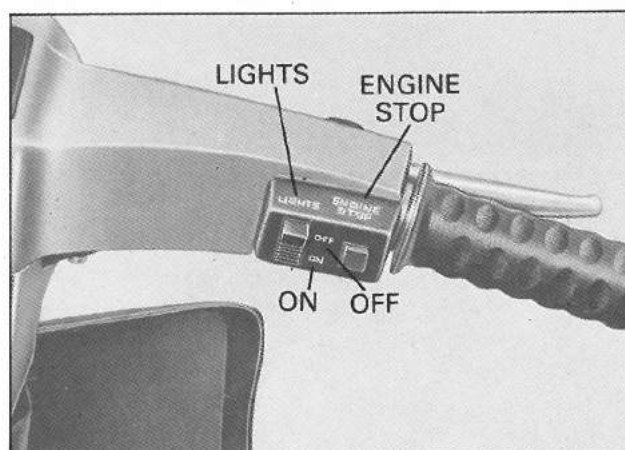
Right handle bar switches :

● **Light 'ON-OFF' Switch :**

OFF	The head light and tail light are switched OFF in this position.
ON	When the engine is running the head light and tail light will be switched ON in this position.

● **Engine cut-off button :**

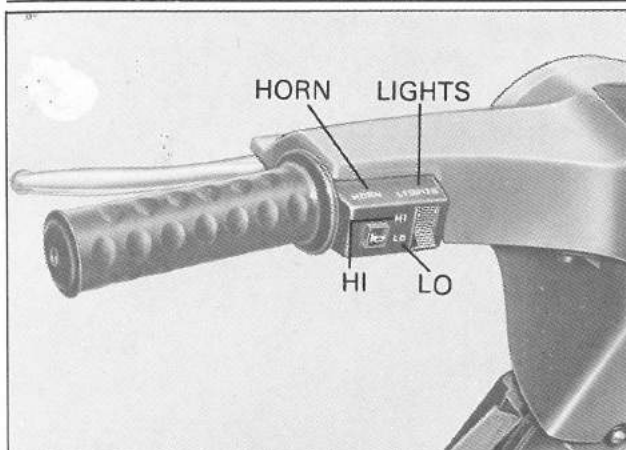
For stopping the engine, press the cut off button inwards.



Right handle bar switches

Left handle bar switches :

- **Horn button :** Press in the horn button for horn sound.
- **Dimmer switch :** The high or low beam can be selected with this switch.



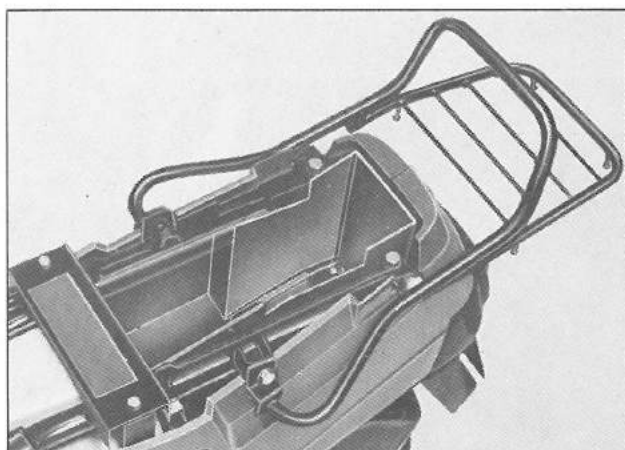
Left handle bar switches

LUGGAGE BOX :

It is provided under the seat and is accessible only after unlocking the seat.

LUGGAGE CARRIER :

A luggage carrier for carrying light loads is provided behind the seat. It can also be used as a hand hold while taking the vehicle 'on' or 'off' the stand.



Luggage box, Light luggage carrier

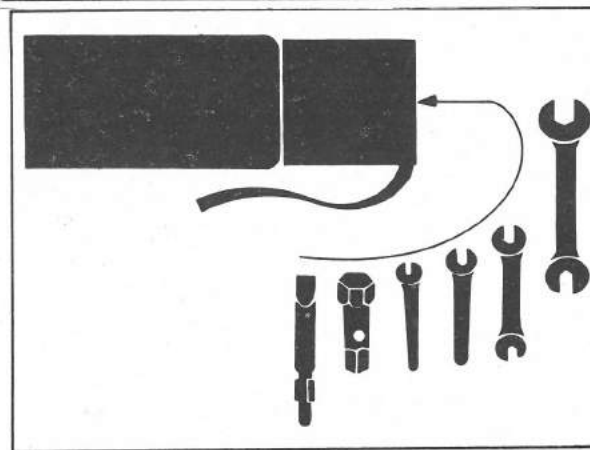
OPTIONAL EQUIPMENT :

1. Spare wheel
2. Rear view mirror

TOOL KIT :

The tool kit is located under the seat. The rubber band holds the tool kit firmly with the seat. It contains :

- | | | |
|-----------------|------------|-----------------|
| 1. Flat spanner | 10 - 11 mm | 6. Screw driver |
| 2. Flat spanner | 8 - 9 mm | |
| 3. Flat spanner | 6 - 7 mm | |
| 4. Flat spanner | 13 - 17 mm | |
| 5. Tool wrench | 21 mm | |



Tool kit

OPERATION :

Running in :

In the process of manufacturing the best possible materials are used and all machined parts are finished to a very high degree of accuracy. But it is still necessary to allow the moving parts to break in before subjecting the engine to maximum stresses. **The future performance and reliability of the engine depends upon the care and restraint exercised during its early life.** The general running in rules are :

- Always keep to the specified running in speed.
- Do not ride the vehicle at high speed.
- Do not race the engine.
- Do not start moving or race the engine immediately after starting. Run the engine for a few minutes at idle speed to give the oil a chance to work up into all engine parts.

The table given below shows the maximum permissible speed during running in :

Running in Kms.	Maximum speed
0 - 500	30 Km.ph.
500 - 1000	40 Km.ph.

Starting :

- Unlock the steering-cum-ignition lock.
- Turn the fuel cock to on/reserve position depending upon the fuel level inside the tank.
- Check that the light switch on right side of handle bar is in 'OFF' position.

When engine is cold :

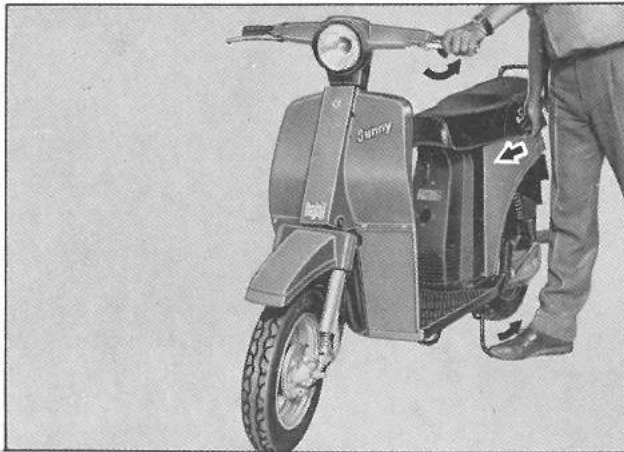
- Push the choke lever up.
- Position the kick start lever and give a sharp kick, with the throttle in completely closed position.
- Once the engine warms up, open the throttle, the choke lever will return back to its position automatically.

When engine is hot :

- While starting the warmed engine, open throttle 1/8th to 1/4th position and start the engine.

Moving off : The vehicle is to be moved on only when the engine has been warmed up sufficiently for a few minutes. For moving off :

- Apply the rear brake, anchor your right foot firmly on stand leg and take out the vehicle from stand.
- Release the rear brake lever. Look for the traffic from behind, give a proper signal and then slowly open throttle. The vehicle will start moving forward.



Taking vehicle off stand

Braking :

For stopping the vehicle smoothly and safely first close the accelerator and then apply front and rear brake simultaneously. Using only the front or rear brake is dangerous and cause skidding and loss of control. Anticipate your stop well in advance for avoiding sudden braking which may be dangerous.

Stopping the engine :

- Close the throttle.
- For stopping the engine, press the engine cut off button inwards.

DAILY SAFETY CHECKS :

Check the following items each day before you ride. These checks hardly require any time and habitual performance of these checks will help to ensure a safe, reliable ride.

If any irregularities are found during these checks refer to the maintenance chapter or contact an authorised bajaj dealer for the action required to return your vehicle to a safe operating condition.

Fuel :

Enough fuel for the planned distance of travel & leakage if any.

Electrical :

Operation of switches, lighting of head, tail /brake lamp, horn sound.

Brakes :

Front and rear brake effectiveness, lever play.

Tyres :

Inflation pressure, cracks, cuts and foreign material embedded in tread.

FUEL SAVING TIPS :

A well maintained vehicle can contribute a lot to the saving of petrol. Following are a few simple tips for keeping your vehicle healthy and your pocket wealthy.

Good riding habits :

- Ride smoothly and steadily at an optimum driving speed of 30 to 40 Kmph.
- Don't waste petrol by stop and go riding and by sudden starts and stops.
- Avoid harsh braking. Do not brake unless it is very essential, anticipate your stops, turns well in advance and slow down by deceleration.
- Choose a proper route to ride especially in peak hours.
- Don't overload the vehicle above the specified payload.
- Use the accelerator judiciously. Think of the accelerator barrel as fuel cock. The more you will turn it, the more petrol will be consumed.
- Cut off the engine if you want to stop more than for two minutes. Remember, idling costs fuel.

Vehicle condition :

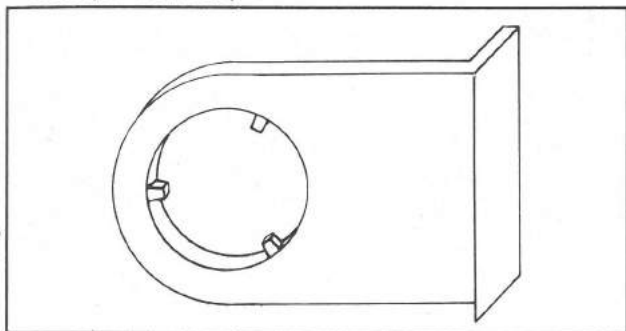
- Check all fuel lines and connections whenever your vehicle smells of petrol. Never fill the petrol right up to the filler cap.
- Always maintain the recommended tyre pressure and check it every week. Under-inflated tyres increases rolling resistance and thus costs both fuel and tyre life.
- Ensure that the brakes are not dragging/binding.
- For keeping the engine healthy :
 - ☐ Inspect and clean the spark plug, adjust the gap.
 - ☐ Clean the air filter.
 - ☐ Service carburettor and adjust idling speed.
 - ☐ Use only the recommended self mixing 2T oil (2%) for mixing with petrol.
 - ☐ Clean the exhaust system at the recommended intervals to avoid clogging.
 - ☐ If there is a power loss, then contact an authorised bajaj dealer and get the vehicle properly tuned.
- Regular maintenance will save fuel and money assuring you trouble free, enjoyable and safe riding.

SPECIAL TOOLS

The special tools recommended for carrying out repairs/overhauls are illustrated below. These tools are designed to facilitate quick and safe repairs. Use of these special tools is recommended to carry out repairs efficiently and for avoiding costly mistakes such as damages to parts, injuries etc. The following list contains for each tool the description, tool application and an illustrative sketch.

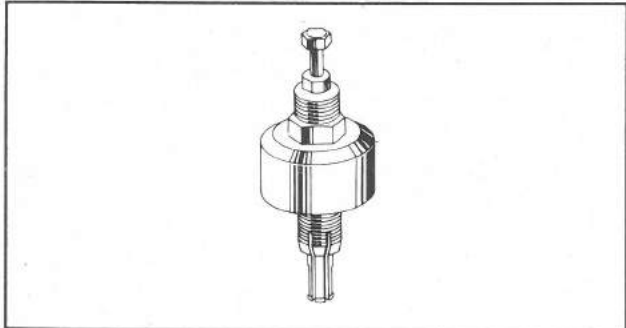
Due to continuous improvements/alterations in design and performance of the vehicle, in some cases there may be minor variations between the actual tools and tool drawings.

1. Spanner for holding crankshaft while tightening nut. (37-1014-07)



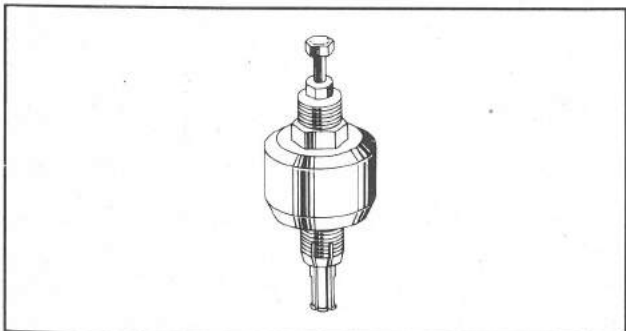
To be used for holding the crankshaft stationary while tightening the nut for starter gear.

2. Extractor for crankshaft and output shaft bearing. (37-1014-10)



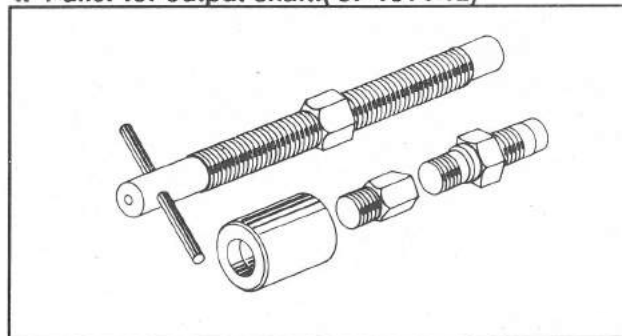
To be used for removing crankshaft bearings and output shaft bearing from crankcase.

3. Extractor for pinion shaft bearing. (37-1014-11)



To be used for removing pinion shaft bearing from crankcase.

4. Puller for output shaft. (37-1014-12)



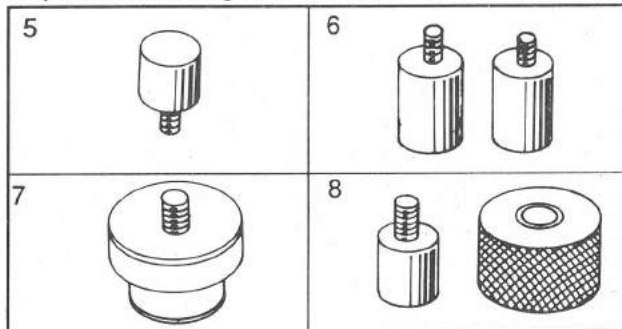
To be used along with puller (P.No. 37-1001-29) for pulling the output shaft while assembling it into the crankcase.

5. Inner driver 12. (37-1014-13)

To be used with holder (P.No. 37-1030-66) and outer bearing driver (P.No. 37-1030-73) for installing pinion shaft bearing.

6. Inner driver 17 (37-1014-14)

To be used with holder (P.No. 37-1030-66) & outer bearing driver (37-1030-73) for installing crankshaft & output shaft bearings into crankcase.



7. Adapter for fitting bush (37-1014-15)

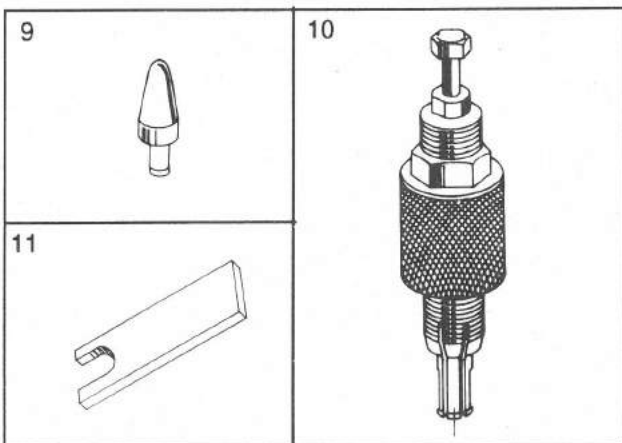
To be used with bearing driver holder (37-1030-66) for fitting bronze bushes into clutch cover.

8. Fixture for fitting rubber bush on crankcase (37-1014-16)

To be used with bearing driver holder (37-1030-66) for fitting rubber bush on crankcase.

9. Pin for fitting inner bush (37-1014-17)

To be used with bearing driver holder (37-1030-66) for fitting inner bush into the engine foundation rubber bush.



10. Extractor for bush (37-1014-18)

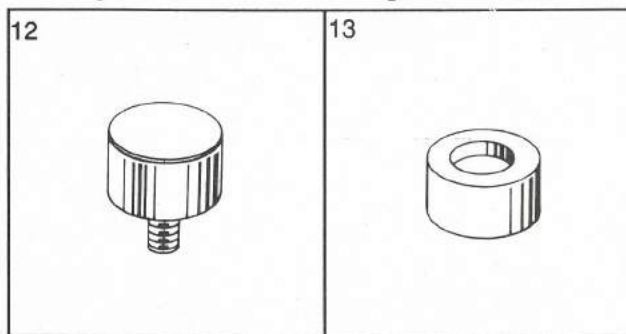
To be used for removing bronze bushes from clutch cover.

11. Spanner to prevent rotation of bolt while tightening nut 39-0302-15 (37-1014-21)

To be used for holding the nut stationary while tightening the rear brake lever mounting bolt.

12. Inner driver 10 (37-1014-23)

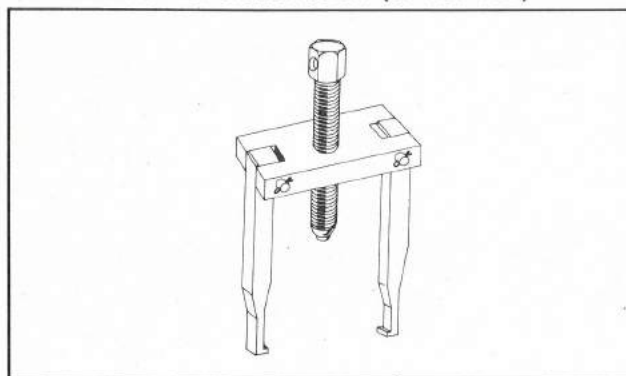
To be used with bearing driver holder (37-1030-66) for installing front brake drum bearings.



13. Inner driver 30 (37-1014-24)

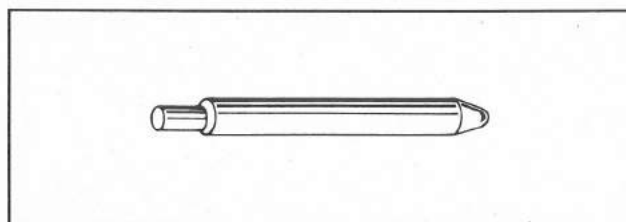
To be used with bearing driver holder (37-1030-66) for installing front brake drum bearings.

14. Extractor for clutch bush (37-1014-27)



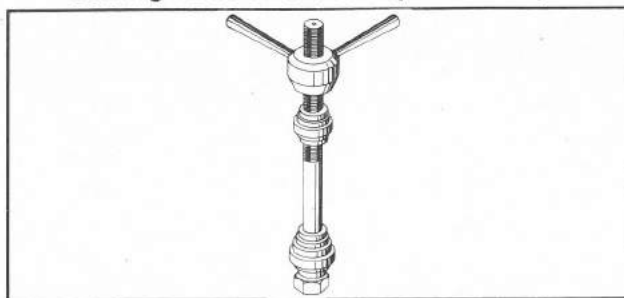
To be used for removing clutch bush assembly from its seat.

15. Drift for piston pin (37-1015-02)



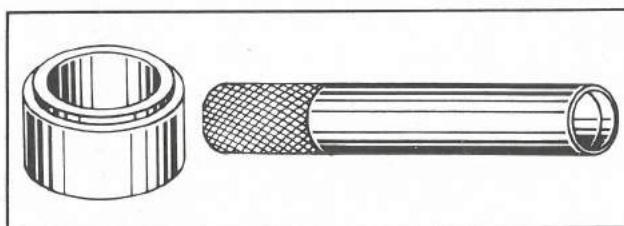
To be used for removal as well as installation of piston pin

16. Assembly tool for fitting upper & lower bearing races on chassis. (37-1801-06)



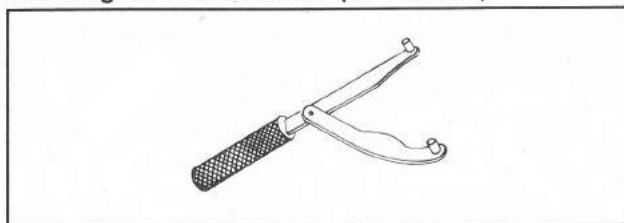
To be used for installing the upper and lower bearing race on chassis tube.

17. Bearing driver for fork assembly 37-1818-10



To be used with (37-1830-05) for fitting lower bearing race on front fork tube.

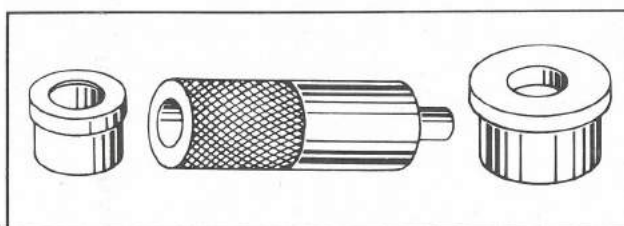
18. Magneto rotor holder (37-1030-54)



For holding the rotor stationary while loosening the rotor nut.

19. Outer driver 32 x 35 (37-1030-72)

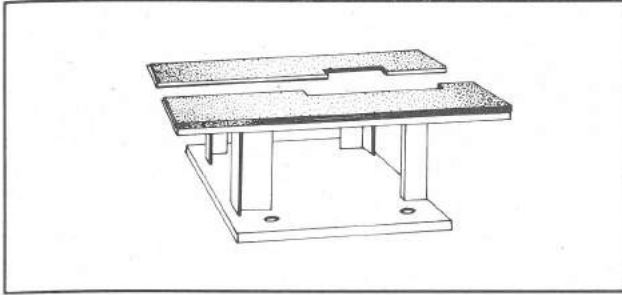
To be used with bearing driver holder for installing magneto side oil seal.



20. Outer driver 37 x 40 (37-1030-73)

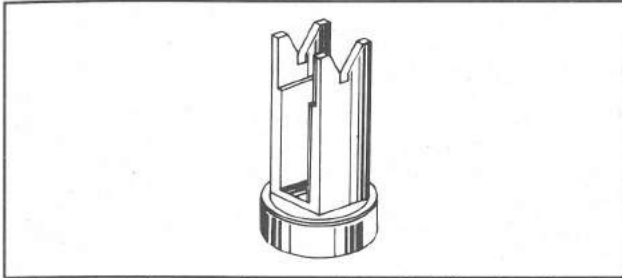
To be used with bearing driver holder for fitting output shaft oil seal, clutch side oil seal, crankshaft & output shaft bearing.

21. Engine support stand (37-0030-01)



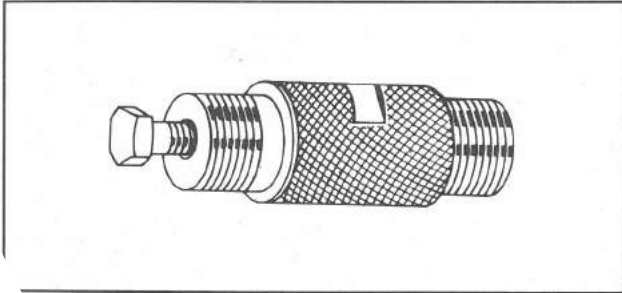
For mounting engine, crankcase

22. Crankshaft alignment checking fixture 37-1030-79



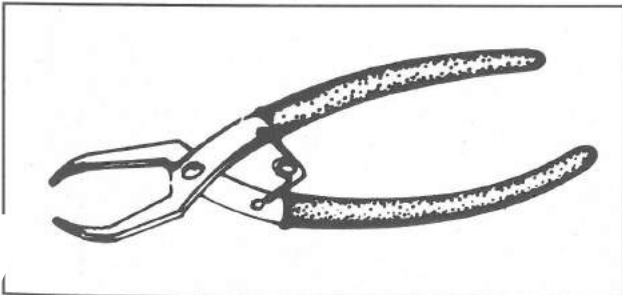
To be used for mounting crankshaft while checking its run out.

23. Magneto puller (37-1024-21)



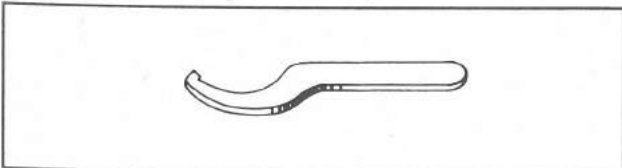
For pulling magneto rotor from its tapered seat.

24. Inside circlip plier (37-1030-56)



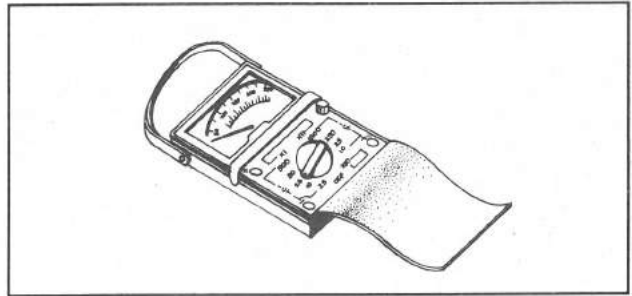
For removing circlip, holding sector gear spindle in clutch cover.

25. Hook spanner (37-1801-01)



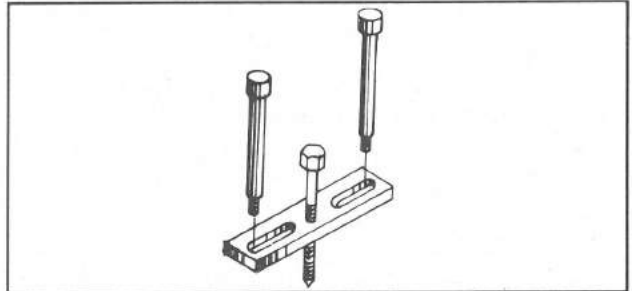
To be used for loosening / tightening of the lock ring nuts of front fork.

26. Hand tester (37-1030-63)



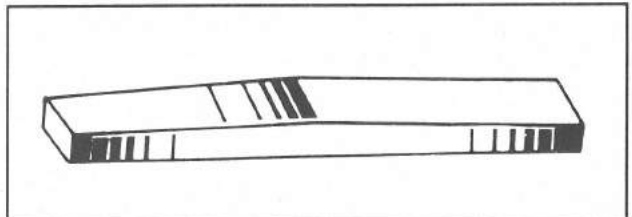
For checking electrical components.

27. Crankcase splitting tool 37-1030-12



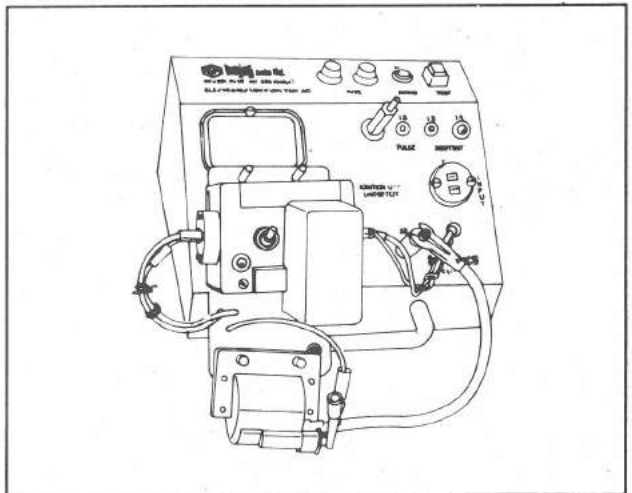
To be used for separating magneto side crankcase half from clutch side crankcase.

28. Wedge for crankshaft alignment (37-1030-65)



To be used while installing crankshaft to avoid distortion of its webs.

29. Electronic testing jig (37-1118-01)



To be used in connection with testing jig (37-1106-03). For checking CDI unit & H.T.Coil.

AN OVERHAUL KIT

SR. No.	DESCRIPTION	PART NO.
OIL SEALS		
1.	Crankcase clutch side oil seal	14-10-1008
2.	Crankcase magneto side oil seal	14-10-1009
3.	Crankcase output shaft oil seal	14-10-1005
4.	Front brake drum oil seal	14-15-1021
5.	Front brake drum cover grease	18-15-1013
BEARINGS		
1.	Crankshaft bearings (2 nos) output shaft bearing	01-1701-11
2.	Pinion shaft bearing	06-1010-09
3.	Connecting rod small end bearing	14-10-1019
4.	Front brake drum bearings (2 nos)	14-15-1033
5.	Steering balls (56)	01-1801-27
'O' RINGS		
1.	'O' ring for clutch cover	15-10-1084
2.	Fuel cock 'O' ring	30-14-1017
3.	Fuel tank cap 'O' ring	18-14-1012
4.	Speedo cable 'O' ring	18-19-1007
GASKETS		
1.	Crankcase joining gasket	14-10-1010
2.	Clutch cover gasket	14-10-1039
3.	Gasket for drain bolt	01-1003-30
4.	Cylinder head gasket	15-10-1027
5.	Cylinder block base gasket	14-10-1014
6.	Speedobase gasket	18-19-1003
7.	Gasket for dip stick	18-10-1010
8.	Gasket for reed valve/ crankcase	16-12-1011
9.	Gasket for reed valve /intake manifold	15-16-1016

TIGHTENING TORQUE

Tighten all bolts and nuts to the specified torque value using an accurate torque wrench. If insufficiently tightened, a bolt or nut, may become damaged or fall off, possibly resulting in damage to vehicle and injury to the rider. A bolt or nut which is overtightened may become damaged, strip an internal thread or break and then fall out. When applying the tightening torque, first loosen the bolt or nut by half a turn and then tighten to specified torque. The following table list the tightening torque for the major bolts and nuts. :

STANDARD TORQUE :

The table below, relating tightening torque to thread diameter and pitch, lists the basic torque for the bolts and nuts used on bajaj vehicles. However, necessary actual torque may vary among bolts and nuts with same thread diameter and pitch. The tightening torque listed in the table varies to a greater or lesser extent from what is given in this table. Refer to this tables for only the bolts and nuts not included in the following tables.

Threads (dia) mm	Torque Kg.m.
5	0.35 - 0.50
6	0.60 - 0.80
8	1.40 - 1.9
10	2.6 - 3.5
12	4.5 - 6.2
14	7.4 - 10.0
16	11.5 - 16
18	17 - 23
20	23 - 33

SPECIFIED TIGHTENING TORQUE

ENGINE				
Sr. No.	Part Name (Part No.)	Size / Thread size / pitch / Threaded length / across flat	Qty.	Torque Kg.m.
1.	Spark plug (18-11-1022)		1	3
2.	Oil drain bolt (39-0527-04)	M8 x 1.25 x 35 x 13	1	0.8 - 1
3.	Castle nut for securing rear brake drum (39-0786-15)	M12 x 1.25 x 15 x 17	1	5 - 6
4.	Magneto rotor nut (39-0302-15)	M10 x 1.5 x 6 x 17	1	4 to 4.5
5.	Starter gear securing nut (39-0786-15)	M12 x 1 x 7 x 19	1	4.5 to 5
6.	Crankcase joining nut, Cylinder head nuts, Reed valve nuts, Clutch cover nuts (39-0292-15)	M6 x 1 x 5 x 10	27	0.8 to 1
7.	Nylock nut for foundation (39-0422-15)	M10 x 1.25 x 12 x 17	2	3.5
8.	Nut for fixing silencer to cylinder block (39-0292-15)	M6 x 1 x 5 x 10	2	0.6 to 0.8
CHASSIS				
1.	Nut for front hub pin (39-0422-15)	M10x1.25x12x17	1	3.5
2.	Nuts for securing wheel rim to drum (39-0956-15)	M8x1.25x7.5x13	6	2 to 2.5
3.	Handle bar bolt (39-0867-04)	M8x1.25x40x13	1	1.2
4.	Bolt for securing luggage carrier (39-0119-04)	M8x1.25x16 x 13	4	1.5 to 1.8
5.	Rear shocker bolt at upper eyelet (39-0934-04)	M10x1.5x38 x 17	1	1.5
6.	Front link bolts centre(39-0866-04) rear(39-0867-04)	M8x1.25x30 x 13 M8x1.25x1.65x14	2 2	1.2 1.2
7.	Lock ring nuts (upper & lower) (01-1801-30)		2	1.6
8.	Floor board securing bolts (39-0062-04)	M6x1x12x14	4	0.6 to 0.8
9.	Domed cap nut for joining upper & lower shield. (39-0963-15)	--	4	0.6 to 0.8
10.	Nuts holding front suspension spring. (39-0292-15)	M6 x1x5x10	4	0.6 to 0.8
11.	Rear shock absorber bolt at lower eyelet (39-0867-04)	M8x1.25x40x13	1	1.2

SCHEDULED MAINTENANCE

CLEANING

The vehicle must be cleaned periodically by using pressurised water. Before cleaning the vehicle cover the important parts like ignition switch, silencer, ignition unit, H.T. coil, by plastic bags. Don't apply the jet of water directly towards electrical parts such as switches, ignition unit, coils etc. otherwise they may get damaged.

Brushing with kerosene and wiping dry with clean rag is advisable for external cleaning of the engine. All painted surfaces should be washed with water. Do not use kerosene or detergent soap on painted surfaces as it damages the paint and turns it dull.

If necessary, blow with compressed air, the head lamp reflector, clean or wipe off dust with a very soft feather brush. After washing, dry the vehicle and carry out the lubrication.

Water may enter on the brake liners during washing and brake slippage may occur. So take enough care to keep liners dry.

PERIODIC MAINTENANCE

Periodic maintenance of a vehicle is most important to prolong its life and ensure your safety while driving. Please carry out the periodic maintenance in accordance with the periodic maintenance chart.

LUBRICATION

To reduce the friction between two moving parts lubricate them periodically. Insufficient lubrication will cause rapid wear, damaging the parts prematurely. Lubricate everytime after washing the vehicle and whenever the vehicle is operated under wet, rainy conditions. Before lubricating, clean off any rusty parts and wipe off old grease, oil or dirt.

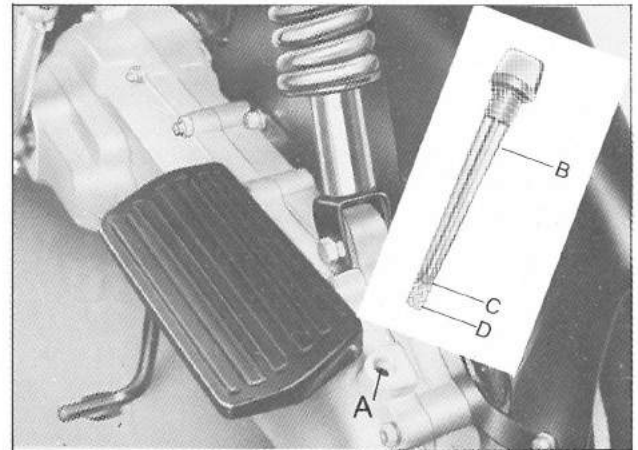
A few drops of oil are effective to keep bolts and nuts away from rusting and sticking. This makes removal easier. Please refer lubrication chart (Page No. 17) for details of lubrication.

Transmission oil :

For proper functioning of clutch and transmission, the oil should be maintained at an appropriate level.

Oil level inspection :

- Place the vehicle on stand, on a level ground.
- Let the oil settle for a few minutes.
- Clean the surface area around the oil filler opening.
- Unscrew the dipstick from oil filler opening hole and clean it.
- Fully screw in the dip stick, then unscrew it and observe the oil level on it.
- There are two marks engraved on it. If the level is below the lower level mark, top up with the appropriate quantity of recommended oil up to upper level mark. If the oil level is too high i.e. above the upper level mark, drain some oil from drain hole.
- Fit back the dipstick and tighten it securely.
- Ensure that there is no oil leakage.



a) Oil filter opening hole.

c) Upper level mark,

b) Dip stick,

d) Lower level mark.

Oil replacement:

If the oil is used for a longer duration its lubricating performance deteriorates. So it is necessary to replace the oil in accordance with the periodic maintenance chart.

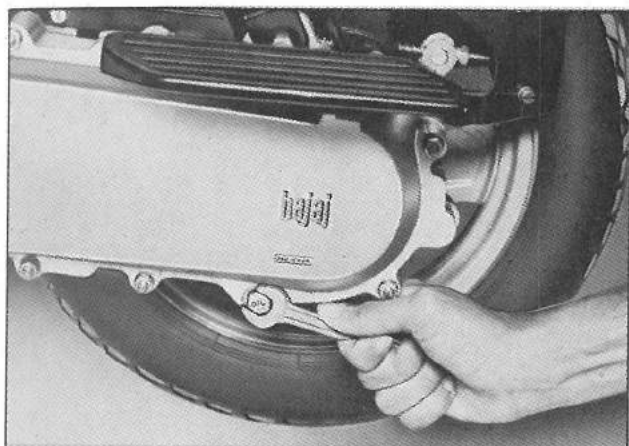
For replacing the oil follow the procedure given below :

- Run the vehicle for few minutes.
- Place the vehicle on its stand. Let the oil settle.
- Remove the oil drain bolt with its gasket. Let the oil drain completely. Replace the gasket if its condition is dubious. Tighten the drain bolt securely (Tightening torque 0.8 - 1 kg.m.)
- By using a funnel pour the recommended oil from the oil filler opening hole.

- Fit back the dip stick and tighten it securely. Make sure that there is no oil leakage.

Do not use inferior grade of oil as a replacement for the recommended oil, otherwise it will lead towards engine troubles.

Oil capacity	500 ml
Recommended oil	SAE30



Drain bolt

SPARK PLUG

The condition of the spark plug indicates how the engine is operating. A defective spark plug will lead to difficult starting and poor performance. Engine heat and combustion chamber deposits will cause any spark plug to slowly break down and erode over a period of use. The spark plug should be removed periodically and inspected for electrode gap and the colour at the tips, at regular intervals as specified in periodic maintenance chart.

If the engine is operating correctly and the machine is being ridden properly, the colour at the electrode tip will be greyish yellow to light brown. The centre electrode will not have pitting and the side electrode will have constant thickness. The combustion chamber residues left on the tip gives an indication of engine performance as follows :

- **Greyish yellow to light brown** : Correct running of engine. Spark plug is perfectly matched for optimum engine performance.
- **Shining black or wet carbon deposits** : Excessive oil percentage in fuel.

- **Burnt white/pearly deposits of metallic enamel beads**: Overheated engine, too lean air fuel mixture, spark plug not fully tight, use of hotter plug.
- **Dull black velvety carbon deposits** : Too rich fuel air mixture, electrode gap too wide, plug too cold, clogged air cleaner, insufficient high tension voltage, continuous slow speed driving.

Clean the spark plug preferably in a sand blasting device and thoroughly clean off any abrasive material left on it

Measure the gap between the electrodes with the wire type thickness gauge, adjust the gap if incorrect by bending the outer electrode carefully. The gap at the electrode for optimum performance is 0.7 to 0.8 mm.

Connect the H.T. lead to spark plug, ground the plug and check the current jumping across the plug electrode. The bright blue spark should jump across the electrodes.

Replace the spark plug in case of following conditions:

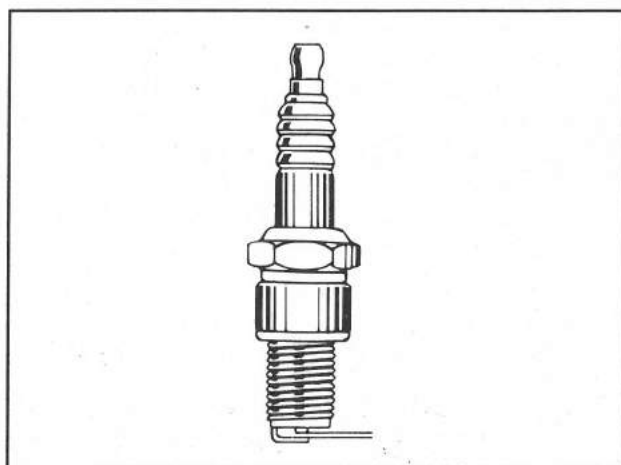
1. Excessive electrode wear
2. Cracked insulator.
3. Chipped off insulator
4. Shorted plug.

While installing back the spark plug, check for ;

1. The condition of sealing washer.
2. Cleanliness of contact surfaces of spark plug seat and cylinder head seat.

When installing the plug, first screw it in with finger and then use the spanner for the final tightening only. This will prevent chances of stripping of the cylinder head threads.

Standard plug : **Modi Champion L82C**
 Electrode gap : **0.7 to 0.8 mm**
 Tightening torque : **3 kg.m.**



Spark plug gap

PERIODIC MAINTENANCE CHART

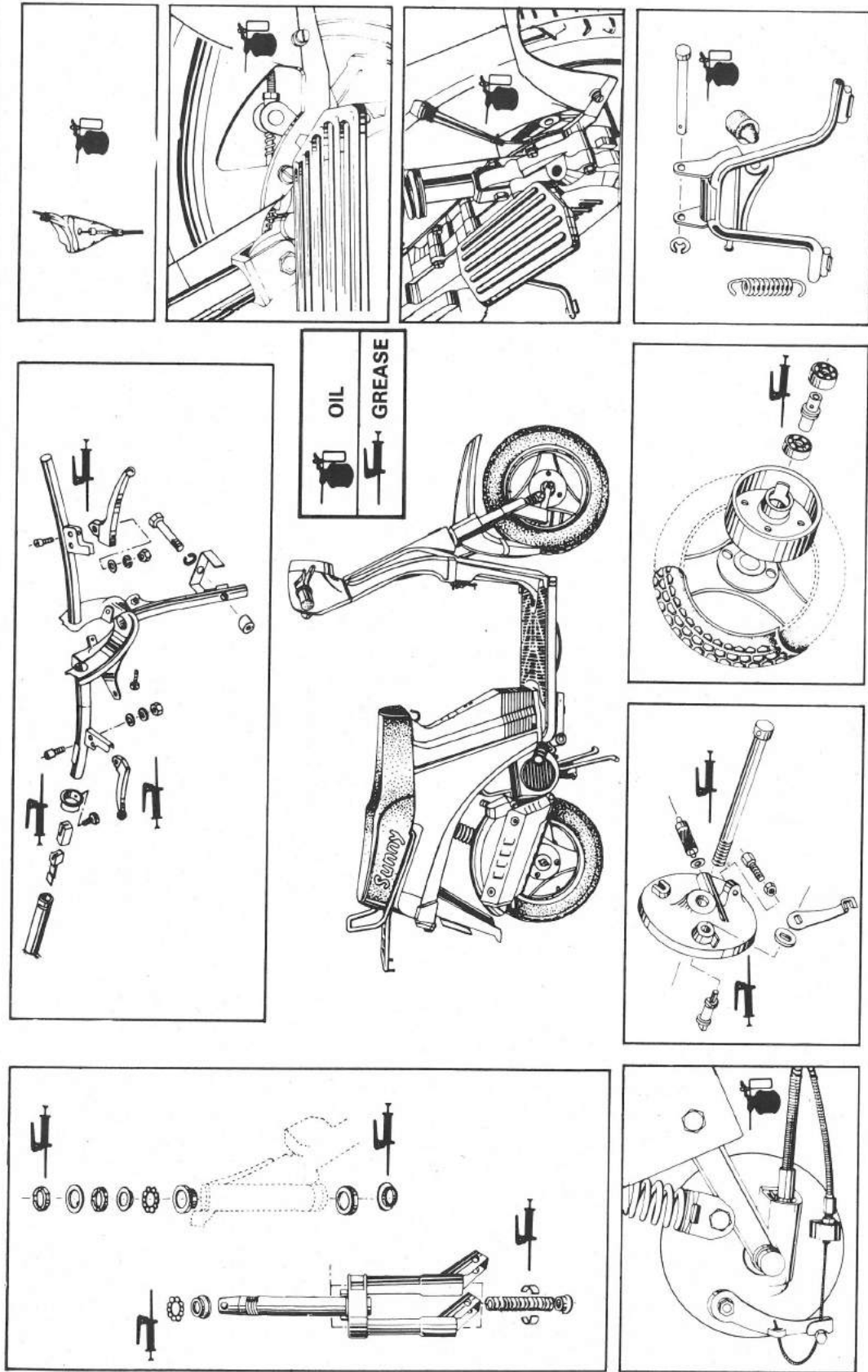
The following chart should be strictly adhered to as a guide to general maintenance. However, one must take into consideration that weather, terrain, geographical location and a variety of individual uses may affect time schedule. For example, if the vehicle is continuously operated in humid climate, all the parts must be lubricated much more frequently than shown in this chart so as to avoid damage caused by water to metal parts.

SR. NO.	FREQUENCY OPERATION	WHICHEVER COMES FIRST				ODOMETER READING (KMS)			
		EVERY	1st 750	IIInd 3000	IIIrd 5000	7500	10000	12500	15000
1	Servicing		●	●	●		●		●
2	Transmission oil:								
	Level checking/topping up			●		●		●	
	Replacement		●		●		●		●
3	Air filter element cleaning		●	●	●	●	●	●	●
4	Spark plug : Cleaning/gap setting		●	●	●	●	●	●	●
	: Replace	7500				●			
5	Carburettor cleaning /overhaul				●		●		●
6	Fuel line/fuel cock cleaning				●		●		●
7	Chain inspection : Roller inspection				●				
	: Elongation inspection						●	●	●
8	Decarbonisation : Block, piston, cyl head	5,000 KM			●		●		●
	: Silencer					●			●
9	Control cables adjustment		●	●	●		●		●
10	Tightening nuts/bolts/fastners	Month	●	●	●	●	●	●	●
11	Check the functioning of all lights/horn/switches	Day	●	●	●	●	●	●	●
12	Head lamp alignment		●	●	●	●	●	●	●
13	Tyre rotation				●		●		●
14	Tyre pressure	Week	●	●	●	●	●	●	●
15	Front fork : check and adjust axial play				●		●		
16	Front/rear brake : inspection/adjustment		●	●	●	●	●	●	●
	: Overhaul					●			
17	Lubricate								
	a) Front and rear brake levers		□	□	□	□	□	□	□
	b) Control cables		*	*	*	*	*	*	*
	c) Speedo pinion/gears/cable				□		□		□
	d) Brake cam shafts	After washing the vehicle		□	□	□	□	□	□
	e) Stand pivot		*	*	*	*	*	*	*
	f) Front fork bearing races/balls			□	□	□	□	□	□
	g) Wheel bearings				□		□		□
	h) Front suspension				□		□		□
	i) Accelerator sleeve/slider block			□		□		□	

● Indicates operation to be performed.

* Indicates lubrication by SAE 30 oil.

□ Indicates lubrication by Lithium-calcium soap base grease.



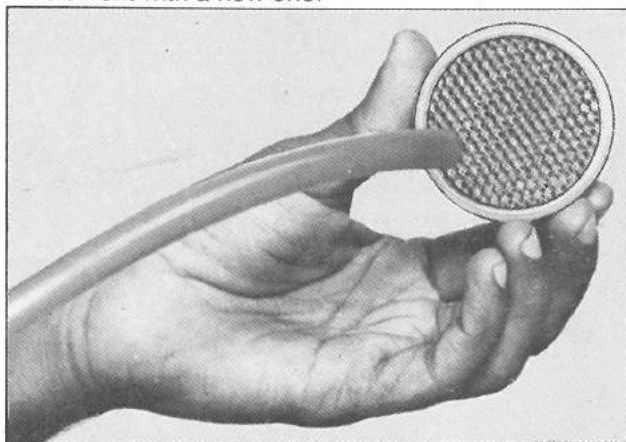
LUBRICATION DIAGRAM

AIR FILTER

If the air filter is clogged, the intake resistance will increase with a resultant decrease in engine power and increase in fuel consumption and spark plug fouling.

Filter Element Cleaning :

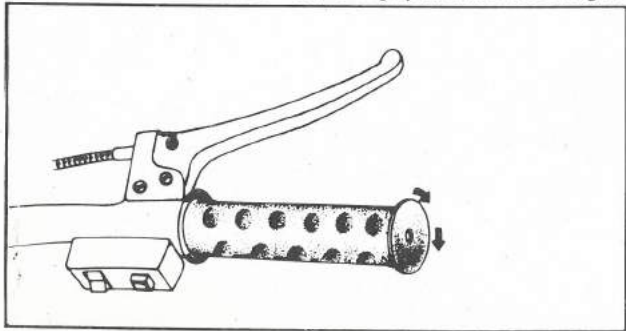
- Take out the front cover.
- Unscrew the clamp securing the air filter box and take out the filter assembly.
- Separate the air filter element.
- The air filter element should be cleaned gently but thoroughly in a bath of petrol and then should be blown dry by using compressed air. The compressed air should be directed from the clean side towards the dirty side.
- Clean the filter element at the intervals in accordance with the periodic maintenance chart. In dusty areas the element should be cleaned more frequently than the recommended interval.
- Each time when the element is cleaned, look for any foreign material inside the air filter box. Tighten all the fittings so as to avoid the entry of unfiltered air into the engine.
- If the air filter element is damaged, replace the element with a new one.



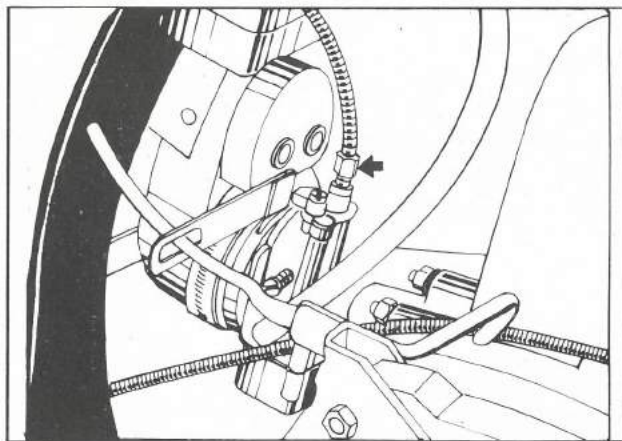
Cleaning the element.

ACCELERATOR GRIP

The accelerator grip controls the movement of carburettor slide. If the accelerator grip has excessive play due to either cable stretch or maladjustment, it will cause a delay in carburettor response especially at low engine rpm. On the other hand, if the accelerator grip has no play, control of carburettor slide will be difficult. If the inner cable is overstretched, idling rpm will be too high.



Accelerator grip play



Accelerator cable adjuster

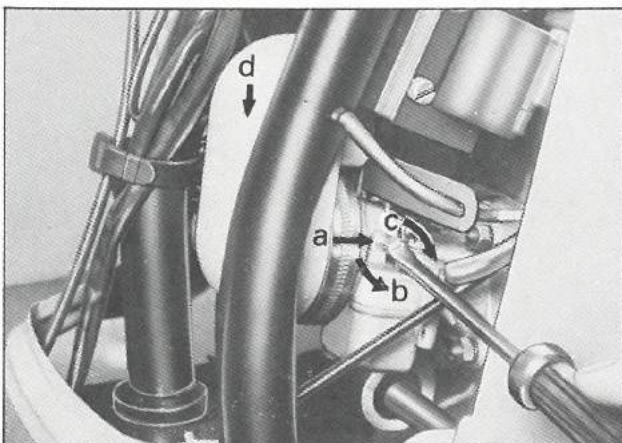
- Inspect the accelerator grip play by lightly turning the grip back and forth.
- For adjusting improper play use the cable adjuster (at top of the carburettor).
- Loosen the adjuster lock nut and turn the adjuster as illustrated until specified free play is obtained. Retighten lock nut after adjustment is over.

Standard accelerator grip play : 2 -3 mm.

IDLING SPEED ADJUSTMENT

Whenever the idling adjustment is disturbed follow the procedure given below for setting proper engine idling.

- Remove front cover, start the engine and warm up for two minutes by running the vehicle on road.
- Set the air screw (emission) $1 \pm 3/4$ turns out from fully in position.
- Then set the engine idling r.p.m. by rotating the idle adjustment screw clockwise or anticlockwise with the help of a screw driver. Adjust the screw so that the engine runs at the slowest steady rpm.



- a. Idling adjustment screw b. Decrease speed
c. Increase speed d. Air filter

Normal idling speed : 1250 to 1350 rpm

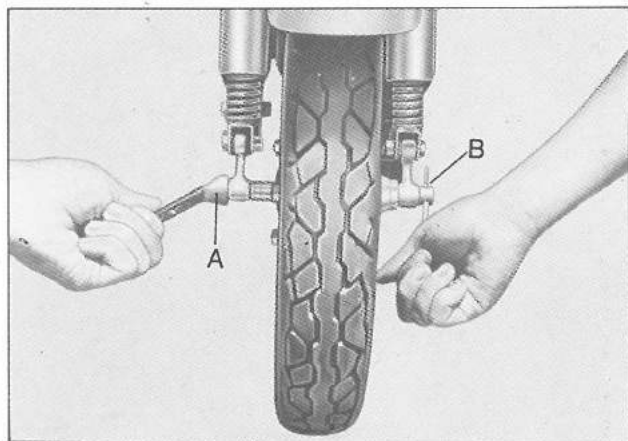
- Open and close the throttle a few times to make sure that the idling speed does not change. Readjust if necessary.
- With the engine idling, turn the handle bar to either side. If the handle bar movement changes the idling speed, the accelerator cable may be improperly adjusted, damaged or improperly routed. Rectify any of these conditions before riding.
- For the precise adjustment of idling speed, use of tachometer is recommended. The tachometer rubber probe is to be pressed at the crankshaft magneto side end.
- Do not attempt to compensate for faults in other systems by adjusting the idle speed.

REMOVAL OF WHEELS

For removal of wheels in case of puncture follow the procedure given below :

Front wheel :

- Place the support under the floor board so that the front wheel is off the ground.
- Loosen the three nuts holding the front rim to brake drum.
- Remove the axle nut. For avoiding the axle from rotating, hold it by inserting a tommy bar through the hole provided on the axle head.
- Tap the axle and remove it from left hand side. Remove the spacer.
- Slide the wheel out, thus dis-engaging the pin of the left link from the slot of brake panel.
- Remove the brake panel from the brake drum.
- Unscrew the three nuts and remove the spring and plain washers.
- Remove the brake drum from wheel.



a) Axle nut

b) Axle hold

Installation :

Fit the spare wheel on brake drum studs. Install the plain washer, spring washer and nuts. Tighten the nuts securely. (Tightening torque - 2 to 2.5 kg.m.)

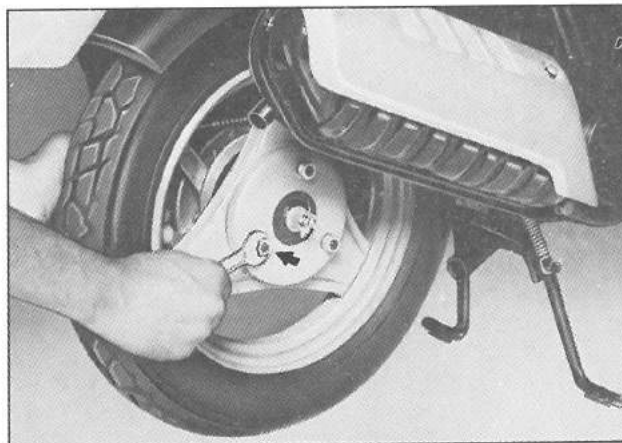
- Insert the brake panel assy into the brake drum. Fit the wheel between the links such that the slot on the brake panel assembly slides on to the pin of left link. (Right direction when sitting on the seat).

- Install the spacer from right hand side.
- By aligning the wheel, insert the axle from left hand side.
- Install the axle nut and tighten it securely. (Tightening torque - 3 to 3.5 kg.m.)
- Rotate the wheel and check for free rotation, brake action and speedometer functioning.

Rear wheel :

- Loosen the three nuts which secure the wheel to brake drum. Take out the spring and plain washers.
- Slide the wheel towards the right side and take it out carefully.

Take enough care not to touch the hot silencer while removing the rear wheel.



Rear wheel nuts

Installation :

- Install the rear wheel on brake drum studs.
- Install the plain and spring washers.
- Install the nuts and tighten them securely (Tightening torque - 2 to 2.5 kg.m.)

BRAKES

Brakes should always be maintained in perfect condition for safety. Brake drum wear, brake lining wear and brake cable stretch causes the brakes to go out of adjustment. This increases the free play at the brake lever and reduces the braking efficiency.

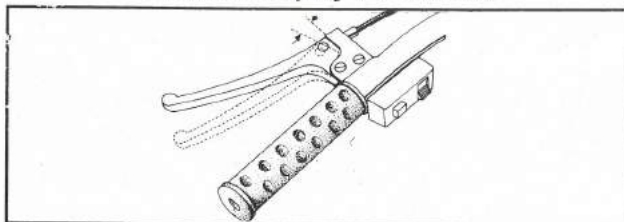
Front brake adjustment

Check the front brake lever play as shown in the figure. If it is more or less than the standard adjust the front brake as follows :

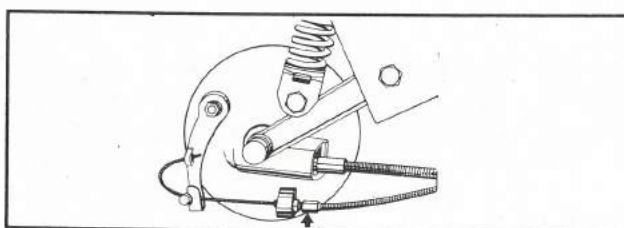
- The adjuster for front brake cable is located on front brake drum panel.
- Loosen the adjuster lock nut. Depending upon the required adjustments, turn the adjuster back and forth as follows :

- Turning the adjuster out reduces the brake lever play.
- Turning the adjuster in (i.e. clockwise direction) increases the brake lever play.
- After adjustment tighten the lock nut of the adjuster. Check the wheel for free rotation and then check the braking efficiency.

Brake lever play : 5 to 6 mm



Front /rear brake lever play



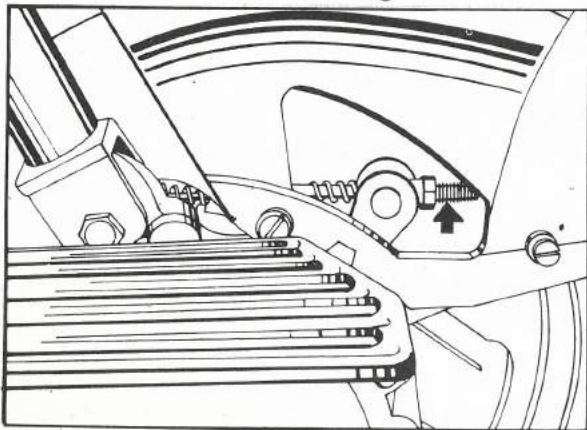
Front brake adjuster

REAR BRAKE ADJUSTMENT

Check the rear brake lever play as shown in figure. If it is more or less than the standard, adjust the rear brake.

- The adjusting nut for rear brake is located on rear brake inner cable at the end.
- Depending upon the adjustment required, turn the adjuster back or forth as follows :
 - Turning the adjusting nut in (clockwise direction) increase the play at the brake lever.
 - Turning the adjusting nut out (anticlockwise direction) reduces the play at the brake lever.
- After adjustment, check the wheel for free rotation and for braking effectiveness.

"If the brakes remain ineffective despite above adjustments, take your vehicle to an authorised bajaj dealer for further investigation."



Rear brake adjusting nut

TYRES

For better road-holding and longer tyre life always maintain correct air pressure. Overinflation will cause bumpy ride and faster wear of the tyre at the centre. Under-inflation will cause poor steering and faster wear at the sides.

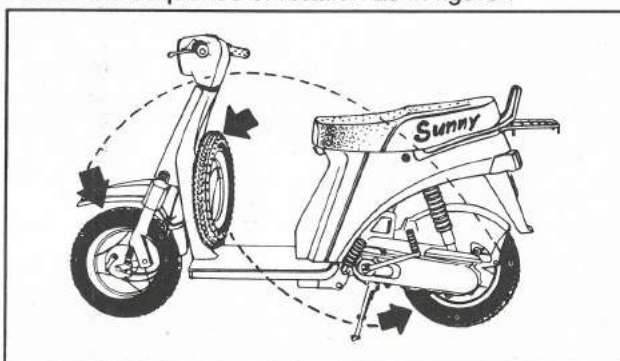
Tyre wear/damage :

Worn out tyre is unsafe. Replace the tyre when the tread depth reaches to less than 1.5 mm.

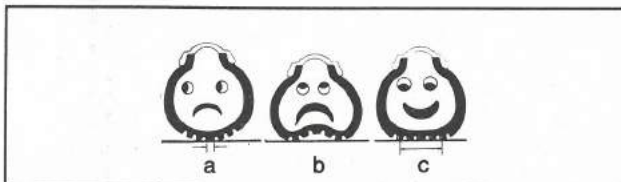
Tyre rotation :

To even out tread wear it is necessary to change the face of tyre and to rotate it position wise every 5000 kms.

Change the face of the tyre in relation with the wheel rim and inflate tyre to the specified pressure. The good tyre should be kept at the rear, which is a driving wheel. Follow the sequence of rotation as in figure :



Tyre rotation



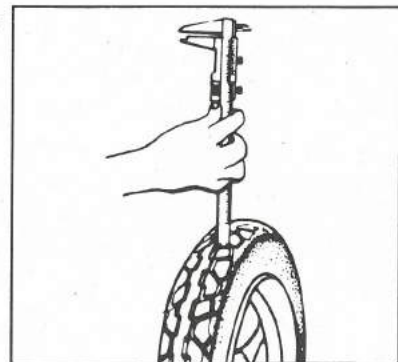
a) Over inflated b) Correctly inflated c) Under inflated

Tyre tread depth :

Measure the tyre tread depth by using the depth gauge. If tread pattern is not visible, replace the tyre. Also replace the tyre when the tyre tread depth is found to be less than the service limit.

Tyre tread depth :

Standard
5 to 6 mm
Service limit
1.5 mm



Tyre tread depth measurement

Tyre inflation pressure :

Cold inflation Pressure on public road	FRONT				REAR			
	Solo		Dual		Solo		Dual	
	Kg/Cm ²	Psi	Kg/Cm ²	Psi	Kg/Cm ²	Psi	Kg/Cm ²	Psi
	1.25	18	1.25	18	1.75	25	2.5	36

CONTROL CABLES :

Due to continuous operation of cables by the brake levers and throttle the inner cables are subjected to wear and tear. Cable maintenance is primarily concerned with preventing deterioration due to rust and weather as well as providing proper lubrication for free movement of inner cables in the outer casing. For checking any of the control cables follow the procedure given below :

- Disconnect the inner cable.
- Check free movement of the cable within its casing. If movement is obstructed, check for fraying or kinking of cable strands. If such damage is noticed, replace the inner cable or cable assembly as necessary.
- To lubricate cable, hold it in vertical position. Apply necessary oil to uppermost end of cable and move the inner cable to and fro. Leave it in vertical position until the oil flows down to the lower end. Allow excess oil to drain and reinstall the cable.
- Lubricate only the front brake cable and speedo cable. Accelerator cable and rear brake cable are friction free cables and hence need not require lubrication.

BULB REPLACEMENT :

When exchanging the bulbs, always replace the bulbs with that of the specified type and rating. This is important to prevent the electrical lighting circuit from malfunctioning. The head lamp bulb is of 12 Volts, 35/35 Watts whereas the stop/tail lamp bulb is of 12 Volt, 21/5 Watts.

Head light bulb replacement :

For replacing head light bulb follow the procedure given below :

- Remove the handlebar top cover.
- Remove the screw holding head lamp assembly to bottom cover.
- Take out head lamp assembly. Remove the clip and take out head lamp bulb holder.
- Replace the bulb of the same voltage and wattage.

Brake/Tail light bulb replacement :

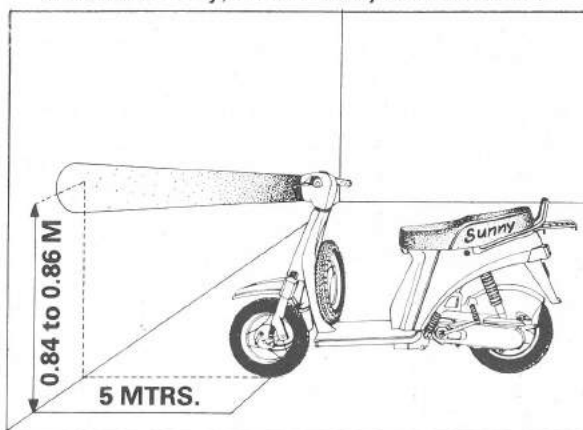
Remove the two screws and take out tail lamp glass. Remove the bulb and replace with new one. While installing back the tail lamp cover take due care of the tail lamp gasket.

HEAD LIGHT BEAM ALIGNMENT

The head light beam is adjustable vertically. If adjusted too low, neither the low nor the high beam will illuminate the road far enough ahead. If adjusted too high, the beam will fail to illuminate the road close ahead, and low beam will dazzle oncoming drivers.

The correct setting of head light beam can be obtained as follows :

- Inflate both front and rear tyres to specified inflation pressure.
- Place the vehicle on a level floor in front of a white wall as shown.
- Start the engine, hold the throttle control twistgrip at about 1/3 of its travel and set the dimmer switch on high beam.
- With two persons on the vehicle, slacken the screw securing the head lamp assembly. Move the head lamp assembly in to the bottom handle bar cover as required in order that the beam axis coincides with the mark on the wall (As shown in the figure). Tighten the screw firmly, once the adjustment is over.



Head light beam alignment

STEERING :

Steering play :

If the steering is too tight, it will be difficult to turn the handlebar quickly, the vehicle may pull to one side and the steering stem bearings may become damaged. If the steering is too loose, the handlebar will vibrate and the vehicle will be unstable and difficult to steer in a straight line.

Inspection :

- Raise the front wheel off the ground.
- From the straight forward position of the handle bar slowly push the handlebar to either side.

- If the handle bar to turn by the action of gravity and continues moving until its stopper on L.H. and R.H. side, the steering is not too tight.
- If the handle bar does not begin to turn by the action of gravity, the steering is too tight necessitating adjustment.
- Squeat in front of the vehicle and grasp the lower ends of the front fork. Push and pull the fork end back and forth.
- If the play is felt the steering is loose, necessitating adjustment.

Adjustment :

- Remove the steering cover.
- Loosen the upper lock ring nut.
- Turn the steering stem lock ring nut about 1/8 turn at maximum at a time using hook wrench (special tool No.37-1801-01). If the steering is too tight, loosen the lock nut a fraction of turn; if the steering is too loose, tighten the locknut a fraction of turn.
- Tighten the upper lock ring nut to a specified torque.
- Check the steering again. If the steering is still tight or loose repeat the adjustment. If the proper condition cannot be obtained inspite of correct adjustment, inspect the steering parts.
- Install the removed parts.

'Do not backout the lower steering stem lock ring nut more than a couple of turns. If the lock nut is backed off too far the bearing balls in the steering stem may fall out of place. This will necessitate steering stem removal and installation.

NON-USE MAINTENANCE

Non-use maintenance is necessary if a vehicle remains off road for a longer duration. The correct and careful non-use maintenance carried out before storing the vehicle will prevent the vehicle from rusting and from such other non-operational damages like fire hazards.

- Clean the entire vehicle thoroughly.
- Empty the fuel from the fuel tank and carburettor float bowl (if fuel is left in for a longer time, the fuel will break and could clog the carburettor.)
- Remove the spark plug and put several drops of 2T oil into the cylinder. Kick the engine over slowly a few times to coat the cylinder wall with oil and install back the spark plug.
- Set the vehicle on a box or a stand so that both the wheels are raised off the ground.
- Spray oil on all un-painted metal surfaces to prevent rusting. Avoid getting oil on rubber parts or brake liners.
- Lubricate the control cables.
- Cover the entire vehicle neatly. Make sure that the storage area is well ventilated and free from any source of flames or spark.

EXHAUST EMISSION CONTROL

Pollution of air due to automotive exhaust emissions is a topic of everybody's interest and concern. The exhaust emissions of an internal combustion engine pollutes the air badly if the vehicle is not tuned properly. Let us understand what is air pollution and what measures can be taken to control this pollution due to automotive exhaust.

What is air pollution :

Air pollution means the presence of abnormal material that reduces the usefulness of the air. More exhaustively it can be defined as;

"The presence of one or more contaminants in the outdoor atmosphere such as dust, fumes, gas-mist, odour, smoke or vapour in quantities of characteristics and/or duration such as to be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life and property"

Clean air is the air constituting of N_2 and O_2 containing approximately 78% and 22% by volume. The air is polluted mainly with the items like - smoke, dust, smog, carbon monoxide, oxides of nitrogen, sulphur dioxide.

In India, authentic data on sources of pollution is not available. However, transportation is mainly responsible for presence of CO, HC, NO_x and SO_x in the air and pollutes it. Automobiles mainly contribute to the emission of CO, HC, NO_x, to certain extent SO_x and particulates. Each of these pollutants has injurious effect on living organism.

What is pollution control :

With the enforcement of Motor Vehicle Rules 1989, Government of India has set the allowable percentage of CO emitted from the exhaust gases. Every vehicle must meet this standard. Tuning of the engine will be necessary if the vehicle is not meeting this standard.

Implementation by Bajaj Auto :

As a manufacturer Bajaj Auto Ltd ensures that the vehicle leaving the factory meet these exhaust emission standards as specified by Central Motor Vehicle Rules 1989. Specially developed low emission carburettors are used on Bajaj vehicles.

Preventive maintenance :

Though every new vehicle leaving the factory is certified and is meeting the exhaust emission standards, the CO level in the exhaust gases may get altered over time period depending upon usage and/or lack of maintenance. Such increase in the CO level in exhaust gases not only pollutes the air badly but also affects the engine performance considerably. So whenever the vehicle is serviced it is necessary to check the CO level and then rectify and tune up the engine to control this within stipulated standards.

Normally simple adjustments of carburettor will help to control the CO level in exhaust gases. However, if you are not able to maintain it within limits, check the following and take necessary action.

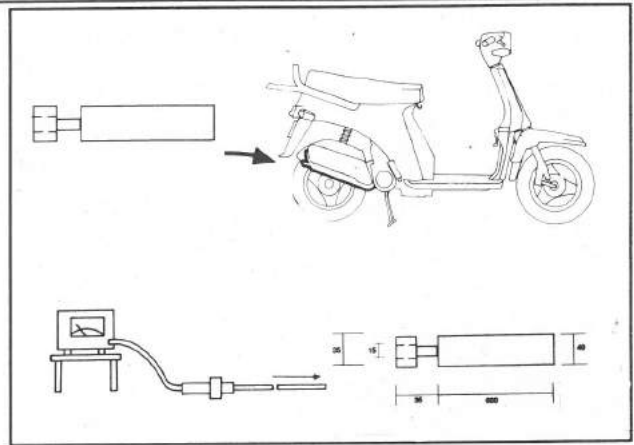
- Confirm that the oil mixed in petrol is mixed in correct percentage and is of correct type (2%, self mixing 2T oil).
- Clean, inspect and adjust the spark plug gap. Use only the recommended spark plug and replace it as per the interval specified in the periodic maintenance chart.
- Clean the air filter element, replace it if damaged.
- Clean and adjust carburettor. Always use the genuine carburettor parts. Set the air screw and idling speed precisely.
- Decarbonise the engine/silencer periodically in accordance with the periodic maintenance chart.
- Check the compression pressure, if not found within limits take the suitable action.

Measuring CO level in exhaust emissions :

Many equipments are available to measure CO percentage in exhaust gases. For the detailed information regarding the equipment, how to use that equipment and how to maintain that equipment, please refer to the individual manufacturer's manual. Understand the measuring procedure, controls and maintenance aspects of that equipment.

Follow the procedure given below for measuring CO% in exhaust gases :

- CO% in exhaust gases is to be measured at the idling speed.
- Warm up and calibrate the instrument before using according to the instructions of the manufacturer of instrument.
- Examine the silencer for any leakages and for possibility of ingress of air in exhaust system. There should be no leakage, ingress of air.
- Set the idling speed at 1300 ± 50 and set the air screw at $1 \pm 3/4$ turns out from fully in position.
- Vehicle must be warmed up by running it on road for approximately 2 minutes.
- Insert sample probe of analyser at least 60 cm inside the exhaust pipe to prevent the dilution of exhaust sample with air, provided there is no disturbance to running of vehicle. For this insertion, a separate air tight pipe can be used.
- CO% should be below 4%. If it is not within this limit adjust the air screw.
- Once the setting is over check the vehicle and confirm that there is no drivability problem.



Arrangement for checking CO percentage.

**CHECKS AND ADJUSTMENT TO BE CARRIED OUT DURING PREDELIVERY INSPECTION,
1ST, 2ND AND 3RD SERVICES.**

Sr. No.	Operation to be carried out	P.D.I.	1st	2nd	3rd.
1	Wash the vehicle on receipt	●	●	●	●
2	Check and correct tyre pressure	●	●	●	●
3	Check wheel nuts and tighten them to specified torque.	●	●	●	●
4	Check and tighten all other important nuts and bolts for specified tightening torque.	●	●	●	●
5	Check cylinder head nuts and tighten them to specified torque.		●		
6	Check transmission oil level and top up if necessary.	●			●
7	Flush and refill transmission oil		●		●
8	Inspect chain	●	●	●	●
9	Carry out lubrication in accordance with periodic maintenance chart.	●	●	●	●
10	Clean spark plug, adjust the gap	●	●	●	●
11	Clean air filter element	●	●	●	●
12	Overhaul carburettor				●
13	Check and adjust all control cables.	●	●	●	●
14	Check and adjust engine idling speed	●	●	●	●
15	Check all lights, switches, horn for satisfactory working.	●	●	●	●
16	Check the steering and suspension for smooth action.	●	●	●	●
17	Check the head light beam alignment.	●	●	●	●
18	Check and adjust front and rear brake for effective working.	●	●	●	●
19	Test drive the vehicle before delivery.	●	●	●	●
20	Clean the vehicle before delivery	●	●	●	●

DISMANTLING : ENGINE

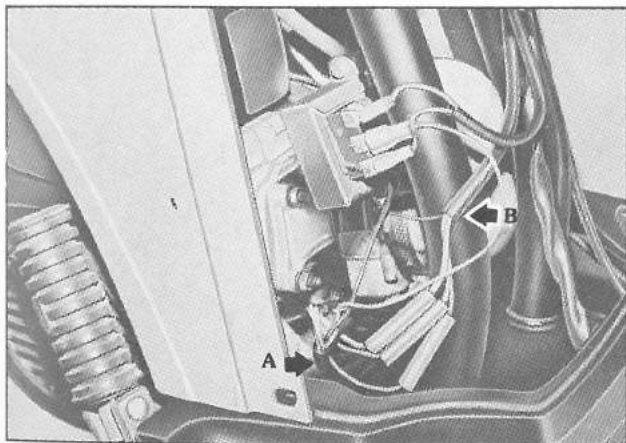
ENGINE REMOVAL :

The engine is required to be removed for dismantling only in case of failure of ;

1. Crankshaft
2. Crankshaft bearings, oil seals
3. Crankcase halves

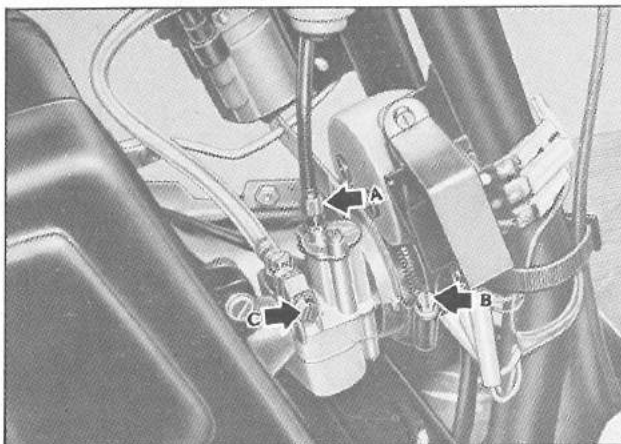
For removing the engine from chassis, follow the procedure given below :

- Preparation for removal : Before commencing the work, clean the external surfaces of the engine thoroughly otherwise accumulated road dust, dirt and other foreign matter will find its way into the precision engine parts.
- Support the chassis with a suitable support block underneath the floor board.
- Drain oil from the engine (ref. Page 14). Meanwhile continue with the following procedure
- Turn the fuel cock lever to 'OFF' position.
- Remove the front cover by unscrewing the 3 screws securing it.
- Take out the spark plug cap and disconnect H.T. lead from spark plug.
- Disconnect the male-female connections of stator plate wiring harness and main wiring harness. Also disconnect black earthing cable from impedance coil bottom screw.



A) Stator plate wiring harness B) Main wiring harness

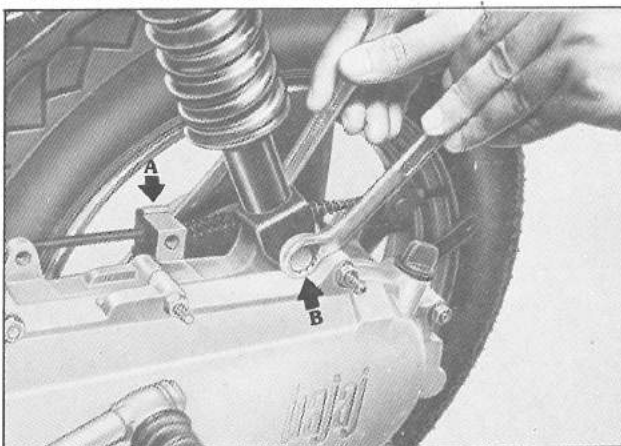
- Remove the fuel inlet pipe from carburettor. Loosen the clamp securing air filter box on carburettor. Remove the air filter box.
- Loosen the carburettor mounting screw. Slide out the carburettor with accelerator cable from intake port. Position the carburettor on floor board neatly so as to avoid any stretch on accelerator cable. Stuff a clean cloth on intake port opening.



A) Accelerator cable adjuster

B) Clamp screw C) Carburettor mounting screw

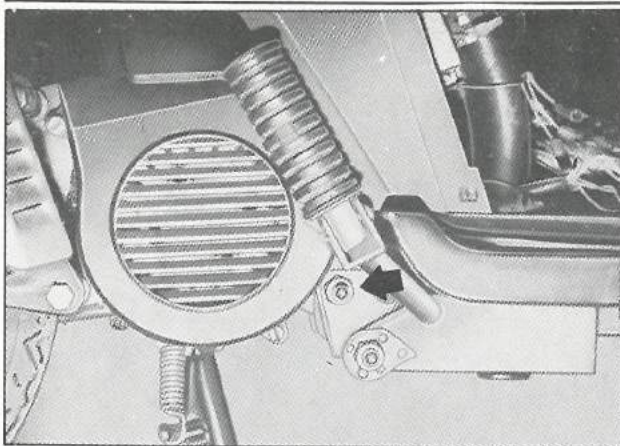
- Remove the saree guard by unscrewing 4 screws securing it to crankcase.
- Remove the two nuts securing side footrest, remove the footrest.
- Remove the brake adjusting nut from the brake inner cable by unscrewing it. Take out the 'rod end' and clear the cable from brake lever.
- Remove the bracket holding the rear brake cable on crankcase by unscrewing the screw holding it. Clear the rear brake cable from engine.



A) Bracket securing rear brake cable

B) Rear shock absorber lower mounting bolt.

- Unscrew the nut, spring and plain washer from rear shock absorber mounting bolt (lower). Take out the bolt.
- Unscrew the nylock nut from the engine foundation bolt.



Nylock nut on engine foundation bolt

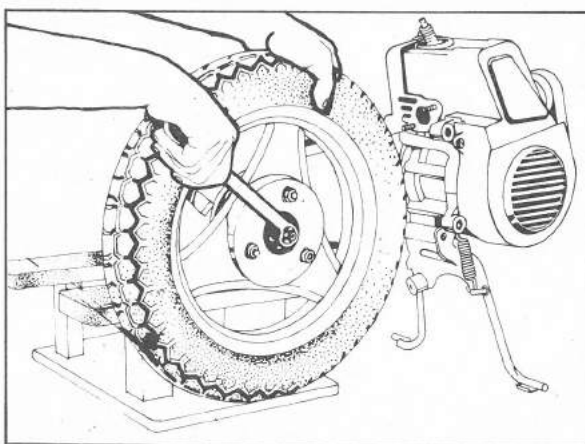
- To ensure that the threads of the engine mounting bolt do not get damaged, support the engine suitably and then withdraw the bolt.
- Check that all the cables, wiring connections are free and are out of the way for engine withdrawal.
- With the stand in position slide out the engine slowly towards the rear end of the vehicle.
- Mount the engine on an 'engine stand' (special tool No.37-1030-01) for dismantling it.

ENGINE DISMANTLING :

Clean the engine thoroughly before dismantling it. Mount the engine on an 'Engine stand' (special tool No.37-1030-01). Follow the procedure given below for dismantling it.

● **Rear brake shoes removal :**

- Remove the split pin and unscrew the castle nut from output shaft. For avoiding rotation of castle nut while unscrewing it hold the rear wheel by hand. Take out the spring, plain washer and castle nut. Remove the rear wheel alongwith the brake drum.



Castle nut removal

- Remove the spacer from the output shaft.
- Lift off the brake shoes and slip their ends away from the brake actuating shaft.

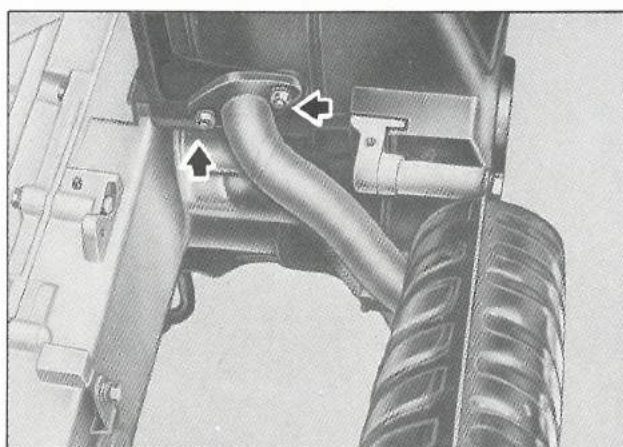
● **Cowling removal :**

- Clear the stator plate wiring harness from the lugs of cowling and remove the magneto side cowling by unscrewing 3 screws securing it.
- Unscrew the bolt securing clutch side cowling and central cover and take them out.

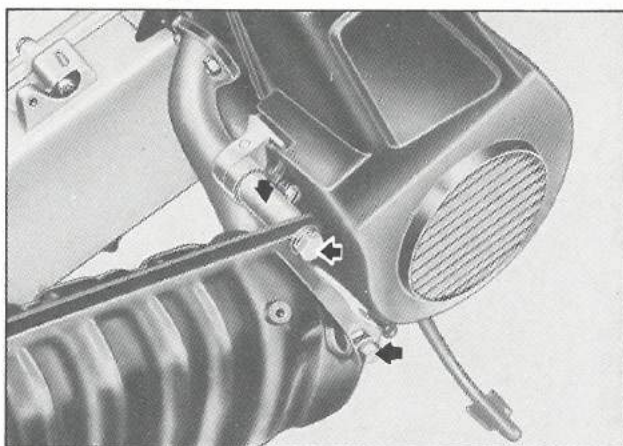
● **Silencer removal :**

- Remove the silencer guard by unscrewing two screws securing it to silencer body.
- Unscrew the two nuts securing silencer flange to cylinder block studs. Take out the spring and plain washers.
- Unscrew the two bolts holding silencer to crankcase. Take out the bolts and separate the two spacers positioned in between the silencer and crankcase.
- Remove the silencer and gasket for silencer.

"To avoid burns never touch the hot silencer with unprotected hands. Protect your hands by thick gloves or wait until the silencer cools."



Silencer flange nuts



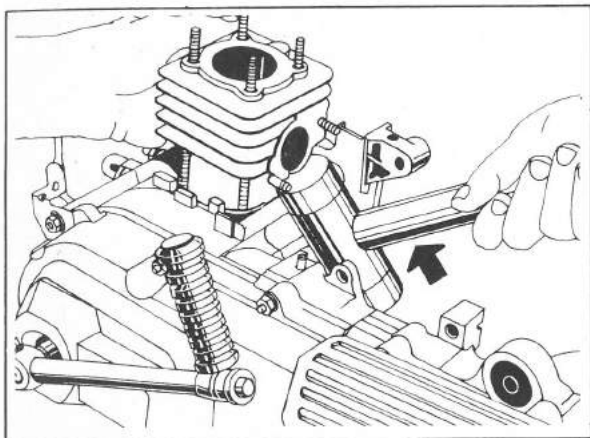
Silencer bolts, spacers

● **Cylinder head removal :**

- Loosen the spark plug before removing cylinder head.
- Loosen the four nuts securing cylinder head in a criss-cross pattern of loosening. Take out the securing nuts alongwith plain & spring washers.
- Lift the cylinder head carefully, clear it off the studs and remove it.
- Remove the cylinder head gasket after clearing it off the studs.

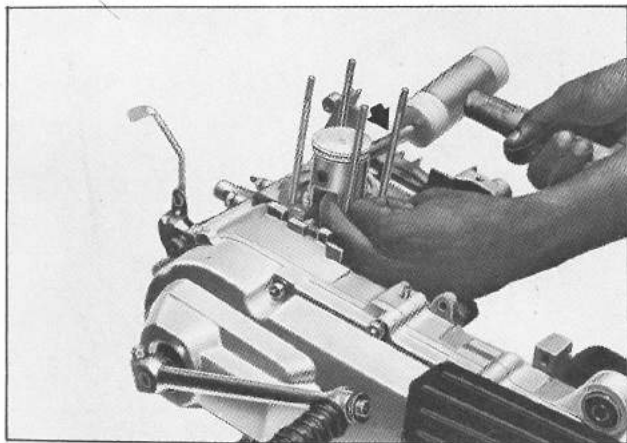
● Piston removal :

- Lift the cylinder block carefully, clear it off the studs and remove it. If necessary gently tap around the base of cylinder block with a rubber mallet, taking care not to damage the cooling fins.
- Take out the cylinder block base gasket carefully. Cover the cylinder base hole with a clean cloth.



Cylinder block removal

- Remove the wire circlip from piston at the gudgeon pin ends by nose plier. Support the connecting rod by one hand and tap out the gudgeon pin by using 'drift' (special tool No.37-1015-02).
- Remove the piston and take out needle roller bearing from connecting rod small end.



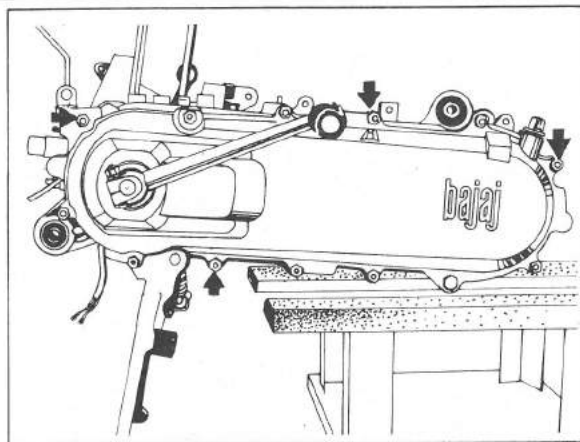
Drift for gudgeon pin

● Reed valve removal :

- Unscrew four nuts securing intake manifold. Take out the spring, plain washers and remove intake manifold.
- Take off the gasket for intake manifold.
- Take off reed valve assembly from the studs and take off the gasket for reed valve.

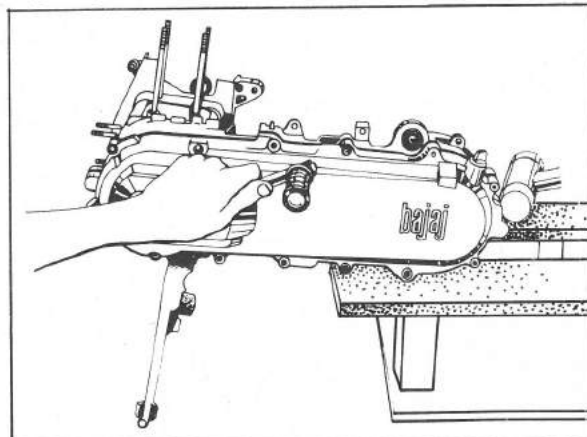
● Clutch cover removal :

- Remove the drain bolt alongwith fibre washer.
- Remove the nuts securing clutch cover to crankcase. Remove the spring and plain washers and take out the 'D' bolts and choke lever bracket assly and bracket assly for mounting sari guard.



Clutch cover joining nuts

- Remove the clutch cover assembly from studs. Tap gently with the mallet at the rear end if necessary.

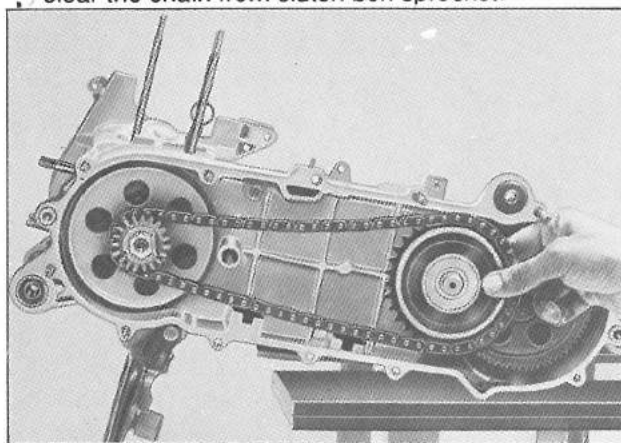


Clutch cover removal

- Remove the clutch cover.
- Remove the cup and spring from intermediate shaft.
- Slide out the helical gear assembly with wire clip from intermediate shaft.
- Lift out the intermediate shaft from clutch cover.

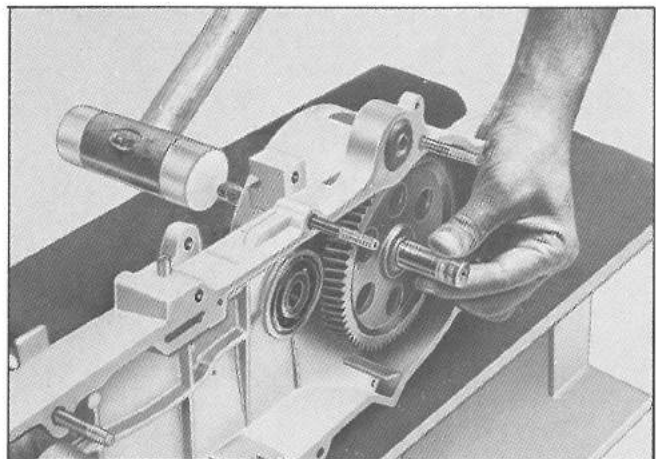
● Output shaft removal :

- Take out beleville washer and thrust washer from pinion shaft assembly.
- Loosen the pivot holding chain tension strip. Take out chain tension strip alongwith tension spring.
- Remove pinion shaft assembly alongwith chain and clear the chain from clutch box sprocket.



Pinion shaft assembly removal

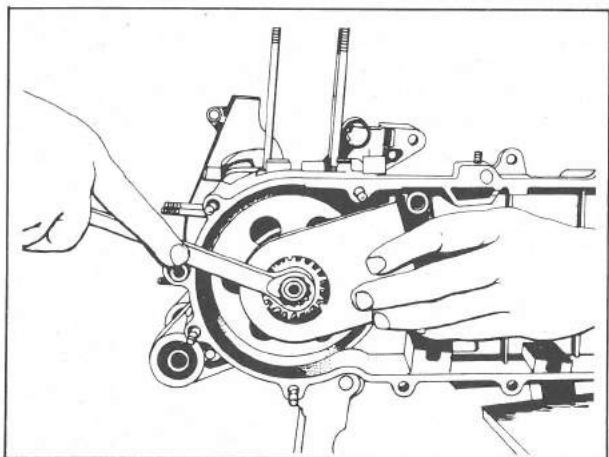
- Remove outshaft assembly by tapping lightly from wheel side end.



Output shaft removal

● Clutch removal :

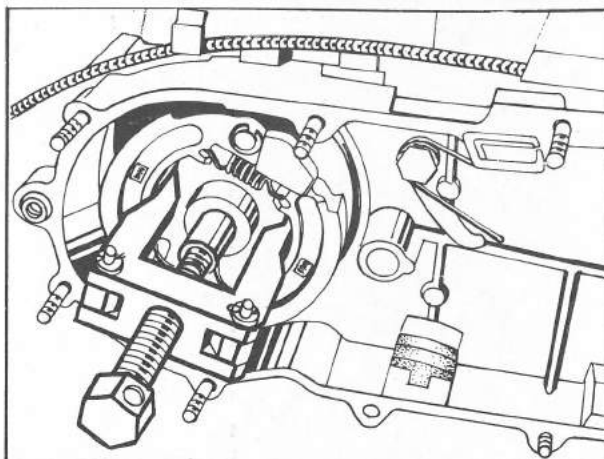
- Straighten the claw washer fixed on starter gear. Loosen the starter gear nut. While loosening starter gear nut use the 'spanner' (special tool No. 37-1014-07) for holding the crankshaft stationary.
- Take out the starter gear nut, claw washer and starter gear.
- Lift off the square key from its key way on crankshaft.
- Slide out the clutch box assembly from crankshaft. Remove the bush of clutch box.
- Remove the clutch bush assembly from crankshaft. Use the extractor (special tool No.37-1014-27) for pulling out the clutch bush assembly.
- Lift off the woodruff key from crankshaft.



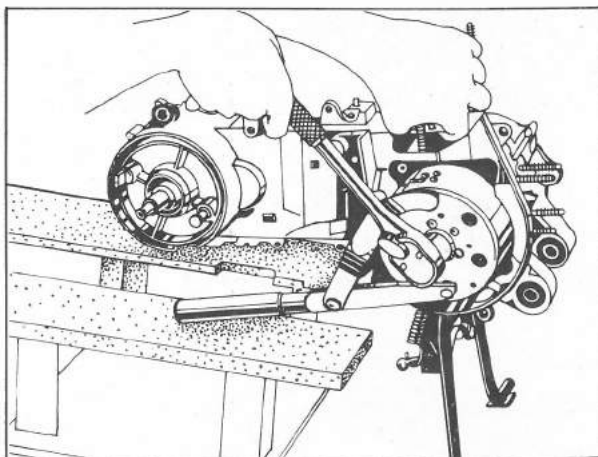
Spanner preventing rotation of crankshaft

● Stator plate removal :

- Remove the fan by unscrewing three screws securing fan to rotor.
- Loosen the rotor nut. Hold the magneto rotor stationary while loosening the nut by using 'magneto holder' (special tool No.37-1030-54). Remove the nut and spring washer.

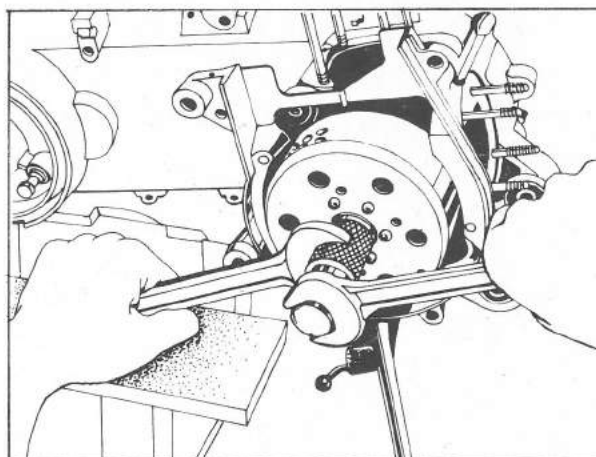


Puller for clutch bush removal



Magneto holder

- Use 'magneto puller' (special tool No.37-1024-21) for removing rotor from its tapered seat. Install the puller fully in into the rotor threads. Hold the puller body and tighten the centre bolt. The rotor will slowly come out off its seat.



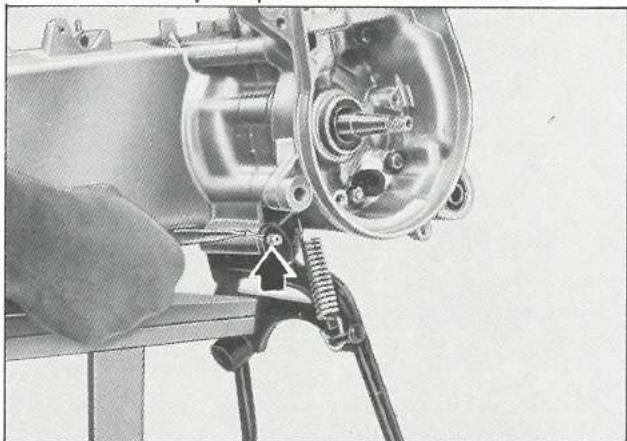
Magneto puller

"Use of hammer for removing magneto may damage the pole shoes and may weaken the magnetism"

- Unscrew the two screws securing stator plate to crankcase. While removing stator plate carefully take out the stator wiring harness through crankcase hole.

● Stand removal :

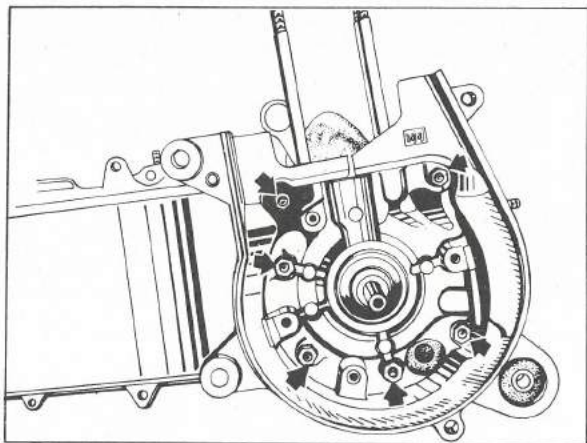
- Remove the stand return spring.
- Remove the split pin locking stand pivot pin.
- Slide out the pivot pin and remove the stand.



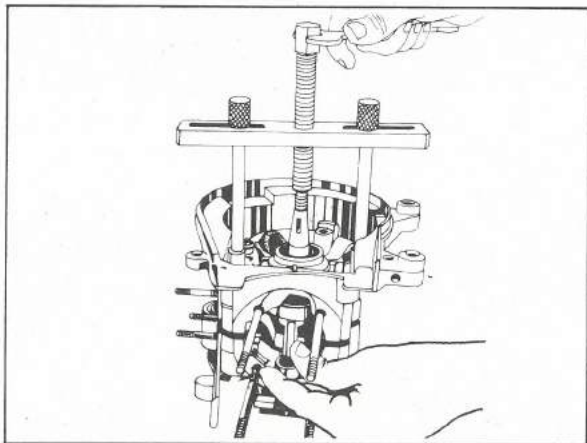
Stand split pin

● Crankcase splitting :

- Loosen the crankcase joining nuts (6 nos) and remove the spring & plain washers. Fully screw in the 'crankcase splitting tool' (special tool N 37-1030-12) into the magneto side crankcase.
- Tighten the centre bolt of the splitting tool. The crankcase halves will start separating. Constantly check that the crankcase halves are separating evenly all around. If necessary gently tap by a mallet.



Crankcase joining nut



Crankcase splitting tool

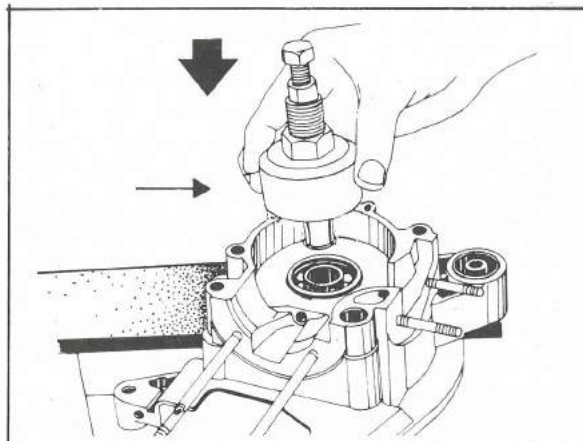
- Once the crankcase is split, remove the splitting tool and take off the magneto half from clutch side crankcase half.
- Remove the crankshaft from clutch side crankcase half. If necessary lightly tap from clutch end.

SUB ASSEMBLIES DISMANTLING AND ASSEMBLY

After splitting the crankcase halves, proceed further for dismantling of various subassemblies.

● Magneto side crankcase dismantling :

- Remove the crankshaft bearing by using 'bearing puller' (special tool No.37-1014-10).

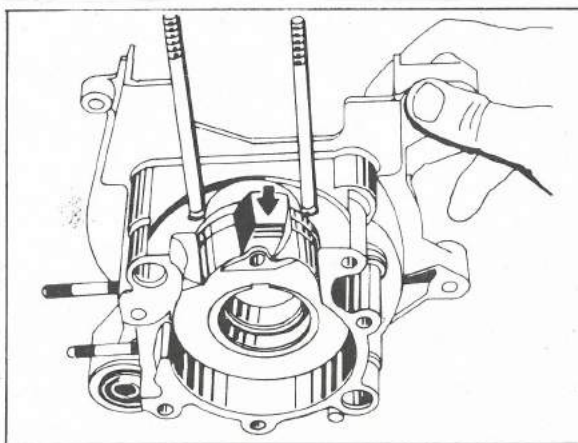


Crankshaft bearing puller

- Remove magneto side oil seal by using 'bearing driver' and holder (special tool No.37-1030-72).
- If necessary, remove foundation bush assembly by using suitable bearing driver.

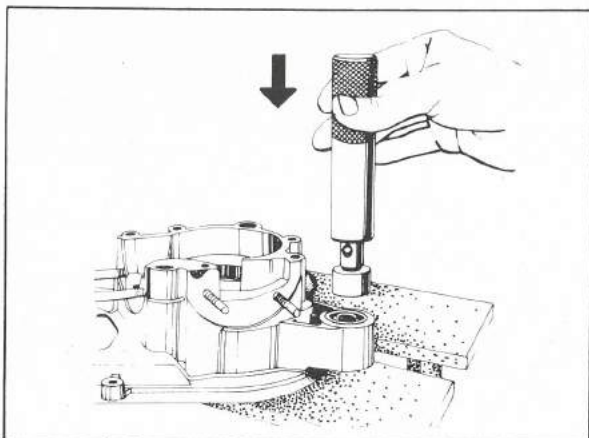
● Magneto side crankcase assembly :

- Clean the crankcase thoroughly by kerosene and hot water. Remove the gasket material from the mating surface.
- Blow dry with compressed air. Ensure that the hole provided for the bearing lubrication is not choked.



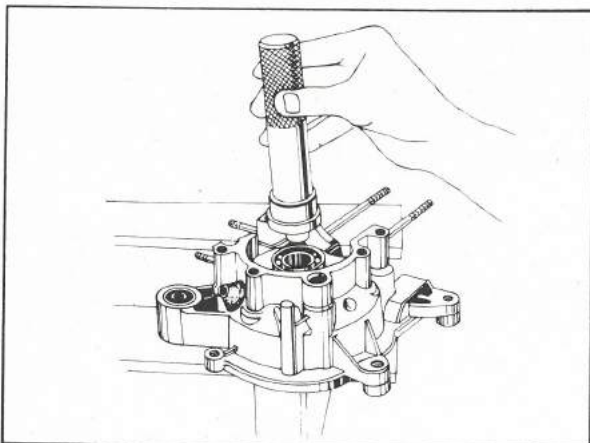
Hole for bearing lubrication

- Fit the foundation bush assembly if removed by using bearing holder and driver.



Fitment of foundation bush

- Press the crankshaft ball bearing from clutch side face of crankcase half with the help of inner and outer bearing drivers (special tool No. 37-1014-14 & 37-1030-73).
- Install the magneto side oil seal from the stator plate side of the crankcase by using outer bearing driver with holder (special tool No. 37-1030-72). The oil seal should fit flush with crankcase. Apply grease on oil seal lips.

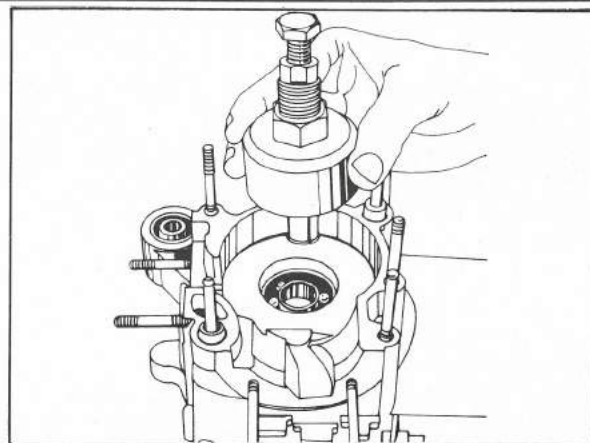


Magneto side oil seal fitment

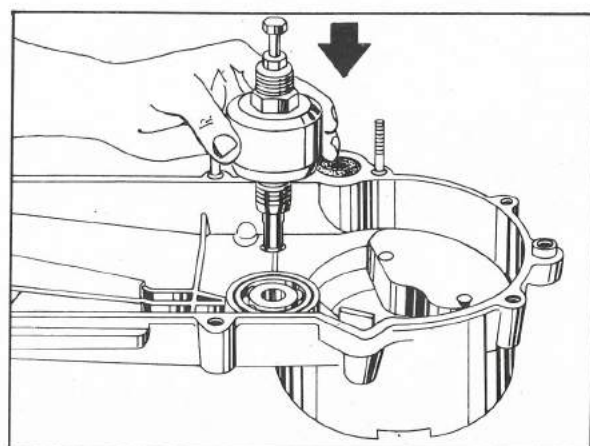
- Check tightness of studs for mounting reed valve and cylinder head. In case any stud require replacement use correct size of stud. Insert the stud correctly with the chamfered end going inside.
- Fit the grommet for stator harness into its position.

● **Clutchside crankcase dismantling :**

- Remove the clutch side oil seal from crankcase.
- Remove the crankshaft bearing by using 'bearing puller' (special tool No. 37-1040-10) from crankcase.
- Remove the ball bearing for pinion shaft by using 'bearing puller' (special tool 37-1014-11).

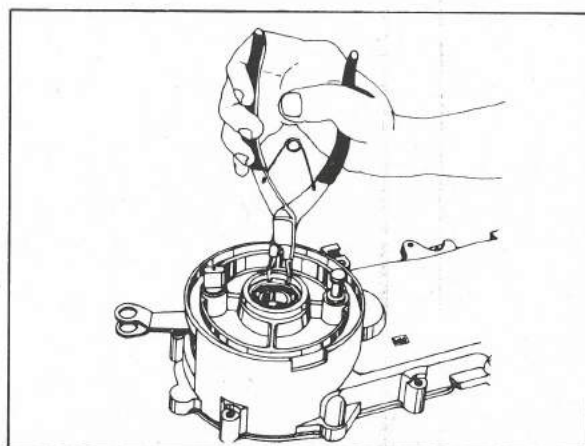


Crankshaft bearing puller

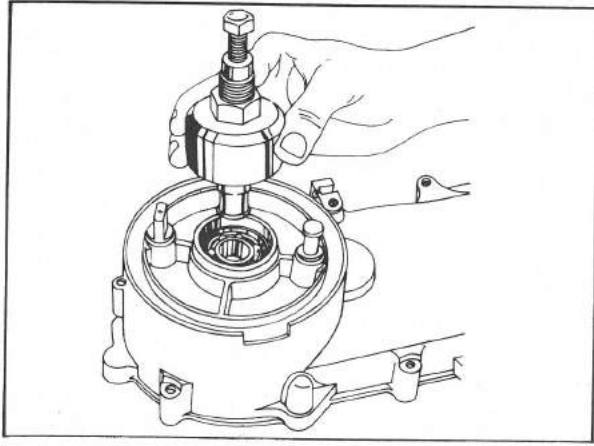


Pinion shaft bearing puller

- Reverse the crankcase face and remove the oil shaft oil seal by using a simple wire hook.
- By using 'inside circlip plier' (special tool No. 37-10356) remove the circlip locking output shaft ball bearing. Remove the bearing from wheel side by using 'bearing puller' (special tool No. 37-1014-12).

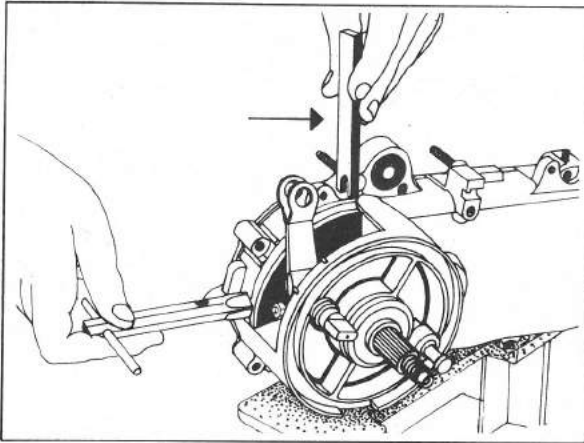


Inside circlip plier



Output shaft bearing puller

- Unscrew the nut securing rear brake lever to brake actuating shaft. While unscrewing use the 'spanner' (special tool No.37-1014-21) to prevent rotation of bolt.



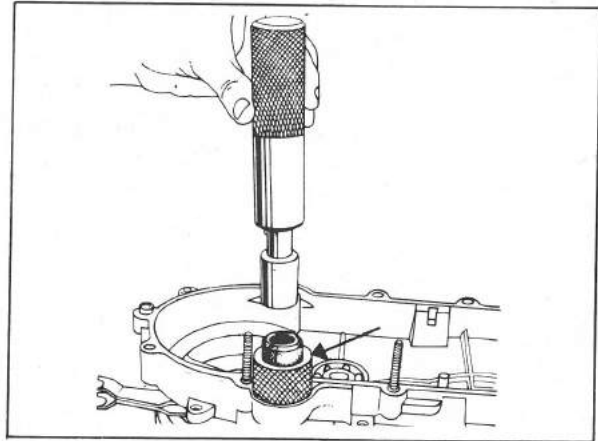
Spanner to prevent rotation

- Make a reference mark on lever and shaft and then remove the brake lever from the splines of brake actuating shaft.
- Replace following parts, if they are worn out or damaged.
 - * Remove foundation bush assembly by using bearing driver.
 - * The rubber bush, inner bush for mounting shock absorber.
 - * The studs for joining crankcase, clutch cover, reed valve and cylinder head.

● **Clutch side crankcase assembly :**

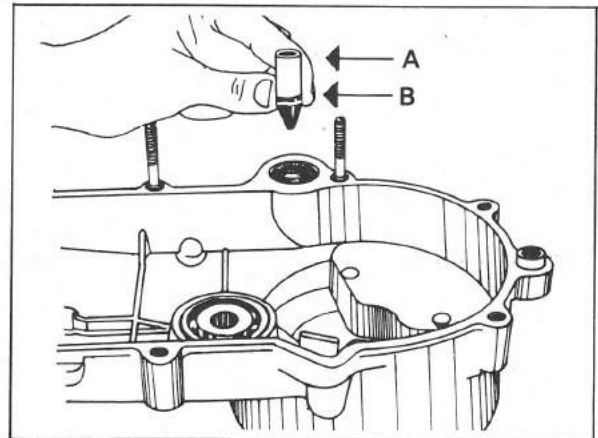
- Clean the crankcase with kerosene and hot water.
- Remove the gasket material if any from the mating surface.
- Whenever using a new crankcase from spare part punch the variation number and the engine number.
- Check tightness of all the studs.
- Check that the locating dowels (4 nos, 2 on each face) are in tact.
- Install the foundation bush assembly by using bearing driver.

- Fit the rubber bush (for mounting shock absorber) by using a 'fixture' (special tool No.37-1014-16).



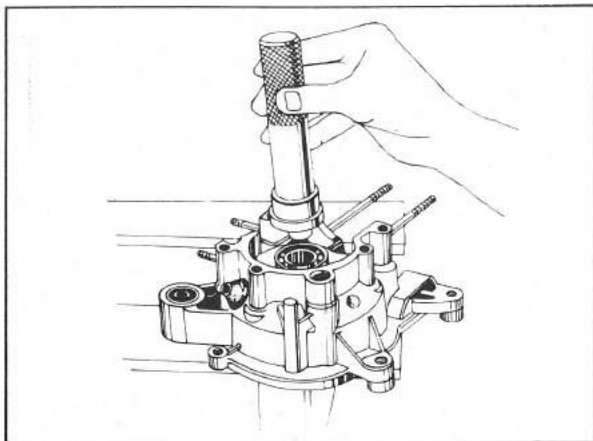
Fixture for fitting rubber bush.

- Insert the inner steel tube into the rubber bush. Use the 'pin' (special tool No. 37-1014-17) to guide steel bush into the rubber bush.



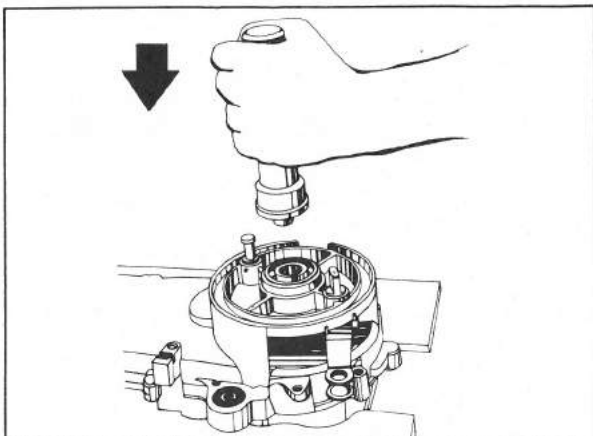
A) Pin for guiding inner bush B) Inner bush

- Press the ball bearing for crankshaft by using inner and outer bearing driver with bearing holder. (special tool No.37-1014-14, 37-1030-73).



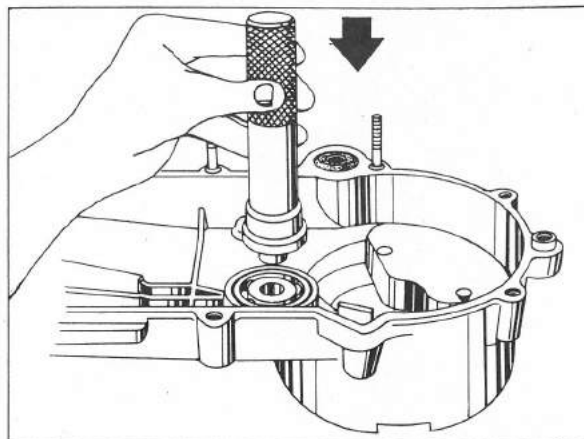
Crankshaft ball bearing fitment

- Apply grease to the clutch side oil seal lip. Press the oil seal by using 'bearing driver' (special tool No. 37-1030-73).
- Press the output shaft bearing by using 'inner and outer bearing driver' (special tool No.37-1014-14, 37-1030-73).



Output shaft bearing installation

- Install the circlip in its groove.
- Press the output shaft oil seal by using bearing driver (special tool No.37-1030-73).
- Press the ball bearing for pinion shaft by using inner and outer bearing drivers alongwith holder (special tool part No. 37-1014-13 and 37-1030-73)
- Insert the brake actuating shaft. Install the brake lever on to the splines of brake actuating shaft in such a fashion that the brake lever is aligning with the mark provided on crankcase. Install the bolt plain and spring washers and andtighten the nut. Use 'spanner' (special tool No.37-1014-21) for avoiding rotation of the bolt.



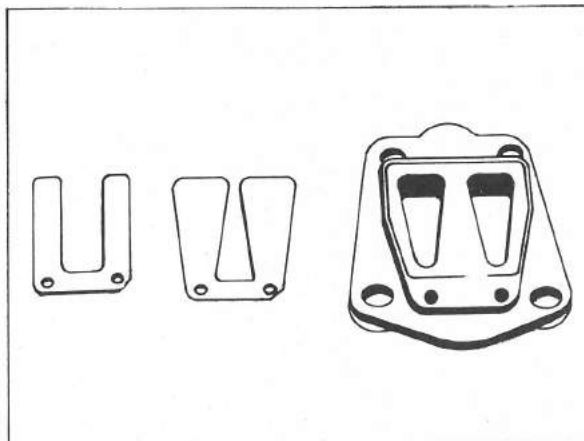
Installing pinion shaft bearing

● **Reed valve :**

- Remove the reed valve assembly from the studs.
- For dismantling, unscrew the two screws securing the reed valve stopper plate. Take out the screws alongwith spring washers. Remove the stopper plate and valve plate.

"After removal keep the valve plates on a plain surface only. Ensure that the valve plates are not subjected to bending stresses."

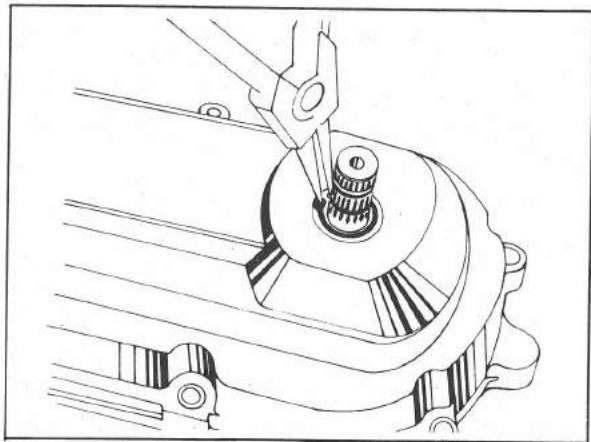
"During assembly use the cut in the lower corner of the valve plate and of the stopper plate as an aid to direction of valve plate installation."



Reed valve cut section

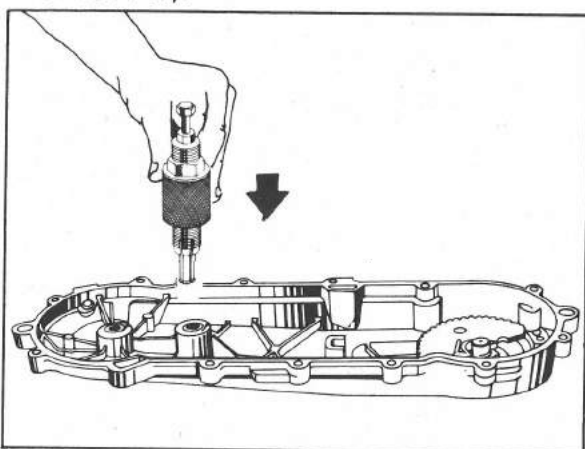
● **Clutch cover dismantling :**

- Loosen the nut securing kick starter lever on sector gear spindle. Take out 'D' bolt, plain & spring washer. Slide out the kick start lever from the splines of the spindle.
- Remove the circlip and plain washer locking sector gear assembly to clutch cover. Tap the sector gear assembly lightly. It will come out with return spring.



Circlip removal

Remove the bronze bushes from clutch cover if worn out or damaged by using 'puller' (special tool No. 37-1014-18).



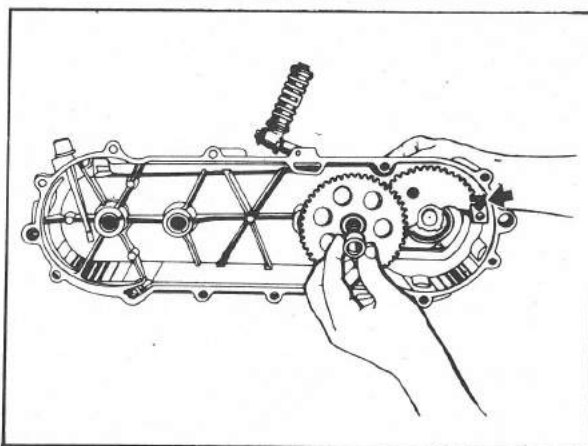
Extractor for clutch bush

- Remove 'O' ring from its groove in clutch cover.
- Remove the rubber pads (sector gear stopper).

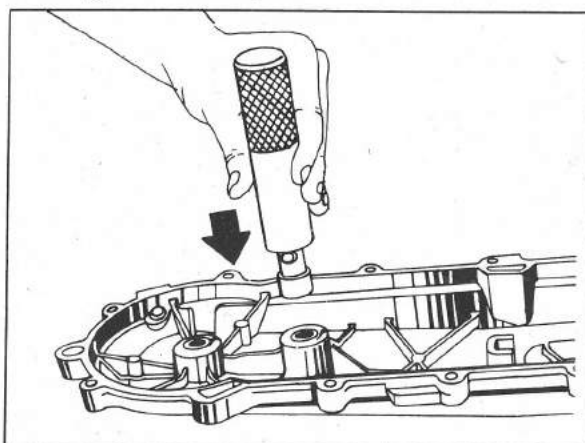
Assembly Notes :

- Clean the clutch cover with kerosene and hot water. Remove the gasket material from mating surface.
- Install new 'O' ring into its groove. Install the sector gear stopper rubber.
- Press the bronze bushes for output shaft and pinion shaft into clutch cover by using 'bearing driver' (special tool No. 37-1014-15).
- Install return spring with sector gear assembly and fit the return spring in its position while inserting sector gear assembly into clutch cover. Fit the plain washer and circlip from the other side of crankcase.
- Install the kick starter lever on sector gear spindle, carefully aligning the splines. Match the kick starter lever's slot with the reference mark given on the clutch cover so as to fit the kick start lever in correct position.

"Confirm that the circlip is seated firmly into its groove by rotating the circlip in its seat. The starting mechanism will fail to work unless the circlip is properly seated."



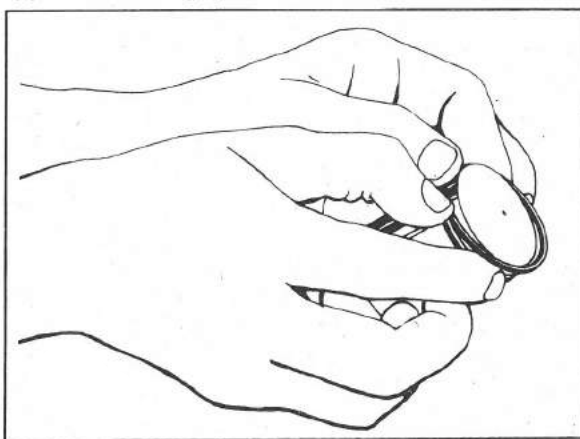
Sector gear / rubber pad



Bronze bush installation

● Piston :

Piston rings are brittle and hence should be removed with great care. Piston ring can be removed by carefully opening them out of the grooves and lifting the portion opposite to end gap.



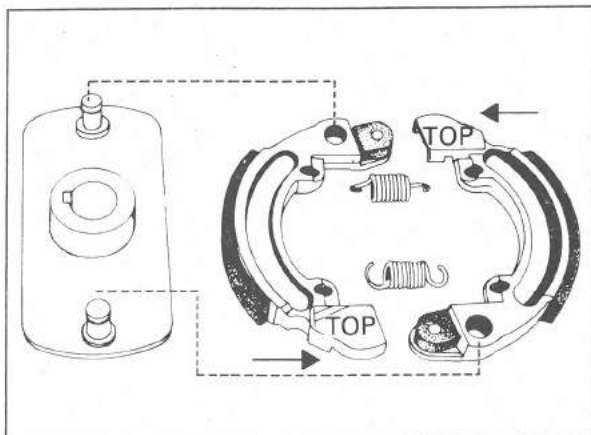
Piston ring removal

Assembly notes :

- While replacing the piston confirm the piston grouping with the cylinder block group.
- While installing the piston rings, first fit one end of piston ring against the pin (peg) inside the piston groove, open out the ring with the other hand and then slip the ring into the groove.

CLUTCH DISMANTLING

- Remove both the circlips from slots of clutch bush pins.
- Tap down the clutch bush assly from clutch shoe assly.
- Remove the clutch springs and separate the clutch shoes and take out the shock pads from their seats.



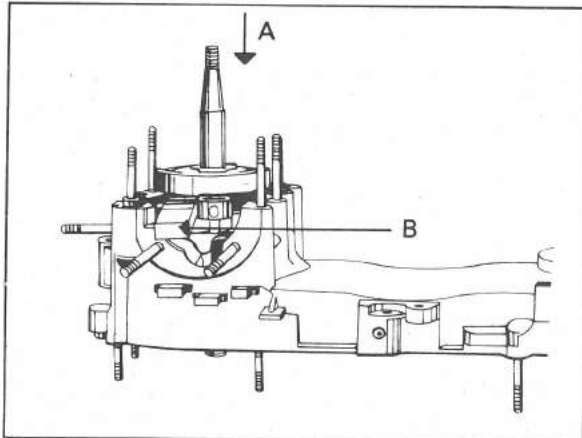
Clutch assembly details / clutch shoe pocket side.

Installation Notes :

- While installing the clutch shoe assly onto clutch bush, assemble it in such a fashion that 'pocket sides' (having top mark) of both the clutch shoes are facing upward. This will avoid the friction between the pocket side face of clutch shoe and clutch bush plate when the shoes will fly off.
- Also confirm that both the clutch shoes and the clutch springs are of the same group. (For details please refer page No. 52.
- Confirm the locking of circlips by rotating them into their seats.

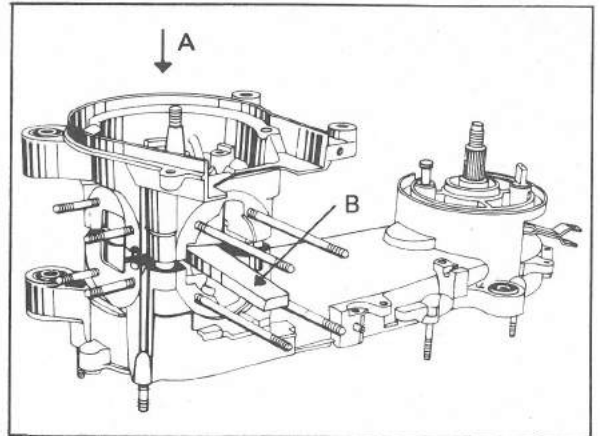
ENGINE ASSEMBLY :

- Clean all the parts thoroughly before starting engine assembly.
- Keep the sub-assemblies like crankcase halves, clutch, stator plate fully assembled.
- Ensure that all the special tools, new gaskets, 'O' rings and other spares are available.
- Lubricate all gears, bearings and other moving parts.
- Position the clutch side crankcase half on an 'engine stand' (special tool No.37-1030-01). Apply shellac on magneto side mating surface of crankcase half. Install the gasket for crankcase through the crankcase joining studs carefully.
- Press the crankshaft in the clutch side crankcase half using arbour press. While pressing the crankshaft, position the wedge for crankshaft alignment (special tool No.37-1030-65) in between the crankshaft webs apposite the connecting rod big end.



A) Pressing crankshaft on arbour press B) Wedge

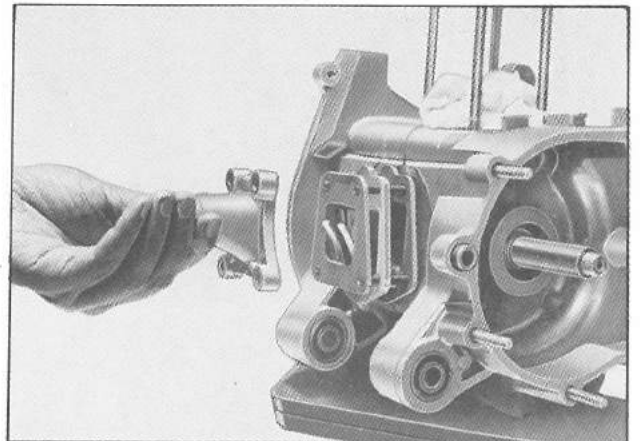
- Press the magneto side crankcase half on to clutch side half using arbour press. While pressing use 'wedge' for crankshaft alignment in between crankshaft webs.
- Install plain washer, spring washer and nuts (6 nos.each) on crankcase joining studs and tighten them lightly.
- Check for the free rotation of crankshaft. If the crankshaft is not rotating freely, probably the crankshaft is not centered, so tap the appropriate end of the crankshaft by a mallet to reposition it correctly. Now tighten the crankcase joining nuts to a torque of 0.8 to 1 kg.m.
- Stuff a clean cloth around connecting rod so as to cover the cylinder block opening of crankcase assembly.
- Install the gasket for reed valve through the reed valve studs carefully.
- Install the reed valve assembly completely on crankcase with stopper plate facing the crankcase opening.
- Install the gasket for intake manifold on reed valve body.



A) Pressing crankcase on arbour press B) Wedge

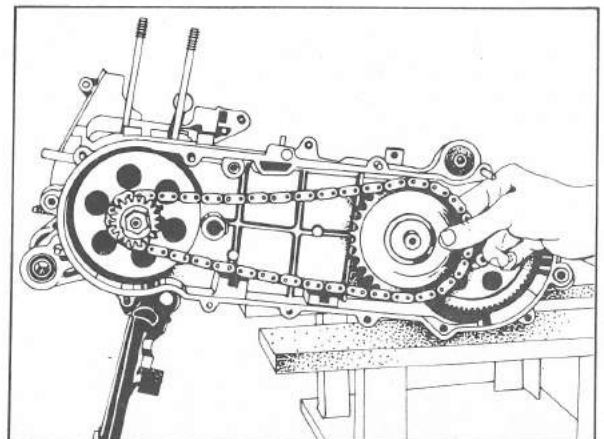
- Install the intake manifold on gasket. Fit the nuts alongwith plain & spring washers on reed valve studs. Tighten the nuts in a criss-cross pattern to specified torque of 0.8 to 1 kg.m.

"Ensure proper sealing of reed valve, intake manifold and crankcase reed valve opening"



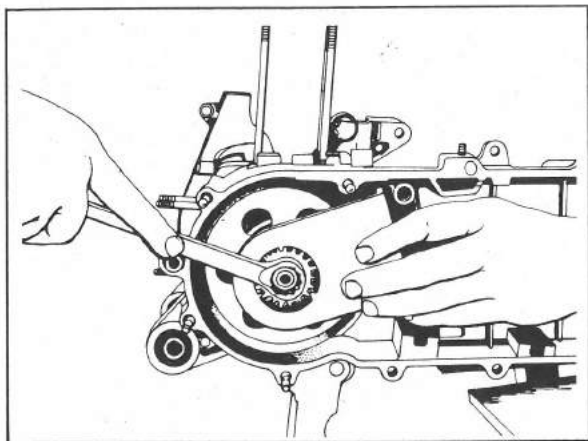
Reed valve installation sequence

- Position the woodruff key into the keyway of clutch side crankshaft and insert the clutch bush assembly.
- Insert the bush for clutch box on crankshaft and mount the clutch box assembly on the bush.



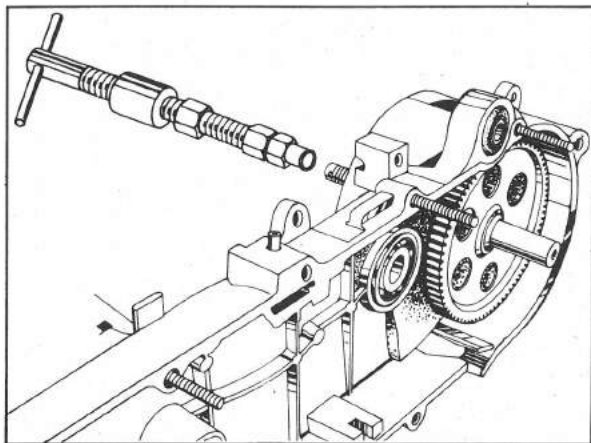
Clutch/starter gear assembly sequence

- Position the parallel key into the keyway of crankshaft. Mount the starter gear guiding its key way on the key with the champered edge facing outside. Position the claw washer on starter gear and screw in the starter gear nut on crankshaft.
- Hold the crankshaft stationary by using 'spanner' (special tool No.37-1014-07) and tighten the starter gear nut to specified torque of 4.5 to 5 kg.m. Bend the claw washer on one of the faces of nut.



Spanner holding starter gear

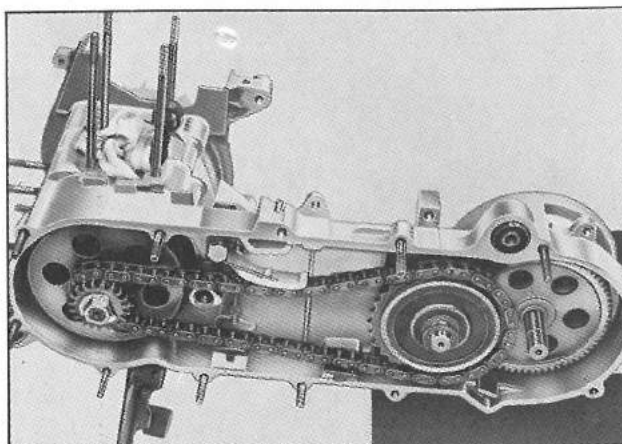
- Insert the output shaft into its bearing seat in clutch side half by using the puller (special tool No. 37-1014-12). Pull the output shaft towards the wheel side.
- Position the spacer on the output shaft from wheel side.



Output shaft puller

- Install the brake drum on output shaft serrations. Position the plain washer and screw in the castle nut and tighten it lightly.
- Insert the rubber pad into its grooves in clutch side crankcase.
- Install the chain guide into the slots.
- Install the chain on pinion shaft sprocket wheel. Position the other end of chain on clutch box sprocket and insert the pinion shaft assembly into its bearing seat matching the teeth of pinion shaft assembly to the teeth of output shaft assembly.

Install the thrust washer and beleville washer on pinion shaft assembly.

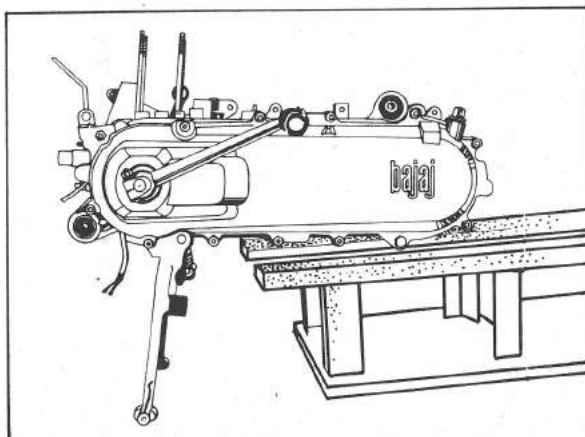


Chain tension pivot/washer

- Install the chain tension strip with tension spring and pivot. Tighten the pivot bolt.
- Position the intermediate shaft into its seat in clutch cover. Slide the helical gear assembly in position with the wire clip seating perfectly into its slot provided in clutch cover. Insert the spring and cup on intermediate shaft.
- Apply shellac on clutch cover mating surface of crankcase clutch side. Install the clutch cover gasket through the studs and dowels.

"Ensure that the slots provided into the clutch side crankcase for breather are not clogged."

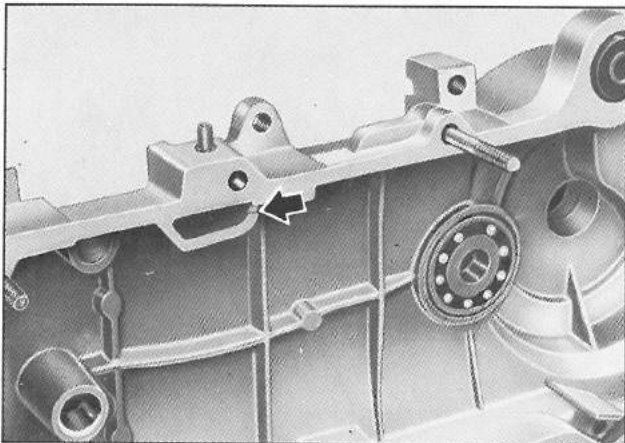
- Fit the clutch cover assembly on crankcase guiding through studs and locating dowels. If necessary lightly tap the clutch cover at the output shaft end by mallet.
- Install the choke lever bracket assembly, 'D' bolts and nuts along with plain and spring washers. Tighten all the nuts in a criss-cross pattern to specified torque of 0.8 to 1 kg.m.
- Install the drain bolt with fibre washer and tighten it to the torque of 0.8 to 1 kg.m.



Clutch cover installation

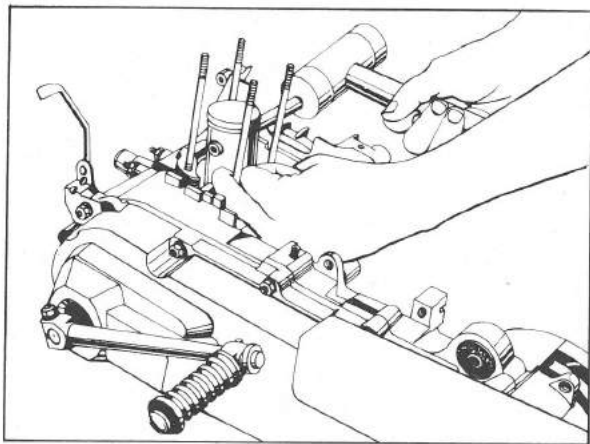
- Carefully pass the stator plate wiring harness through magneto side crankcase grommet. Position the stator plate and fully screw in the two screws to secure the stator plate to crankcase.
- Position the woodruff key into the key way of crankshaft. Slide the rotor into its position carefully guiding its key way over the key. Install the spring washer and screw in the rotor nut by hand.
- Hold the magneto rotor stationary by using 'magneto holder' (special tool No.37-1030-54) and tighten the rotor nut to specified torque of 4 to 4.5 kg.m.

"Before installing the rotor check that no foreign particles are stuck up with pole shoes."



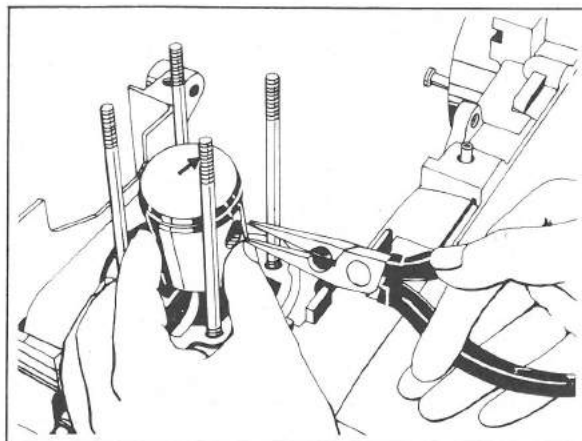
Breather slot

- Confirm the grouping of cylinder block and piston.
- Position the cylinder block base gasket through the studs.
- Apply 2T oil on connecting rod small end and roller bearing and position it inside the connecting rod small end.
- Position the piston on connecting rod small end, align the piston hole and roller bearing by using 'drift' (special tool No.37-1015-02). Insert the gudgeon pin through piston hole and roller bearing with guide by drift.



Drift for guiding gudgeon pin

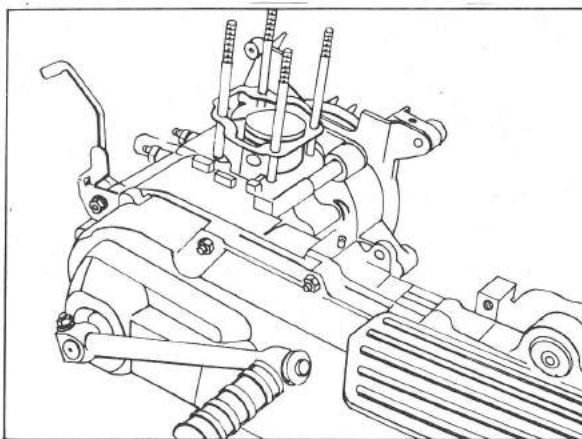
- Lock the gudgeon pin by new wire circlips from both ends into piston grooves. Confirm the seating of the circlip by slightly rotating it. The circlip should be compressed only enough to install it and no more.



Installing locking circlip "Ex" mark on piston

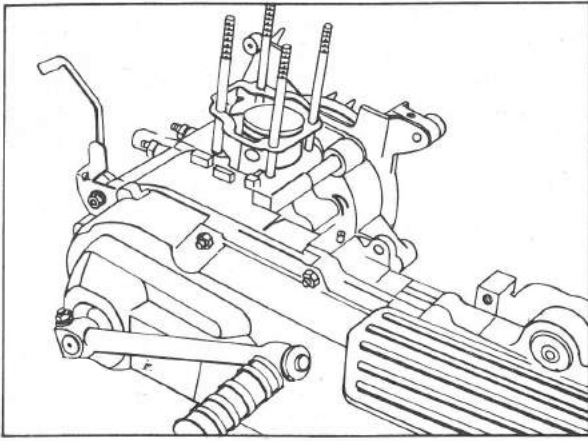
"Ensure that the "Ex" mark on piston crown is facing towards the exhaust side."

- Coat 2T oil inside the cylinder block and on piston assembly. Confirm that the open end of piston ring is resting on the peg pin provided. Set the piston at BDC.
- Gently slide the block over the piston rings, pressing an opposite side (to the peg) of ring as necessary.
- Take care that the rings do not slip out of position and further slide the bottom of cylinder block past the rings and into its position in crankcase.



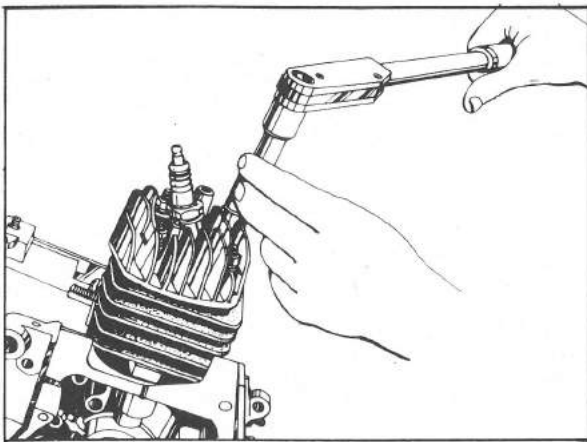
Piston ring peg position

- Install the gasket for cylinder head
- Position cylinder head carefully guiding through studs. The cowl locating lug on cylinder head should be towards the clutch side. Install the nuts along with plain & spring washer. Tighten the nuts in a criss-cross pattern to specified torque of 0.8 to 1 kg.m.



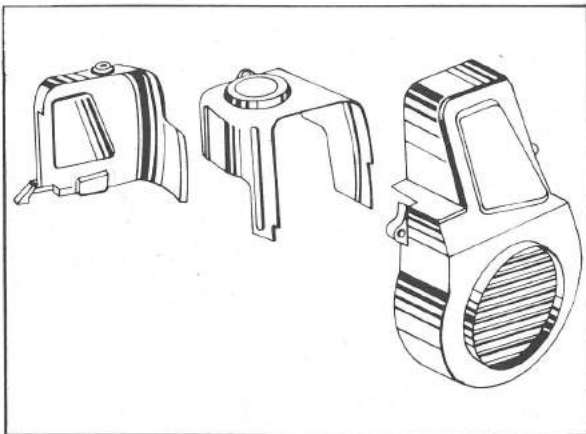
Cylinder block base gasket.

- Screw in the spark plug. For avoiding damaging the threads screw it in first by hand and then tighten it to specified torque of 3 kg.m.



Cylinder head fitment position

- Position central cover and the clutch side cowling on cylinder head. Install the bolt alongwith spring washer and tighten it.



Cowling fitment

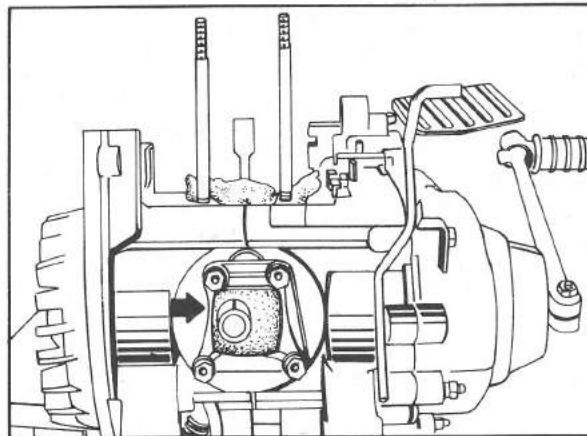
- Install the exhaust gasket into the cylinder block exhaust port studs. Position the silencer inlet tube flange on cylinder block exhaust port studs. Install the plain and spring washers and tighten the nuts to a torque of 0.8 to 1 kg.m.

- Position the spacers between silencer body and magneto side of crankcase. Insert the bolts through silencer flange, the spacer and tighten them.
- Position the silencer guard on silencer and tighten the screws.
- Fit the rubber stopper on stand. Position the stand on the lower side of clutch side crankcase and insert the pivot pin through the stand and crankcase. Lock the stand pivot pin by split pin. Install the stand spring and check for the free movement of the stand.
- Install the rear wheel on brake drum studs. Install the plain, spring washers and the wheel nuts. Tighten the wheel nut to specified torque of 2 to 2.5 kg.m.
- Hold the rear wheel and tighten the castle nut to specified torque of 6 kg.m. Install the split pin and lock it.

ENGINE INSTALLATION :

The sequence of operations for installing the engine is just the reverse of engine removal. Carry out following adjustments after mounting the engine on chassis in addition to assembling of other parts and connections that were removed during engine removal.

- Tighten the engine foundation nylock nut to the torque of 3.5 kg.m.
- Tighten the rear shock absorber lower mounting bolt to the torque of 1.2 kg.m.
- Adjust the carburettor mounting position. The mark is provided on the intake manifold. Align the slot of the carburettor flange with this mark.



Carburettor mounting position slot

- Correct the cable routing (ref page No.45)
- Fill the oil and check the oil level (ref page No.14)
- Adjust the accelerator cable play (ref page No. 18)
- Adjust the rear brake lever play (ref page No. 19)
- Start the engine, set the idling speed (ref page No.18)
- Check all lights, switches, horn for proper functioning.

FLOW CHART FOR ENGINE DISMANTLING

This chart is intended to aid you in proper engine dismantling once it is removed from the chassis. Select the component you wish to remove and follow the flow of the chart and dismantle the parts to remove that component.

ENGINE ON
STAND

1	2	3	4	5	6	7	8	9
Rear wheel with brake drum	Clutch side cowl.	Spark plug	Silencer guard	Cylinder head	Air filter	Ladies footrest	Fan	Stand
Rear brake shoes	Magneto side cowl.		Silencer	Cylinder block	Carburettor		Magneto rotor	
Rear brake actuating lever	Central cover			Piston assly.	Intake manifold	Carburettor choke linkage	Stator plate	
Brake shoe actuating shaft					Reed valve assly.	Sector gear assly	Pinion shaft assly.	Starter gear
						Kick return spring	Chain	Clutch box assly.
							Output shaft assly.	Clutch bush assly.

Crankcase joining nuts

Crankcase splitting

Magneto side crankcase dismantling

Crankshaft

Clutch side crankcase dismantling

NOTES :-

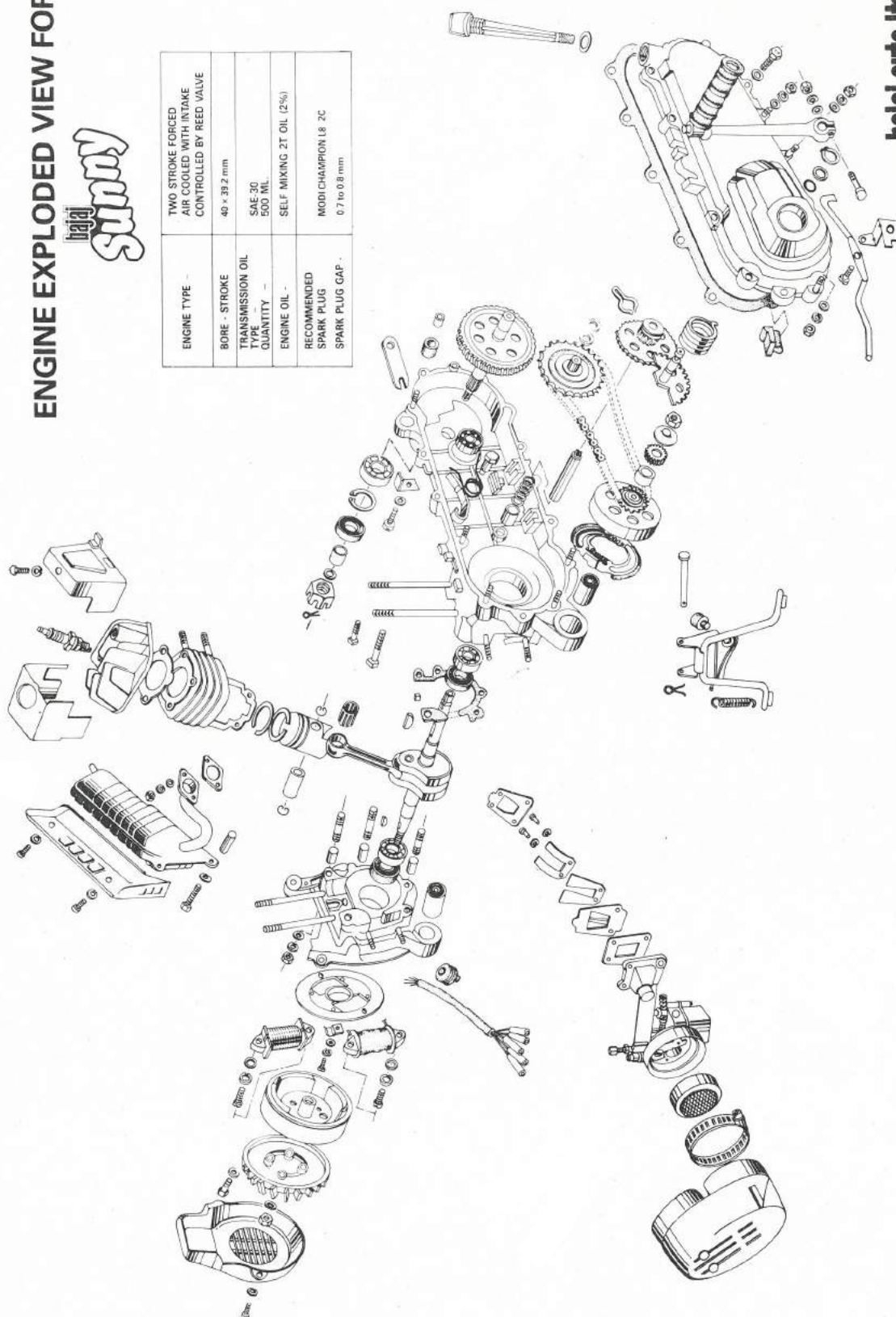
- Action that has already been done in the engine removal procedure is omitted.
- Action with an asterich (*) mark requires special tool for removal, installation, dismantling or assembly.
- The flow of chart is from left to right and from up to down.

FLOW CHART FOR ENGINE DISMANTLING

ENGINE EXPLODED VIEW FOR

bajaj
Sunny

ENGINE TYPE -	TWO STROKE FORCED AIR COOLED WITH INTAKE CONTROLLED BY REED VALVE
BORE - STROKE	40 x 33.2 mm
TRANSMISSION OIL TYPE - QUANTITY -	SAE 30 500 ML
ENGINE OIL -	SELF MIXING 2T OIL (2%)
RECOMMENDED SPARK PLUG SPARK PLUG GAP -	MODI CHAMPION L8 2C 0.7 to 0.8 mm



bajaj auto ltd.
AKURDI, PUNE 411 035

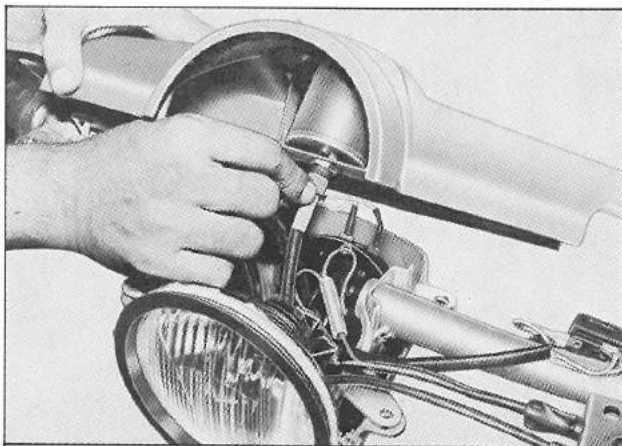


ENGINE EXPLODED VIEW

DISMANTLING : CHASSIS

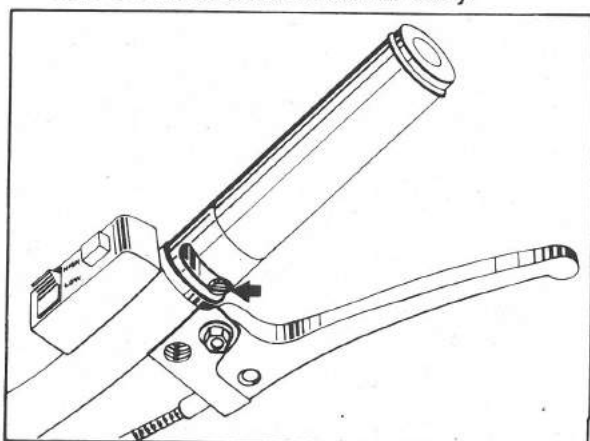
HANDLE BAR REMOVAL

- Remove 4 screws joining top and bottom cover of handle bar.
- Lift the top cover. Unscrew the speedocable nut and lift up the top cover along with speedometer assly.



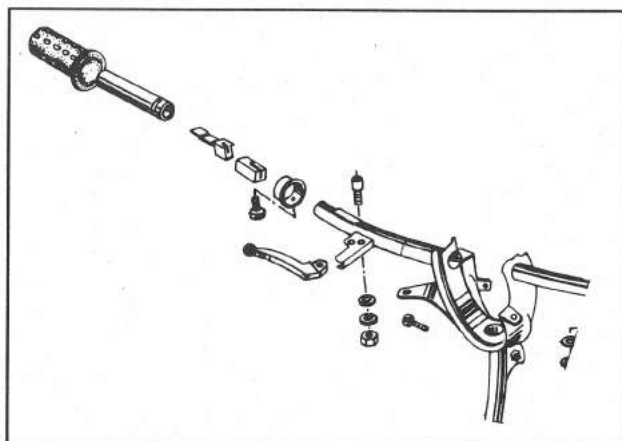
Speedo Cable nut

- Loosen the brake inner cables of front and rear brake by using the adjusters and disconnect the inner cables from the handle bar brake levers.
- Disconnect the male-female connections of rear brake switch wiring harness. Remove the brake switch body from handle bar only if it is damaged, faulty etc. While removing brake switch body carefully align the protruded lugs of body into the slot of handle bar lever bracket and gently pull it out.
- Slide out the rubber sleeve from the accelerator sleeve assly. Unscrew the screw from bottom which is holding the accelerator sleeve with cable holder. Slide out the accelerator sleeve assly.



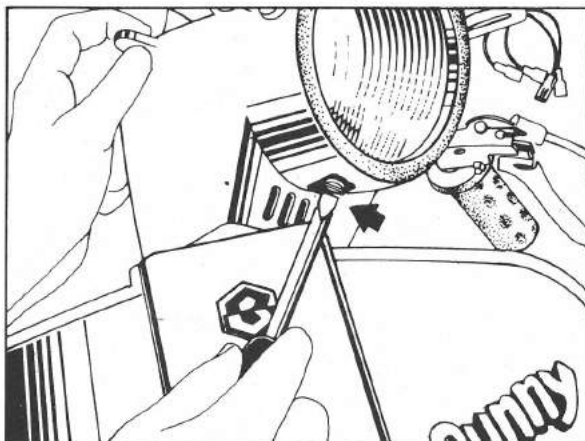
Cable holder bottom screw

- Turn the accelerator cable adjuster (at the top of carburettor) to zero position, so as to have enough accelerator inner cable free play. Then disconnect the accelerator inner cable from the slider block. Take out the slider block. Remove the nylon bush and take out the cable holder. Remove the accelerator outer cable from handle bar tube.



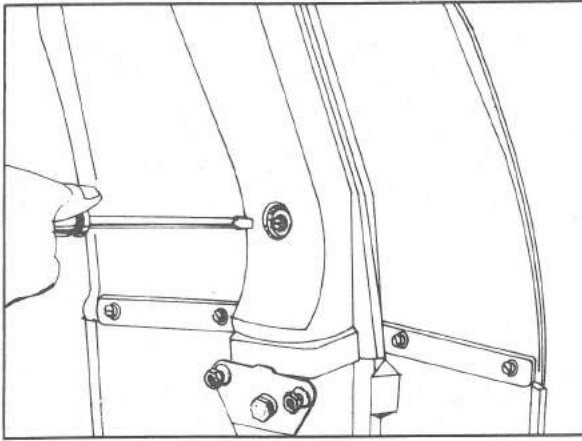
Accelerator mechanism

- Remove the self tapping screw securing black earth cable to handle bar body.
- Remove the screw securing head lamp assly to handle bar bottom cover. Lift the head lamp assly from its seat and disconnect all the wiring connections. Take out the handle bar ring.

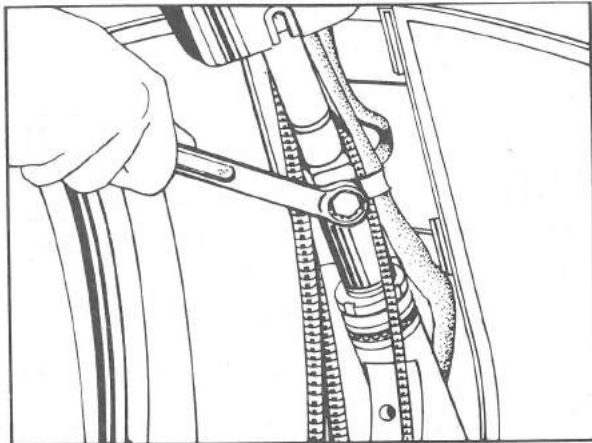


Screw securing head lamp

- Disconnect the wiring connections from horn. lift the horn from its seat alongwith its rubber packings.
- Slide out the R.H. and L.H. switch covers carefully taking due care of their fitting lugs. Remove the screws securing R.H. and L.H. switch bases to handle bar. Remove the switch bases.
- Remove the spare wheel. Remove the spare wheel bracket by loosening the bolt securing spare wheel bracket to chassis.
- Remove the screw along with spring and plain washer securing steering cover. Remove the steering cover.
- Loosen the screw securing bottom cover to handle bar body.
- Unscrew the handle bar mounting bolt, take it out alongwith cable holder clip and take out the round nut from the other end.



Screw securing steering cover



Handle bar bolt

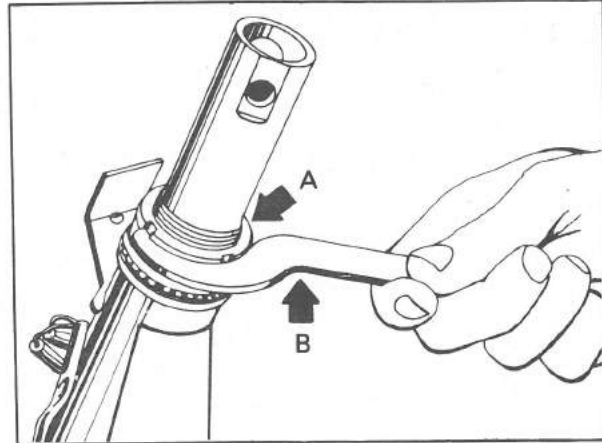
- Lift up the handle bar from the front fork tube. Clear the harness and control cables from bottom cover. Remove the handle bar and separate the bottom cover.

Installation notes :

- Insert the handle bar bottom cover into the handle bar tube before installing the handle bar into the fork tube.
- Carefully pass the wiring harness and control cables through the bottom cover. Route the harness and control cables correctly as shown in the figure. (Ref page 45).
- Tighten the handle bar mounting bolt securely. (Tightening torque 1.2 kg.m.).
- While installing the top and bottom handle bar cover align their locating lugs neatly.
- Check that the horn rubber packings, the head lamp rubber packings are correctly in position.
- Adjust the free play at the front and rear brake lever and at the accelerator sleeve assly.
- Ensure that all the wiring connections are done properly. Also check the working of horn, head lamp etc. before installing handle bar top cover.
- Adjust the head light beam alignment (Page 21).
- Carefully align the lugs of the steering cover into the slots of upper and lower shield.

FRONT FORK REMOVAL

- Remove handle bar.
- Remove front wheel (Refer Page 19)
- Unscrew the upper lock ring nut by using hook spanner (Special Tool P.No. 37-1801-01)
- Remove the spacer ring. Unscrew the lower lock ring nut.
- Support the fork from bottom firmly so that the steering balls will not dislocate. Remove the upper race. Carefully lower the fork assly, clear the fork stem from chassis steering tube and take out fork.



A) Front fork lock ring nut

B) Hook Spanner

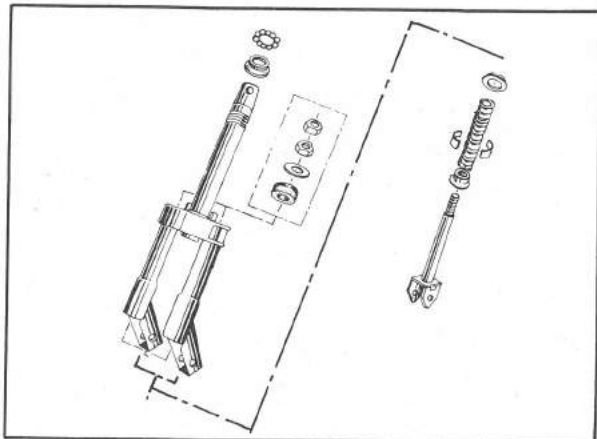
Installation Notes :

- Inspect the steering races, steering balls before assembly.
- Position the rubber packing blocks on front fork tubes.
- Install the front mudguard on fork before installing the fork into the chassis steering tube.
- Grease the steering races sparingly and install 28 balls each on upper steering race of chassis and lower steering race of front fork.
- Tighten the lock ring nut securely. (Tightening torque 1.6 kg.m.). Use hook spanner (Special tool No. 37-1801-01) for tightening.
- Tighten the front axle nut securely. (Tightening torque 3.5 kg.m.).
- Swing the fork assly from one side to other. It should swivel freely. If there is any tightness or restrictic movement loosen the lock ring nut slightly. If tightness steel persists check the fitment of steering races, steering balls.

FRONT FORK DISMANTLING

- Unscrew two screws securing front mudguard to front fork. Take out front mudguard.
- Unscrew the bolts securing the L.H. and R.H. to the respective bracket assly after removing the nuts from inner side.
- Unscrew the bolts securing L.H. and R.H. links to fork tubes after removing the nuts, spring washers and plain washers from outside.

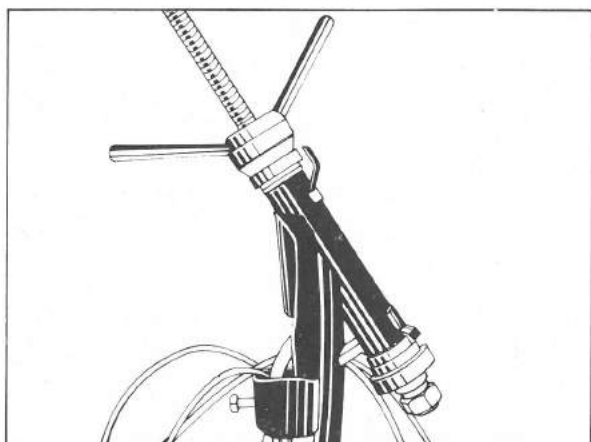
- Using the long T type tube spinner, unscrew the lock nut and the nut securing bracket assly to fork. Hold the bracket assly at its lower end to avoid rotation.
- Take out the bracket assly alongwith spring and nylon guide bush. Remove the thrust washer and the rubber pad from the other side.
- Remove the lower steering race from the front fork tube. (Only when the race is damaged or when the front fork is to be replaced).



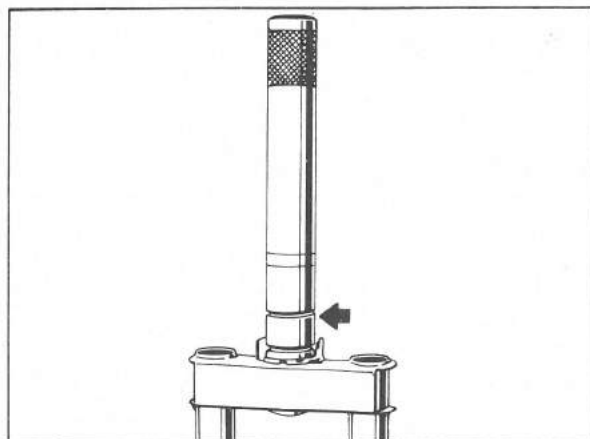
Front fork assembly details

Installation Notes :

- Install the nylon guide bushes on the 9th link from bottom and grease them spairingly.
- Install the bracket assly alongwith spring, install the L.H. and R.H. link. Compress the bracket assembly by pressing spring, install rubber pad, thrust washer and tighten the nut. Install the lock nut and tighten it.
- For installing the new steering races on the chassis steering tube use an assembly tool (Special Tool No. 37-1801-06) for correctly fitting the races on chassis steering tube.
- Install the lower bearing race on the front fork tube by using driver (Special Tool No. 37-1818-10) along with the driver (Special Tool No. 37-1830-05)



Assly tool for fitting races

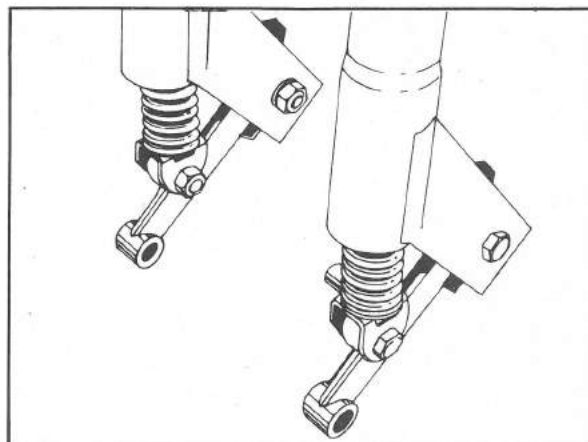


Driver for fitting lower race.

L.H. AND R.H. SIDE PANEL REMOVAL

For removing either L.H. or R.H. side panel follow the procedure given below :

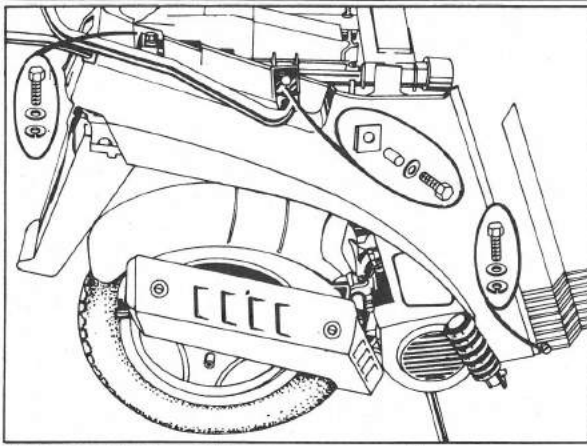
- Remove the front cover.
- Remove tail lamp glass. Remove the stop /tail lamp bulb. Unscrew two screws securing tail lamp base assly to chassis. Carefully take out the tail lamp base assly by clearing the lugs from the L.H. and R.H. side cover slots.
- Unscrew the screw securing side panel at the rear end.
- Lift the seat up and keep it in that position.
- Remove 4 bolts securing luggage carrier. Remove luggage carrier.
- Take out the spacer and packing from beneath the side panel centre mounting bracket and remove the side panel.



Front fork assly. details

Installation notes :

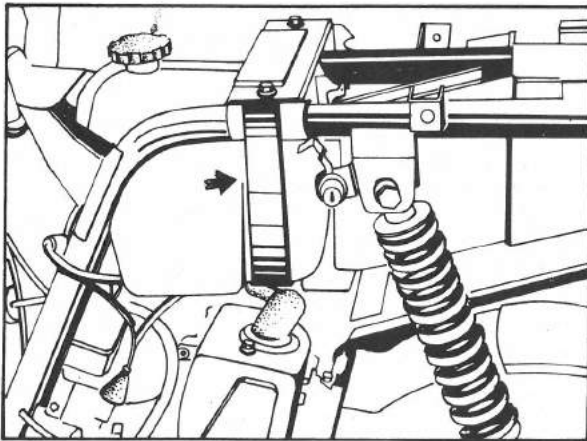
- Position the spacer and packing into the side panel correctly.
- Tighten the luggage carrier mounting bolts securely. (Tightening torque 1.8 kg.m.).
- Align the lugs of tail lamp assly into the slots of side panels carefully, while installing tail lamp base assly.
- Assemble tail lamp glass.



Side panel mounting arrangement

FUEL TANK, LUGGAGE BOX REMOVAL

- Remove front cover.
- Remove L.H. and R.H. side panel.
- Empty the petrol tank.
- Unscrew two bolts securing clamp assly to chassis. Take out the clamp assly from R.H. side of the vehicle.
- Unscrew the two self tapping screw securing luggage box to luggage box support plate.
- Unscrew two bolts securing luggage box support plate to chassis. Take out the support plate.
- Detach the fuel pipes from fuel tank and take out the luggage box and fuel tank simultaneously.



Fuel tank clamp

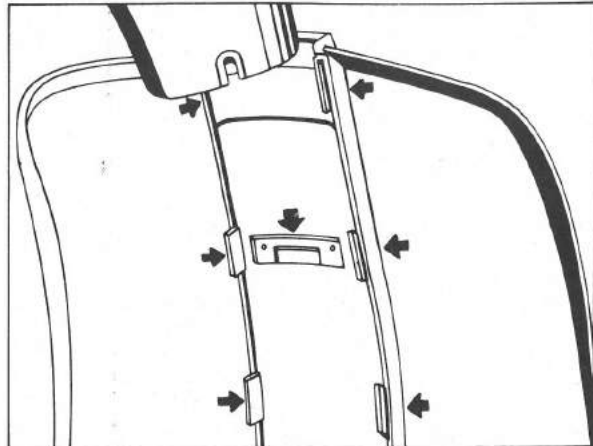
Installation notes :

- Install the luggage box and fuel tank simultaneously.
- Check that all the rubber packings (at clamp assly, on chassis bracket, on luggage box and on chassis tubes) are correctly installed.
- Match the locating lugs of luggage box and fuel tank into their respective seats.

FLOOR BOARD REMOVAL

- Remove the screw securing steering cover and take out the steering cover.
- Remove the 4 domed cap nuts clamping upper and lower shield. Lift the upper shield.

- Remove the matting. Remove the 3 hex. head bolts securing lower shield to floor board and remove the lower shield.
- Remove the 4 hex. headed bolt securing floor board to chassis. Remove the floor board.



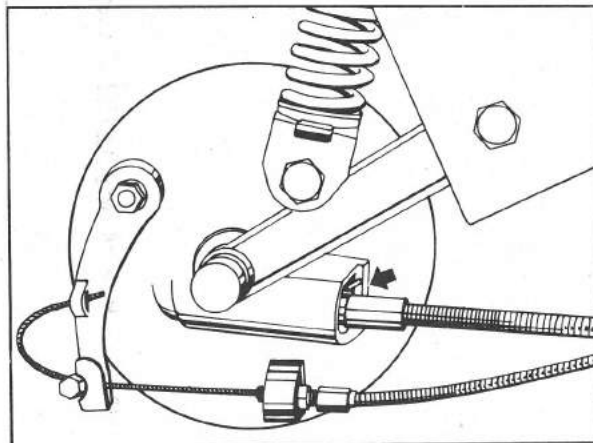
Upper - lower shield mounting lugs.

Installation notes :

- Route the control cables, wiring harness correctly before installing floor board.
- Assemble the upper shield onto the lower shield with great care, after matching the lugs into the lower shield and the slot into the chassis bracket on the rubber packing.
- Assemble front cover.

FRONT BRAKE DRUM COVER DISMANTLING

- Remove front wheel.
- Disconnect the brake cable. Remove the wire clip holding speedocable into the brake drum cover. Remove the speedocable and separate the drum cover.



Wire clip holding speedocable.

- Lift off the brake shoes after slipping their ends off the brake shoe actuating shaft. Remove the brake shoe return spring.
- Remove the grease seal.
- Remove the speedo pinion assly alongwith plain washer and remove speedometer gear.

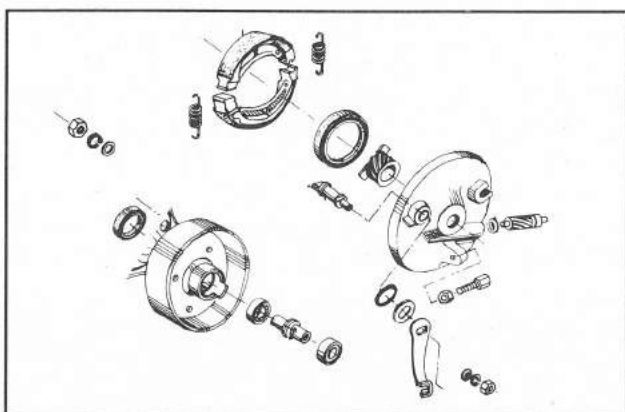
- For removing brake actuating shaft, unscrew the nut securing front brake lever to actuating shaft. Take out spring, plain and special washer and "o" ring. Remove the brake actuating shaft from the other side.

FRONT BRAKE DRUM DISMANTLING

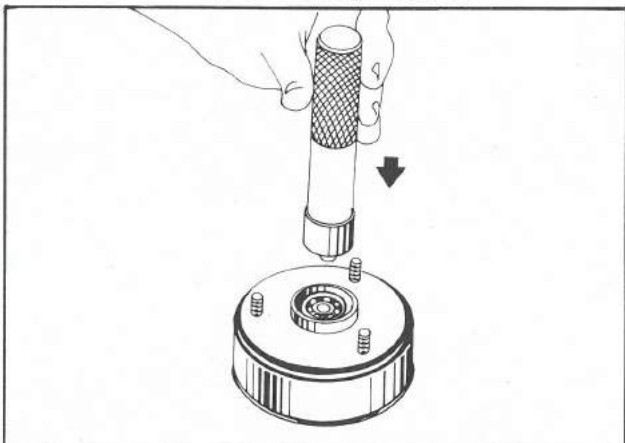
- Remove the oil seal by using hook spanner.
- By using Bent Tool (Special Tool P.No.37-1515-01) remove the bearing. Take out the assly of spacer tube and collar ring.
- Now remove the second bearing from the other side by using the same bent tool.

Installation notes :

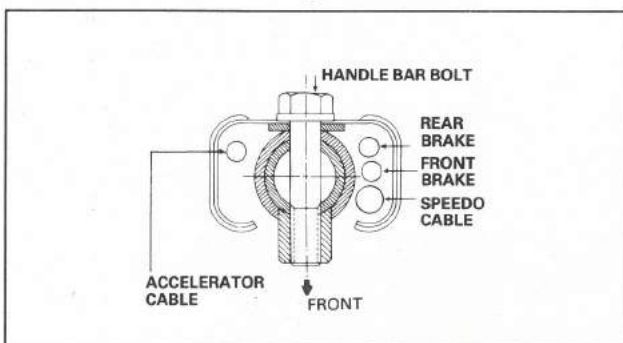
- Install the bearings by using an inner bearing driver. (Special Tool P.No.37-1014-23 ,37-1014-24)
- Install the oil seal by using a suitable bearing driver.



Front brake drum cover assly details.

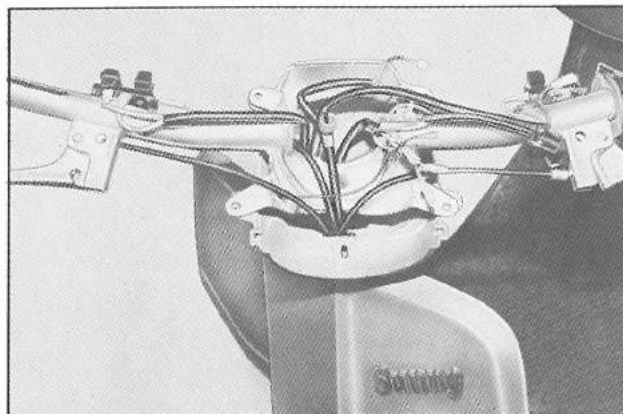


Front brake drum bearing installation.

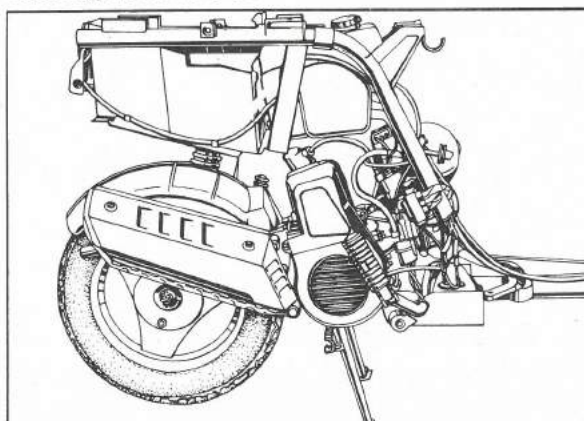


Routing at handle bar bolt clamp

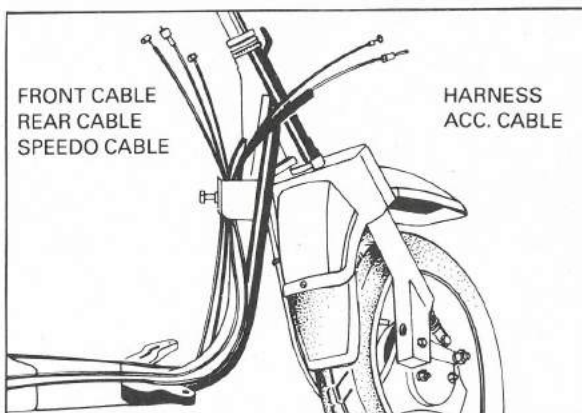
CABLE AND HARNESS ROUTING



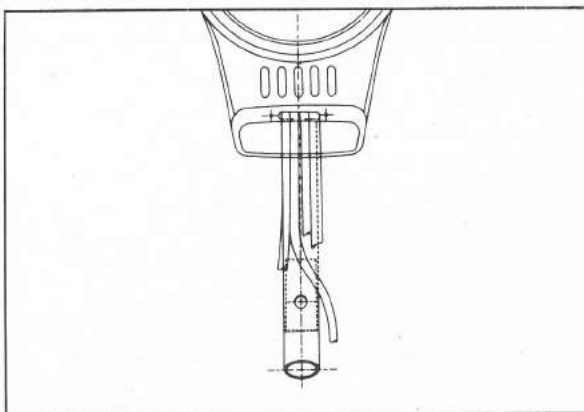
Routing at handle bar



Routing near luggage box



Routing near spare wheel bracket



Routing at handle bar bottom cover

MAINTENANCE : ENGINE

CARBURETTOR :

The side draught single jet carburettor with choke system is fitted on this vehicle. The jet is immersed inside the petrol in the float chamber.

Carburettor specification :

Type	Jetex 300J 13-13-BS
Venturi size	13/13
Main jet	54
Idle hole	0.60
Slide	Back scoop
Air (emission) screw setting	1 ± 3/4 turns out from fully in position

The construction and the various parts of the carburettor are as shown in adjoining figure.

Since the carburettor mixes and regulates the fuel-air mixture going to engine, normally the carburettor trouble is either too rich mixture or too lean mixture.

The carburettor troubles are caused by dirt, wear, maladjustments and improper fuel level inside the float chamber.

The symptoms indicating the mixture troubles are ;

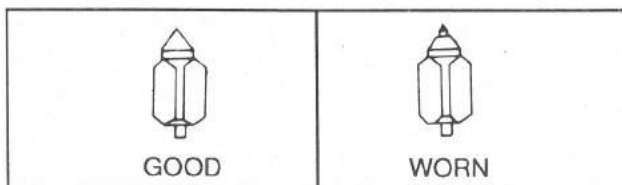
Starting trouble	Overheating
Smokey exhaust	Back firing
Higher emission level	

Cleaning :

Dismantle the carburettor. For dismantling follow the sequence as indicated by alphabetical order in the figure. For assembling back the carburettor reverse the same sequence.

After dismantling the carburettor keep all the parts in a clean dish and wash them in pure petrol only. Blow dry all the parts (except float) with compressed air. The compressed air should be passed through the jets and passages in opposite direction of the fuel flow. Inspect all the parts carefully as follows.

Float pin : If the dirt dust settles between the float pin and its seat the float valve will not close and fuel will overflow. Overflow can also result when float pin is worn. Therefore a worn float pin (refer fig) should be replaced.



Float pin wear

Main jet :

Inspect the jet for clogging. If clogged, clear it by compressed air. If firm deposits are formed then they can be desolved into carbon-tetra-chloride solution.

"Don't clean the jet by inserting wire through its orifice, it will damage the jet."

Float :

Handle the float carefully. Replace the float if leaking, punctured. The punctured float can easily be identified by testing it by dipping into the water.

Slow running adjusting screw :

Do not overtighten the screw otherwise its conical tip will get damaged.

Throttle slide :

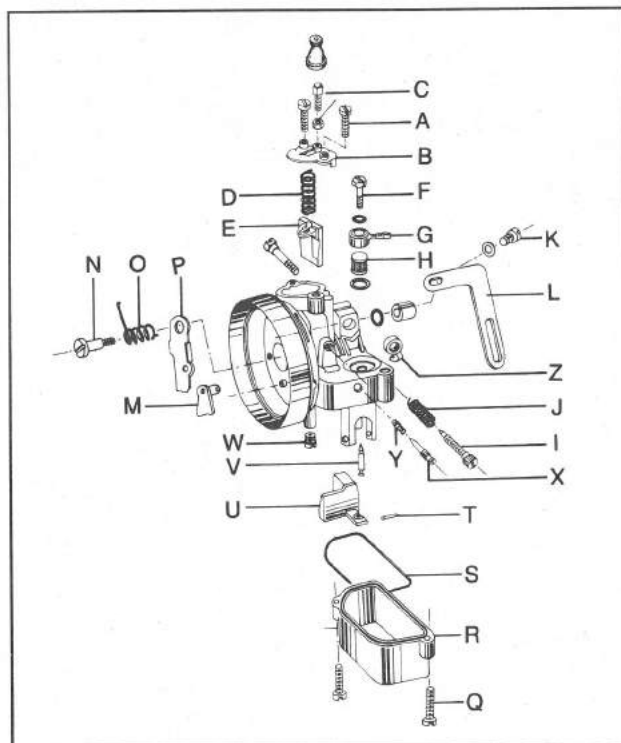
Inspect the slide for wear and tear. Check for free sliding inside the mixing chamber slots.

Air Screw :

Do not overtighten the air screw otherwise its conical teeth will get damaged.

Always use genuine carburettor spares for replacement.

Tighten all the carburettor fasteners with great care otherwise they will get damaged.

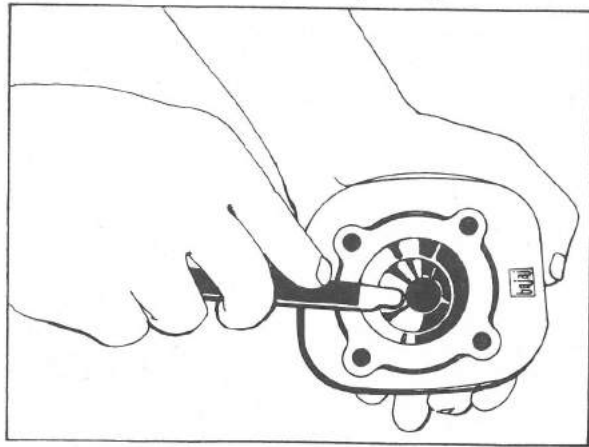


Carburettor dismantling sequence

- Check the valve plates for warpage. Warped valve plates cause leak as well as create a sound when engine is run. Replace the warped plates with new one.
- While dismantling and assembling, handle the plates carefully. Avoid scratches and do not bend the plates.
- Inspect the intake manifold for any crack, blow hole etc.

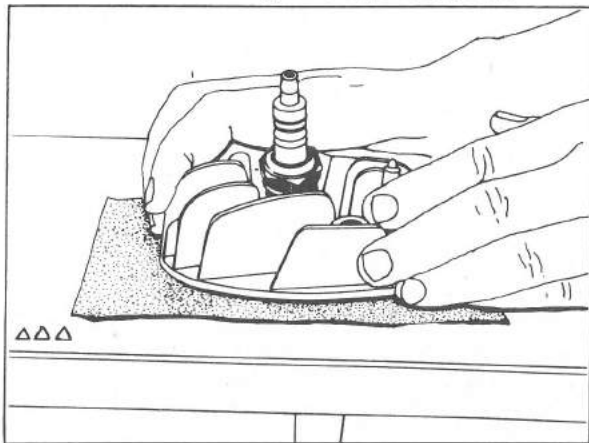
CYLINDER HEAD

Inspect the cylinder head for carbon deposit accumulation. Scrape the carbon deposits from combustion chamber by using a rounded scraper. Clean the cylinder head and blow dry with compressed air. A polished combustion chamber surface will reduce the tendency of carbon to adhere and will also help to improve gas flow.



Scraping carbon by rounded scraper

- If there are any signs of compression leakage from around the mating surface, inspect the mating surface for flatness and/or damages.
- Light damages to the mating surfaces are repairable. This can be done by rubbing the mating surface on fine emery paper secured to a surface plate. While rubbing use sanding pattern of figure eight and change the cylinder head position to avoid removing too much material from one side.
- Check the mating surface flatness on surface plate continue with rubbing till it is perfectly flat.



Cylinder head rubbing

- Replace the cylinder head in case of broken fins.
- Clean the cooling fins, remove any foreign material imbedded in between the cooling fins so that the air flow will not get obstructed.
- In case the thread for spark plug fitment are worn or damaged due to overtightening/cross tightening either recondition the threads by using a helicoil insert or replace the cylinder head.
- Use only the standard gasket for cylinder head, use of the gasket of incorrect thickness will affect compression.
- The distortion of cylinder head is normally the result of uneven tightening. To avoid such distortion tighten the cylinder head nuts to the specified torque of (0.8 to 1 kg.m) in a criss-cross pattern.

Cylinder head volume :

The extent to which the cylinder head can be rubbed on surface plate will depend upon combustion chamber volume. Follow the below given procedure for measuring the combustion chamber volume.

- Fit the spark plug in position and tighten to the specified torque.
- Place the cylinder head on some suitable fixture in such a fashion that the combustion chamber will face upward and the mating surface horizontal.
- Apply a thin layer of grease on mating surface and place upon it a transparent plate having two holes.
- Pour any non volatile liquid through one of the holes into the combustion chamber, with the help of a burette until the combustion chamber is completely filled without any air bubble remaining.
- Measure the volume consumed in the burette.
- Repeat the above procedure 2 or 3 times and take the average reading as combustion chamber volume.

Combustion chamber volume	5.8 - 6.00 cc
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CYLINDER BLOCK

The cylinder block wears out with the use, especially when foreign unfiltered objects like dust particles enters inside. If this wear is excessive the compression will decrease and will adversely affect the engine performance.

If the engine has rendered reasonable amount of service, there will probably a ridge formation at the uppermost cylinder bore, which marks the limit of the top piston ring travel. The size of the ridge will give some indication of amount of wear of cylinder bore.

- Inspect the cylinder bore visually. If the surface of the bore wall is scored, grooved or scratched the cylinder block should be rebored or replaced.
- Clean any dust-dirt from over the cooling fins to ensure that the cooling fins are receiving full air flow. The engine will overheat badly if this cooling area is obstructed.

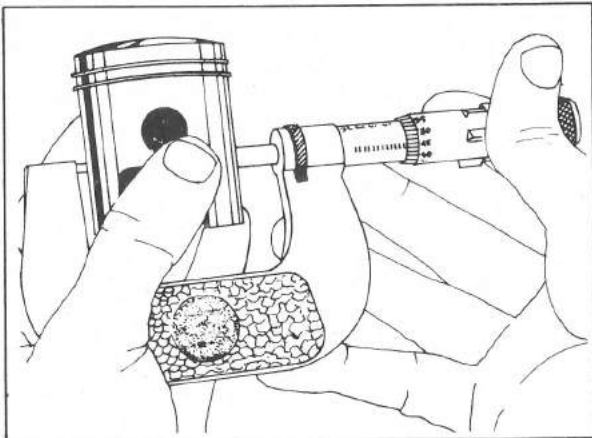
- Measure the cylinder bore diameter and piston diameter for finding out the clearance. If it is more than the service limit, machine the cylinder block to fit oversize piston or replace the block with new one.

PISTON

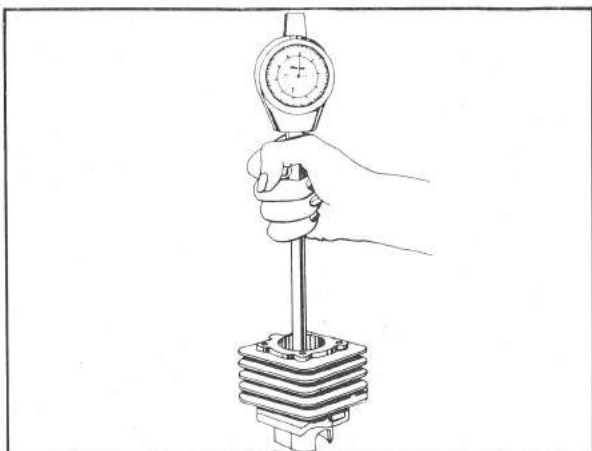
- Remove the piston rings carefully.
- Decarbonise piston crown, ring grooves. Clean the piston and inspect visually for any abnormal wear or damage.
- The light score and seizure marks on piston can be removed by polishing the piston with fine emery paper. But if the indentation is deeper then the piston should be replaced.
- Inspect the ring seating into grooves. The rings should seat perfectly parallel to the groove surfaces.

Cylinder block - piston clearance :

The clearance between cylinder bore and piston is critical. If it is excessive the compression losses will increase and if it is too low frictional losses will increase. So for optimum engine performance, the standard clearance should be maintained. This clearance can be obtained by measuring cylinder bore diameter and piston diameter.



Piston dia measurement



Cylinder bore dia measurement

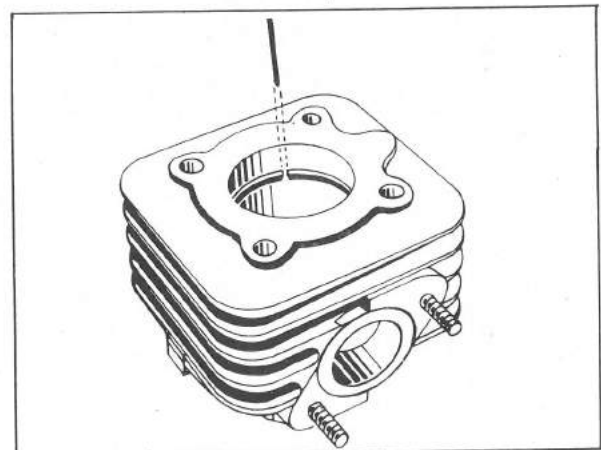
The cylinder and piston supplied through spare parts are marked by certain alphabet depending upon dimensions. **In order to ensure prescribed clearance between cylinder and piston, check that the grouping mark on piston is matching with the grouping mark on cylinder before assembling them.** The chart given below shows the grouping dimension and the respective identification stamp.

PISTON RING

- Remove the piston rings taking great care as they are brittle and break easily. The piston ring can be easily removed after opening its diameter at the ends and gently lifting the portion opposite to the end gap.
- Visually inspect the piston rings. If the rings are worn unevenly or damaged they must be replaced.
- Examine the working surface of the rings. If discoloured areas are evident, the rings should be renewed, since the patches indicate the blow by of gases.
- Check that there is no built up of carbon behind rings.

Piston ring end gap :

- Place the ring inside the cylinder bore, using the piston to locate it squarely in place. Set it close to the top of the cylinder where cylinder wear is high.
- Measure the gap between the ends of the ring with a thickness gauge.
- If the gap is wider than the service limit, the ring is worn and must be replaced.



Piston ring gap measurement

Piston ring end gap :

Standard	Service Limit
0.15 to 0.3 mm	0.7 mm

COMPRESSION TEST

A compression test is very useful as an aid to determine engine condition. A low compression value than the normal indicates compression loss due to leakages, worn block piston, worn piston ring etc. On the other hand a high compression pressure value than the normal indicates carbon built up on combustion chamber, less clearance volume etc.

CYLINDER BLOCK / PISTON GROUPING CHART

Size	Cylinder block size in mm	Piston size in mm	Clearance in mm		Identification stamp	
			On assly.	After use	Cylinder block	Piston
Standard	39.995 - 40.000	39.945 - 39.950	0.045 to 0.055	0.090	A	A
	40.000 - 40.005	39.950 - 39.955			B	B
	40.005 - 40.010	39.955 - 39.960			C	C
	40.010 - 40.015	39.960 - 39.965			D	D
	40.015 - 40.020	39.965 - 39.970			E	E
	40.020 - 40.025	39.970 - 39.975			F	F
Oversize	40.495 - 40.505	40.445 - 40.455	0.04	0.09		
	40.505 - 40.515	40.455 - 40.465	to			
	40.515 - 40.525	40.465 - 40.475	0.06			

- Before measuring the compression pressure check that the cylinder head mounting nuts are tightened to specified torque.
- Warm up the engine for a few minutes so that oil between the cylinder wall and piston will help to seal compression leakage. While engine is warming up check that there is no gas leakage from around the cylinder head gasket and spark plug.
- Stop the engine. Remove the spark plug. Screw in the hose of compression gauge securely into the spark plug hole.
- With the throttle fully open, turn the engine over sharply with kick starter several times, until the compression gauge needle stops moving further. The highest reading obtained will be the compression pressure.

Compression pressure :

	Kg/cm ²	Psi
Standard	10.2 to 10.9	145 - 155
Service limit	8.45	120
Indicating need of decarbonization	12.3	175

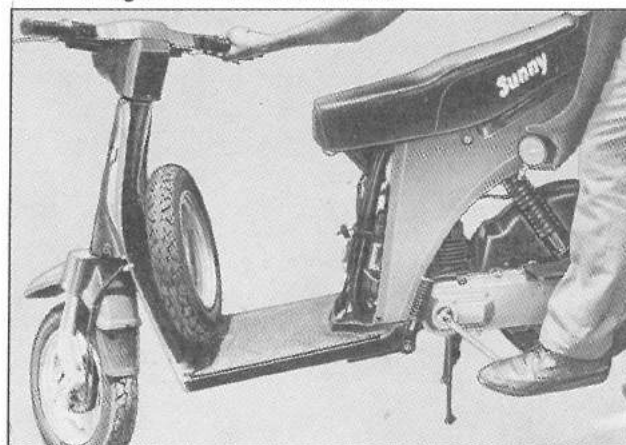
If the compression pressure obtained is more than the standard compression pressure, check the following probable causes.

- Excessive carbon deposition on cylinder head/piston crown.
- Incorrect cylinder head gasket/cylinder block base gasket.
- Reduced combustion chamber volume due to rubbing of cylinder head for flatness.

If the compression pressure is less than the service limit, check the following :

- Gas leakage around cylinder head / spark plug.

- Excessive piston - cylinder clearance.
- Worn out piston rings - ring grooves.
- Damaged crankshaft oil seals.



Compression pressure measurement

DECARBONISATION

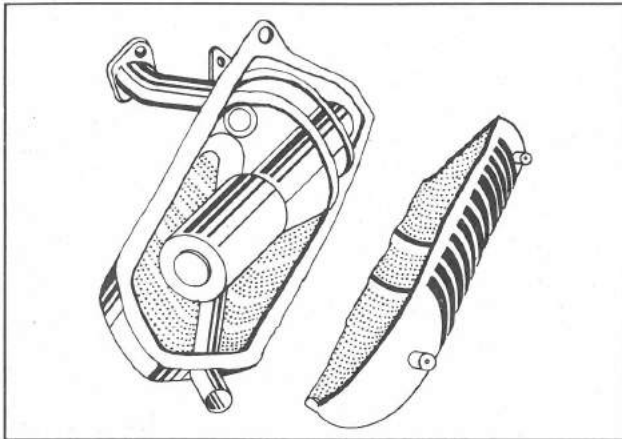
Lubricating oil gets burnt inside the combustion chamber of a two stroke engine, causing accumulation of carbon deposits around cylinder exhaust port, piston crown and combustion chamber. The excessive carbon deposits will eventually lead to higher compression pressure causing overheating, preignition etc. So it is necessary to decarbonise the engine and silencer at a regular interval in accordance with the periodic maintenance chart. For decarbonising proceed as follows :

- Remove the cylinder head and scrape the carbon deposits with rounded scrapper. Protect the mating surface from getting scratched.
- Remove the cylinder block piston. Clean all the carbon deposits from the exhaust port and try to obtain smooth finish in the port without enlarging them. The size and position of the ports determine the power characteristic of the engine, so an unwarranted tampering can produce adverse effects.
- To obtain smooth finish of exhaust port, apply chemisil solution after decarbonising.

- Scrape the carbon deposits from above the piston crown. Lightly polish the crown with fine emery paper.
- Remove the piston rings. Scrape the carbon deposits accumulated in the ring grooves. Use an end of a broken piston ring to scrape the deposits inside the grooves.

"While decarbonising take ample care not to scratch the cylinder, the side of the piston or the piston ring grooves."

"Never clean the piston head in an assembled condition. If the carbon particles remain inside they will drastically shorten the life of rings, piston, cylinder etc."



Silencer decarbonisation

- For decarbonising silencer, remove it from the engine.
- Cut the silencer body as shown in the figure into two halves.
- Keep the dismantled silencer halves deeped in kerosene for a few hours. The deposits will loosen. Then scrape them off by a wire brush.
- Assemble the silencer halves and weld it neatly. A leaking silencer will give a harsh exhaust sound.

CRANKSHAFT:

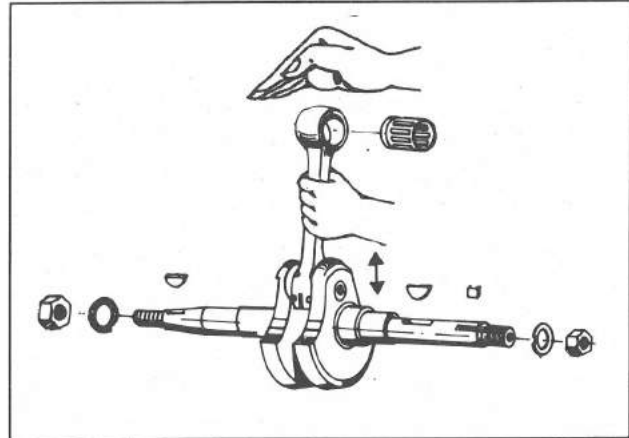
- Thoroughly clean the crankshaft assembly with petrol to remove all surplus oil.
- Visually inspect the crankshaft for damaged threads at both the ends, the worn out keyways for magneto rotor, clutch bush and starter gear. In case if found damaged, either recondition or replace the crankshaft.

Vertical play at big end bearing :

- Hold the connecting rod at its highest point of travel i.e. T. D.C. position of piston and check whether there is any vertical play in the big end bearing by alternately pulling in the direction of travel. If the bearing is good, there should be no play.

This can also be checked by holding the connecting rod by one hand in the simple position and then tapping at the small end by other hand. If there is any excessive play in big end roller bearing, there will be a distinct metallic noise from the crankshaft big end.

- Replace the crankshaft assembly in case of excessive play.

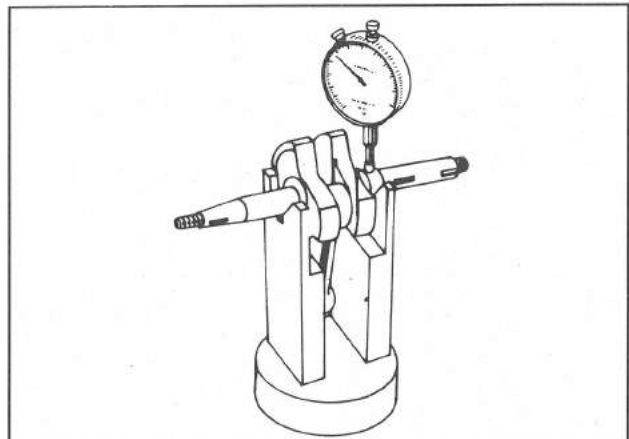


Checking connecting rod vertical play

Crankshaft runout :

Set the crankshaft on 'crankshaft alignment fixture' (special tool No.37-1030-79). For measuring the runout with a dial gauge, rest the dial gauge spindle end as shown. Turn the crankshaft slowly. The maximum difference observed in readings of the dial gauge is crankshaft runout.

Standard	Service limit
0.03 mm	0.1 mm



Checking crankshaft runout

If the runout at either point, exceeds the service limit align the crankshaft webs so that runout falls within the service limit.

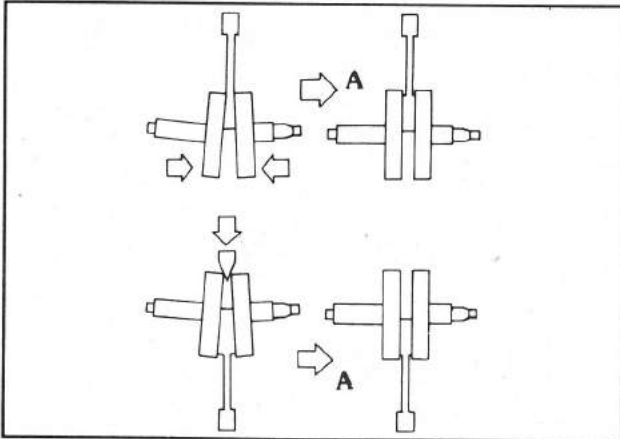
As shown in the figure, there are three types of crankshaft misalignment. In the case of horizontal misalignment which is the most common, strike the projecting web of the crankshaft with plastic, soft lead or brass hammer as

indicated in the figure. Recheck the runout with a dial gauge, as explain above until the runout falls within the service limit.

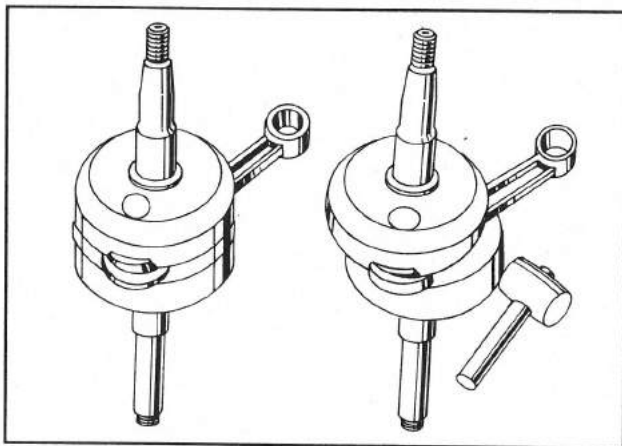
Vertical misalignment is corrected either by driving a wedge in between the crankshaft webs or by squeezing the crankshaft webs in a vice depending on the nature of the misalignment. In case of both horizontal and vertical misalignment correct the horizontal misalignment first.

If crankshaft misalignment can not be corrected by above method replace the crankshaft.

Do not hammer the crankshaft at part "A"



Crankshaft horizontal misalignment



Crankshaft vertical misalignment

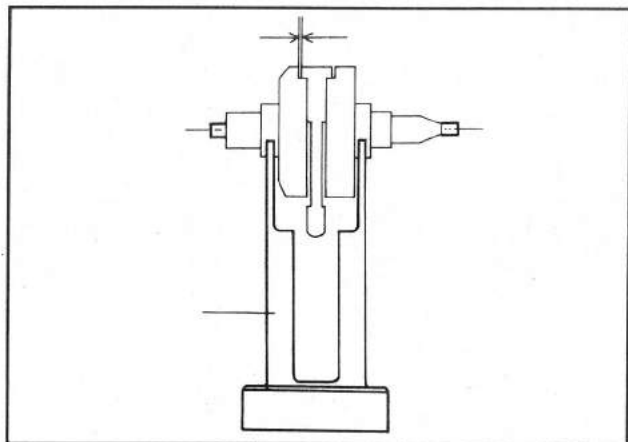
Connecting rod big end side crankcase :

Certain play is necessary between the connecting rod big end, big end bearing and crankshaft webs if the bottom end of connecting rod is to run freely. But an excessive play may damage the connecting rod / piston necessitating engine overhaul.

- Measure the side clearance of connecting rod at its bigger end by using a feeler gauge as shown in figure.
- If the side clearance exceeds the service limit, the crankshaft should be replaced.

Connecting rod big end side clearance :

Standard	Service limit
0.15 mm	0.41 mm



Connecting rod big end side clearance

Assembly Clearances for Connecting Rod, Roller Bearing and Crank Pin.

Connecting rod and needle cages of the same category should be assembled. (Ref. table) The category is marked on the connecting rod small end (by electric pencil) and on the edge of the needle cage (1 to 4 notches) depending on the category.

Connecting Rod, Roller Cage and Gudgeon Pin

Part No.	Name of Part	Std. Dimns.	Clearance	Assly Clearance
14 10 1106	Connecting Rod	+0.023 G 150 +0.006	Clearance "I"	0.002 to 0.016
15 10 1039	Small end Roller Bearing	1.500 F 1.5080		
15 10 1152	Gudgeon Pin	+0.0 H 120 -0.005		

Assembly Categories

Gudgeon Pin External Dia	Connecting Rod		Roller Cage		
	Internal Dia	Category	Roller Dia	Marking	Packing Colour
+ 0.0 12 - 0.005	+ 0.011 15 + 0.006	1	1.500 1.502		Green
	+ 0.015 15 + 0.010	2	1.502 1.504		White
	+ 0.019 15 + 0.014	3	1.504 1.506		Blue
	+ 0.023 15 + 0.018	4	1.506 1.508		Red

CLUTCH :

The power developed by engine is transmitted through centrifugal clutch, chain and gears.

Damaged, worn out clutch shoe assembly, clutch box and clutch shoe springs will cause transmission losses badly affecting power, pick-up and fuel consumption.

Remove the clutch shoe assembly from crankshaft. Clean it by petrol and dry.

Visually inspect the clutch shoe assembly. The shoe liners should be replaced if they are damaged/cracked/worn out. Remove the foreign material embeded in the shoe lining.

"Don't polish the clutch shoe assembly, clutch box otherwise slippage may take place."

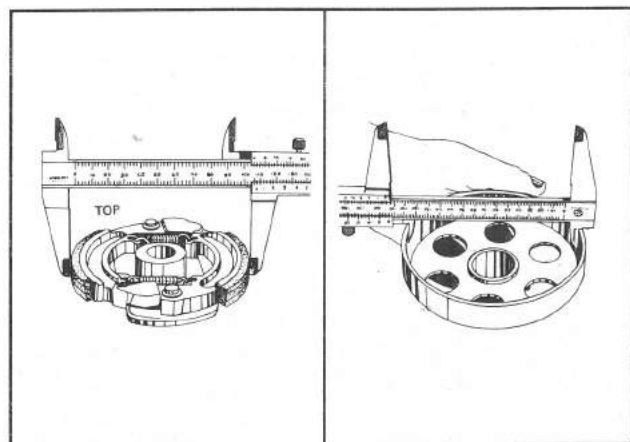
Inspect the clutch shoe assembly, clutch box for the following checks.

- **Clutch shoe liners :**
Visually inspect the shoe liners for seizure marks, overheating and uneven wear.
- **Clutch shoe assembly outer diameter :**
Measure the outer diameter of clutch shoe assembly by vernier caliper.

Standard	Service limit
102 mm	99.5 mm

- **Clutch box inner diameter :**
Measure the inner diameter of clutch box by vernier caliper. Replace it if it has worn past the service limit.

Standard	Service limit
105 ± 0.2	106



Clutch shoe outer diameter / Clutch box inner dia.

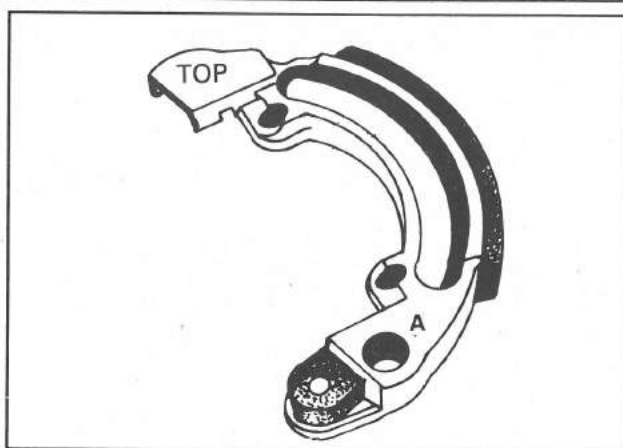
- **Clutch tension spring - clutch shoe weight grouping:**

Based on the weight of the clutch shoe the tension spring of correct spring rating should be used while assembling the clutch.

The grouping mark is etched on each clutch shoe near the pivot pin hole. The grouping of the tension spring is indicated by its coating i.e. either phosphatising or zinc plating.

Weight group for clutch shoe	Corresponding spring to be used
A	Phosphatised
B	Zinc plated

For the optimum performance of engine, the clutch shoes and tension springs of the same group must be used.



Clutch shoe grouping mark.

- **Shock pads :**

Inspect the shock pads for any signs of fatigue cracks, damages, etc. and replace if necessary.

Clutch locking R.P.M. measurement :

The grouping of clutch shoe, clutch spring can be confirmed by measuring the clutch locking R.P.M. The clutch shoe assembly should lock with the clutch box at 3700 ± 100 R.P.M. For checking this, follow the procedure given below .

- Start the engine and warm it up.
- Depress and hold the rear break lever firmly.
- Now open the throttle full. Measure (with a digital tachometer) the clutch shoe locking R.P.M. The locking R.P.M. is the R.P.M. at the point where the tachometer registers the maximum reading.
- Do not continue this test for longer durations.
- If the clutch shoe locking R.P.M. is not within limit, confirm the clutch shoe - spring routing, clutch box inner diameter and clutch shoe outer diameter.

CHAIN

The drive from clutch box drive sprocket to the driven sprocket of pirion shaft assly is by chain.

Due to contineous running, chain and tensioning arrangement parts wear out gradually. So inspect the chain at periodic intervals in accordance with the periodic maintenance chart. Also inspect the chain and the other components whenever the chain noise is heard.

Visually inspect the chain guide, chain tension strip, rubber pad for fatigue cracks, indentations and rubbing marks and replace them if found damaged.

Chain wear :

When the chain has worn so much that it is more than 2.5% longer than when new, it is no longer good for use and should be replaced. Whenever the chain is replaced inspect both the engine and the rear sprocket and replace them if necessary as the worn sprocket will cause a new chain to wear quickly.

Chain wear measurement :

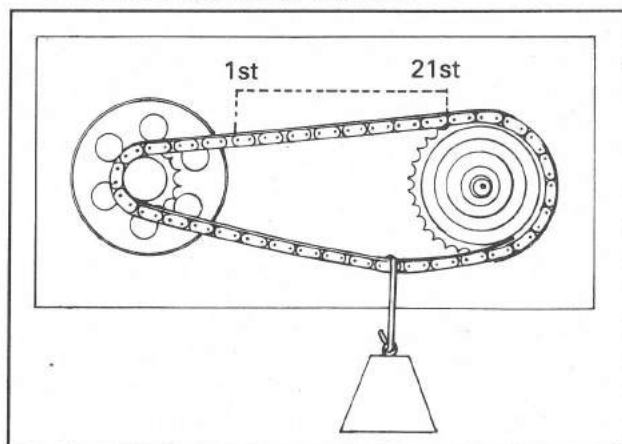
Since it is not practical to measure the entire length of the chain, determine the degree of wear by measuring 20 link length of the chain.

- Remove the chain from the engine.
- Hang the chain vertically in the hook.
- Stretch the chain by handing 16 kg load.
- Measure the length of 20 links on side on a straight part of chain from pin centre of 1st pin to pin centre of 21 st pin .

Drive chain 20 link length

Standard	Service limit
190.5 mm	195.26 mm

- Chain should be replaced if the 20 link length is found to be more than the service limit.

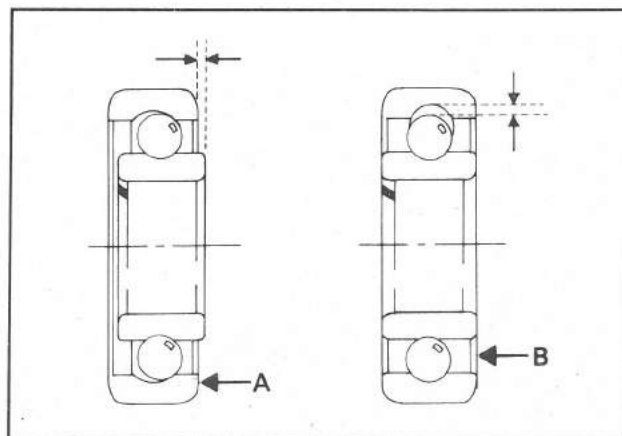


Chain wear inspection.

BALL BEARING

Since the ball bearings are manufactured to extremely close tolerances both the radial and axial play can not normally be measured. Therefore, the condition of the bearings must be judged by following method.

- Wash the bearing in petrol, dry it and then oil it. Spin it by hand to check its condition. If it is noisy, does not spin smoothly or has any rough spots it must be replaced.
- Check the axial and radial play of the two bearing cages by hand as shown. If the play can be felt by hand then the bearing must be replaced.



Axial play/ Radial play

- "During overhaul the bearings must be stored, duly lubricated. If kept dry, the bearing may rust and may not perform properly when assembled."
- Before installing the bearing apply a light coat of oil on its seat. While installing the bearing use the suitable bearing driver and push that cage of bearing which takes the seat. This prevents severe stresses on balls and races.
- Don't fit the bearing if it is not fitting snugly into its seat.
- Replace both the crankshaft bearings at the same time. It is a false economy to replace only one bearing.

CRANKCASE :

- After dismantling, thoroughly wash both the crankcase halves and the clutch cover.
- Clean the mating surfaces thoroughly and inspect them for damages etc.
- Visually inspect the crankcase castings for cracks, damages, blow holes etc.
- If bearings have been removed, check their seats in the crankcase for damages/wear.
- Check all studs, dowels, nuts removed from crankcase for loosening and /or damage.
- Check oil delivery passage in magneto side half for blockage and clean if necessary.
- Check engine foundation bushes for damage / wear and replace if necessary.

OIL SEALS :

The worn / damaged oil seal will allow air to leak into the crankcase. This will dilute the incoming mixture before it is compressed resulting in poor engine performance.

Visually inspect the oil seal. Replace the oil seal if its lip is deformed, hardened, discoloured or otherwise damaged. Check the spring tension and replace the oil seal if not found ok.

Press the oil seal fully in so that the face of the oil seal will be flush with the surface of its seat.

"O" RINGS :

Visually inspect the 'O' ring. Replace it if any crack / deformation is observed. It is desirable to replace the oil seal once removed because it normally gets damaged during removal.

RUBBER PARTS :

Visually inspect the rubber parts such as grommets/pads/bushes. If they are deteriorated, damaged, sheared off, torn or cracked, replace them. Replace the rubber bushes if they are noisy.

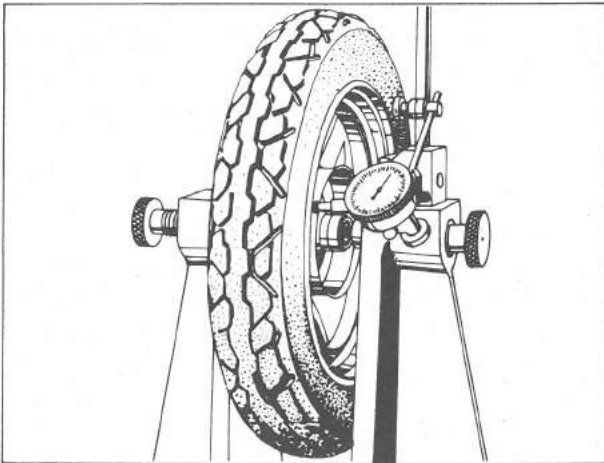
MAINTENANCE : CHASSIS

WHEEL RIM RUNOUT :

For checking wheel rim runout mount the wheel on the stand (Special tool P.No. 37-1515-21) as shown. Use the dial gauge supported on magnetic base for measuring the rim runout.

Axial Runout :

Set the dial gauge against the side of the rim and rotate the wheel slowly to measure the amount of runout. The difference between the lowest and the highest reading is the amount of rim runout.



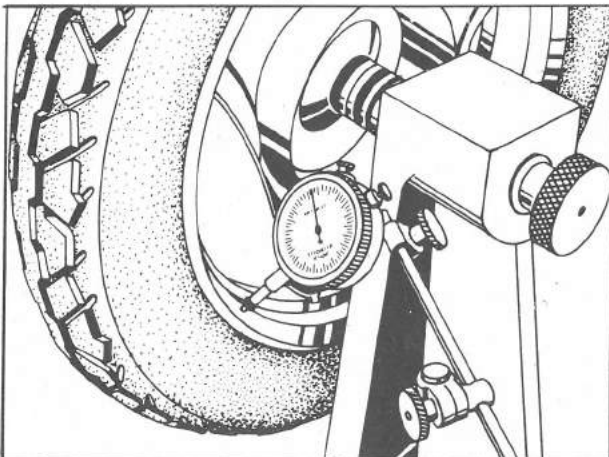
Axial Runout

Radial RunOut :

Set the dial gauge pointer at the inner circumference of the rim and rotate the wheel slowly for measuring the amount of run out. The difference between highest and the lowest reading on the dial gauge is the amount of rim runout.

	Standard	Service limit
Axial	0.8 mm	2.0 mm
Radial	1.0 mm	2.0 mm

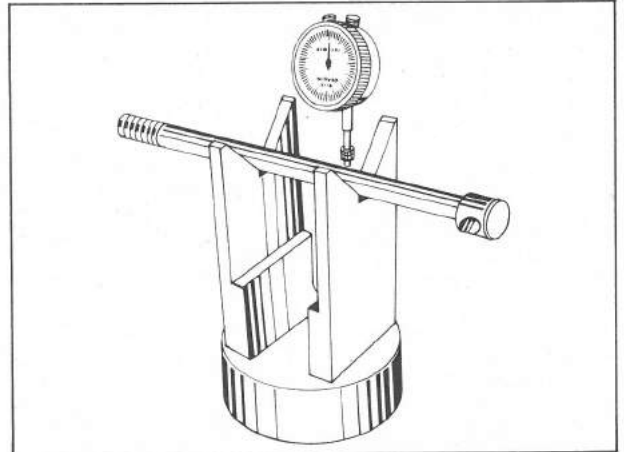
If the wheel rim runout exceeds the service limit, either recondition the wheel rim within the tolerable runout limit or replace the wheel rim.



Radial runout

FRONT HUB PIN INSPECTION

Remove any rust from hub pin by using fine emery paper. To measure the runout set the hub pin on 'V' blocks. Station the dial gauge probe on hub pin. Rotate the hub pin slowly. The travel of the dial gauge needle will indicate the amount of hub pin run out.



Hub pin runout

If the hub pin runout exceeds 0.2 mm, either straighten the hub pin within tolerable limit or replace it.

BRAKES

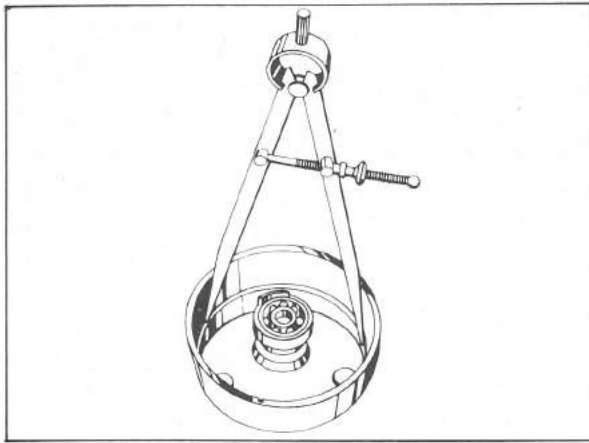
BRAKE DRUM :

Visually inspect the inner surface of the brake drum. The inner diameter should be free from scoring marks, indentation otherwise the braking efficiency will be less. Remove all traces of brake lining dust and polish the inner surface by fine emery paper. Wipe the inner surface with a petrol soaked rag to remove all traces of grease and oil.

Measure the inner diameter of brake drum. Since uneven wear will decrease braking efficiency, take measurements at a minimum of two positions at right angle to each other. Replace the brake drum if the diameter exceeds the service limit.

Brake drum inside-diameter

Standard	Service limit
110 ± 0.11 mm	110.75 mm



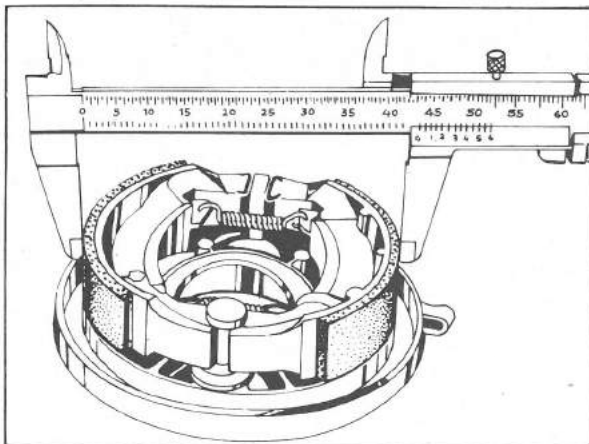
Brake drum inside diameter

Brake shoe assembly :

- Visually inspect the condition of the brake shoe linings. Remove any foreign particles imbedded in the linings. File any high spots on the lining. Wipe linings clean with a petrol soaked rag to remove all traces of grease and oil.
- Visually inspect the brake shoe body for cracks/blow holes etc.
- With the brake shoes assembled, measure the outer diameter of the brake shoe assy. If the outer diameter of the brake shoe assy is less than the service limit replace the brake shoe assy.

Brake shoe assy outer diameter

Standard	Service limit
109	107



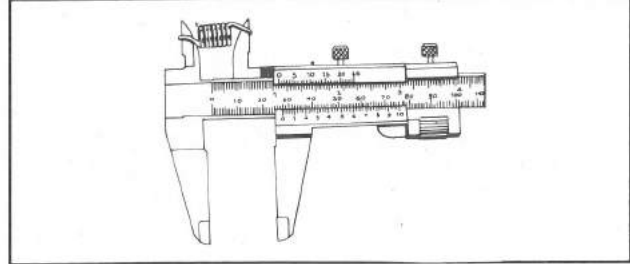
Brake shoe assy outer diameter

BRAKE SHOE SPRINGS :

Measure the free length of brake shoe spring. Replace the spring if it has worn past the service limit.

Brake shoe spring free length

Standard	Service limit
36 + 0 - 1.5	38.5



Brake shoe spring free length

Brake linings contain asbestos fibres. Inhalation of asbestos may cause serious scanning of the lungs and may promote other internal injuries and illness. Observe the following precautions when handling brake linings.

Never blow brake lining dust with compressed air.

Wash your hands immediately upon work.

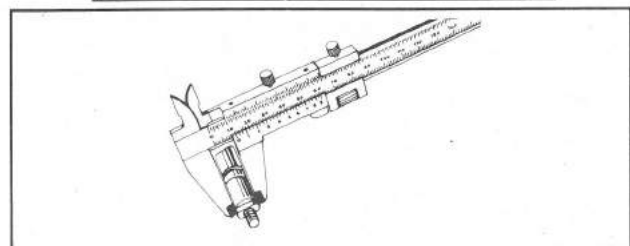
BRAKE ACTUATING SHAFT :

Check that the brake actuating shaft operate smoothly in the brake drum cover. If it is not working smoothly remove the actuating shaft, clean the actuating shaft seat and the brake drum cover seat by a fine emery paper. Apply grease on actuating shaft.

Measure the actuating shaft diameter. Replace the actuating shaft if worn past the service limit.

Brake actuating shaft diameter

Standard	Service limit
12 mm	11.8 mm



Brake actuating shaft diameter

Measure the inside diameter of the actuating shaft housing hole in the brake drum cover. Replace the brake drum cover if the diameter has increased beyond service limit.

Brake actuating shaft hole diameter

Standard	Service limit
12 + 0.043	12.2

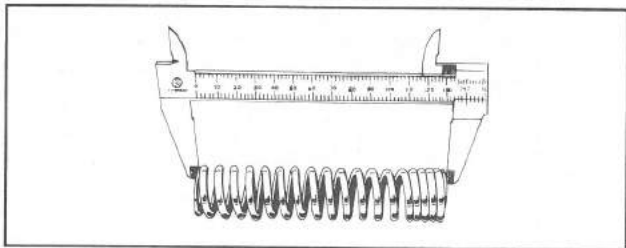
SUSPENSION

FRONT SUSPENSION SPRING :

- Measure the free length of front suspension spring. Replace the spring if it has compressed beyond the service limit.

Front suspension spring free length

Standard	Service limit
127 mm	122 mm



Front suspension spring free length

- Visually inspect the condition of rubber pad, nylon bushes. If they are worn, swollen replace them.
- Also check the outer diameter of the assembled nylon bushes fitted on front suspension spring. If the bushes are worn replace them with new one.

REAR SHOCK ABSORBER :

Since the rear shock absorber is a sealed unit, it cannot be dismantled. Only external check on its operation can be carried out.

- Remove the spring from the shock absorber.
- Hold the shock absorber in a position as like it is fitted on the vehicle.
- For priming, pump the shock absorber 4-5 times initially.
- Compress and release the stem slowly.
- See that the compression stroke is smooth and that there is a damping action. While on return stroke also the stem should come out with damping action.
- Check for any oil leakage from around the oil seals. If oil leakage is evident, replace the shock absorber.
- Check the stem rod, if it is bent or damaged, replace the shock absorber.
- Check the rubber bushings fitted into upper and lower eyelet. Replace them if they are worn/cracked/swollen.

FUEL TANK, FUEL COCK :

Damaged fuel tank cap 'O' ring, fuel cock 'O' ring, loosely tightened sediment bowl will lead to fuel leakage. Visually inspect these parts and replace them if necessary.

Periodically inspect and clean the fuel cock filter and sediment cup by petrol by using a fine brush. If the filter gauze is damaged, it must be replaced. If the sediment cup contains too much of water or dirt the fuel tank and the carburettor will need to be cleaned.

Inspect the condition of fuel cock rubber packing. If it has hardened, cracked replaced it.

Examine the condition of fuel pipe whenever the front cover is removed. Never use an ordinary rubber tube to replace the original tube because the ordinary tube will rapidly swell and deteriorate as a result of the action of the petrol.

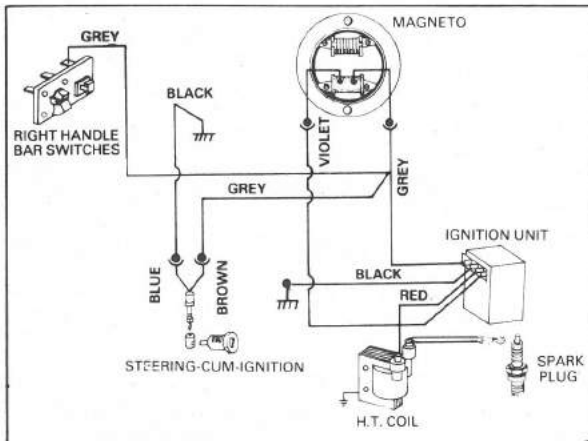
BEARING RACES, STEERING BALLS :

Wipe the bearing races and steering balls clean of grease and dirt. Examine the steering races closely. The ball bearing tracks of respective cup and cone bearing should be polished and should be free from indentations or cracks. In case of wear and pitting of an individual race, replace the cup and cone races as a set.

MAINTENANCE : ELECTRICALS

ELECTRONIC IGNITION SYSTEM

The electronic ignition system used on Bajaj Sunny is based on capacitive discharge principle. The ignition charging coil fitted on stator plate generates the necessary primary voltage which is fed to primary windings of H.T. coil via the electronic ignition unit. Inside the ignition unit the circuit is so arranged that the spark at the spark plug electrode occurs at the precise timing with respect to piston position in the cylinder. Due to absence of the moving parts the ignition remains fixed. So the frequent adjustment for ignition timing is eliminated.



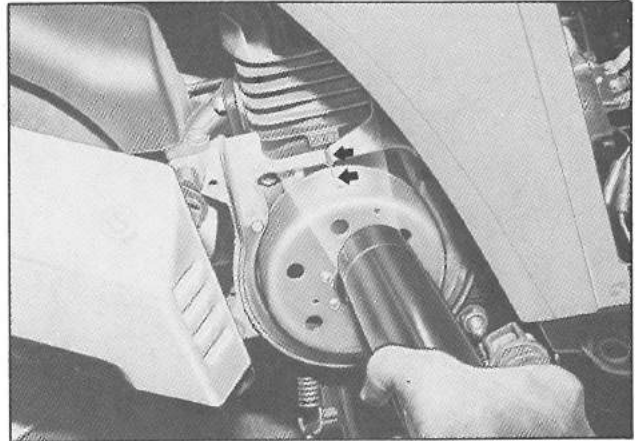
Ignition Circuit

Checking Ignition Timing :

Even though the ignition timing cannot be adjusted, it can be checked for accuracy. The standard ignition timing is 18 ± 1.5 degrees BTDC.

For checking ignition timing stroboscope light should be used. The timing index marks are engraved on the crankcase magneto side and on the rotor. When the index mark on the rotor coincide with that of the index mark on crankcase the piston position is 18 degrees BTDC. For checking ignition timing follow the procedure given below :-

- Remove the magneto side cowling and fan.
- Attach the crocodile pin end of stroboscope light to H.T. lead near spark plug.
- Start the engine and let it run at an idle speed.
- Focus the beam of stroboscope light on index marks of rotor and crankcase.
- If the ignition timing is correct the index marks on rotor and crankcase will be aligning with each other when the beam of the stroboscope light is focused on them.
- If the index marks are not aligning with each other the ignition timing is wrong indicating defective CDI unit, ignition timing coil necessitating their replacement.

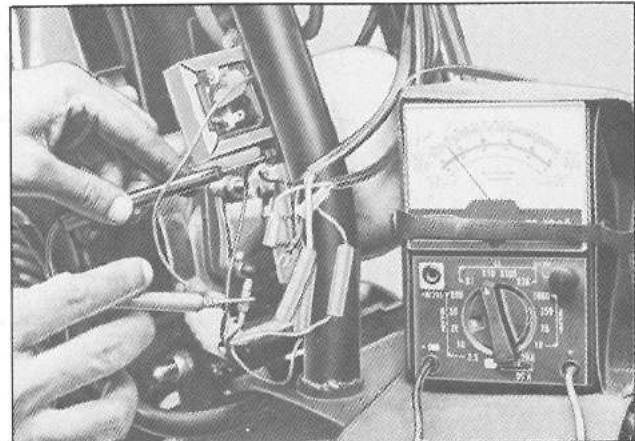


Checking ignition timing

Ignition charging coil resistance :

Use the hand tester (Special Tool P.No. 37-1030-63) for checking resistance of ignition charging coil.

- Check the resistance between violet cable and black (earth) cable.
- Also check the resistance between the gray cable and black cable.



Checking resistance across ignition charging coil

Ignition charging coil resistance

Connection	Meter	Resistance
Violet - black	10	230 to 310 ohms
Gray - black	10	20 to 25 ohms

- The ignition charging coil should be replaced if the resistance values are not found within the specified range as prescribed in the table. It should also be replaced if the meter needle shows discontinuity indicating that the coil is open.

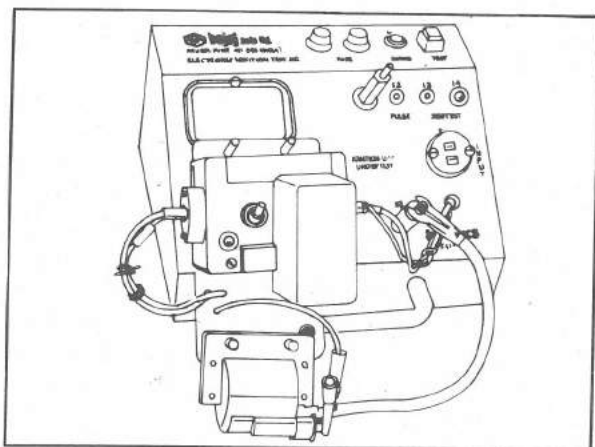
TESTING ELECTRONIC IGNITION UNIT, H.T.COIL:

For testing electronic ignition unit and H.T. coil the electronic test jig (Special Tool P.No. 37-1106-03) is to be used with the special attachment (Special Tool P.No. 37-1118-01). For checking, one OK electronic ignition and one OK H.T. coil is necessary. The testing procedure is given below :-

Self testing of the instrument :-

Before starting any testing, make sure that the instrument is OK by following procedure -

- Connect gray and violet cable of the instrument (37-1106-03) in socket S1.
- Press the red switch SW1 - all four lamps L1 to L4 should glow.
- If not, then check respective fuse and if blown replace the fuse with that of the same amperage.



Electronic Ignition Test Jig.

Testing Ignition Unit :

- Mount the attachment (37-1118-01) on the electronic ignition test jig (37-1106-03).
- Mount the ignition unit as shown.
- Connect gray and violet cables coming from test jig to the input of the attachment jig.
- Position the switch of the attachment jig to CDI position.
- Give 230 V AC supply to the electronic ignition test jig and press the test switch SW1.
- If the ignition unit is OK the L.E.D. lamp on the attachment jig will glow.

Testing H.T. Coil :

- Confirm that the ignition unit installed on the attachment jig is OK.
- Mount the H.T. coil on the attachment jig as shown.
- Connect the blue cable to primary of the H.T. Coil and connect H.T. lead to earth terminal.
- Position the switch of the attachment jig to H.T. Coil position.

- Press the switch SW1. The sparking will take place between the electrodes inside the window if the H.T. coil is OK.

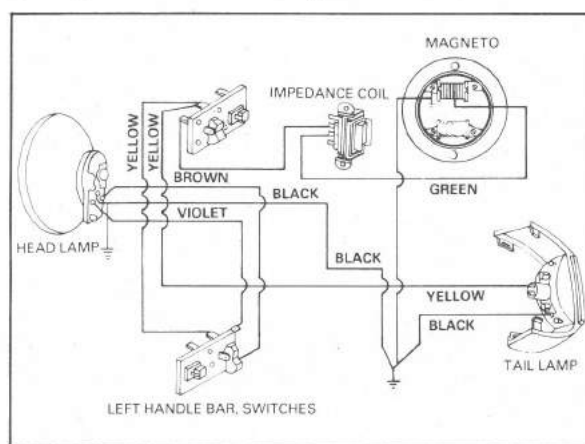
"Do not press test switch SW1 for more than 1 minute."

LIGHTING SYSTEM :

Lightning coil:

The lighting coil is having two windings. Its applies the necessary voltage for lighting head lamp, tail lamp, horn through one winding whereas to brake lamp by the other winding.

Check the continuity of lighting coil. Replace the lighting coil if it is short or open.



Lighting circuit

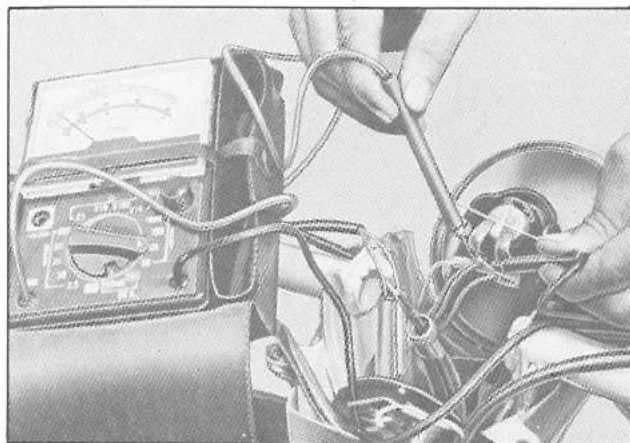
A.C. Lighting Voltage Measurement :

For measuring A.C. lighting voltage follow the procedure given below :-

- Remove the magneto side cowling and fan cover.
- Remove the handle bar top cover.
- Connect a voltmeter parallel to the A.C. circuit load by connecting positive meter lead to violet cable coming out from dimmer switch and negative meter lead to black cable.
- Performance the test with the head light connected.
- Start the engine. Switch ON the light switch and position the dimmer switch on high beam. Measure the rpm by using tachometer. Record the reading of the A.C. lighting voltage at about 5000 rpm.

A.C. Lighting Voltage

Meter	Reading at about 5000 \pm 100 rpm
0 - 25 V	13 to 14.5



A.C. Lighting Voltage

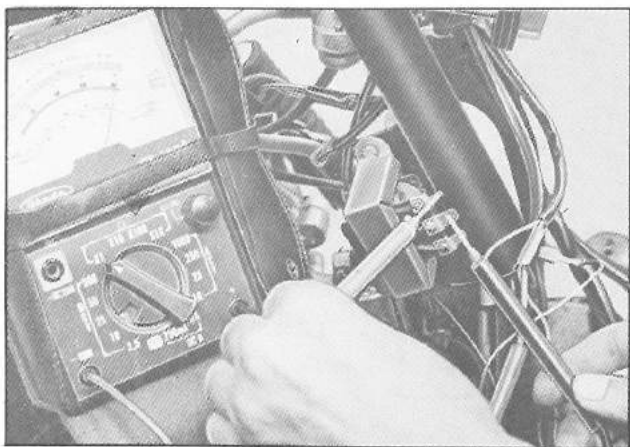
Note : Before measuring the A.C. lighting voltage confirm the wattage of bulbs.

If the value of A.C. lighting voltage is not found within the specified range then check for impedance coil, lighting coil, magneto rotor etc.

Impedance coil inspection :

Impedance coil controls the voltage going to head lamp, tail lamp, and horn. Whenever the A.C. lighting voltage checks out to be less or higher than the specified range check the impedance coil.

- Use the hand tester to measure resistance across the impedance coil.
- Measure resistance across the biggest terminal and the smallest terminal.
- Measure the resistance across the biggest terminal and the medium terminal.



Impedance coil inspection

Impedance coil resistance

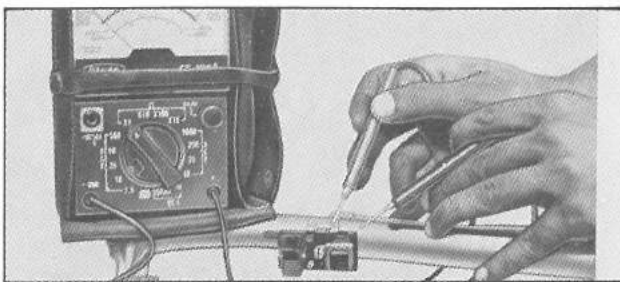
	Meter	Resistance
Between Biggest & smallest terminal	Digital	0.2 ± 0.04 Ohms
Between Biggest & Medium terminal	Digital	0.1 ± 0.02 Ohms

Replace the impedance coil if resistance values are not found within the specified range.

Right Handle Bar Switch Inspection :

Remove the R.H. switch base and inspect for :

- Ignition cut-off button : Connect the hand tester probes to point 1 and 2. When the cut-off button is pressed the meter needle should register reading. When the button is released the meter should not show any reading.



R.H. Switch base inspection

Engine stop button	1	2
ON		
OFF (Pressed)	●	●

Replace the R.H. switch base if any of the above reading fails.

- Light switch : Now connect the hand tester probes to points 6 and 3. When the light switch is in ON position, the meter needle should show short. When light switch is in OFF position the meter needle should not show any reading.

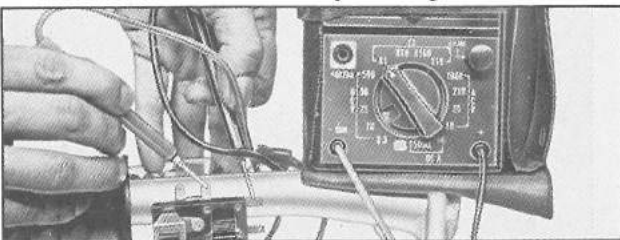
Light switch	6	3
ON	●	●
OFF		

Replace the R.H. Switch if any of the above reading fails.

Left Handle Bar Switch Inspection :

Remove the L.H. switch base and inspect for :

- Horn switch : Connect the hand tester probes to point 1 and 2. When the horn button is pressed the meter should show reading. When the button is released the meter should not show any reading.



Horn button	1	2
ON (Pressed)	●	●
OFF		

Replace the L.H. switch if any of the above checks fails.

- Dimmer Switch : Connect the hand tester probes to point 4 and 5. With the dimmer switch in 'LO' position. The meter needle should show short. But with dimmer switch in 'HI' position the meter should not show any reading.
Now connect the hand tester probes to point 3 and 5. With the dimmer switch in 'HI' position the meter should show short. But with dimmer switch in low position the meter should not show any reading.

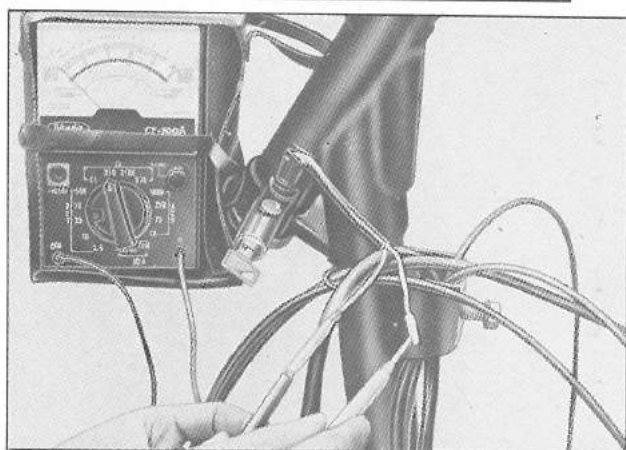
Dimmer switch	4	5	3
HI		●	●
LO	●	●	

Replace the LH switch base if any of the above checks fails.

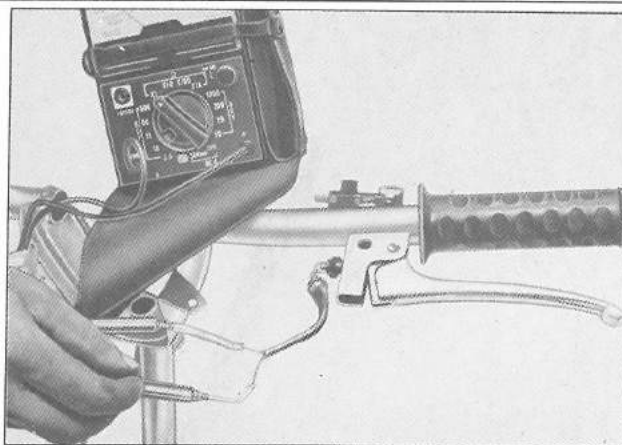
Brake Light Switch/Ignition Cut-off Switch Inspection:

Connect the hand tester terminals to the blue and brown cables coming from the switch. After correcting the brake lever play press the brake lever. The meter needle should show short. When the lever is released the meter should not show any reading.

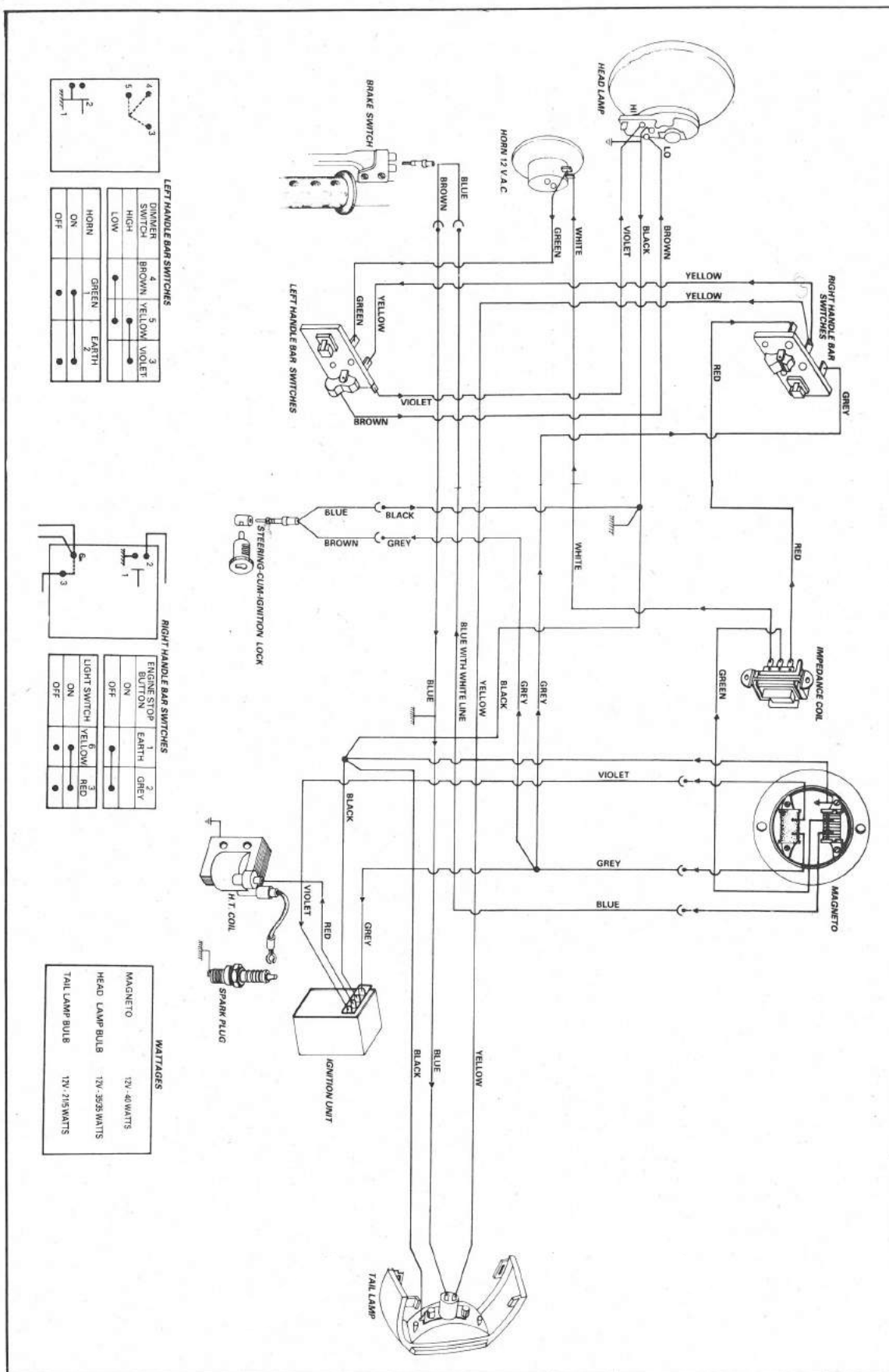
Brake Switch	Blue	Brown
Stop lamp ON	●	●
Stop lamp OFF		



Ignition switch inspection



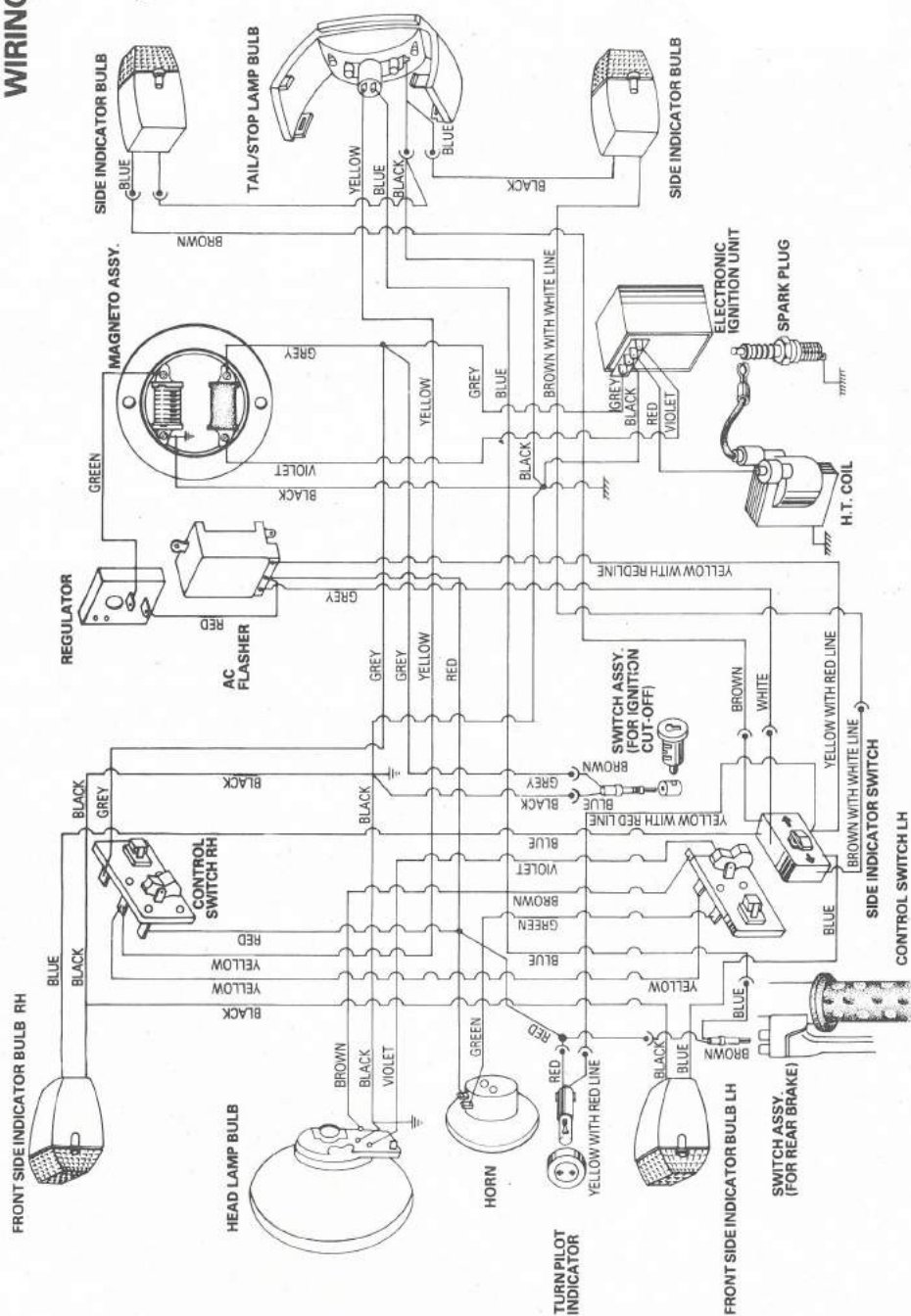
Brake light switch inspection



WIRING DIAGRAM FOR VEHICLES WITHOUT SIDE INDICATOR SYSTEM

Hi Sunny

WITH SIDE INDICATORS



BULB WATTAGE :	
HEAD LAMP	12 V 35/35 W
TAIL/STOP LAMP	12 V 5/10 W
SIDE INDICATOR LAMP	12 V 10 W
TURN PILOT INDICATOR BULB	12 V 1.2 W

BULB WATTAGE :

SIDE INDICATOR SWITCH

NEUTRAL -	ALL TERMINALS DISCONNECTED
LH -	L ₁ -B ₁ , LB CONNECTED
EH -	R ₁ -B ₁ , RB CONNECTED

—GREY
—YELLOW WITH RED LINE

SIDE INDICATOR SWITCH

RIGHT HANDLE BAR SWITCHES	
ENGINE STOP BUTTON	1 EARTH 2 GREY
ON	
OFF	
LIGHT SWITCH	3 RED 6 YELLOW
ON	
OFF	

RIGHT HANDLE BAR SWITCHES

LEFT HANDLE BAR SWITCHES			
DINNER SWITCH	4 BROWN	5 YELLOW	3 VIOLET
HIGH		●	●
LOW	●	●	

LEFT HANDLE BAR SWITCHES

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TROUBLE SHOOTING GUIDE

Diagnosis of defects is relatively simple if proper procedure is used and a few basic principles are observed. The following trouble shooting guide summarises and simplifies the trouble shooting process. Use it to identify possible problem areas, then refer to specific chapter or section of the manual for details. Remember this list is not an exhaustive one and some problems may fall beyond its scope.

ENGINE DOES NOT START, STARTING DIFFICULTY

- **Engine does not turn over**

- Cylinder-piston seized.
- Connecting rod small end seized.
- Crankshaft bearings seized.
- Helical gear assembly not engaging with starter gear.
- Sector gear, helical gear assembly, starter gear teeth broken.

- **No fuel**

- No fuel in tank.
- Fuel cock closed, not positioned correctly.
- Fuel pipe clogged.
- Fuel cock clogged.
- Float valve clogged.
- Fuel tank cap air vent clogged.
- Air lock in fuel pipe.

- **No spark**

- Ignition-cum-steering lock in 'off' position.
- Faulty/pressed ignition cut off button.
- Spark plug souted, bridged, damaged.
- Spark plug cap, lead damaged, short.
- Disconnected/loose wiring connections at H.T.coil, ignition unit.
- Faulty wiring harness.
- Faulty H.T.Coil.
- Faulty ignition unit.
- Faulty ignition charging coil.
- Weak magnetism/rotor damaged.
- Broken rotor key.

- **Engine flooded**

- Float pin worn/stuck open.
- Faulty starting technique.

- **Fuel-air mixture incorrect**

- Choke not used while starting cold engine.
- Clogged air filter element.
- Clogged/worn out main jet.
- Enlarged carburettor body orifices.
- Loosely mounted carburettor/air filter.
- Leaking / loose intake manifold.

- **Low compression**

- Worn out cylinder block, piston.
- Worn out piston rings.
- Excessive clearance between block, piston grouping incorrect.
- Cylinder head nuts loose
- Cylinder head gasket damaged.
- Cylinder head warped, leaking.
- Cylinder block base gasket damaged.
- Loosely mounted spark plug.
- Leakage of compressed gases through crankcase joints, oil seals.

ENGINE STALLS WHILE RIDING

- **Fuel cock in closed position.**

- No fuel in tank.
- Partially choked air cleaner.
- Overheating leading to seizure.
- Partially choked carburettor jet.
- Loose connections, fault in ignition system.
- Contaminated fuel.
- Excessive load on engine.
- Loosely mounted carburettor/air cleaner.

HIGH FUEL CONSUMPTION

- **Incorrect idling.**

- Idling too fast.
- Idling adjustment screw maladjusted.
- Accelerator control cable catching-maladjusted.
- Eroded spark plug electrodes.
- Excessive gap at spark plug electrodes.

- **Fuel air mixture too rich**

- Enlarged jet size.
- Clogged air filter element.
- Leakage at reed valve gasket, inlet manifold.
- Reed valve plates bend.
- Carburettor maladjusted, faulty.

- **Faulty engine load**

- Low tyre pressure.
- Worn out clutch liner/clutch box.
- Dragging brakes.
- Wheels not rotating freely.
- Clutch shoe / spring of wrong group.

- **Low compression**

Worn out cylinder piston
Worn out piston rings.
Excessive clearance between block piston.
Cylinder head gasket damaged.
Cylinder head warped, leaking.
Cylinder block base gasket damaged.
Loosely mounted spark plug.
Leaking compressed gases through crankcase joints, oil seals etc.

- **Exhaust obstructed.**

Cylinder exhaust port clogged.
Silencer clogged.

- **Leakages**

Leaking fuel lines, petrol tank, carburettor.
Reed valve plate clearance excessive.
Petrol spilling from petrol tank cap.

- **Poor pick up**

Accelerator control cable catching.
Eroded spark plug electrodes.
Excessive gap at spark plug electrodes.
Clogged air filter element.
Carburettor maladjusted, faulty.
Low tyre pressure.
Worn out clutch liner/clutch box.
Clutch shoe / spring of wrong group.
Dragging brakes.
Wheels not rotating freely.
Worn out cylinder piston.
Worn out piston rings.
Excessive clearance between block and piston.
Cylinder head gasket damaged.
Cylinder head warped, leaking.
Loosely mounted spark plug.
Cylinder exhaust ports clogged.
Silencer clogged.

SMOKEY EXHAUST.

Poor quality 2T oil used in petrol.
Higher % of 2T oil used in petrol.
Leaking clutch side oil seal.
Clogged air cleaner.
Main jet hole size too large.
Carbon built up on cylinder head.
Carburettor flooding.

ENGINE OVERHEATING.

Excessive carbon deposition in combustion chamber/exhaust port/silencer.
Poor quality, less percentage of 2T oil used.
Spark plug of wrong heat range.
Faulty ignition timing.
Sustained high speed riding.
Cooling fins of cylinder head, cylinder block obstructed, damaged.
Cooling fan damaged.
Transmission oil viscosity too high.
Incorrect block piston clearance - wrong grouping.
Cracked / loosely fitted cowling

ABNORMAL ENGINE NOISE.

- **Noise from cylinder block piston**

Piston slapping noise due to worn cylinder piston/
wrong grouped piston.
Worn out small end needle roller bearing.
Worn crankshaft bearings.
Worn piston rings.
All the above may be due to less % of oil/poor
quality oil/or defective air cleaner.
Connecting rod big end radial clearance excessive.
Connecting rod big end side clearance excessive.
Knocking due to excessive carbon deposits.

- **Noise from magneto cover**

Fan screws loose/magneto cover bent inward.
Rotor/stator plate loose.
Coils touching to pole shoes of rotor.
Rotor crankshaft keyway damaged.

- **Noise from clutch cover**

Insufficient/ no transmission oil
Worn teeth of sector gear, helical gear assembly,
starter gear.
Rubber pad missing (stopper for preventing
hitting of sector gear to crankcase while
returning.)
Worn out teeth of clutch box and pinion shaft
sprocket.
The rubber pads (preventing chain touching to
crankcase) missing.
Worn gear teeth of output shaft, pinion shaft gears.
Chain tensioner spring missing.
Broken - weak clutch tension spring.
Worn pinion shaft bearing/output shaft bearing.
Clutch shock pads missing.
Helical gear assembly not returning to its position
due to weak return spring.
Excessive play between pinion shaft/output shaft
into their bushes in clutch cover.
Clutch securing nut loose.

- **Others**

- Reed valve plates noisy.
- Gear noise.
- Brake squeaking noise.

POOR BRAKING

- **Incorrect brake adjustment**

- Excessive brake lever play.
- Worn out brake shoe lining.
- Worn out brake drum.
- Brake cable excessively stretched.
- Improper functioning of brake cable.
- Brake control cable not adequately lubricated.
- Oil, grease, water on brake liners.
- Brake liners glazed, hardened.
- Brake drum surface too smooth.
- Actuating shaft, rear brake lever not installed correctly.

HANDLING AND/OR STABILITY UNSATISFACTORY

- **Wheels**

- Front/rear tyre not inflated to correct pressure.
- Tyre fitment on wheel rim, faulty.
- Excessive wheel rim run out.
- Excessive play in front rear wheel bearings.
- Front / rear wheel out of alignment.

- **Fork**

- Front fork too tight.
- Front fork too loose.
- Damaged steering races.
- Less number of steering balls
- Damaged steering balls.
- Front fork bent.
- Front fork races/balls not adequately lubricated.
- Worn out front link bushes.

- **Mountings**

- Excessive play in engine foundation bushes/foundation bolt.
- Damaged bushes.
- Rear shocker weak/leaking/worn bushes.

- **Frame**

- Twisted frame.

- **Weak rear shock absorber.**

DEFECTIVE SUSPENSION :

- **Front suspension.**

- Weak suspension springs.
- Worn front link bushes.
- Tyre not inflated correctly.
- Front fork loose.
- Front fork steering balls missing.
- Riding with more than specified load.
- Front link rubber dampers worn out.
- Front suspension spring rubber pad worn out.
- Front suspension spring guide bushes worn out, not adequately lubricated.

- **Rear suspension**

- Rear shock absorber weak/hard.
- Rear shocker mounting bushes worn out.
- Oil leakage at rear shocker.

- **Excessive vibrations - noise from vehicle :**

- Engine noise.
- Suspension noise .
- Nuts-bolts-fasteners securing parts loose.
- Broken parts.

- **Head lamp/tail lamp not lighting**

- Fused bulbs
- Improper loose connections at tail lamp socket/H.L.bulb holder.
- Short wiring harness.
- Defective light switch/dimmer switch.
- Faulty impedance coil.
- Lighting coil short, open.
- Weak magnetism/rotor damaged.
- Earthing not proper.

For effective overhaul and optimum performance:

- **Get fully familiarised with dismantling / assembly procedures as given in this manual.**
- **Always use genuine Bajaj Spares for replacement.**
- **Use special tools developed for dismantling and assembly procedures.**



AKURDI, PUNE: 411035 INDIA.

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