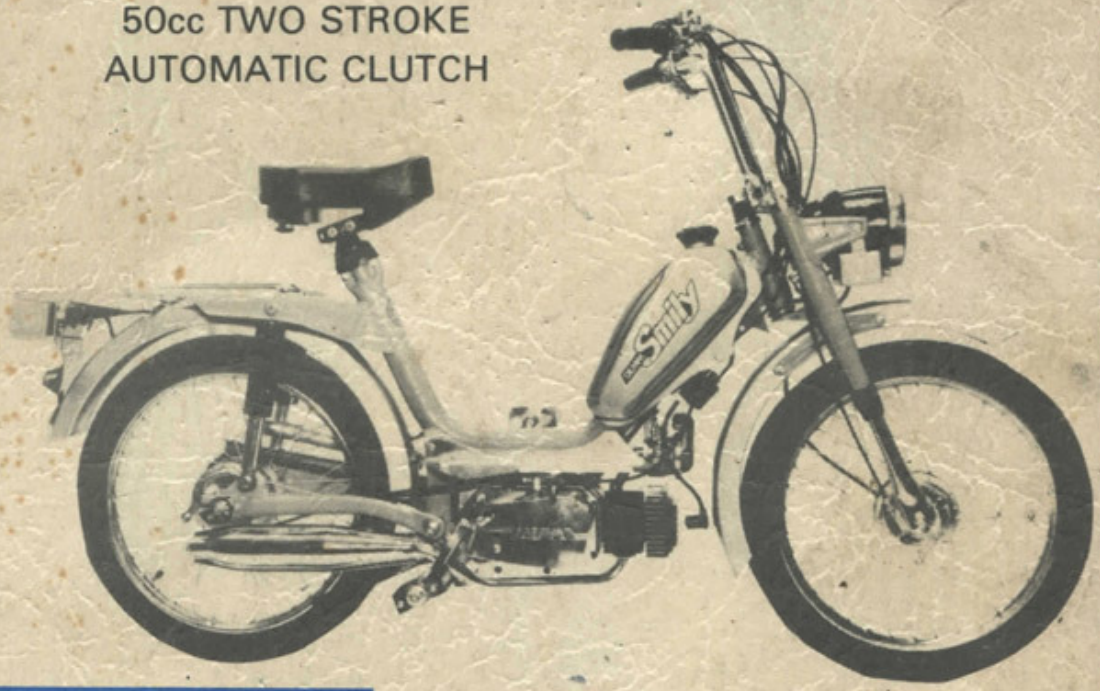
1978 (Orange)

Smily moped

50cc TWO STROKE
AUTOMATIC CLUTCH

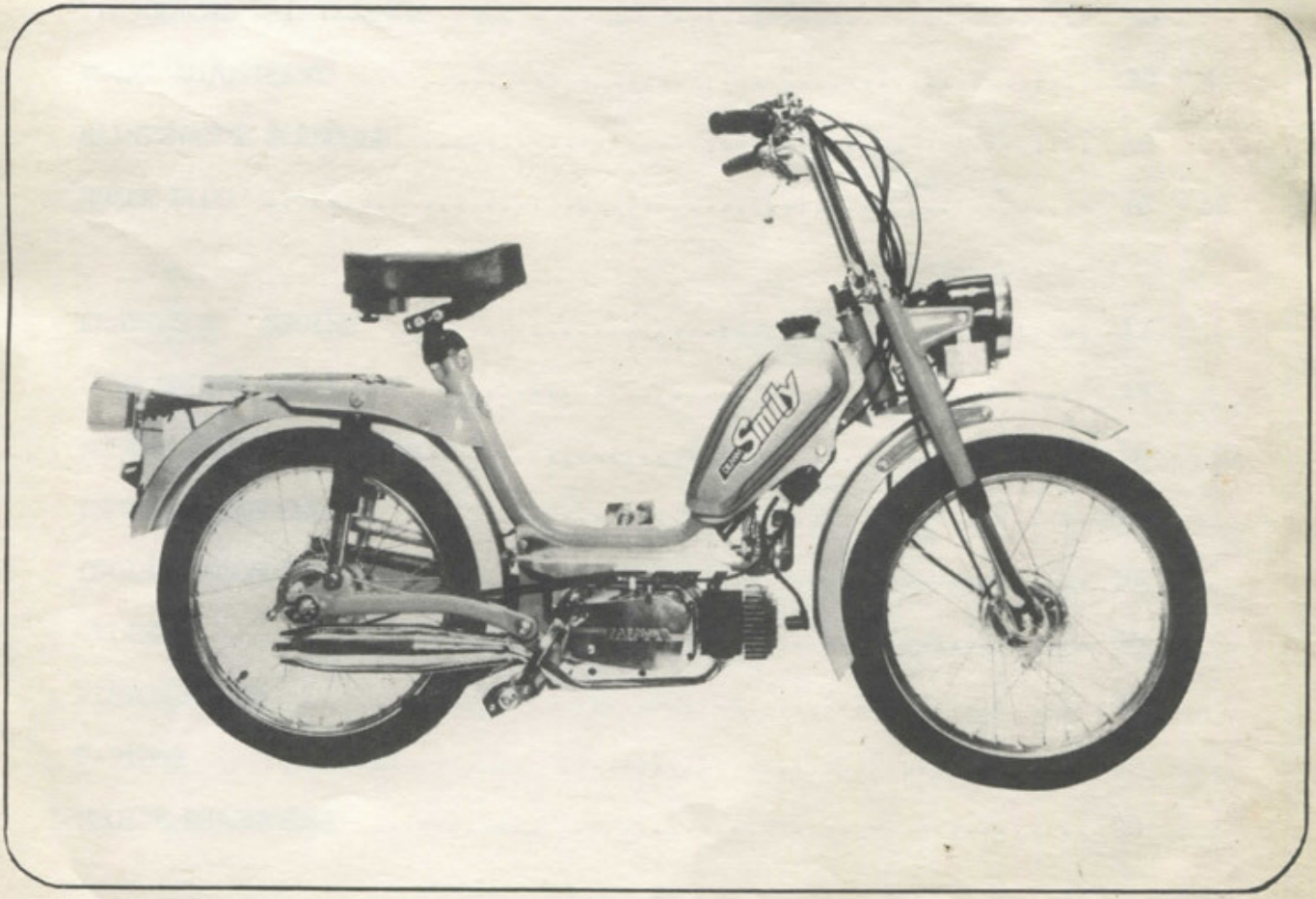


GRYCNER
MOTORS CORPORATION

SERVICE MANUAL

SMILY

SERVICE MANUAL



FORWARD

Grycner Motors Corporation presents the new Smily moped, incorporating many attractive design features. We are confident that this new Smily will meet the highest expectations of the moped fan.

This manual is intended to make Smily Dealers and mechanics familiar with the technical features and service instructions required to maintain the Smily moped in top operative condition.

CONTENTS

CONTENTS - cont'd.

CHAPTER -1-

GENERAL

SPECIFICATIONS

MAIN FEATURES

Overall Length:	64.567"
Overall Width:	27.165"
Overall Height:	40"
Saddle Height:	Max. 32.677"
	Min. 29.527"
Wheel Base:	10.039"
Main Frame:	Tubular Steel Construction

Front Suspension: Telescopic type Forks
Rear Suspension: Swinging arm with spring/shock absorbers
Center Stand
Unladen Weight - 101 lbs.
Fuel Tank Capacity: 1 gallon
Fuel Consumption: 1 gallon per 150 to 180 miles (approximately)

ENGINE

Single cylinder two-stroke air cooled
Bore: 1.527"
Stroke: 1.653"
Capacity: 49.65 cc
Compression Ratio: 0.5: 1
Maximum Output: 4100 rpm - 1.5 h.p.
6 Volt A-C Lighting System

Ignition by 25 Watt Alternator Flywheel Magneto
Spark Plug Type: AC 42F5
Lubrication: gas/oil mixture
Gear Box Capacity: 0.33 CV. In.
Oil Bath Gear Case Lubrication
Automatic Centrifugal Clutch in oil bath

CARBURETOR

Dell'Orto SHA 14/12

TRANSMISSION

Chain from engine sprocket to rear wheel
Chain 1/2 x 3/16" size

Rear sprocket: 34 teeth
Engine sprocket: 10 teeth

WHEELS AND BRAKES

Wheel Size - 16"
Tire Size - Rear 2.25" x 16"
Front 2.25" x 16"

Brake-Front: Heavy duty drum brake
Brake-Rear: Heavy duty drum brake
Brakes: Front & Rear: Actuated by handlebar grip controls

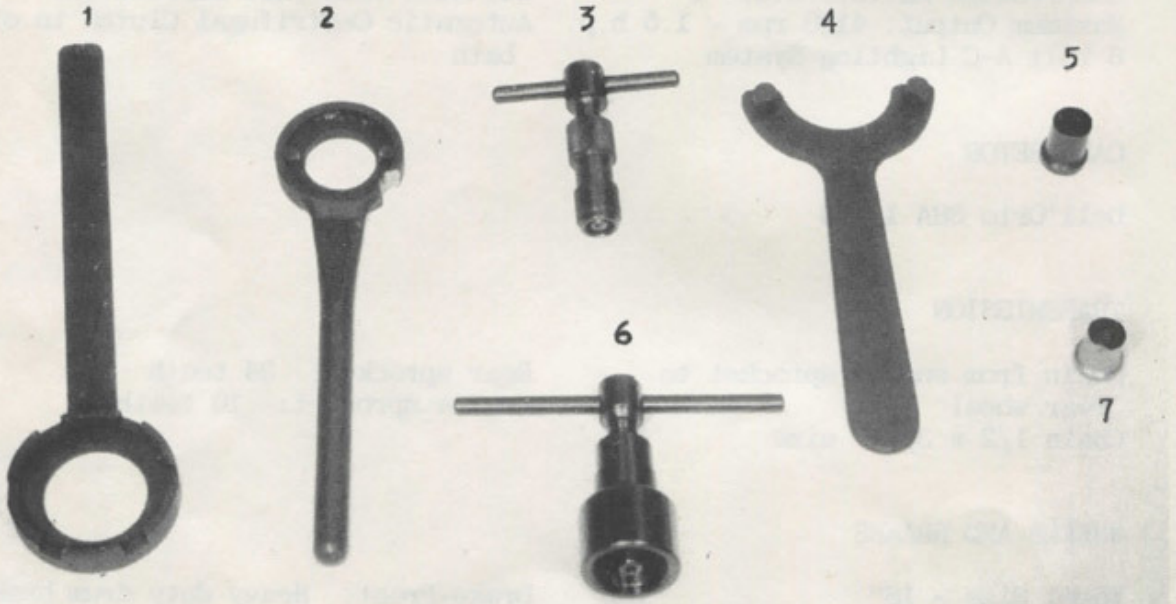
TOOLS FOR SHOP SERVICE

1. GENERAL TOOLS

(1) (a) Plug Wrench 23x29 mm.
(2) (b) Set of Metric Wrenches
(3) (c) Set of Metric Socket Wrenches
(4) (d) Plastic tip Hammer
(5) (e) Steel Hammer
(6) Circlip Pliers (St. Type)
(7) Circlip Pliers (Tr. Type)
(8) Needle Nose Pliers
(9) Pliers
(10) Phillips-Head Screwdriver
(11) Phillips-Head Screwdriver (L)
(12) Phillips-Head Screwdriver (M)
(13) Phillips-Head Screwdriver (S)
(14) Slot-Head Screwdriver (M)
(15) Slot-Head Screwdriver (S)
(16) T-handle Socket Wrench
(17) L-handle Stock Wrench

2. SPECIAL TOOLS

(1) Clutch locking Wrench
(2) Locking Wrench for Chain Sprocket
(3) Flywheel Magneto Extractor
(4) Flywheel Magneto Locking Wrench
(5) Seal Rings Bushing
(6) Clutch Extractor
(7) Bushing for Carter Assembly



3. OTHER TOOLS

(1) Gear Box Lubrication (SAE 40)
(2) High Performance - 2-Cycle Oil
(3) Wiping Material
(4) Overhauling Stand
(5) Parts Tray
(6) Oiler

The use of a wooden box will facilitate engine service and overhaul. Consumable parts (such as gaskets) and replacement parts must also be on hand.

ASSEMBLY INSTRUCTIONS

The Smily moped is very simple to assemble. There are five items to put in place:

1. Handlebars
2. Rearview mirror
3. Pedals
4. Seat
5. Rear taillight assembly

1. HANDLEBARS

A. Remove the handle bar clamping cover and 3 hex screws using the Allen wrench provided in the tool kit attached under the seat.

B. Position handlebars to the fork head and replace clamping cover and the 3 hex screws.

C. The front and rear brake cables along with the clutch cable should be changed to go through the protection rubber hole located on the front of the fork. To do this, loosen the nut on the two brake cables and the clutch with a 10 mm. wrench and grip the levers toward the handlebars. Remove the pins (trunnions) and pull the cables through the protection rubber hole and back to the brake and clutch levers. Return the pins (trunnions) and tighten the nuts of the 3 cables.

2. REARVIEW MIRROR

Attach rearview mirror on the left hand side handlebar as close to the light switch as possible. Use 13 mm. wrench to tighten the nut. Adjust to your own convenience.

3. PEDALS

Screw the pedals into the pedal arms using a slender 15 mm. wrench.

Caution: Care should be taken to insert the right hand pedal to the right side pedal arm. The left pedal and pedal arm are threaded to the left.

4. SEAT

Remove the 2 nuts and bolts from the saddle tube using (2) 13 mm. wrenches. Place the seat on the saddle tube and replace the 2 nuts and bolts and tighten. The seat can be adjusted forward and rear with the same 2 nuts and bolts. To raise the seat to the required height, loosen the 13 mm. screws in the frame just below the seat and adjust the seat upward. Tighten screws firmly.

5. REAR TAILLIGHT ASSEMBLY

Connect the three wires in the following manner only:

A. Blue wire connects to the S terminal.
B. Yellow wire connects to the T terminal.
C. Green wire connects to the G terminal.

Fasten the rear taillight assembly to the rear fender using 2 10 mm. wrenches as follows: bolt - washer - fender - lock washer - nut.

IMPORTANT:

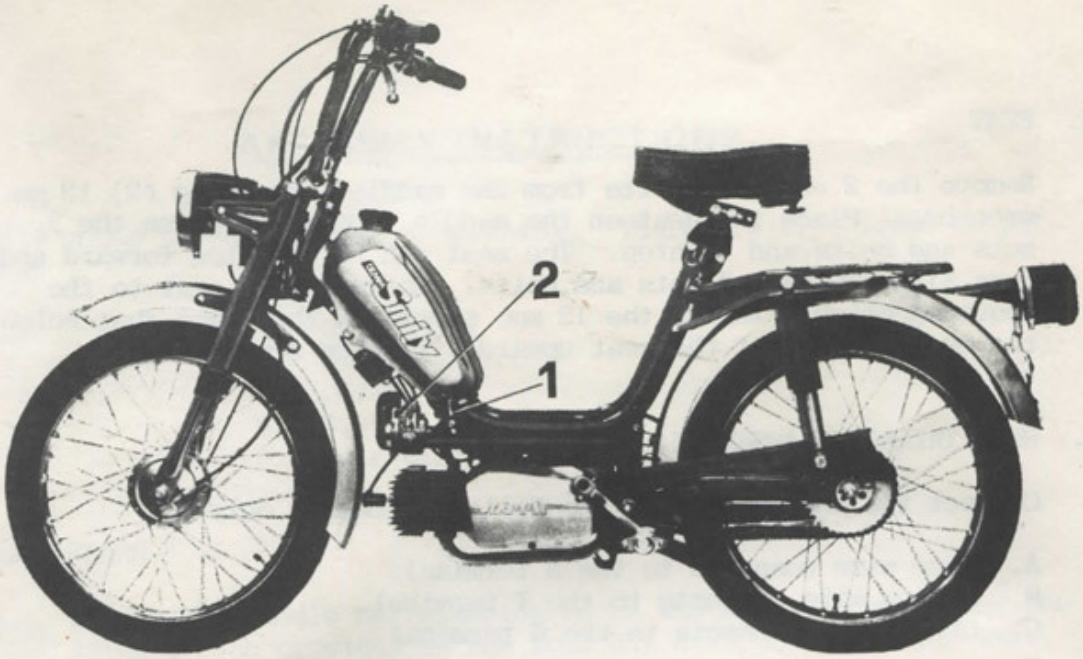
The Smily is fully lubricated throughout, however it may have accidentally been placed on its side during shipment, causing the oil from the engine to drain out. It is recommended that the oil level be checked by removing the oil level screw on the right side of the engine cover. The oil should be just visible if the moped is inclined slightly from the vertical. If oil does not appear, add SAE 40 nondetergent oil in the following manner:

Remove the right foot rest and remove the oil plug. Pour the oil into the engine until it begins running out of the oil level screw hole. Replace the oil level screw along with the oil plug. Replace the right foot rest and tighten the nut securely.

GASOLINE AND OIL MIXTURE

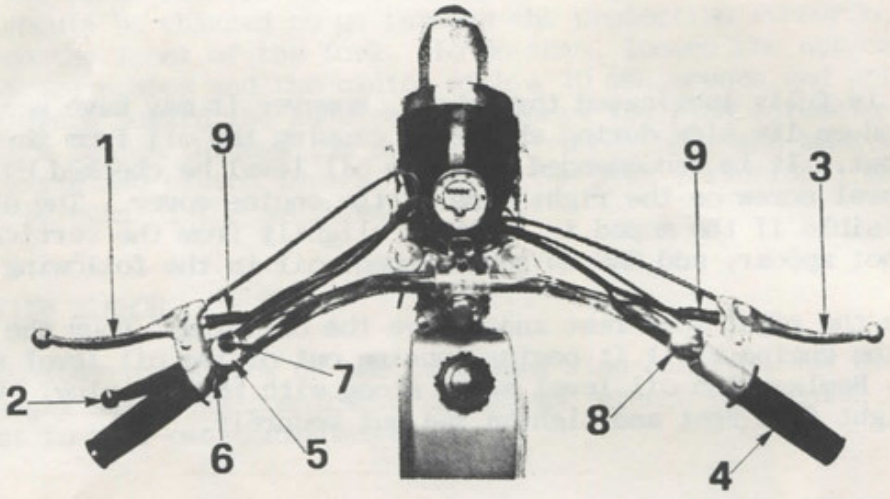
The Smily is run with regular gasoline and oil mixed. The Smily gasoline cap serves as a measuring cup for the oil. During the break-in period (6½) capfuls of 2-stroke oil should be added to each one gallon of regular gasoline. The break-in period should last for the first 300 miles with top speeds not exceeding 20 mph. After the break-in period, (4) capfuls of 2-stroke oil should be added to each one gallon of gasoline.

Warning: The gas tank should not be filled completely as the fuel mixture will overflow when the gas cap is screwed back on to the tank.



1. FUEL TANK TAP

2. CHOKE



HANDLEBARS AND CONTROLS

1. Left hand lever: Rear brake
2. Left hand lever: Clutch
3. Right hand lever: Front brake
4. Right hand grip: throttle control
5. Three position switch with horn button
6. Lighting switch

Central position: No lights
Left hand position: City light and taillight
Right hand position: Head lamp and taillight

7. Button Horn
8. Two position ground switch: Run-Off
9. Stop limit switch

ENGINEERING DETAILS

All engine casings are manufactured out of light alloy die castings. The cyclinder head is of special light high resistance die-cast alloy. The connecting rod and gears are manufactured from high quality chrome nickel steel, drop-forged case hardened and quenched.

The single speed gear box is of a constant mesh type, gears being specially machined to obtain high efficient noiseless running.

GENERAL STARTING PROCEDURE

The moped is started either on the stand when stationary or by pedaling.

With the moped on the stand, position one of the pedals according to which side of the machine you are standing in the uppermost position.

Fully apply the clutch lever (2) (fig. 2) and press down with pedal firmly. Your engine should start.

NOTE: Before attempting to start moped (1) Switch gas tap to the "ON" position; (2) Close choke; (3) Position engine switch to "ON."

NOTE: When starting on stand, before moving machine off the stand, set throttle control to minimum R.P.M.

Procedure by Pedaling: Mount moped and push off stand. Begin pedaling at the same time lifting clutch lever. Open throttle slightly, engine will then start. Release clutch lever.

It is then only necessary to move throttle in accordance with speed required.

Choke will return automatically by opening throttle to fullest extent for a very short period.

IMPORTANT: Do not stop engine by lifting clutch lever (8) (fig. 2). It is necessary to use cut-out button to stop engine.

During cold periods, it may be necessary to apply the carburetor choke to enrich the fuel mixture.

The clutch is completely automatic and will operate as soon as the engine R.P.M. is sufficient.

It is essential during the break-in period of the engine (first 300 miles) that speeds should NOT exceed 20 m.p.h. and the engine should not be over-loaded, i.e., with hilly conditions assist with pedals.

FUEL

During the break-in period, 6½ capfuls of 2-stroke oil should be added to each one gallon of regular gasoline. After this period, four (4) capfuls of 2-stroke oil should be added to each one gallon of gasoline.

The DEMM engine does not require gasoline with a high octaine rating. Regular gasoline is adequate.

ENGINE LUBRICATION

For the gearbox lubrication, use a high grade nondetergent SAE 40 lubricating oil. Check the oil level frequently by unscrewing the screw (2) (fig. 4), which is a level plug on the gearbox. The oil should be just visible when the plug is removed, if the machine is inclined slightly from the vertical. Add oil to suit, when topping off.

To change the oil (at 1500/2000 mile intervals), remove the drain plug (1) (fig. 4), and fill to the level plug hole through plug (3) (fig. 4). It is advisable when draining the oil, that the engine be HOT.

PERIODICAL MAINTENANCE

CARBURETOR: It is advisable to clean the fuel filters every 1500 miles. To clean the gasoline tap filter, remove the tap from the fuel tank. Remove the carburetor filter and carefully clean in a container of clean gasoline. Both filters should be dried by compressed air before refitting.

When driving in extremely dusty conditions, the carburetor intake filter should be cleaned at least every 1500/2000 miles; remove the filter and wash off in clean gasoline. Dry with compressed air and immerse before refitting to the carburetor in a gasoline/oil mixture of 10 percent.

When cleaning carburetor jets NEVER USE wire or other such metal.

Compressed air should be all that is required.

DECARBONIZATION: Should general loss of power be experienced, this may be due to a buildup of carbon within the cyclinder head/piston and exhaust pipe. These parts should be dismantled and the carbon deposit removed. CARE must obviously be taken NOT to damage the aluminum surfaces.

Every 3500/4500 miles the piston should be dismantled and the carbon deposit removed from under the piston rings.

IGNITION: From time to time, it will be necessary to adjust the contact breaker points, particularly if difficult starting is experienced.

Fig. 5 shows the magneto with the flywheel rotor removed. Contact Breaker (1) (fig. 5), adjustment is achieved by loosening screw (2) (fig. 5), which clamps the fixed magneto contact. Adjust points by inserting a screwdriver into the slot provided (30) (fig. 5), to the maximum setting of between 0.35 to 0.45 mm. (0.014 to 0.018 inches). If the magneto points are dirty or oily they must be removed and thoroughly cleaned.

The spark advance is 2.8 mm. before the piston reaches top dead-center.

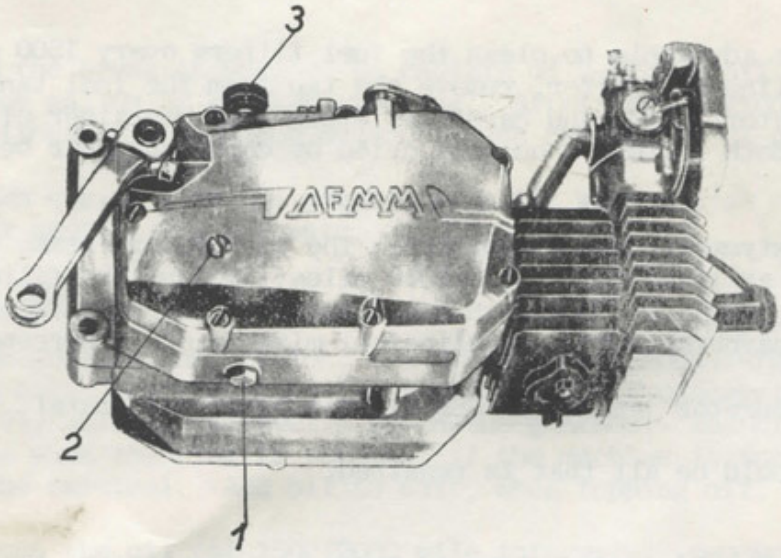
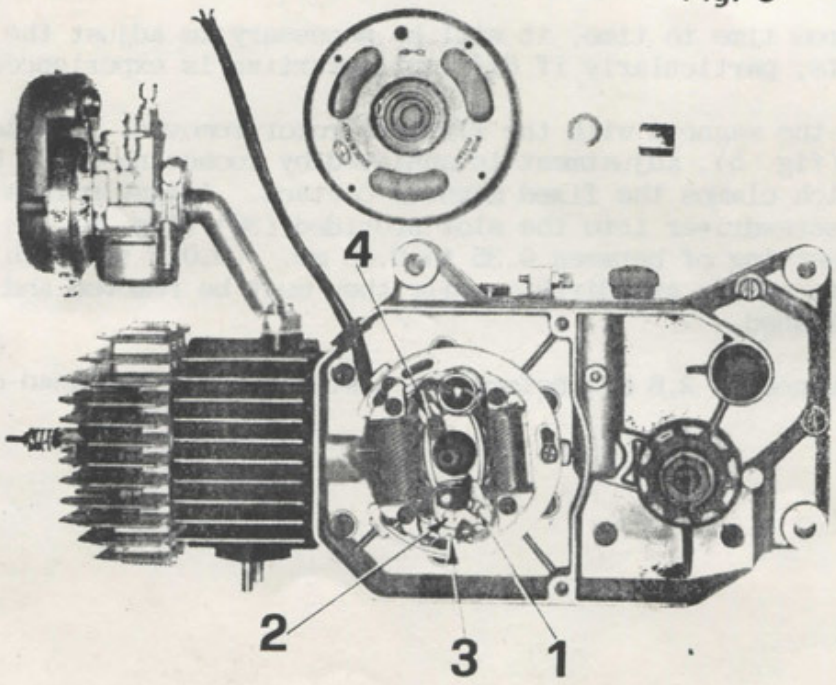
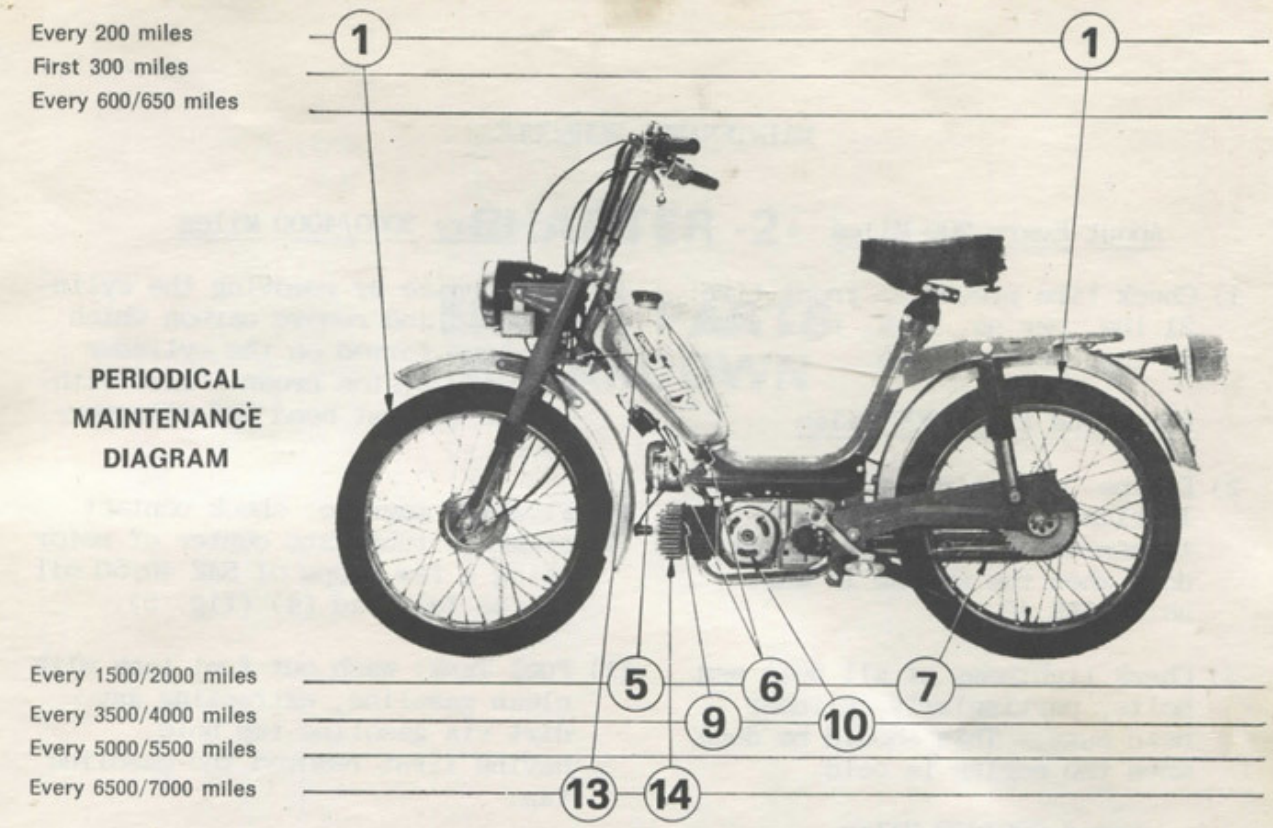


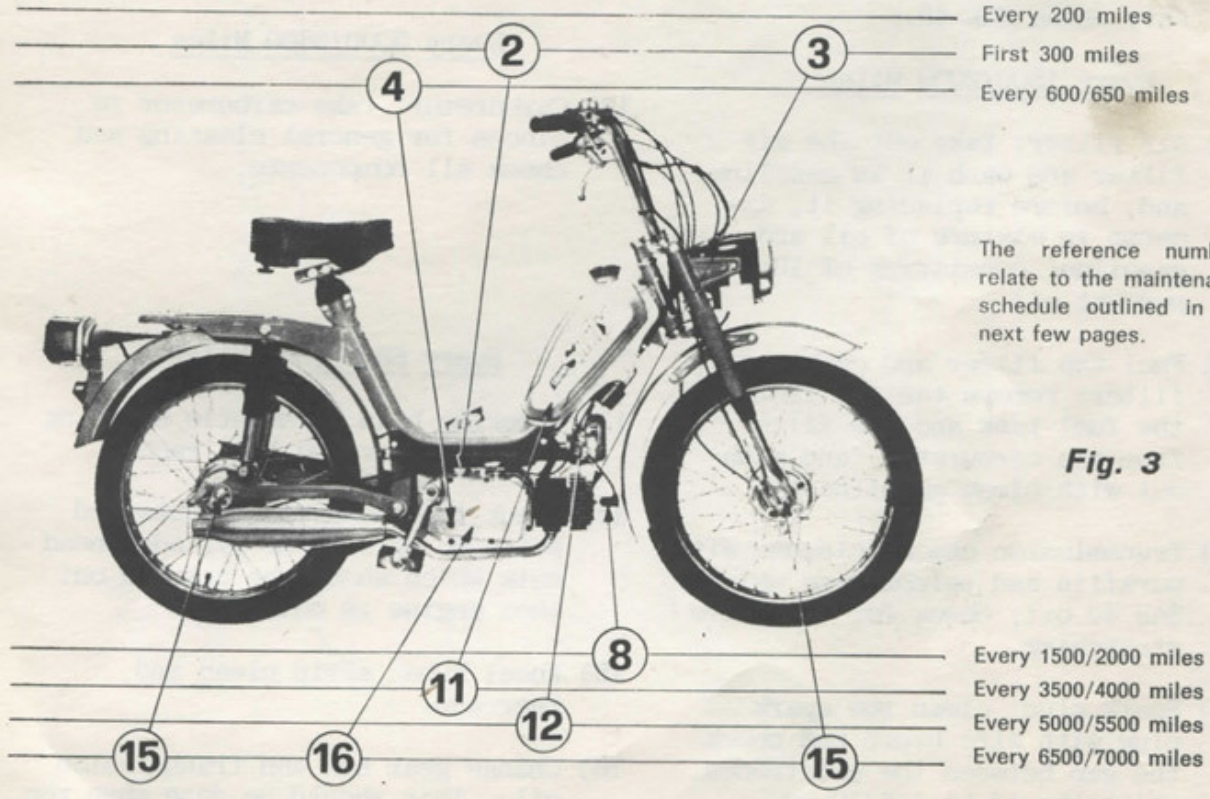
Fig. 4

Fig. 5



PERIODICAL MAINTENANCE DIAGRAM





The reference numbers relate to the maintenance schedule outlined in the next few pages.

Fig. 3

MAINTENANCE SCHEDULE

About Every 200 Miles

1) Check tire pressure: front tire: 21 lbs. per sq. inch; rear tire: 24 lbs. per sq. inch.

After the first 300 Miles

2) Engine: change the oil for the lubrication of gear box and transmission. This should be done when the engine is warm using SAE 40 oil.

3) Check tightness of all nuts and bolts, particularly cylinder head nuts. This should be done when the engine is cold.

Every 600/650 Miles

4) Check gear box and transmission oil level, and add oil as necessary using SAE 40.

Every 1500/2000 Miles

5) Air filter: take out the air filter and wash it in gasoline and, before replacing it, immerse in mixture of oil and gasoline, consisting of 10 percent oil.

6) Fuel tap filter and carburetor filter: remove the tap from the fuel tank and the filter from the carburetor, and wash out with clean gasoline.

7) Transmission chain: cleanse with paraffin and relubricate using SAE 40 oil; check for excessive stretching.

8) Spark plug: clean the spark plug with wire brush and check the gap between the electrodes which should be 4-5/10 mm. (0.016" to 0.020").

Every 3000/4000 Miles

9) Decarbonize by removing the cylinder head and remove carbon which may have formed on the cylinder head and piston crown. Also within the exhaust bend and silencer-tube.

10) Flywheel magneto: check contact breaker; lubricate center of rotor using a few drops of SAE 40/50 oil on the felt pad (4) (fig. 5).

11) Fuel Tank: wash out fuel tank with clean gasoline, extracting any dirt via gasoline tap hole, having first removed the gasoline tap.

Every 5000/5500 Miles

12) Carburetor: take carburetor to pieces for general cleaning and check all components.

Every 6500/7000 Miles

13) Steering head: dismantle steering head and regrease tail races.

14) Check tightness of all nuts and bolts to particular cylinder head nuts which should be carried out when engine is cold.

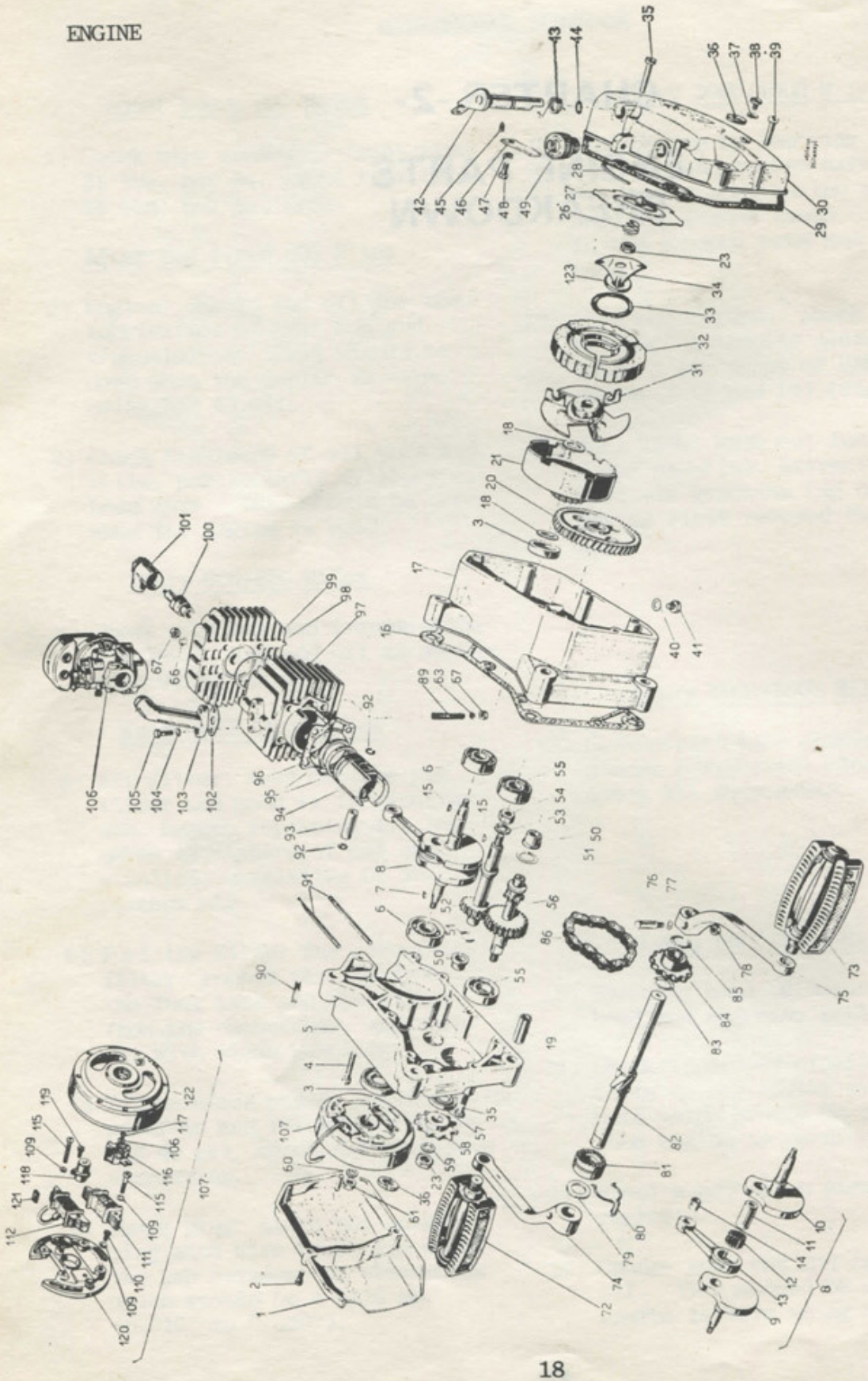
15) Wheel hubs: strip clean and regrease.

16) Change gear box and transmission oil. This should be done when the engine is warm using SAE 40 oil.

CHAPTER -2-

ENGINE PARTS BREAKDOWN

ENGINE



ENGINE PARTS

Fig.	Description
1.	Cover
2,	Screw, 6 x 25
3.	Seal ring
4.	Screw, 6 x 40
5.	Half crankcase
6.	Ball bearing
7.	Key
8.	Cpl. crankshaft
9.	Half flywheel
10.	Half flywheel
11.	Pin
12.	Roller cage
13.	Connecting rod
14.	Bronze bushing
15.	Key
16.	Gasket
17.	Half crankcase
18.	Thrust washer, o.5 mm.
18.	Thurst washer, o.4 mm.
18.	Thurst washer, 0.2 mm.
19.	Bush
20.	Gear wheel, 57T
21.	Clutch casing
23.	Nut, 10 x 1
26.	Spring
27.	Clutch disc
28.	Circlip
29.	Gasket
30.	Cover
31.	Mass holder
32.	Centrifugal mass
33.	Spring
34.	Plate spring
35.	Screw, 6 x 25
36.	Seal ring
37.	Gasket
38.	Oil level screw
39.	Screw, 6 x 30
40.	Gasket
41.	Oil drain plug
42.	Clutch lever
43.	Spring
44.	Seal ring
45.	Screw, 5 x 9
46.	Plate
47.	Spring
48.	Screw
49.	Oil plug
50.	Roller cage

Fig.	Description
51.	Thrust washer
52.	Primary shaft
53.	Spring washer
54.	Nut, 14 x 1.5
55.	Ball bearing
56.	Secondary shaft
57.	Seal ring
58.	Sprocket, 10T
59.	Spring washer
60.	Spring washer
61.	Nut, 10 x 1
63.	Spring washer
67.	Nut, 6 dia.
72.	L.H. pedal
73.	R.H. pedal
74.	L.H. pedal arm
75.	R.H. pedal arm
76.	Taper pin
77.	Spring washer
78.	Nut, 6 dia.
79.	Thrust washer
80.	Spring
81.	Starting shaft slider
82.	Starting shaft
83.	Thrust washer
84.	Starting gear
85.	Thrust washer
86.	Chain
89.	Stud
90.	Rubber protection
91.	Stud
92.	Circlip
93.	Gudgeon pin
94.	Piston for L ring, 38.80 dia.
94.	Piston for L ring, 39 dia.
94.	Piston for L ring, 39.20 dia.
94.	Piston for L ring, 39.40 dia.
94.	Piston for L ring, 39.60 dia.
95.	Piston ring, 38.80 dia.
95.	Piston ring, 39 dia.
95.	Piston ring, 39.20 dia.
95.	Piston ring, 39.40 dia.
95.	Piston ring, 39.60 dia.
95.	L Piston ring, 38.80 dia.
95.	L Piston ring, 39 dia.
95.	L Piston ring, 39.20 dia.
95.	L Piston ring, 39.40 dia.
95.	L Piston ring, 39.60 dia.
96.	Gasket

ENGINE PARTS - cont'd.

97. Cylinder
98. Gasket
99. Head
100. Sparking plug
101. Sparking plug cap
102. Gasket
103. Manifold
104. Spring washer
105. Screw, 5 x 20
106. Carburetor
107. Cpl. Flywheel magneto
109. Flat washer
110. Screw, 4 x 8
111. L.T. coil
112. H.T. coil
115. Screw
116. Contact points
117. Screw
118. Condenser
119. Screw
120. Stator
121. Lubrication felt
122. Magneto body

DEMM ENGINE

DISASSEMBLY

The engine should be disassembled in an orderly sequence for easy and efficient work

** CAUTION ON ENGINE DISASSEMBLY **

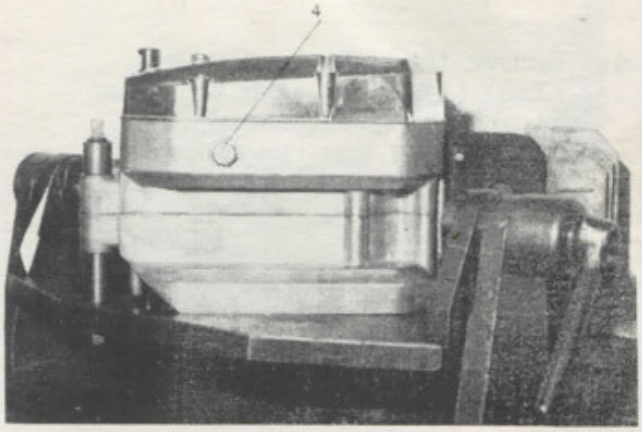
(1) Before removing the engine from the chassis, clean away all dirt and dust from cylinder head, cylinder and crankcase, and keep these components clean during disassembly.

(2) Always use clean tools and use them correctly to avoid damaging parts.

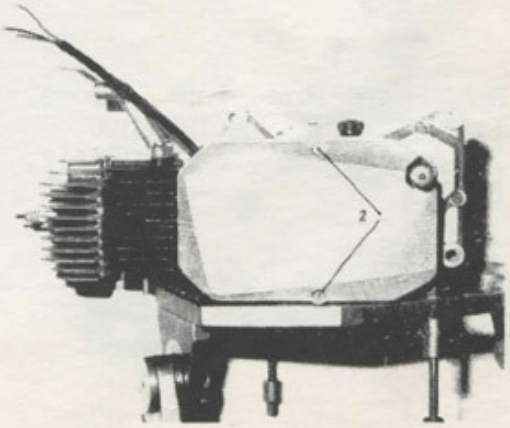
(3) Keep the disassembled parts on the parts tray separately in each group.

ENGINE DISASSEMBLY

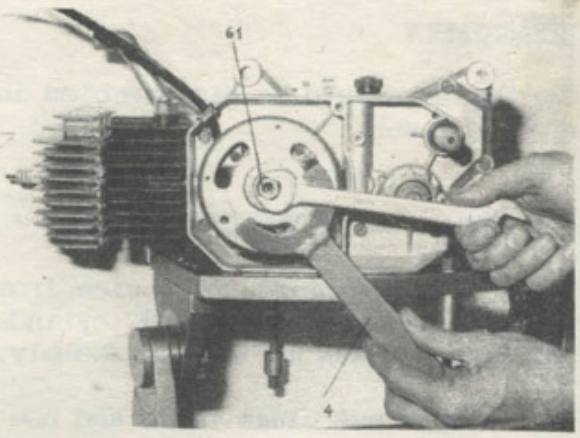
1. Drain the transmission oil by removing the oil drain plug (4) (fig. 1), located under the engine on the right side with a 13 mm. wrench.



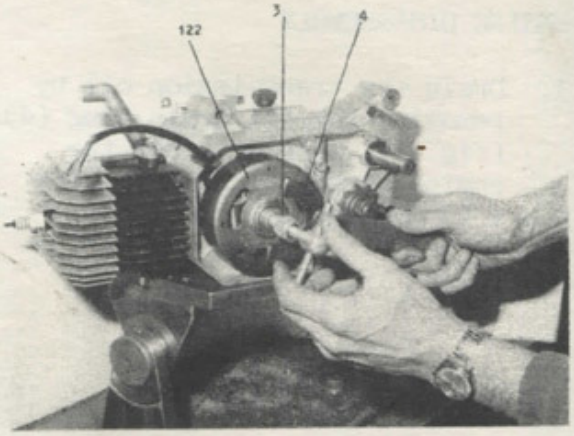
2. Remove the left crankcase cover, (fig. 2), by removing two 6 x 25 mm. screws.



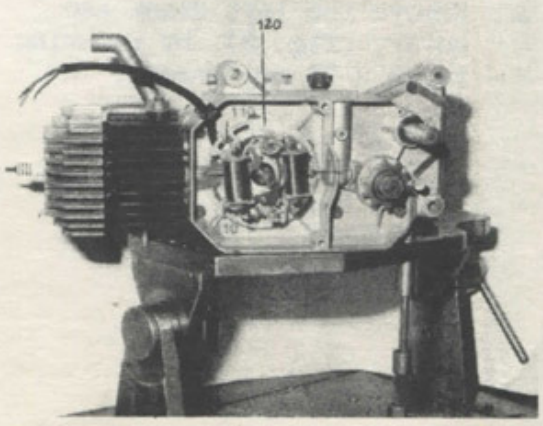
3. Use the magneto flywheel holder (special tool No. 4) to hold the flywheel while removing the 10 mm. nut from the crankshaft end (61) (fig. 3), with a 10 mm. wrench.



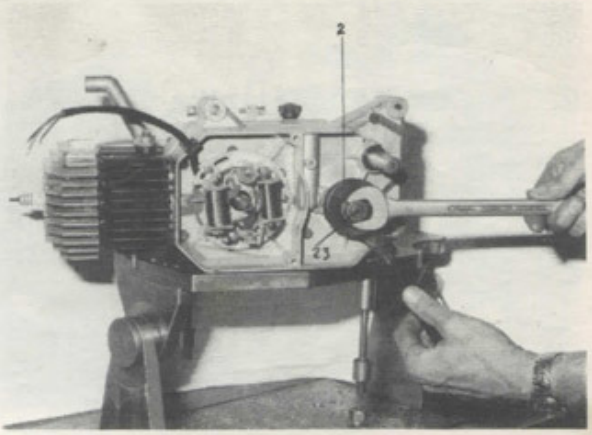
4. Remove the magneto flywheel (122) (fig. 4), with the flywheel extractor (special tool No. 3) and the magneto flywheel holder (special tool No. 4).



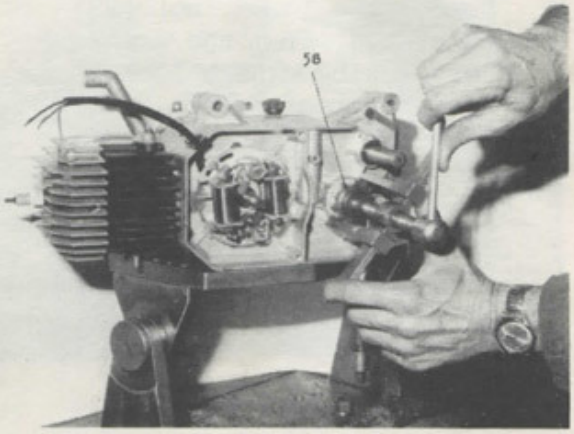
5. Remove the three 4 mm. screws, (110) (fig. 5), and remove the magneto stator (120) (fig. 5).



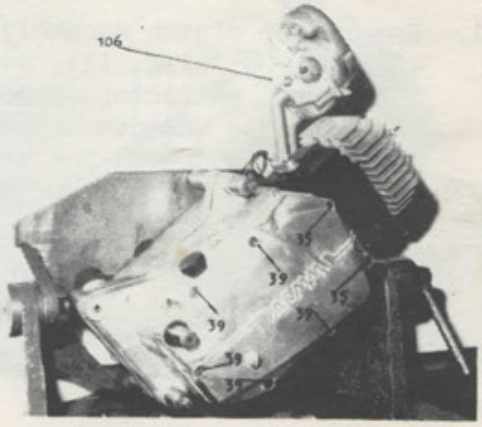
6. Remove the 10 mm. nut, (23) (fig. 6), from the secondary shaft (with special tool No. 2).



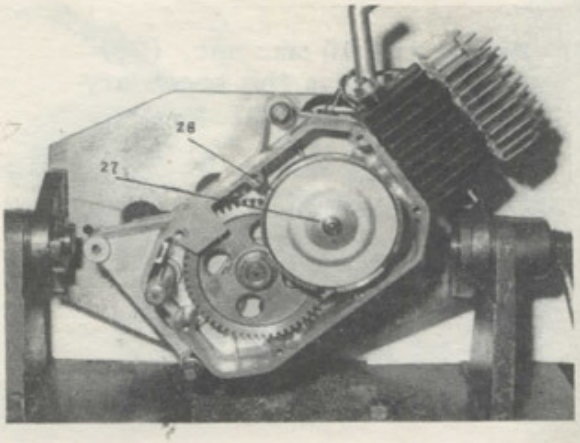
7. Remove the chain sprocket (58) (fig. 7), using a gear puller.



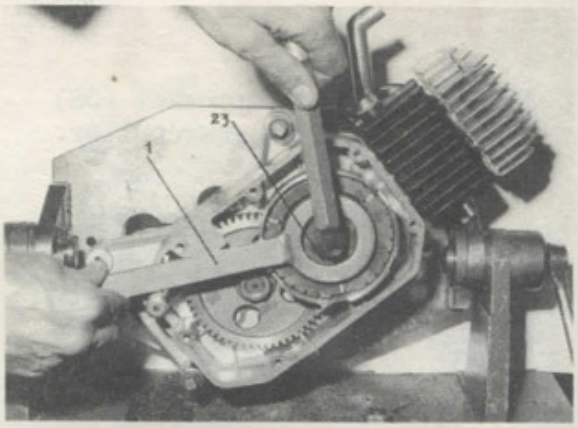
8. Take off the carburetor (106) (fig. 8), using a screwdriver. Remove the five 6 x 30 mm. screws, (39) (fig. 8) and the two 6 x 25 mm. screws (35) (fig. 8). Remove the right crankcase cover.



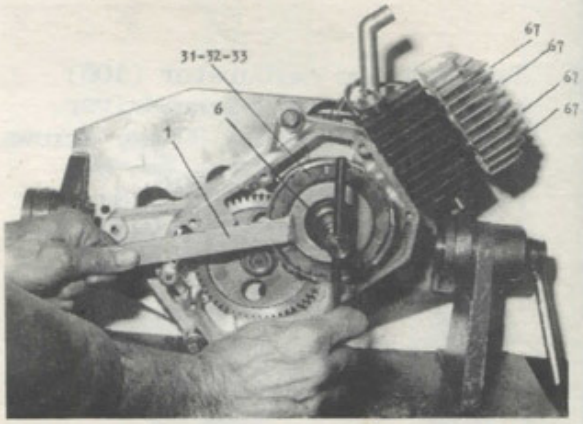
9. Remove the split ring (28) (fig. 9), the starting disc (27) (fig. 9) and the spring under the disc.



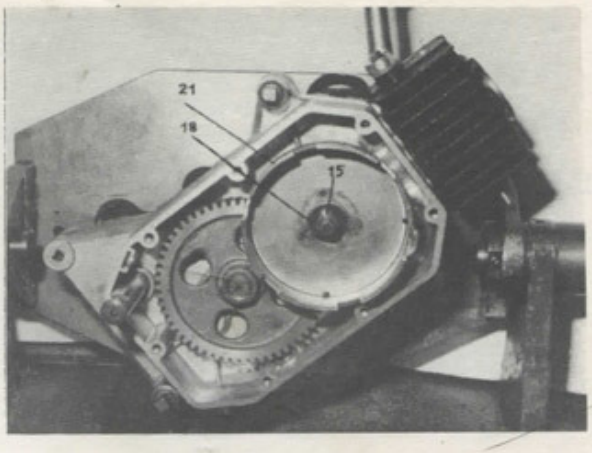
10. Remove the 10 mm. nut (23) (fig. 10), from the crankshaft using clutch locking wrench (special tool No. 1).



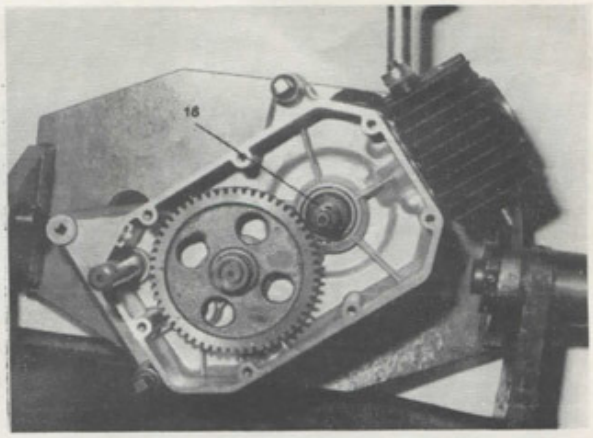
11. Remove the clutch assembly (31, 32, 33) (fig. 11), with the clutch extractor (special tool No. 6). Remove the four nuts using a 10 mm. box wrench and take off cylinder head.



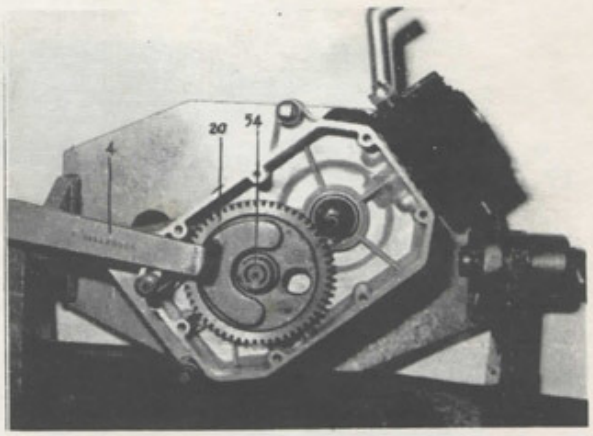
12. Remove the key (15) (fig. 12), and the thrust washer (18) (fig. 12) to remove the clutch (21) (fig. 12).



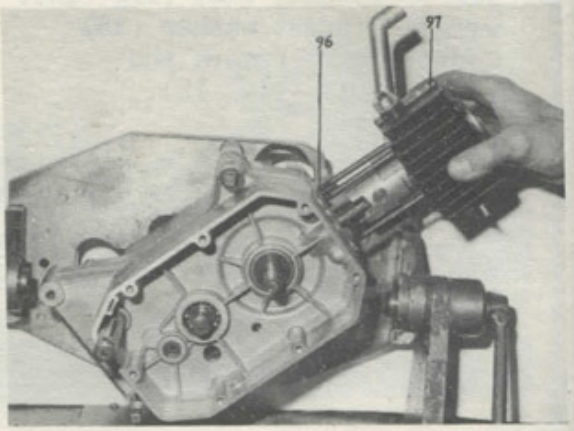
13. Remove the second thrust washer (18) (fig. 13).



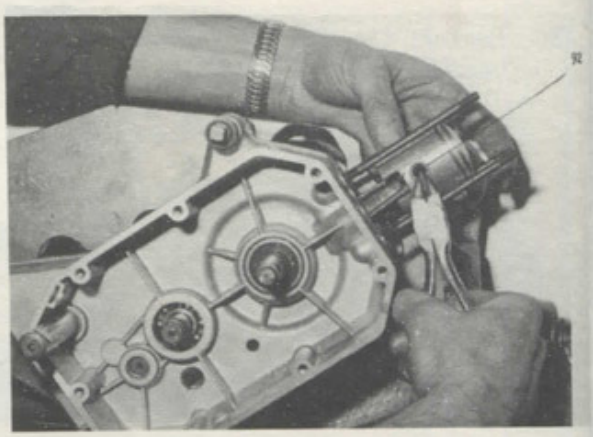
14. Remove the 14 mm. nut (54) (fig. 14) from the primary shaft using flywheel magneto locking wrench (special tool No. 4) to hold the gear wheel. Remove the gear wheel (20) (fig. 14).



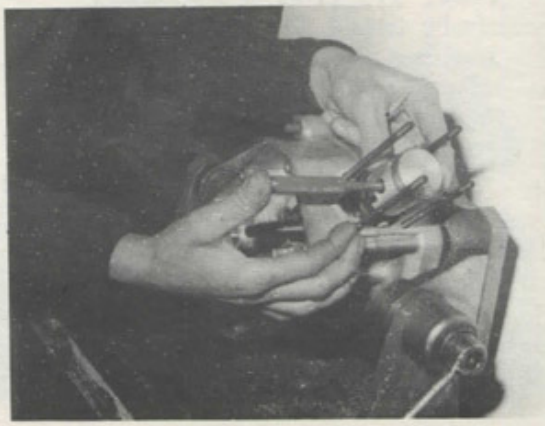
15. Remove the four 6 mm. nuts and washers from the cylinder head, then remove the cylinder head and the cylinder (97) (fig. 15).



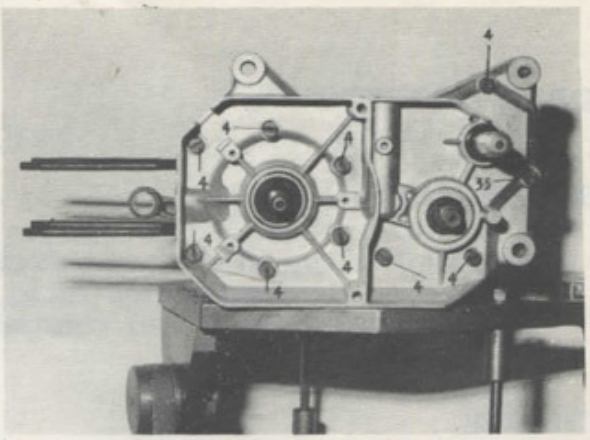
16. Remove the two circlips (92) (fig. 16).



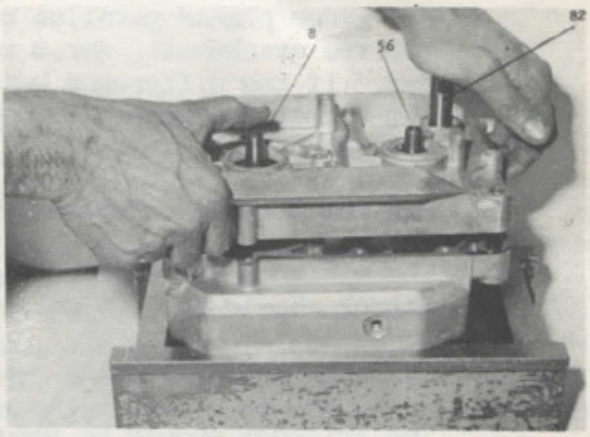
17. Using a long pin push the piston pin (93) (fig. 17), through the piston to remove it from the crankshaft.



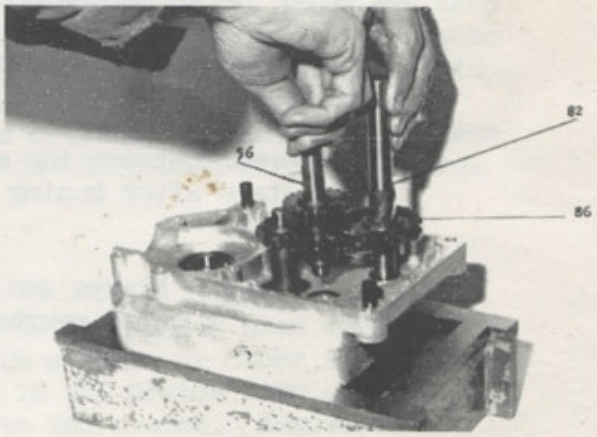
18. Remove the nine 6 x 40 mm. screws (4) (fig. 18), and the one 6 x 25 mm. screw (35) (fig. 18), from the left crankcase half.



19. In order to separate the two half crankcases, TAP, with a rubber hammer on the shaft (56) (fig. 19), crankshaft (8) (fig. 19), and on the pedal shaft (82) (fig. 19).



20. Take off - AT THE SAME TIME - the secondary shaft (56) (fig. 20), the pedal shaft (82) (fig. 20), and the chain (86) (fig. 20).



ENGINE RECONDITIONING

REMOVING CARBON

Carbon buildup in the combustion chamber of the cylinder head increases the compression ratio, causing preignition, overheating and greater fuel consumption. Clean the cylinder head.

CYLINDER

1. Checking Cylinder Wear

   Measure the cylinder bore diameter at four different depths with a bore measuring micrometer, or a cylinder gauge placed parallel with, then at right angles to, the crankshaft, for 8 measurements in each cylinder. If the difference between the maximum and minimum diameters exceeds 0.05 mm., rebore and hone the cylinder.

2. Minimum Clearance Between Piston & Cylinder

   The minimum clearance between the piston and the cylinder should be 0.05 mm.

   Cylinder Reconditioning

   The cylinder should be reconditioned in the following manner:

   A. Pistons are available in diameters of 39.00, 39.20, 39.40 and 39.60 over sizes.

   B. Cylinder should be bored and honed to a diameter of the oversize piston, plus the clearance.

   C. The error between the maximum and minimum bore diameters after honing should be no more than 0.01 mm.

      NOTE: Always use new cylinder gaskets when overhauling the engine.

3. Checking Piston Rings

A. Measuring Piston Ring Wear

Put each ring into the cylinder so that the ring is parallel with the cylinder bottom, and measure the end gap with a feeler gauge. Each gap should be between 0.23 and 0.30 mm. for both No. 1 and No. 2 rings.

B. Removing Carbon

Carbon in the ring grooves will make the rings stick to the piston. Remove the ring from the piston and clean the carbon from the rings and grooves.

No. 1 Ring (Upper) - 0.04 to 0.08 mm.
No. 2 Ring (Lower) - 0.04 to 0.08 mm.

4. Checking and Reconditioning the Piston

A. Measuring Piston Clearance

Piston clearance mentioned here is defined as the difference between the minimum and the maximum outside diameter of the piston. The piston clearances should be 0.05 mm. To determine the maximum piston outside diameter, measure it with a micrometer at right angles to the skirt and 10 mm. above the bottom edge.

B. Checking and correcting scratches

Pistons showing signs of seizure are noisy and keep the engine from developing full power. If a piston that has seized up is used again without correction, another seizure will develop at the same point, causing damage to the cylinder. Lightly sand these seizure "high spots" on the piston with #400 sandpaper.

C. Removing Carbon

Carbon accumulations on the piston head should be carefully removed with a knife or other scraper. Carbon accumulations in the piston ring groove make the ring stick to the piston. Remove the carbon.

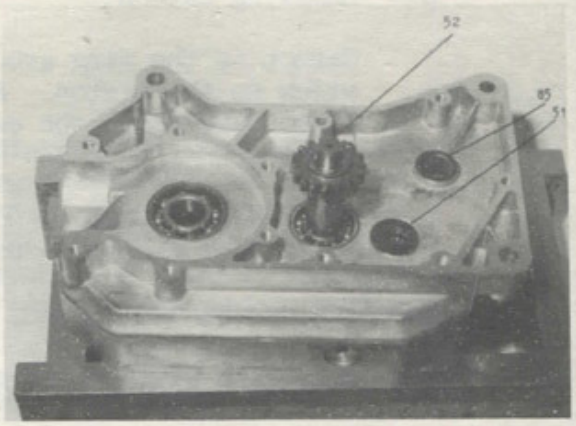
D. Installing the Piston in its proper direction

Install the piston with the arrow marked on the piston head pointing downward (toward the exhaust port).

ENGINE REASSEMBLY

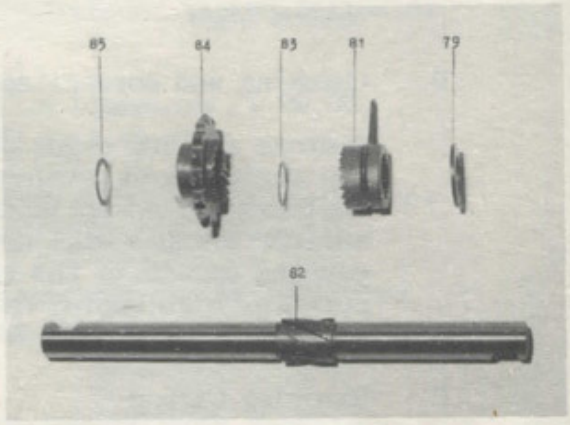
1. Crankcase - Clutch side

Assemble the primary shaft into the right crankcase half. Place the shims (85) (51) (fig. 21), into place over the bearings using a tight coat of oil to hold in place.



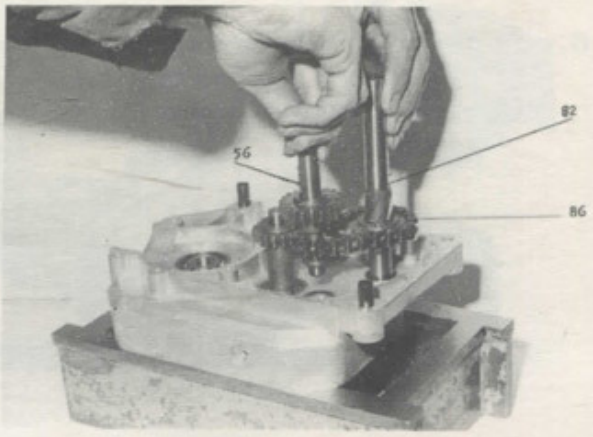
2. Assemble the Pedal Shaft

Carry out reassembly as shown in fig. 22.



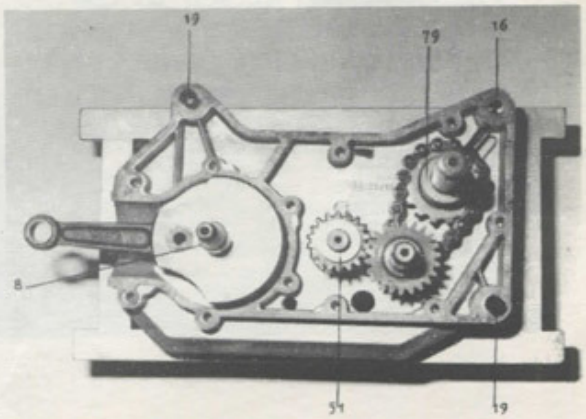
3. Assemble the Pedal Shaft, Secondary Shaft and Chain into the crankcase as a unit

Place the secondary shaft (56) (fig. 23), the pedal shaft (82) (fig. 23), and the chain (86) (fig. 23) as a unit.



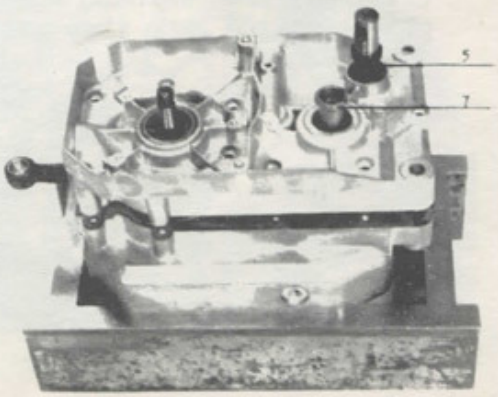
4. Insert the crankshaft (8) (fig. 24). The two bushings (19) (fig. 24) and the thrust washers (51) (fig. 24).

Apply the gasket (16) (fig. 24), using a light coating of gasket cement to hold it in place. Make sure the spring (80) (fig. 24), is in place in the proper position.

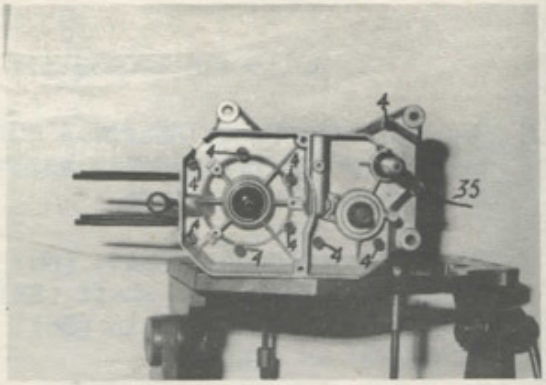


5. Half Crankcase-Flywheel Magneto Side

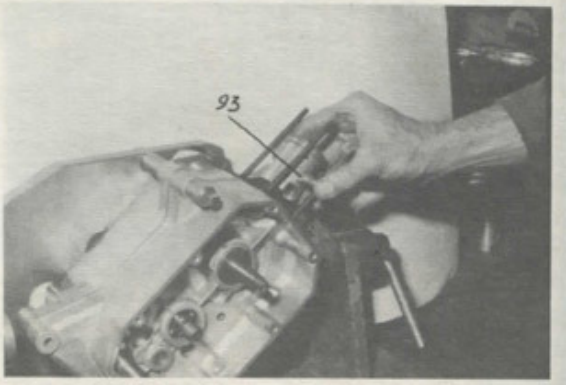
Before assembling the half crankcase, apply the bushings (5-7) (fig. 25) in order to avoid the breaking of the seal rings. Assemble the left crankcase.



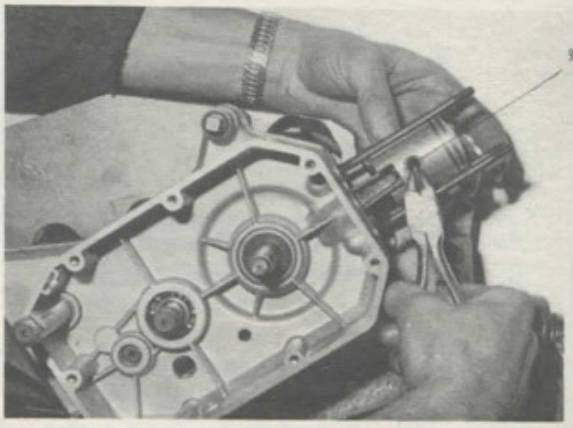
6. Fasten the nine screws (4) (fig. 26) and the screw (35) (fig. 26), with a screwdriver.



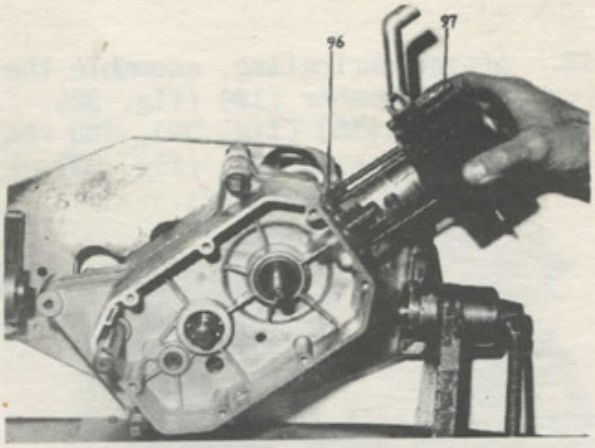
7. Lubricate the piston with a light oil and attach to the crankshaft with the piston pin and circlips (93) (fig. 27). Make sure the arrow on the top of the piston is pointed down.



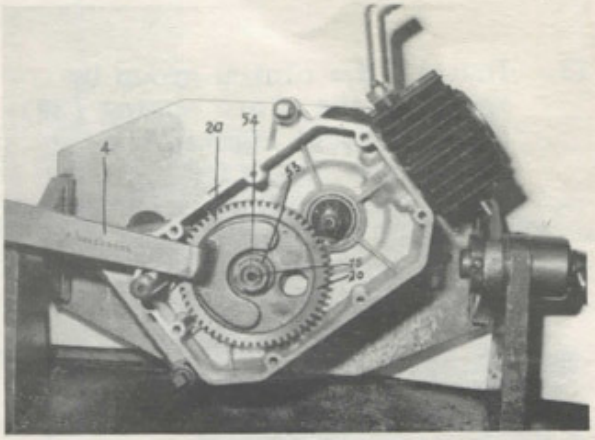
8. Apply the two seal rings (92) (fig. 28) with a round nose plier, making sure they are well secured.



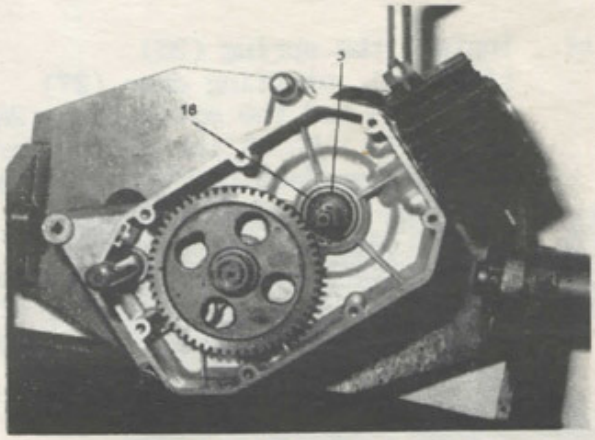
9. Apply a light coating of gasket cement to the cylinder gasket and attach it to the crankcase (96) (fig. 29). Lubricate the cylinder (97) (fig. 29) and slide it into place over the piston, making sure the piston rings are in proper position.



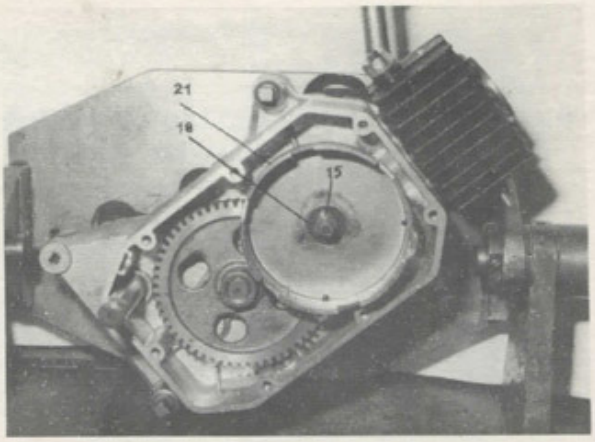
10. Assemble the key (15) (fig. 30), the gear (20) (fig. 30), the lock washer (53) (fig. 30), and the nut (54) (fig. 30) on to the primary shaft. Tighten the nut with a 22 mm. wrench and the flywheel magneto locking wrench (special tool No. 4).



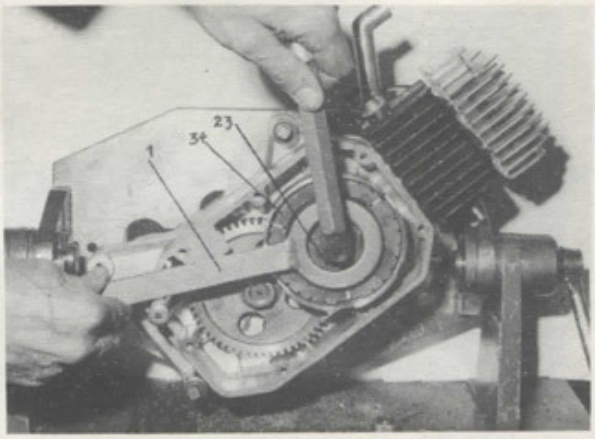
11. Install the oil seal ring (3) (fig. 31) on to the crankshaft.



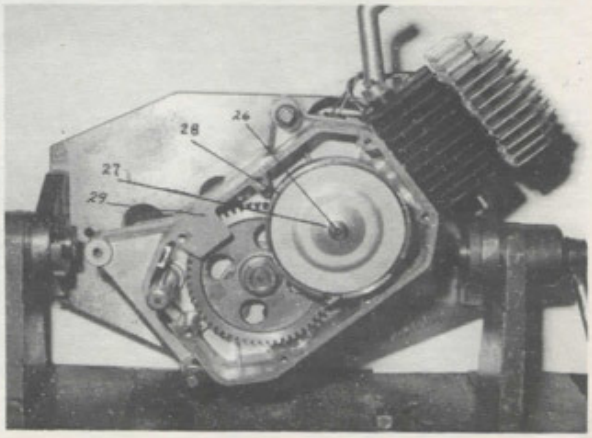
12. After lubricating, assemble the thrust washer (18) (fig. 32), the key (15) (fig. 32), and the clutch casing (21) (fig. 32), on to the crankshaft.



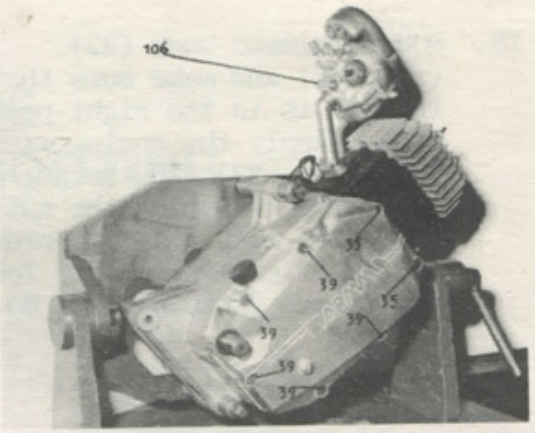
13. Install the clutch group by applying the plate spring (34) (fig. 33) and tighten the 10 mm. nut (23) (fig. 33) using the clutch locking wrench (special tool No. 1) and a 17 mm. box wrench.



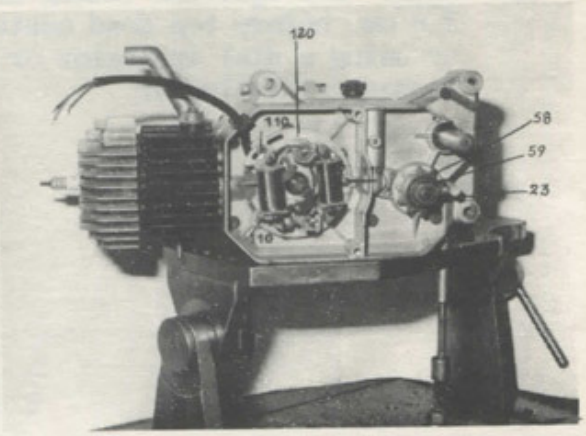
14. Install the spring (26) (fig. 34), starting disc (27) (fig. 34) and the split ring (28) (fig. 34). Check the clutch for proper clearance (.010" - .020"). Check to make sure there is at least 1 mm. of space between the starting disc and the clutch group. Apply a light coating of gasket cement to the gasket (29) (fig. 34), and attach to the clutch cover.



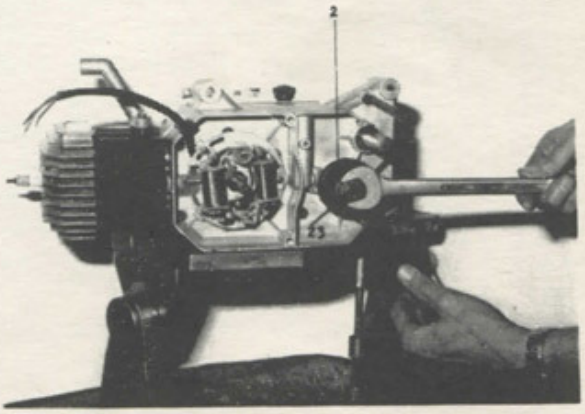
15. Install the clutch cover using the seal ring bushing (special tool No. 5) in order to avoid breaking the seal ring. Insert the five screws (39) (fig. 35), and the two screws (35) (fig. 35), using a screwdriver. Attach the carburetor and secure with a screwdriver.



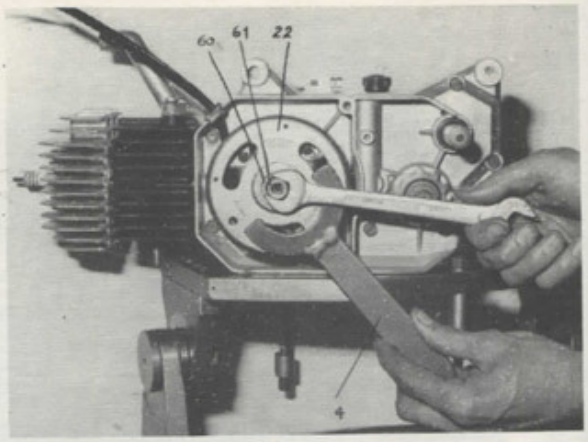
16. Assemble the chain sprocket (58) (fig. 36), lock washer (59) (fig. 36), and the nut (23) (fig. 36), on to the secondary shaft. Apply the magneto stator (120) (fig. 36) and secure it with the three screws (110) (fig. 36) using a screwdriver.



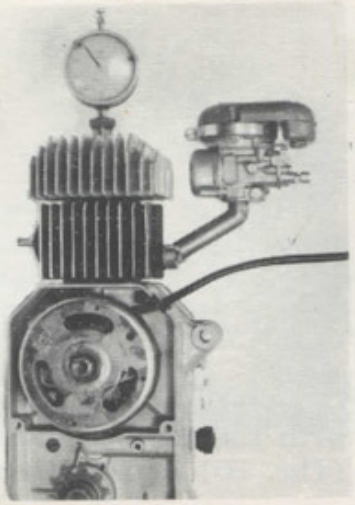
17. Tighten the nut (23) (fig. 37), using the chain sprocket locking wrench (special tool No. 2) and a 19 mm. box wrench.



18. Mount magneto body (22) (fig. 38) and make sure that the key is in the right position. Apply the spring washer (60) (fig. 38) and the nut (61) (fig. 38). Tighten the nut (61) (fig. 38) with a 14 mm. wrench and the flywheel magneto locking wrench (special tool No. 4).

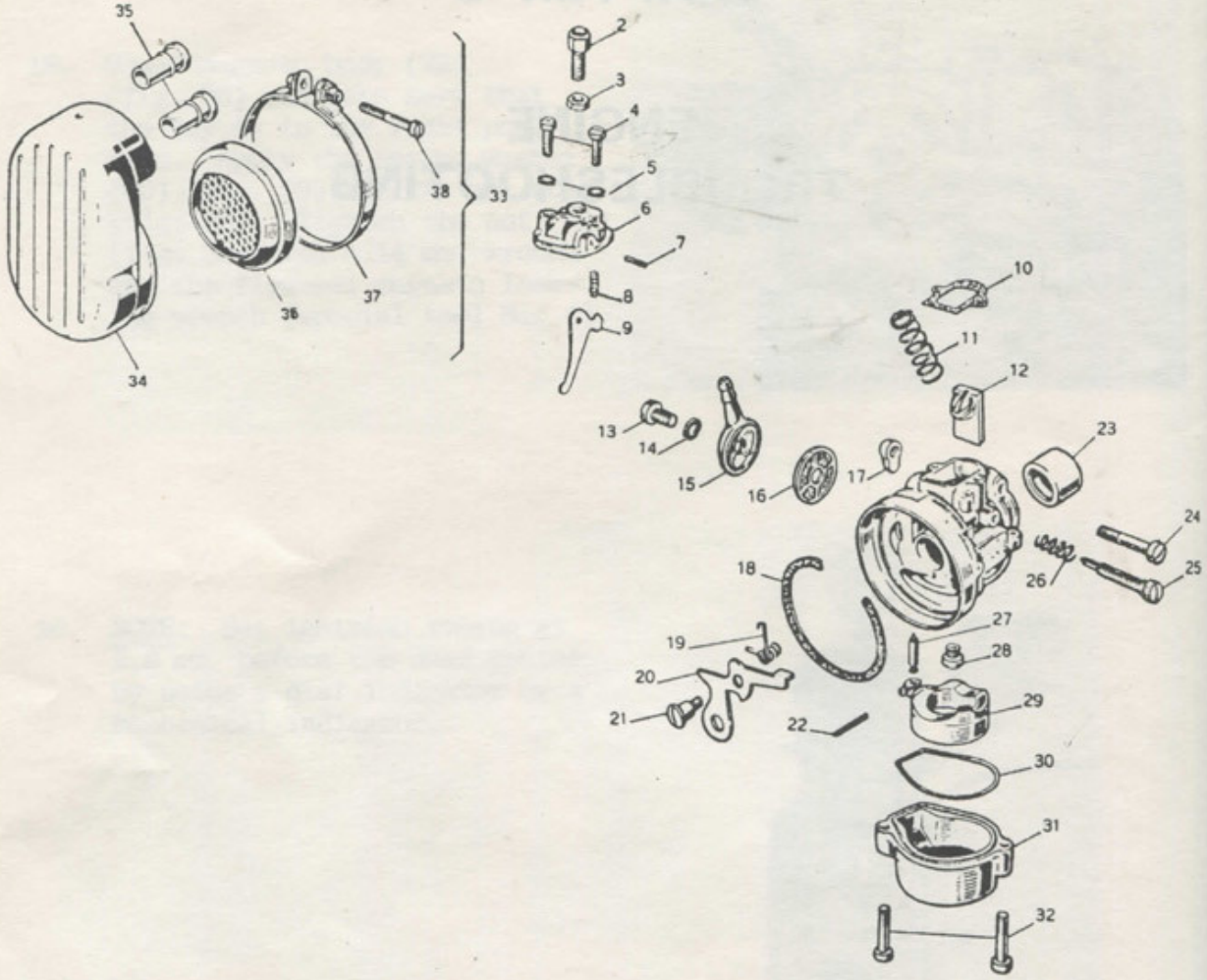


19. NOTE: Set ignition timing at 2.8 mm. before top dead center by using a dial indicator or a mechanical indicator.



CHAPTER -3-

ENGINE TROUBLESHOOTING



1. Carburetor with filter
2. Screw
3. Nut
4. Screw
5. Spring washer
6. Cover
7. Pin
8. Spring
9. Lever
10. Gasket
11. Spring
12. Gas-valve
13. Screw
14. Gasket
15. Cover
16. Fuel filter
17. Nut
18. Gasket
19. Spring
20. Air valve
21. Pin
22. Pin
23. Insulating reduction
24. Screw
25. Screw
26. Spring
27. Needle
28. Jet 53
29. Float
30. Gasket
31. Float chamber
32. Screw
33. Cpl. air filter
34. Cover
35. Air intake
36. Filter element
37. Clip
38. Screw

DIFFICULT OR NO STARTING

POSSIBLE CAUSES		INSPECTION AND/OR REMEDY
1. Ignition System		
A.	Bridged, fouled, or dirty spark plug.	Clean or replace. Make sure the plug is of the correct heat range.
B.	Incorrect spark plug gap	Reset.
C.	Burned, dirty, or incorrectly gapped ignition points	Clean or replace. Set correct gap.
D.	Incorrect ignition timing	Reset.
E.	Faulty Magneto	Test voltage output and isolate trouble source as described in "Electrical Systems."
F.	Faulty Wiring Harness	Check for short circuits, poor grounds, etc., and repair as necessary.
2. Fuel System		
A.	No fuel delivery	Check the fuel level and switch to reserve. Disconnect the delivery switch at the carburetor and make sure there is free fuel flow. If not, look for clogged gas tank vent, fuel petcock, or delivery line.
B.	Stock carburetor float	Disassemble the float bowl and make sure the float operates freely and that the float needle seat is free from obstruction.
C.	Poor quality fuel	Inspect the spark plugs and if yellow-brown sulphur deposits are evident, flush and refill the fuel tank with fresh, good quality gas and oil mixture.

3. Loss of Compression

A.	Loose spark plug	Usually caused by over torqueing the plug and stripping the cylinder head threads. Either a helicoil insert or a new cylinder head will be required.
B.	Loose cylinder head	Make sure the head is correctly fitted and torqued.
C.	Broken head gasket	Replace.
D.	Worn piston rings	Replace.
E.	Excessive Piston-to-Cylinder wall clearance	Replace the piston and rings; rebore or replace the cylinder.
F.	Leaking crankcase	Replace.
G.	Muffler is clogged	Clean it or replace.
H.	Air filter is clogged	Clean and oil it.
I.	Gas and oil mixture is not enough to get maximum power	Clean fuel line and filter.
J.	Carburetor is clogged	Clean with compressed air
K.	Dummy air inlets	Check the engine gaskets
L.	Time delay in the sparking	Retime it.

HARD STARTING OR IRREGULAR IDLE

1. Ignition System

A.	Dirty or incorrect spark plug	Check plug condition, heat range and electrode gap.
B.	Incorrect ignition timing	Reset.
C.	Dirty or worn out points	Replace the points and check for any signs of oil leakage around the breaker cam. Wet points usually indicate a faulty oil seal.

1.	Ignition Systems - cont'd.	
	D. Faulty condenser	If points are badly burned, or discolored, it is very likely a bad condenser is the cause. Replace it and be safe.
	E. Faulty magneto	Check the slip ring and pickup for grease, dirt, etc., and clean as necessary.
	F. Ignition cable is damaged	Splice or replace it.
	G. Water in the flywheel magneto	Take off the cover and dry out the water with compressed air.
2.	Fuel System	
	A. Water in carburetor	Disconnect and clean.
	B. Incorrectly adjusted carburetor idle circuit	Clean and adjust.
	C. Clogged carburetor fuel jets	If the bike has been stored or left sitting for some time, there is the possibility of sediment or oil residue obstructing fuel flow through the main and needle jets. Clean all the jets in solvent and blow them dry with compressed air.
3.	Dirty Air Cleaner	Clean or replace.
4.	Excessive carbon buildup	Decarbonize the engine.

MISFIRE FROM DECELERATION FROM IDLE

1.	Incorrect Idle Mixture	A misfire while accelerating from a stand still is often caused by too rich an idle mixture. Readjust the idle mixture and, if necessary, remove and clean the jets.
2.	Water in carburetor float bowl or fuel petcock	Drain and flush with fresh gasoline.
3.	Faulty Spark Plug	Look for signs of bridging, tracking, or flashover. Sandblast or replace the plug.

MISFIRE AT A GIVEN THROTTLE OPENING ONLY

1.	Faulty Carburetor	Disassemble and inspect all carburetor parts for nicks, scratches, etc. Pay particular attention to the needle and jet needle.

INTERMITTENT MISFIRE

1.	Ignition System	Check all items in the ignition/ electrical system; points, plugs, wire, grounds and wiring harness connections.

MISFIRE UNDER LOAD

1.	Faulty Spark Plug	Inspect the plug for signs of overheating. Install a cooler plug, if necessary.
2.	Incorrect Ignition Timing	Make sure the timing is right on because it becomes more critical as load increases.

MISFIRE UNDER LOAD - cont'd.

3.	Dirty Air Cleaner	Clean and replace.
4.	Incorrect Fuel Mixture	Make sure fuel mixture is not too rich. Check main jet size.
5.	Poor Quality Fuel	Check plug condition and, if necessary, drain and replace fuel.

HIGH SPEED MISFIRE

1.	Ignition System		
	A.	Faulty plug	Check plug condition and heat range.
	B.	Incorrect spark plug gap	Reset.
	C.	Faulty condenser	Test and, if necessary, replace.
	D.	Faulty ignition coil	Inspect the leads for signs of corona discharge: soft rubber. Test and, if necessary, replace.
	E.	Faulty high-tension leads	Test and, if necessary, replace.
2.	Fuel System		
	A.	Incorrect fuel mixture	Inspect the main jet and valve for any nicks, etc. Also make sure the needle is properly positioned.
	B.	Incorrect float level	Reset.
	C.	Air leak	Inspect the fuel induction passage and make sure there is no place for air to enter other than carburetor throat.

HIGH SPEED MISFIRE - cont'd.

3.	Loss of Compression	Measure cylinder compression as described in "Tune-up Analysis."
	A. Broken head gasket	Replace.
	B. Broken cylinder base gasket	Replace.
	C. Leaking crankcase oil seal	Replace.
4.	Dirty air Cleaner	Clean and replace.
5.	Carbon buildup in Head and/or Exhaust Passage	Decarbonize

ENGINE OVERHEATING AND SEIZURE

Overheating to the point of seizure is mostly due to the fact that moped engines require a stream of air passing through the fins for cooling. Slow riding in hot weather, overloading the bike and extended periods of idling can all contribute to overheating which could cause a partial piston seizure. A brand new or rebuilt engine is particularly prone to overheating, and care should be taken in the first few hundred miles to use small amounts of throttle and a moderate rev. range. If a mild seizure does occur, just letting the engine cool off for a few minutes will generally free it again, probably without any damage. Strange noises and a loss of performance, however, means you need to pull the head and cylinder to have a look at the piston and bore.

If the bike is overheating (noticeable as a drop in performance and an inordinate amount of heat radiating from the cooling fins), look for the causes.

1. Insufficient amount of oil, due to incorrect mixing.

2. Incorrect (lean) fuel/air mixture, caused by an intake air leak or incorrect carburetor jetting.

3. Improperly adjusted ignition timing or faulty ignition advance unit. Two stroke engines are very sensitive to timing variations, and overheating can easily result from a careless setting.

4. Carbon buildup in the combustion chamber. Excessive carbon buildup can cause an increase in the compression ratio, which will increase the amount of heat produced by the engine. In addition, the carbon tends to remain very hot, causing preignition and adding to the overheating problem.

5. Clogged exhaust post and muffler baffles. This causes an increase in back pressure, which in turn increases the amount of heat retained by the engine, as well as the throttle opening necessary to maintain the same level of performance. (Engine heat produced is directly related to the amount of throttle opening being used.)

6. Too "hot" a spark plug, which can ultimately cause a holed piston. The heat range of a spark plug refers to the heat dissipating ability of a plug. Therefore, a hot plug retains (not produces) more heat than a colder plug will, causing more heat buildup in the cylinder head.

7. Oily, or dirty, cooling fans, which are prevented from performing this job of dissipating heat as quickly and over as large an area as possible.

ENGINE VIBRATION

Nearly all abnormal engine vibrations can be attributed to two causes: Loose or broken engine mounts, or incorrect ignition timing. If broken mounts are suspected, be sure to check the mounts under the bolt heads and nuts where hidden fractures can occur. Although it happens only with high mileage engines, it is possible that worn crankshaft bearings can also cause vibrations which, of course, would show up more gradually than the other causes would.

ENGINE NOISES

Engine noises are often the first indication of component malfunction or excessive wear. It is important, however, not to confuse normal noise with those indicating a problem. All mopeds produced today are air-cooled and use a great deal of aluminum alloy in the engines. Both of these factors contribute to the transmission of normal noises and should not be a cause of alarm.

Two stroke engine noises are the most susceptible to misinterpretation because of the varying levels. An engine that has been run under load in extreme heat, for example, can emit some very frightening sounds but run quietly the next morning. This is not to say there should be no concern when the noises are heard. But, rather, the difference should be learned between the expensive thump of bad main bearings and the harmless piston slap of a cold off-road single.

INCONSISTENT NOISES

A clicking or clattering under moderate acceleration is usually the result of carbon buildup on the rings which reduces the end gap, or it could be excessive side clearance of the rings.

A heavier clicking sometimes heard as a click in quick succession is most often a sign of excessive clearance between the wrist pin and its bearing.

A definite knock heard under acceleration generally means that the connecting rod bearing is worn.

Pinging under hard acceleration is caused by incorrect ignition timing, cheap or contaminated fuel, excessive carbon buildup or overheating.

A low R.P.M. rattle, especially when the engine is cold, is normally attributable to piston slap. This is nothing serious.

CONSISTENT NOISES

A grating rattle, noticeable when the engine is idling in neutral is clutch and primary drive noise. This is quite normal and is not very serious. The noise may be audible when running under a light load at low speed, and should disappear almost completely when the clutch is disengaged.

A sharp knock at all engine speeds could be the piston rings hanging up as they pass the ports and is very serious.

A heavy thump throughout the R.P.M. range is descriptive of worn main bearings. Worn mains are also sometimes noticeable as loud whirring screeching from the bottom end.

TUNE-UP

When performing a tune-up, you are restoring to peak efficiency certain engine components that are subject to changes in operating efficiency during use. A tune-up is a series of adjustments that are performed in logical order, one at a time, for predetermined specifications. There is no guesswork involved. There are no complicated disassembly procedures and years of experience in diagnosing engines is not necessary.

A two-stroke tune-up involves the following procedures, in the order given below.

1. Contact breaker point cleaning and gapping.
2. Ignition timing adjustment.
3. Spark plug cleaning and gapping, or replacement.
4. Carburetor idle speed adjustment.
5. Throttle cable adjustment.

Keep in mind, however, that while the procedures are both quick and simple, two-stroke engine design inherently makes each adjustment critical.

CONTACT BREAKER POINTS AND IGNITION TIMING

The contact breaker adjustment and ignition timing are accomplished in one operation.

1. Remove the ignition access cover, then separate the points and check their condition. Blueing and slight pitting are signs of normal wear; built-up mounds and matching depressions require point set replacement. It is generally a good idea to replace the points.

2. If you are going to reuse the points, clean them by running a point file or piece of fine sandpaper between them. Remove any deposits and smooth out the pitted surfaces, then apply a non-oily solvent to the contact surface.

   NOTE: Apply solvent to a new set of points as well, since many of them are coated with a protective film.

3. Snap the points shut on a white business card (or piece of heavy paper) to remove the filings and cleaning fluid. Repeat this step until the points leave a clean imprint.

4. Rotate the engine by turning the rear wheel. Observe the points as they open and close. If they do not meet squarely, replace the set.

5. Rotate the engine until the marks on the flywheel and crankcase are aligned. Loosen the point breaker plate just enough to allow it to be turned, and adjust the position of the points so that they are just opening. Retighten the breaker plate.

6. Check the adjustment by rotating the engine and observing the points. They should begin to open when the flywheel and crankcase marks fall into alignment.

7. Check and adjust the point gap as per the manufacturer's specifications and lubricate the breaker cam with a high melting-point grease.

SPARK PLUGS

Sandblasting is the best method of cleaning plugs provided you get all the sand particles off. It is very quick, very thorough and many local gas stations are equipped to do the job. Carefully scraping deposits off the plug with a wire brush or knife blade will also work.

Check and get the plug gap with a wire feeler gauge. Use the notch in the gauge handle to bend the ground electrode to the proper gap of 4-5/10 mm. (0.016" to 0.020").

NOTE: New plugs should be installed at tune-up intervals. New plugs every 2,000 miles will prove economical (better fuel consumption).

Replacement

1. Do not experiment unnecessarily with different spark plug heat ranges. The plug supplied with the moped should perform well in almost all situations. Spark plug heat ranges refers to the ability of a plug to dissipate heat relative to another type of plug, not to the amount of heat or quality of spark that it produces. If you do find it necessary to try a different heat range because of fouling or erosion of the electrodes, follow this rule of thumb: use the coldest heat range possible that will not foul and cause misfiring if the bike is normally ridden.

2. Make certain the plug selected is the correct reach. Installing the wrong reach plug will bring about either a plug fouling or eventual engine damage. Too short a reach causes rapid carbon buildup; too long a reach causes excessive heat concentration on the piston crown or, in some cases, causes the piston to hit the plug electrode on each stroke.

3. When installing either new or used plugs, make certain only a plug wrench is used, and torque to the plug specifications. Using a tool other than a plug wrench can easily strip the threads in an aluminum head, and failing to torque the plug properly will inhibit its ability to dissipate heat. Screw the plug down finger tight, then turn it an additional three-quarter turn with the plug wrench.

CARBURETOR ADJUSTMENT

Idle Speed and Mixture

1. Turn the idle mixture (air) screw in until it seals lightly.

   CAUTION: Too much pressure when turning in the adjustment screw will damage the seal.

2. Back out the idle mixture (air) screw the recommended number of turns.

3. Start and warm up the engine with the throttle grip completely closed, turn the idle speed (throttle stop) screw in or out until the engine idles at the specified R.P.M.

Throttle Cable Adjustment

Proper adjustment is an important factor in extending cable life, ensuring proper actuation and reducing the possibility of a failure. The cable runs from the twist handle to the carburetor. The end next to the carburetor top is fitted with an adjustment nut.

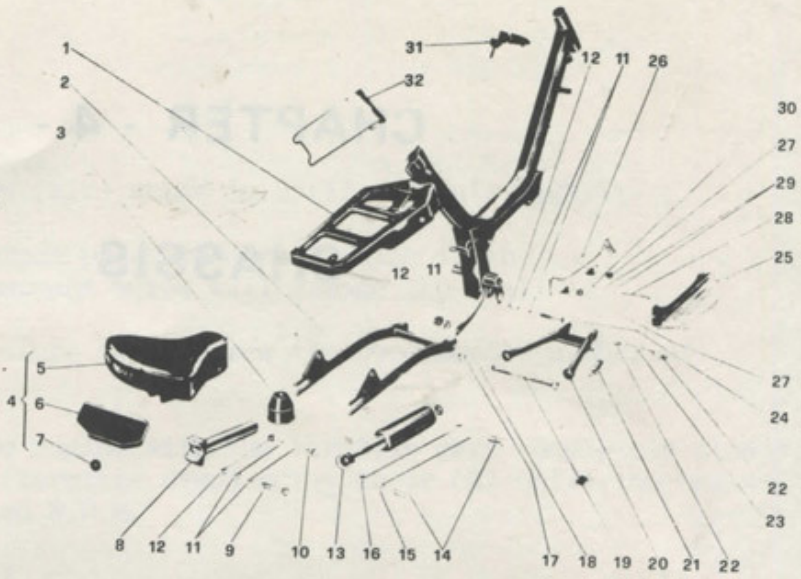
After setting the free play, start to warm up the engine, then turn the handlebars from side to side and note any change in idle R.P.M. If a variation occurs, the cable is adjusted incorrectly (not enough free play) or is binding somewhere along its route. There should be about one-eighth (1/8th) inch free play in the cable.

CHAPTER - 4 -

CHASSIS

4-1 FRAME, SUSPENSIONS, STAND AND SADDLE

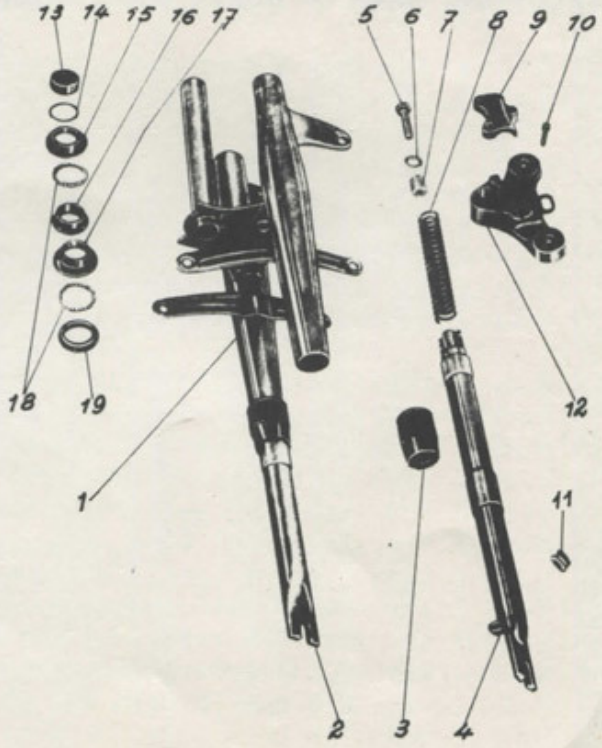
1. Frame
2. Rear fork
3. Rubber cap
4. Cpl. saddle
5. Saddle
6. Tool box
7. Knob for tool gox
8. Saddle tube
9. Screw, 8 x 55
10. Screw, 8 x 20
11. Flat washer
12. Nut, 8 dia.
13. Shock absorber
14. Screw, 10 x 35
15. Flat washer
16. Nut, 10 dia.
17. Nut, 12 dia.
18. Flat washer
19. Fork grub screw
20. Stand
21. Spring
22. Circlip
23. Stand pin
24. Screw, 8 x 65
25. R.H. Footboard
26. L.H. Footboard



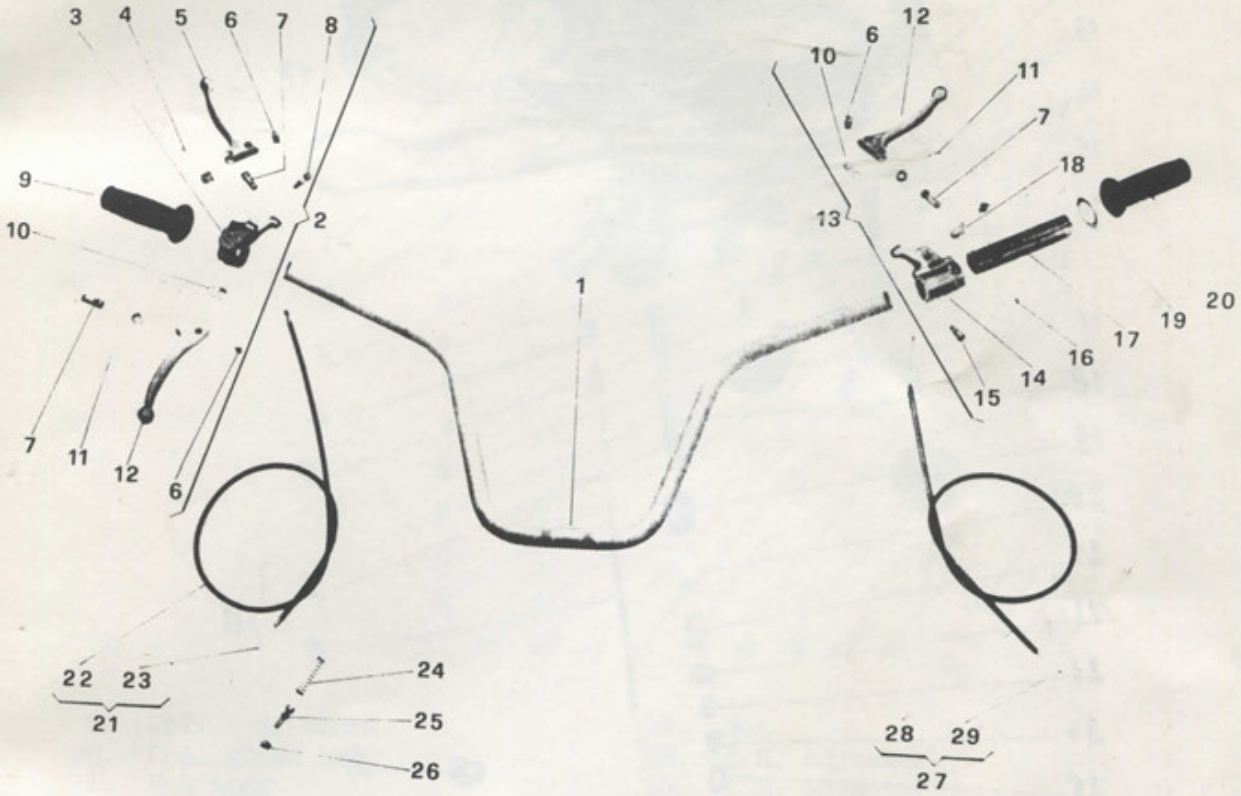
27. Rubber bearing
28. Screw, 6 x 65
29. Flat washer
30. Nut, 6 dia.
31. Lock with keys
32. Parcel clip

4-2 FRONT FORK

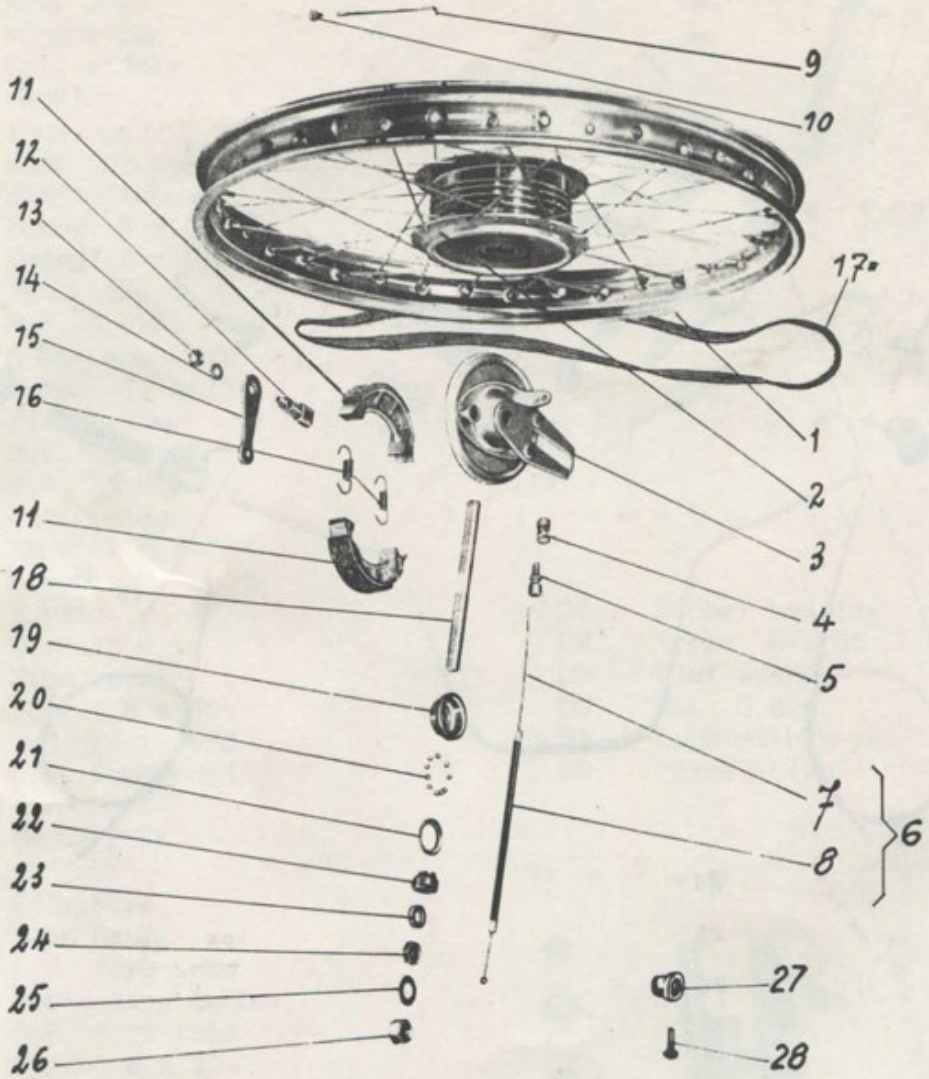
0. Cpl. Fork
1. Fork base
2. L.H. fork tube
3. Protecting rubber
4. R.H. fork tube
5. Screw, 8 x 25
6. Flat washer
8. Spring and anchorage plug
9. Clamping cover
10. Screw, 6 x 25
11. Protection rubber
12. Fork head
13. Special nut
14. Shim
15. Adjustable cap
16. Upper cap
17. Lower cap
18. Ball cage
19. Steering cap



4-3 HANDLEBARS AND CONTROLS

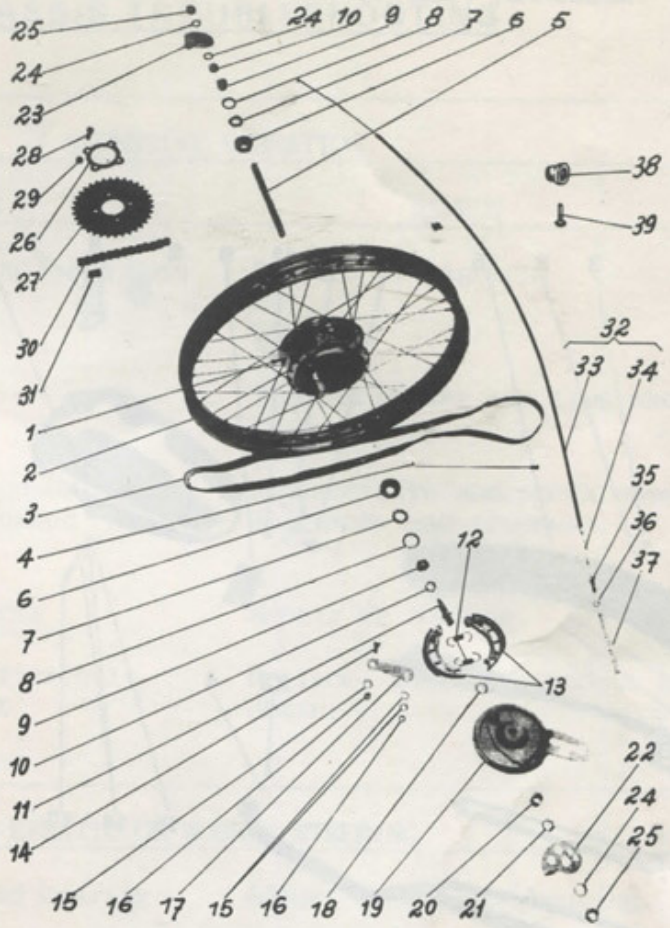


1. Handlebar
2. Cpl. control
3. Lever-holding support
4. Return spring
5. Clutch lever
6. Trunnion
7. Group for fixing lever
8. Screw with bush
9. L.H. twist grip
10. Contact plate
11. Return spring
12. Brake lever
13. Cpl. throttle control
14. Lever-holding support
15. Screw with bush
16. Stop screw
17. Sleeve
18. Slider with screw
19. Flat washer
20. R.H. twist grip
21. Cpl. clutch cable
22. Clutch sheath
23. Clutch cable
24. Spring
25. Cpl. adjustment screw
26. Cpl. terminal clamp
27. Cpl. throttle cable
28. Throttle sheath
29. Throttle cable

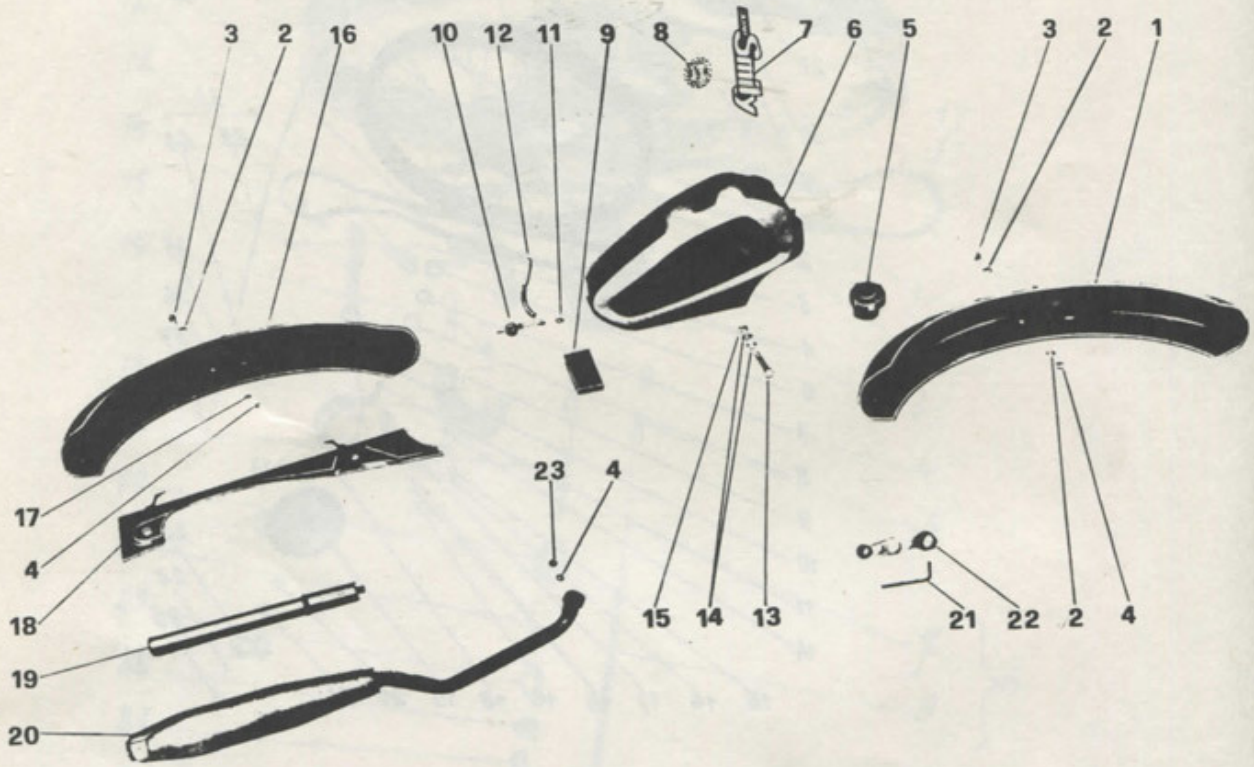


0. Cpl. front wheel
00. Cpl. wheel hub
1. Rim, 1.20 x 16
2. Hub body
3. Brake cover
4. Brake terminal clamp
5. Brake adjustment screw
6. Cpl. brake cable
7. Brake cable
8. Brake cable sheath
9. Spoke
10. Spoke nipple
11. Brake shoe
12. Brake shoe cam
13. Nut, 6 dia.
14. Flat washer
15. Brake lever
16. Spring
17. Protection band
18. Central axle
19. Ball-holding cup
20. Ball, ¼" dia.
21. Ring
22. Adjustable cone
23. Spacer
24. Cone clamping nut
25. Flat washer
26. Nut for clamping wheel
27. Rubber plug
28. Cable terminal

4-5 REAR WHEEL



0. Cpl. rear wheel
00. Cpl. wheel hub
1. Hub body
2. Rim, 1.20 x 16
3. Protecting band
4. Spoke with nipple
5. Central axle
6. Ball-holding cup
7. Ball, ¼" dia.
8. Ring
9. Adjustable cone
10. Cone clamping nut
11. Brake shoe cam
12. Spring
13. Brake
14. Cpl. brake terminal clamp
15. Flat washer
16. Nut, 6 dia.
17. Brake lever
18. Flat washer
19. Brake cover
20. Spacer
21. Nut
22. R.H. adjuster
23. L.H. adjuster
24. Flat washer
25. Nut for clamping wheel
26. Retainer plate
27. Chain wheel
28. Screw
29. Nut, 7 dia.
30. Chain
31. Chain link
32. Cpl. brake cable
33. Brake cable
34. Brake cable sheath
35. Cpl. adjustment screw
36. Nut, 6 dia.
37. Spring
38. Rubber plug
39. Cable terminal



1. Front mudguard
2. Flat washer
3. Screw, 6 x 12
4. Nut, 6 dia.
5. Fuel tank cap
6. Fuel tank
7. Transfer, SMILY
8. Transfer, DEMM
9. Fuel tank felt
10. Fuel tank tap
11. Gasket
12. Fuel pipe
13. Screw, 8 x 70
14. Flat washer
15. Nut, 8 dia.
16. Rear mudguard
17. Internal tooth lock washer
18. Chain guard
19. Pump
20. Cpl. silencer
21. Hexagonal key, 5 mm.
22. Plug box wrench
23. Spring washer

CHASSIS TROUBLESHOOTING

EXCESSIVE VIBRATION

POSSIBLE CAUSES	REMEDY
Loose, broken, or worn motor mounts	Replace or tighten.
Loose Axle Nuts	Tighten.
Loose Spokes	Tighten spokes and true wheel if necessary.
Wheel rimouts out of true or damaged, irregular or peaked tire wear	Replace tire and check wheel alignment and trueness.
Broken or bent frame forks	Repair or replace.
Chain badly worn, insufficiently lubricated, or too tight	Replace, lubricate and/or adjust chain.

ERRATIC OR WOBBLY STEERING

Worn or bad steering head bearing	Adjust or replace bearing.
Bent forks	Repair or replace damaged parts.
Wheel improperly aligned	Align wheels.
Tires improperly seated on rim	Seat tire so bead is even all around.
Tires unevenly worn	Replace tires.
Loose front wheel	Tighten wheel.

HEAVY OR STIFF STEERING

Low front tire pressure	Check tire pressure with tires cold
Bent or damaged Steering Stem of Frame Neck	Repair or replace damaged parts.

BRAKES DO NOT HOLD

Brake shoes glazed or worn	Repair or replace shoes.
Brake shoes oil or grease impregnanted	Replace shoes.
Brake linings worn away	Replace linings.
Broken linkage incorrectly adjusted	Adjust linkage as needed.
Brake control cables binding	Replace cable as needed.

BRAKES MAKE SCRAPING NOISES

Lining worn down to the rivets	Replace the linings.
Dirt in the brake drum	Blow out with compressed air.
Broken Rivet	Replace brake shoe.

BRAKES SHUDDER

Unevenly worn shoes	Replace shoes.
Out of round brake drum	Replace.

CHAIN WHINE

Chain too tight	Adjust chain correctly.
Chain rusty or kinking	Lubricate or replace.

CHAIN SLAP

Chain too loose	Adjust chain correctly.
Bent chain guard	Repair chain guard so chain rotates freely.

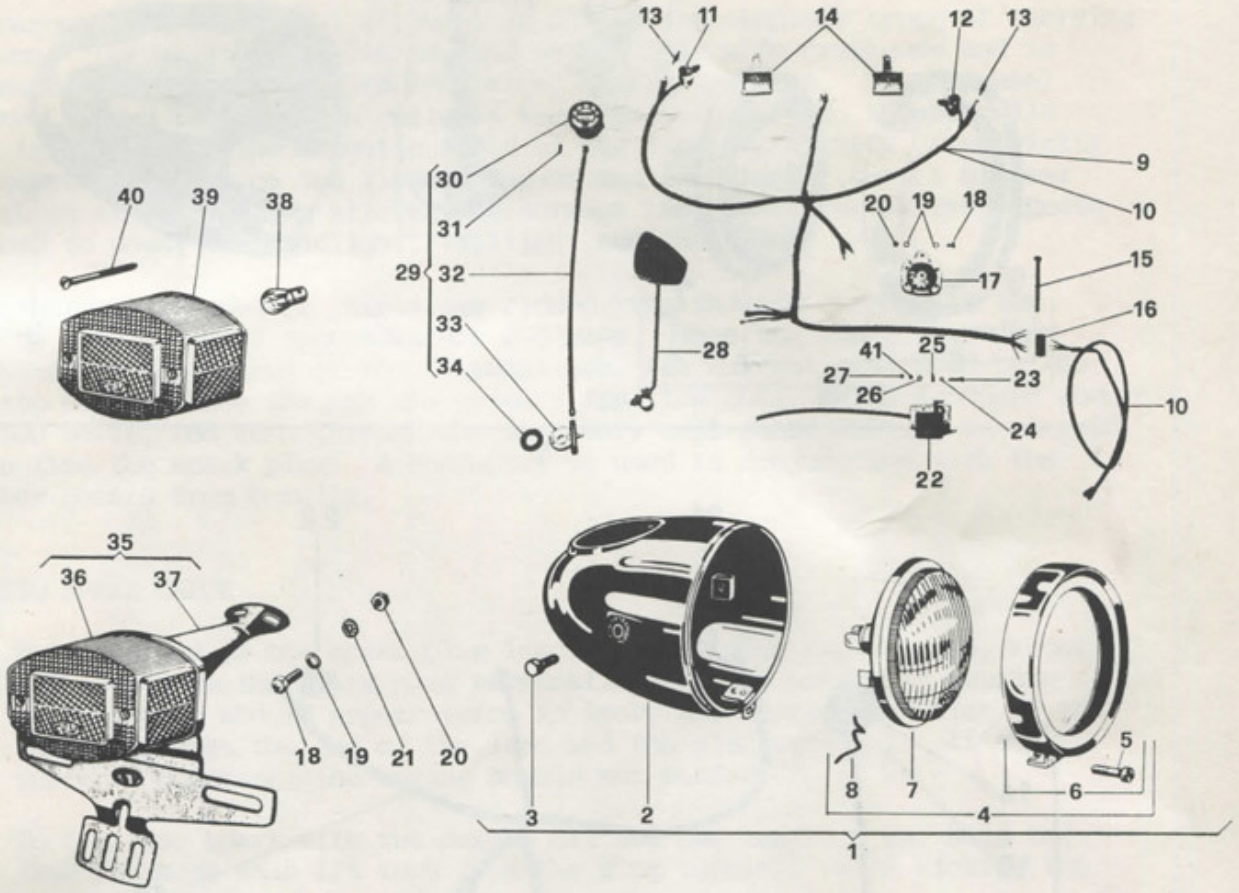
CHAIN AND SPROCKET WEAR

Sprocket improperly aligned	Align sprocket.
Rear wheel out of alignment	Align wheels.
One or both sprockets damaged	Replace sprocket and chain.
Chain worn and damaged	Replace chain and sprocket.
Chain insufficiently lubricated	Keep chain lubricated thoroughly.

CHAPTER - 5 -

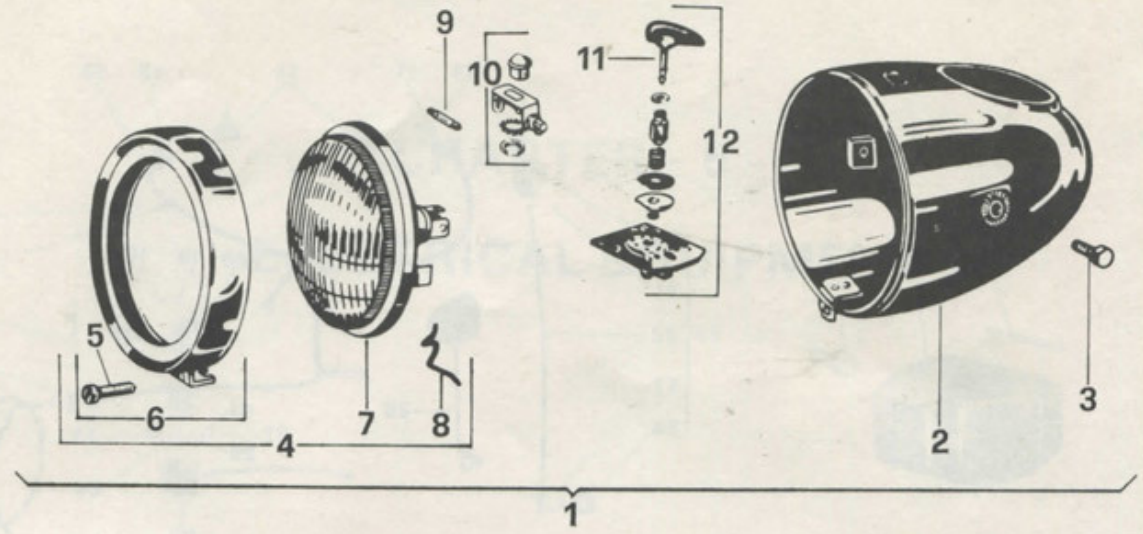
ELECTRICAL EQUIPMENT

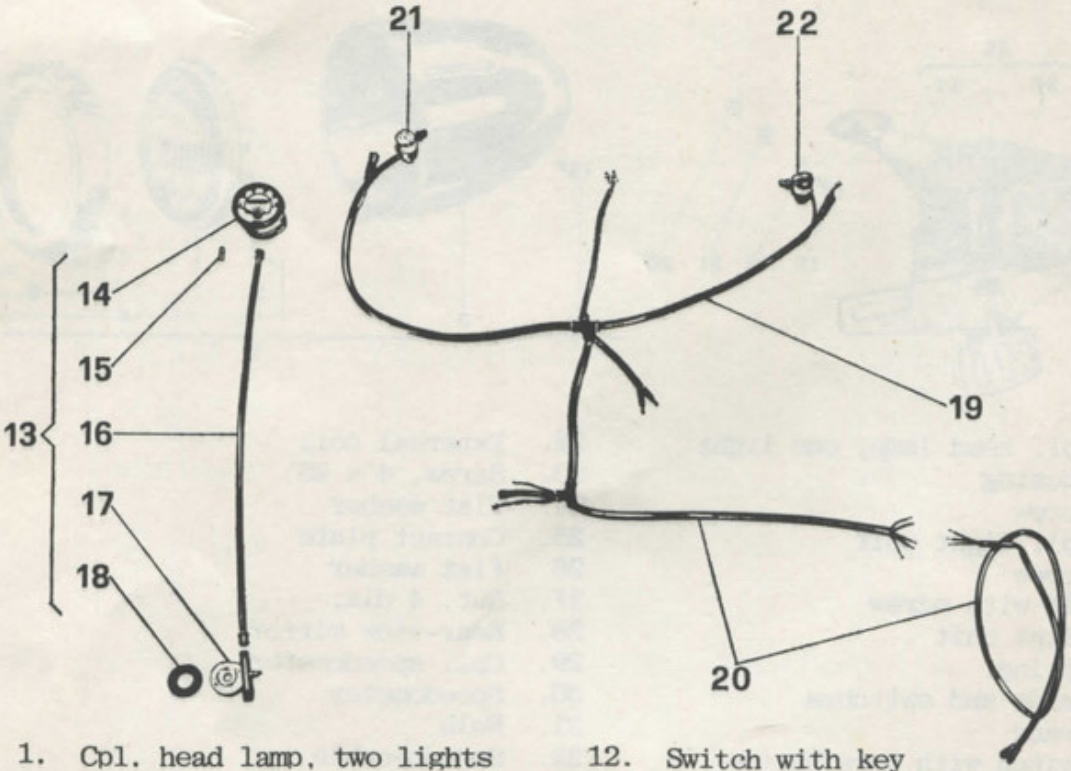
ELECTRICAL EQUIPMENT WITH SINGLE BEAM HEADLIGHTS



1. Cpl. head lamp, one light
2. Housing
3. Screw
4. Cpl. light unit
5. Screw
6. Rim with screw
7. Light unit
8. Spring
9. Leads and switches
10. Leads
11. Switch with horn button
12. Ground switch
13. Stop limit switch
14. Front yellow gem
15. Clip for cable
16. Terminals
17. Horn
18. Screw, 6 x 12
19. Flat washer
20. Nut, 6 dia.
21. External tooth lock washer
22. External coil
23. Screw, 4 x 25
24. Flat washer
25. Contact plate
26. Flat washer
27. Nut, 4 dia.
28. Rear-view mirror
29. Cpl. speedometer
30. Speedometer
31. Bulb
32. Speedo-cable
33. Speedo-drive
34. Speedo-drive gasket
35. Cpl. number plate holder, with rear lamp
36. Cpl. rear lamp
37. Number plate holder
38. Bulb, 6V - 5/18W
39. Red gem
40. Screw
41. Spring washer

ELECTRICAL EQUIPMENT WITH HIGH AND LOW BEAM HEADLIGHT





1. Cpl. head lamp, two lights
2. Housing
3. Screw
4. Cpl. light unit
5. Screw
6. Rim with screw
7. Light unit with bulb, 6V-20/20W
8. Spring
9. Bulb, 6V - 1.5W
10. Cpl. bulb holder
11. Key
12. Switch with key
13. Cpl. speedometer, CEV
14. Speedometer, CEV
15. Bulb, CEV
16. Speedo-cable, CEV
17. Speedo-drive, CEV
18. Speedo-drive gasket
19. Leads and switches
20. Leads
21. Switch with horn button
22. Ground switch

MAGNETO

The magneto mounted in the flywheel is one of the simplest types of charging systems. The magneto base is mounted on the left side crankcase and is surrounded by a flywheel with symetrical cast-in magnets. The flywheel rotates around the ignition coils in the magneto base and, as the coils pass in and out of the magnetic field of the flywheel magnets, electricity is created. The cam on the flywheel opens and closes the contact breaker points as it turns. The alternating current (AC) generated by the magneto is used to power the headlight, taillight and the horn.

When the contact breaker points are closed, the induced current in the magneto coils reaches approximately 3-5 amps. When the contact breaker is opened by the action of the flywheel cam, the current generated by the magneto coils passes through the primary ignition coil, which produces about 200-300 volts, and then through the secondary coil where voltage is stepped up to fire the spark plug. A condenser is used in conjunction with the breaker points from burning.

MAGNETO SPARK CHECK

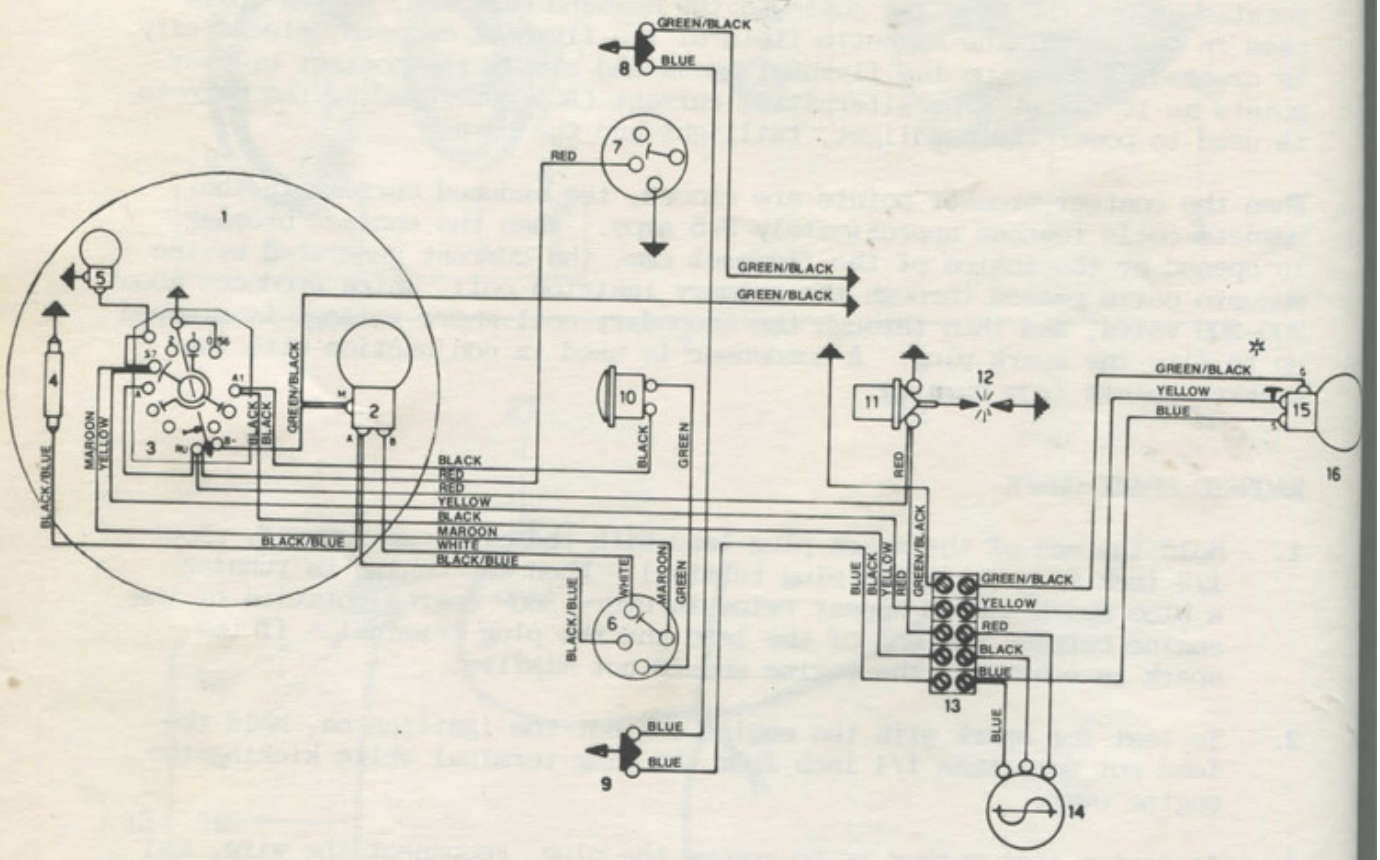
1. Hold the end of the spark plug lead with the plug cap removed, about 1/8 inch from the spark plug terminal. When the engine is running a blue spark should appear twice in every 360^{o} degree rotation of the engine between the end of the lead and the plug terminal. If the spark is constant, the engine should not misfire.

2. To test for spark with the engine off but the ignition on, hold the lead not more than 1/4 inch from the plug terminal while kicking the engine over.

3. An easier test method is to remove the plug, reconnect the wire, and ground the plug tip against the cylinder head. Rotate the engine and watch for a blue spark at the plug tip.

4. If no spark is present, the kill button should be checked for a grounded condition before the magneto is removed for service.

WIRING SCHEMATIC (HIGH AND LOW BEAM HEADLIGHT) No. 19426



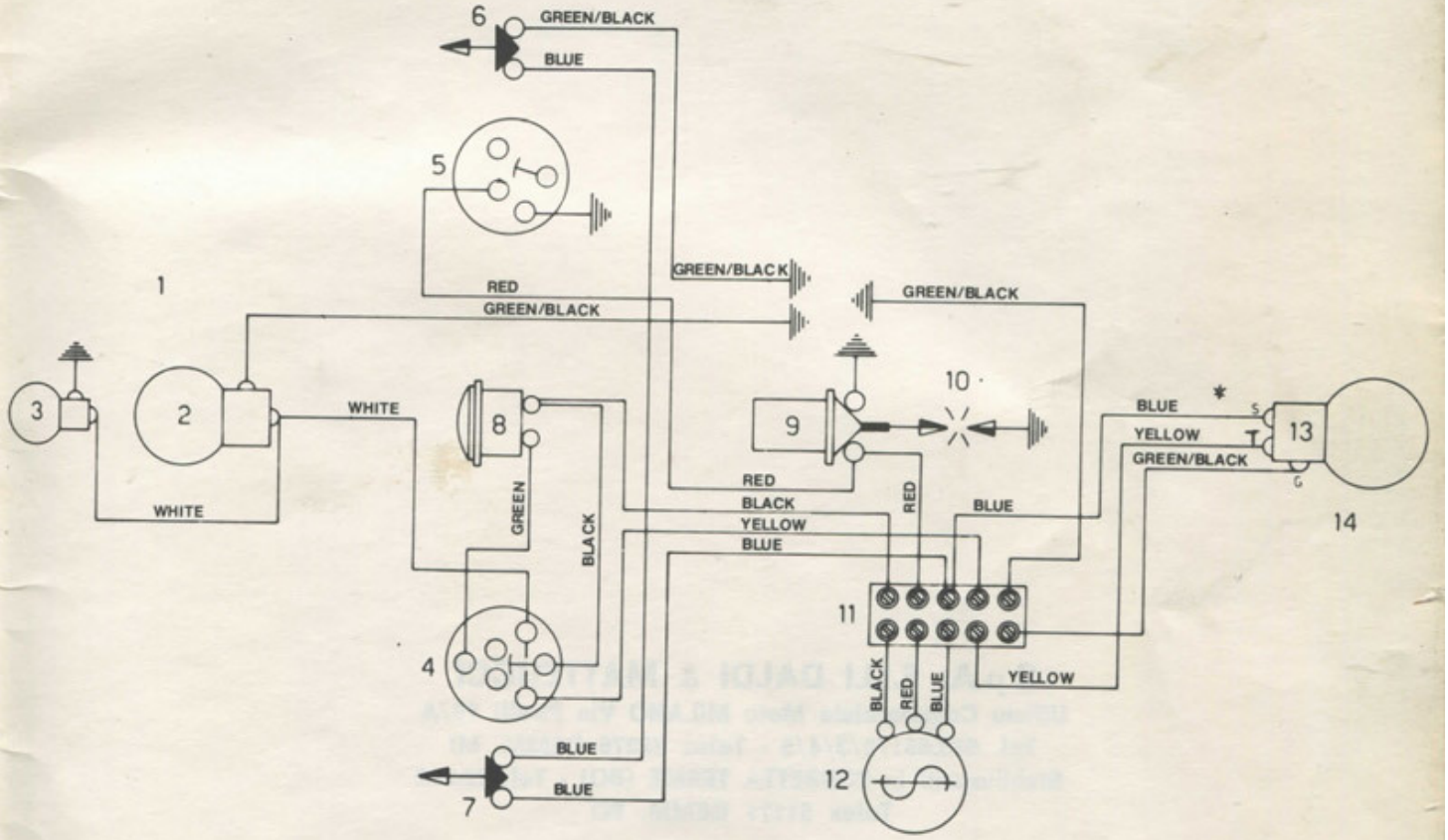
1. Headlight assembly
2. Lamp bulb
3. Switch
4. High/low beam switch
5. Lamp bulb
6. Light switch
7. Ignition switch
8. Brake light switch
9. Brake light switch
10. Horn
11. Coil
12. Spark plug
13. Connector block
14. Magneto
15. Taillight bulb
16. Taillight

Taillight connections

G Terminal	green/black
S Terminal	blue
T Terminal	yellow

NOTE: The electrical wiring is in sequence. The stop light bulb is in series with the ignition coil. The engine will not run if the stop light bulb is burned out and the brake is applied.

WIRING SCHEMATIC (SINGLE HEADLIGHT) No. 19423



1. Head light assembly
2. Lamp bulb
3. Lamp bulb
4. Light switch
5. Light switch
6. Brake switch
7. Brake switch
8. Horn
9. Coil
10. Spark plug
11. Connector block
12. Magneto
13. Lamp bulb
14. Taillight

Taillight Connection

G Terminal green/black
S Terminal blue
T Terminal yellow

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