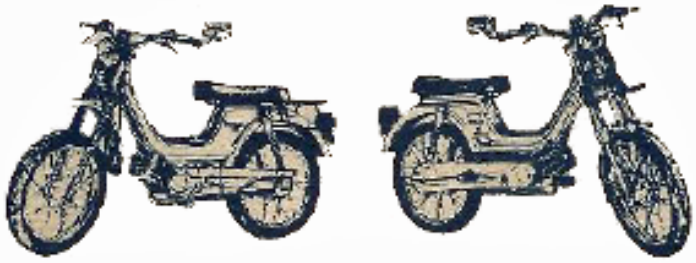
# MAINTENANCE MANUAL

Variant

SLE SL T.T.



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WORLD'S CHAMPION

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# REPLACEMENT PARTS

# YOUR GUARANTEE OF QUALITY

**DERBI MOTOR CORPORATION OF AMERICA**

23011 Alcalde Drive • Suite A • Laguna Hills, CA 92653 • (714) 770-6726

DERBI NACIONAL MOTOR, S.A. and DERBI MOTOR CORPORATION OF AMERICA, the manufacturers and distributors of DERBI motorcycles and mopeds have issued this repair manual to illustrate and simplify servicing and repair of your DERBI moped.

The manual has been designed to show the ease with which repairs are carried out and the small amount of tools needed for repairs and routine maintenance.
The new DERBI VARIANT moped has been designed to provide the owner with an enjoyable and economic form of transportation combined with ease of service and repair. Please read the manual and follow the service procedures to carry out the work as easily and quickly as possible.

DERBI MOTOR CORPORATION OF AMERICA

Impreso por: Gráficas Astor - Mollet
Printed in Spain - Depósito legal: B-11.472-1977

6.000 ejemplares de 40 páginas.

INDEX

TECHNICAL SPECIFICATIONS

1.1 ENGINE

| | |
|---|---|
| Number of cylinders | One |
| Cycle | Two stroke |
| Bore and stroke | 38mm x 43mm (1.5 x 1.7 in.) |
| Displacement | 48.7cc (2.97 cu. in.) |
| Compression ratio | 8.5:1 |
| Direction of rotation | Counter clockwise facing magneto |

1.2 CARBURETOR

| | |
|---|---|
| Type | Dell Orto model ϕ12-12 with choke and air filter. |

1.3 CLUTCH AND PRIMARY TRANSMISSION

Completely automatic centrifugal clutch with increased surface area isolated from primary transmission. Variable speed drive with heavy duty V-belt. All drive assembly is cooled by forced air flow. Constant coupled helical gear speed reducer runs on needle bearings.

1.4 IGNITION SYSTEM

Motoplat 6 volt/25-15 watt, magneto alternator operates off flywheel, high tension coil, contact points are inverted to avoid dirt and permit instant starting.

| | |
|---|---|
| Contact gap | 0.4mm (.015 ins.) |
| Advance | 1.80mm (21 degrees) |
| Spark Plug | ND W20FSU<br>NGK B7HS<br>Champion L82 |

1.5 STARTING PROCEDURE

Using the engine choke and the centrifugal clutch. Starting the engine can be done in several ways.

1.6 PEDALS

Pedals may be used for starting the engine. With the pedal switch engaged the moped can be peddled as a bicycle as approved by International standards.

1.7 LIGHTING

| | |
|---|---|
| Front headlamp | 6V/21W |
| Taillight | 6V/5W |
| Stoplight | 6V/10W |
| Speedometer | 6V/1.5W |
| Reflectors | DOT approved front and rear. |

## 1.8 CHASSIS

| | |
|---|---|
| Frame | Modern unitized (automotive type) construction frame. |
| Suspension and transmission | Front suspension has long travel telescopic fork of extra strength and durability. Rear suspension has cast light alloy swing arm which is co-axial with transmission shaft. It is mounted on self lubricating bearings with telescopic shock absorbers. This system prevents chain stretching, helps prolong transmission life and maintains a constant lineal balance. Because the chassis, engine, and pedals are sprung weight, riding and driving comfort are superior over all types of surfaces. |
| Brakes | Internal-expanding drum type. Diameter 105mm (4.13 ins.) Braking surface 8.332mm$^2$ (12.9ins.) |
| Front Tire | S/L, S/L/E 2½ x 17" Universal<br>T/T 2½ x 17" Trial |
| Fuel Tank | Protected on the inside of the chassis with gas cap under the seat. |
| Seat | Dual passenger |
| Speedometer | VDO |

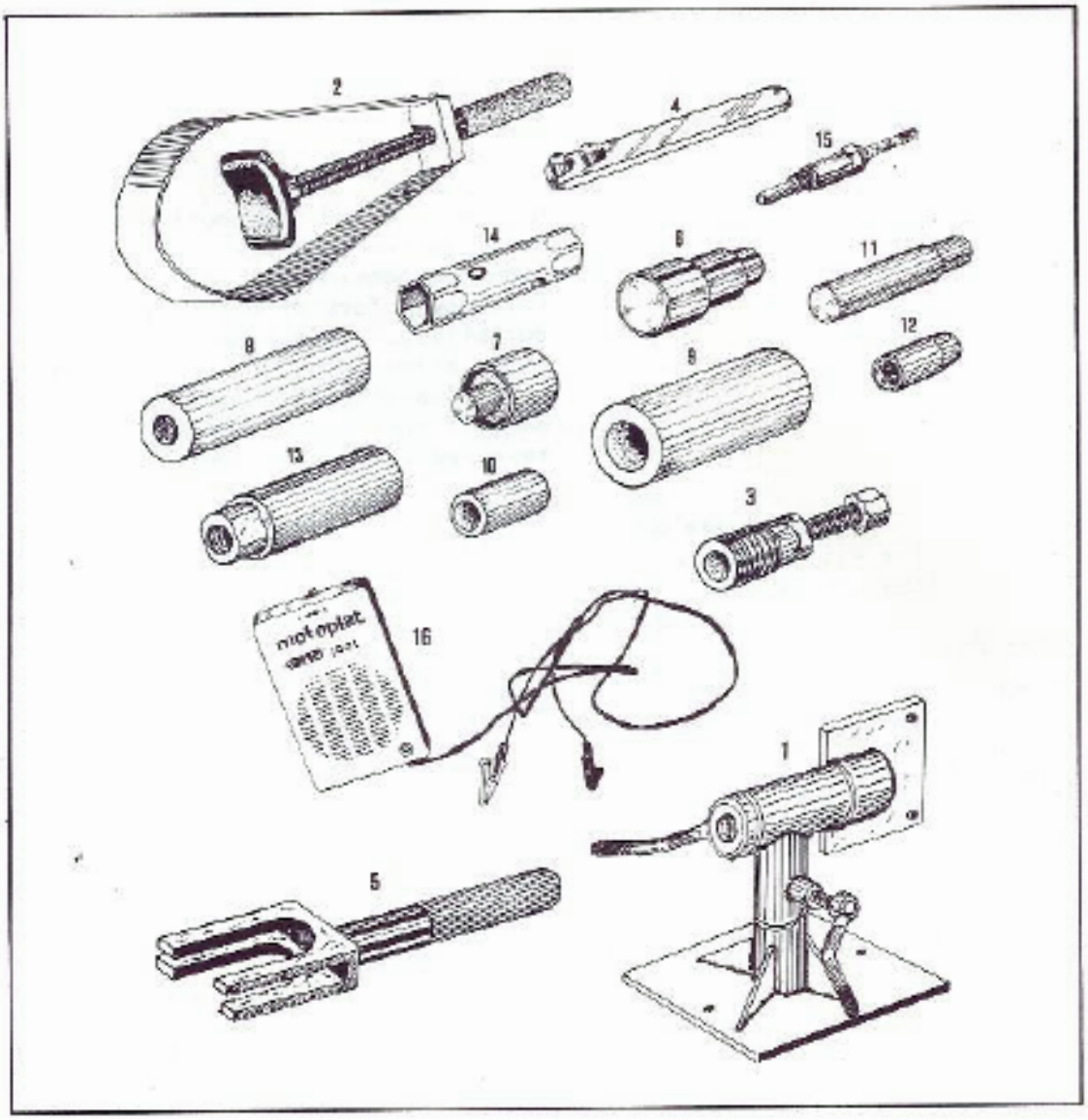
## 1.9 DIMENSIONS

| | |
|---|---|
| Overall length | 1840mm (72.7") |
| Wheelbase | 1160mm (45.7") |
| Maximum width | 650mm (25.6") |
| Saddle height | 780mm (30.7") |
| Ground clearance | 125mm ( 4.9") |
| Weight | 60kg (125 lbs.) |
| Fuel capacity | 3.8lt (1 U.S. Gal.) |

## 1.10 PERFORMANCE

| | |
|---|---|
| 1.5 HP Engine | 25MPH* |
| Maximum Speed | 25MPH, Maintained on level terrain |
| Fuel Consumption | 130MPG, Maintained on level terrain |
| 2 HP Engine | 30MPH* |
| Maximum Speed | 30MPH, Maintained on level terrain |
| Fuel Consumption | 117MPG, Maintained on level terrain |

* Depending on local laws, mopeds shipped will be maximum HP and MPH allowed for your area. Maximum grade negotiable 25%. MPG may vary due to climactic conditions and how the moped is driven.




## 2. TOOLS

| | | Part No. |
|---|---|---|
| 1. | Engine Stand | 8254010 |
| 2. | Pulley clamp wrench | 5253240 |
| 3. | Flywheel puller | 8853010 |
| 4. | Flywheel/Drive pulley wrench | 8253290 |
| 5. | Driven pulley/Spring assembly tool | 8254670 |
| 6. | Driveshaft/drive pulley assembly tool | 8254680 |
| 7. | Clutch main bearing assembly tool | 8254730 |
| 8. | Driveshafts/pedal shaft assembly tool | 8254440 |
| 9. | Crankcase and driveshaft assembly tool | 8254720 |
| 10. | Oil seal assembly tool | 8254710 |
| 11. | Clutch alignment tool | 8254650 |
| 12. | Oil seal assembly tool | 8254700 |
| 13. | Clutch puller | 8254690 |
| 14. | 35mm-37mm Tube wrench | 8253440 |
| 15. | Piston timing gauge | 3153490 |
| 16. | Timing indicator, electronic | 1152470 |

## 3. INSTRUCTION PROCEDURES

The procedures that are followed throughout this manual are based on the vast experience that our factory has with moped production and service. This does not mean that the methods shown are the only ones to follow. They do however, offer a practical guide from which the best method to carry out servicing or repair may be selected.

## 4. REMOVING THE ENGINE FROM THE FRAME

Proceed as follows:

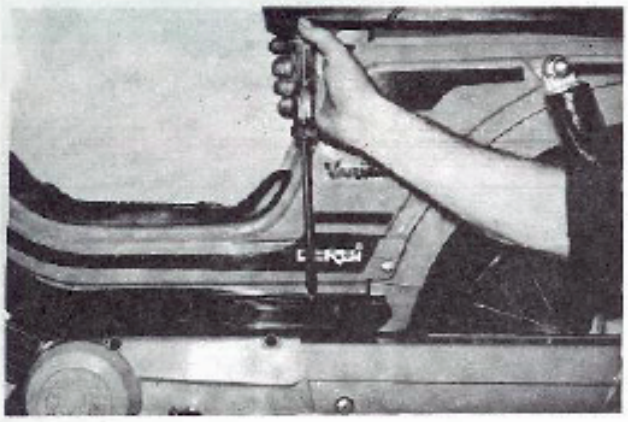


Fig. 1. Footrests. Loosen the two screws that hold the footrests to the frame and remove from moped.

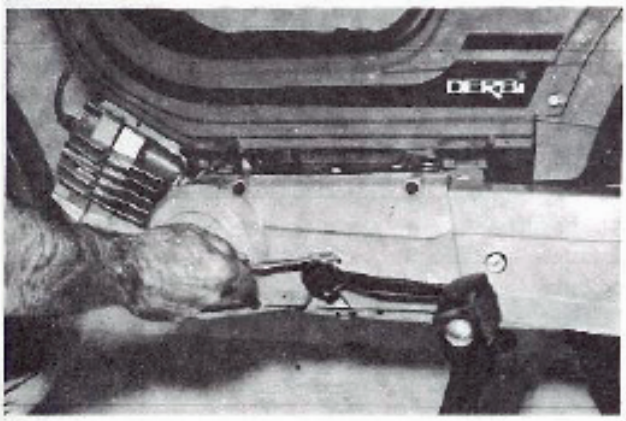


Fig. 2. Pedals. Loosen and remove securing nut. Tap lightly to remove tapered pin. Pull off crank arm.

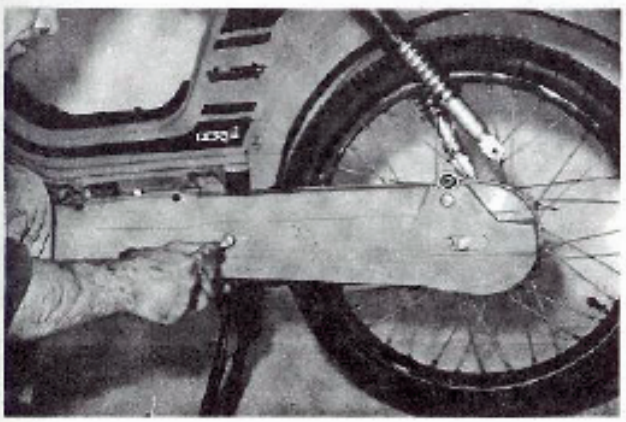


Fig. 3. Chain cover. Remove lower shock mounting bolt. Swing shock absorber to rear of moped. Remove two bolts holding cover to swing arm. Remove chain cover.

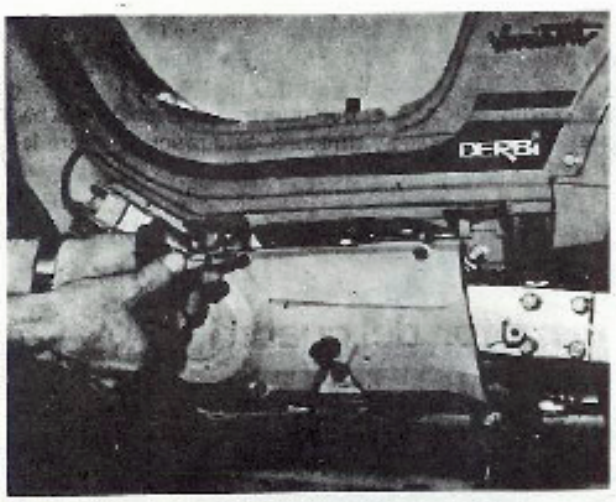



Fig. 4: Remove lefthand crankcase cover.

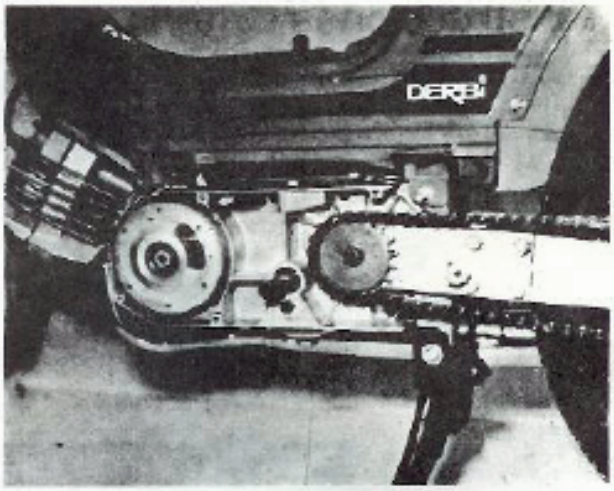



Fig. 5: Lefthand crankcase without cover.

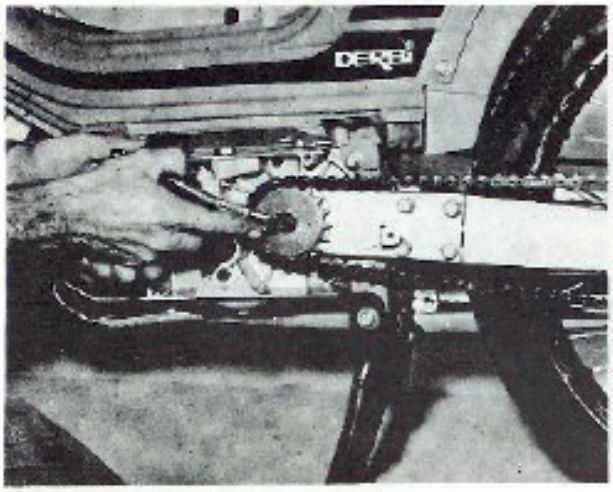



Fig. 6: Remove output sprocket circlip.

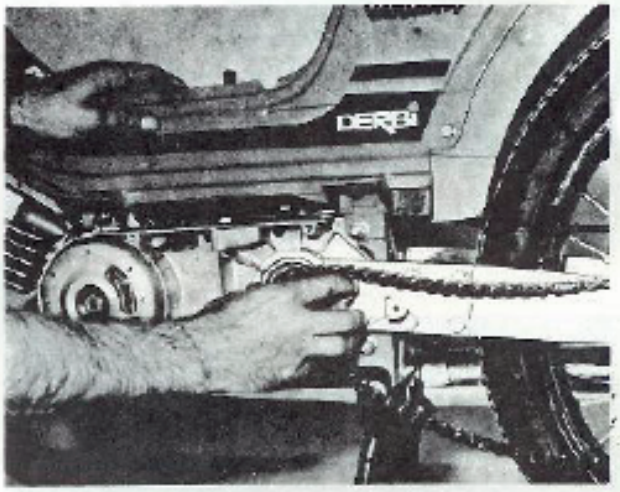



Fig. 7. Remove sprocket and chain. Let chain rest on swing arm.

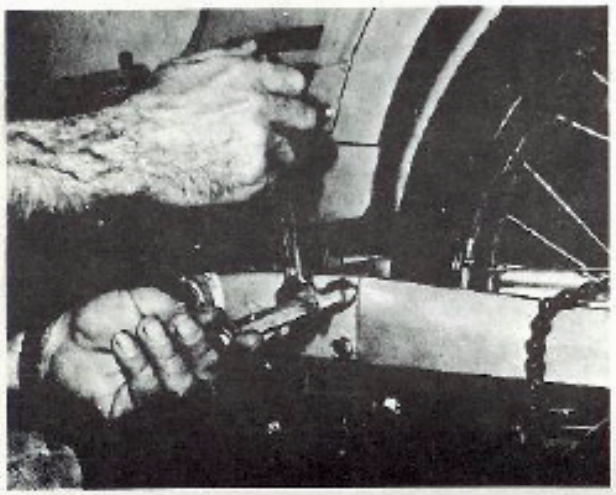


Fig. 8: To remove rear swing arm. Loosen and remove 8 bolts. (4 per side)

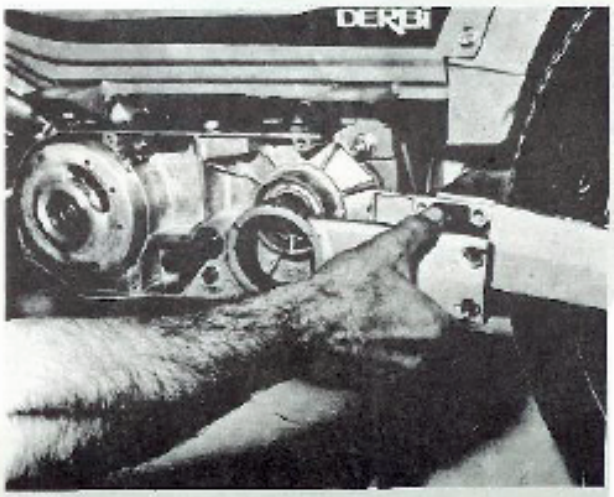



Fig. 9: Remove bracket from swing arm.

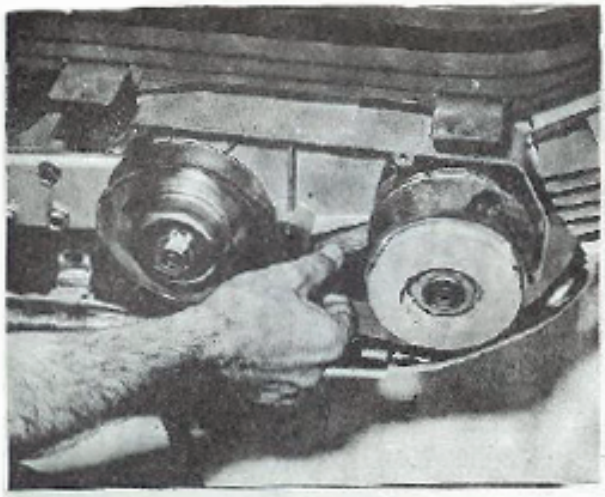


Fig. 10: Remove righthand crankcase cover. Take off V-belt and fold into a figure '8'.

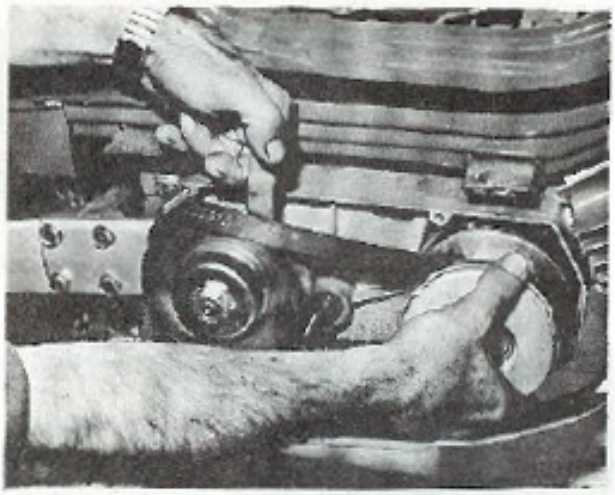


Fig. 11: By rotating the front pulley to the rear of the motor, the V-belt will ride off the rear pulley.

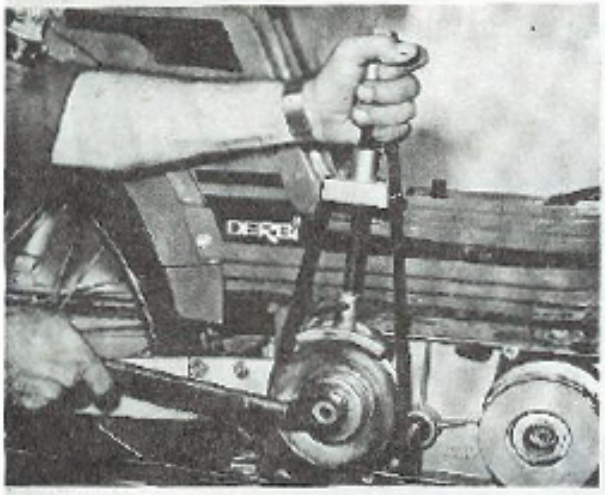



Fig. 12: Driven pulley. Bend back tab on retaining washer. Using driven pulley holder #2 loosen and remove nut.

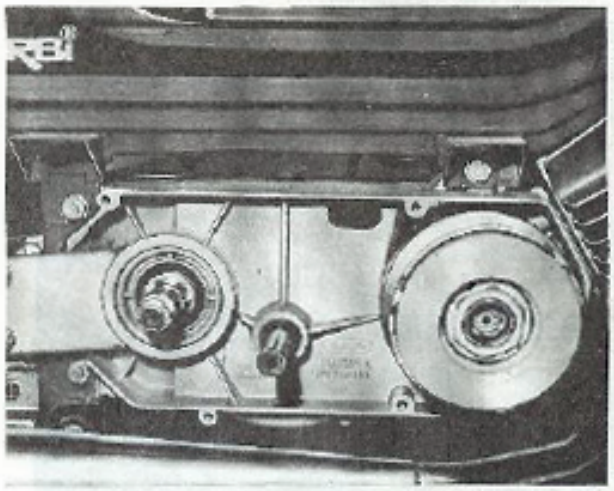



Fig. 13: Driven pulley inner spring will now push pulley off the shaft. NOTE: Exercise caution when removing this unit.

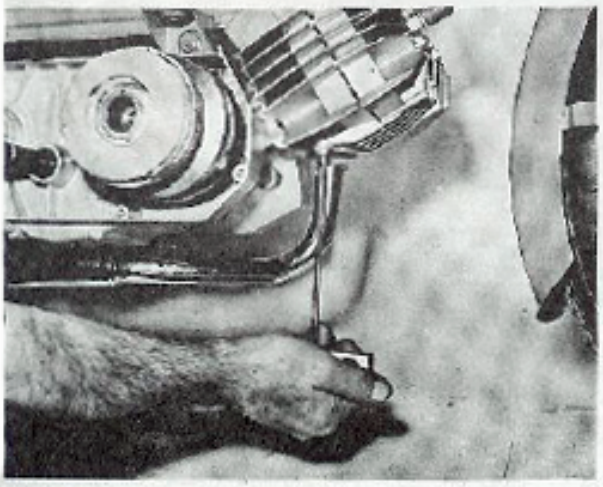


Fig. 14: Loosen and remove front bolts of muffler assembly.

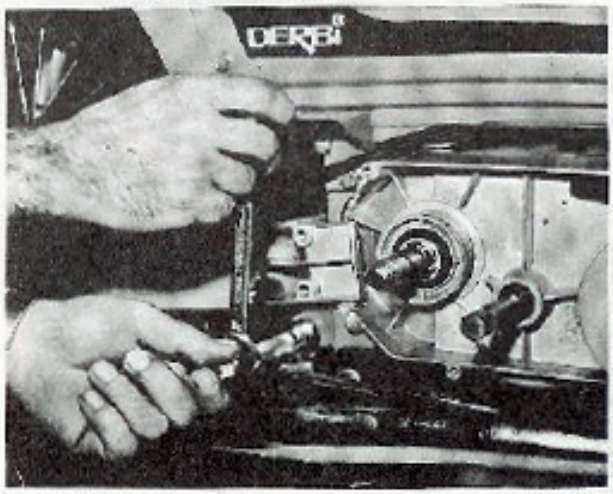



Fig. 15: Loosen rear muffler bolt and remove header/muffler assembly.

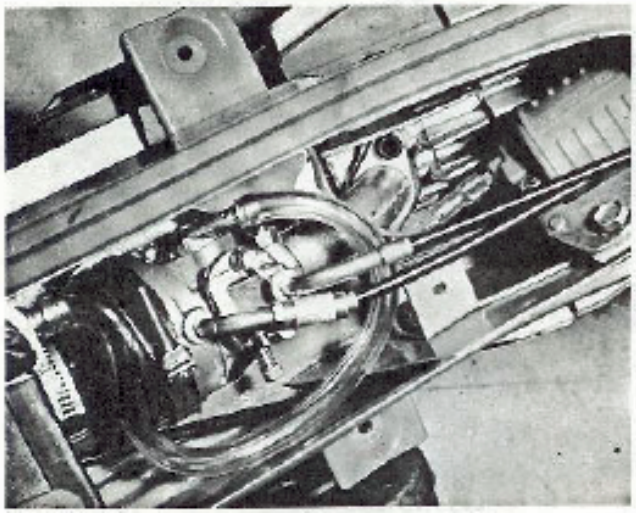


Fig. 16: The top cover is removed from the frame. All interior parts are the revealed.

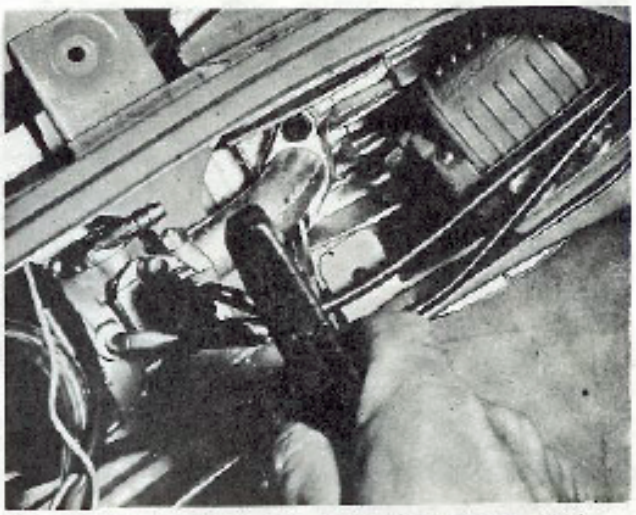


Fig. 17: Disconnect the ignition coil, and remove the two allen screws that hold the carburetor and inlet manifold.

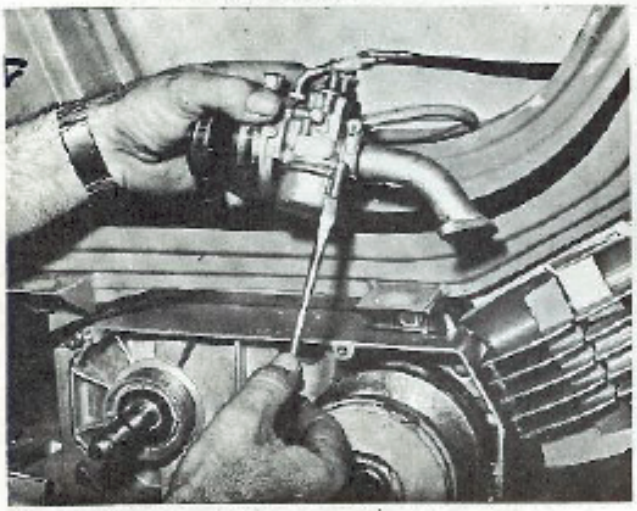


Fig. 18: Remove the carburetor from the engine. This allows work on the carburetor should this be required.

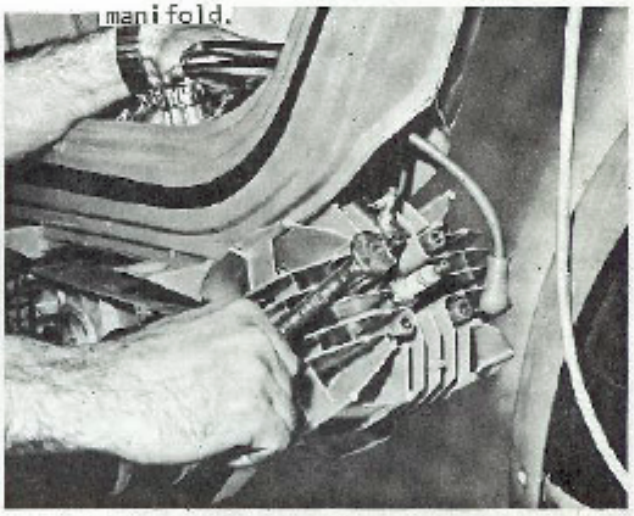


Fig. 19: Remove the cylinder head from the barrel. There is no need to disconnect the decompression cable.

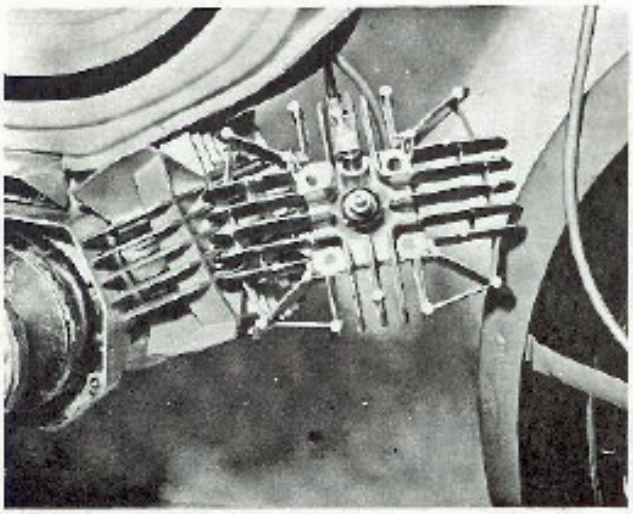


Fig. 20: The cylinder head can now hang from the decompression cable.

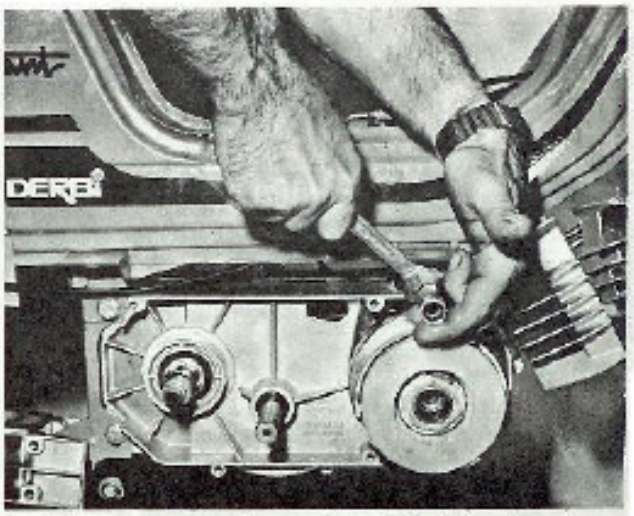



Fig. 21: Finally remove the 3 bolts that hold the engine in the chassis and remove the engine.

## 5. ENGINE STRIP DOWN PROCEDURE

### 5.1 – PROCEDURE FOR DISASSEMBLINE THE RIGHTHAND AND LEFTHAND SIDES OF THE ENGINE.

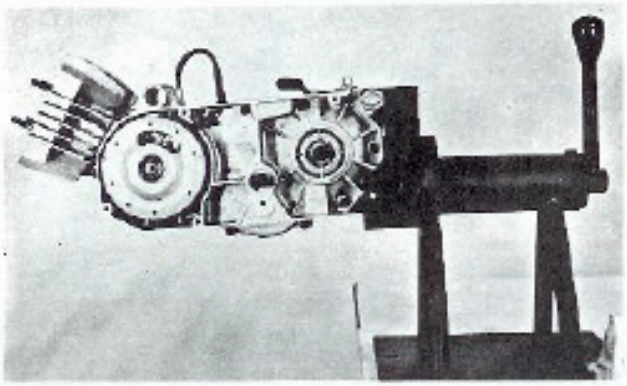


Fig. 22: Mount the crankcase on the special engine mount #1. This will allow the engine to be rotated as required during strip down.

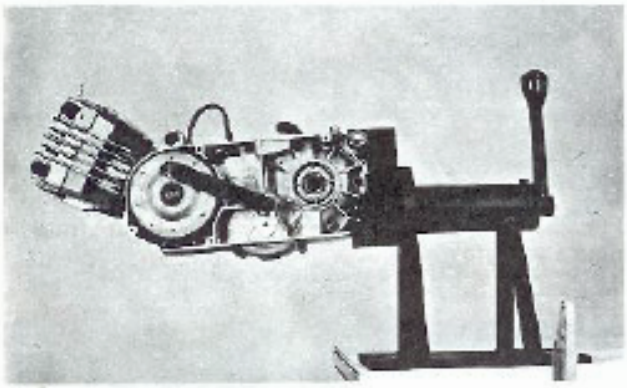


Fig. 23: With the flywheel and magneto held by the wrench #4, remove the variable speed clutch.

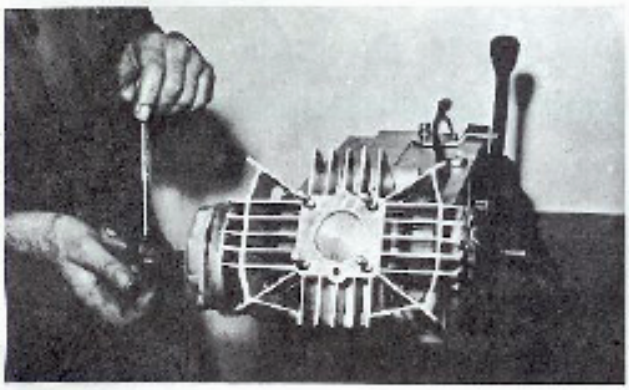


Fig. 24: Using a socket, loosen and remove the crankshaft nut. Remove the pulley which the releases the clutch plates.

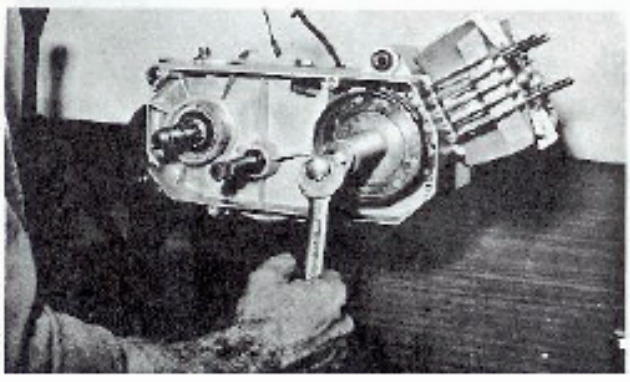


Fig. 25: With the flywheel still held by the #4 wrench, remove the clutch assembly with the extractor tool #13.

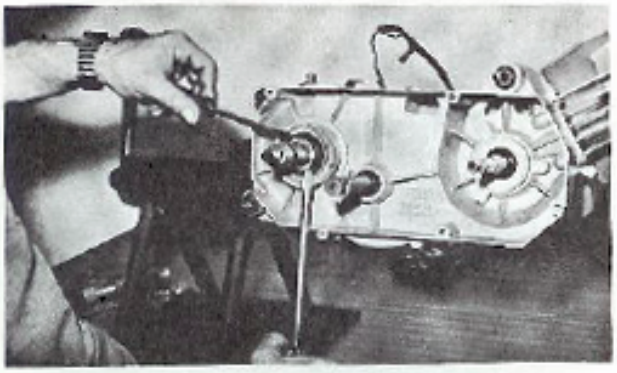


Fig. 26: Using two screwdrivers, remove the spring washer from the driven shaft. This completes the right hand side strip down.

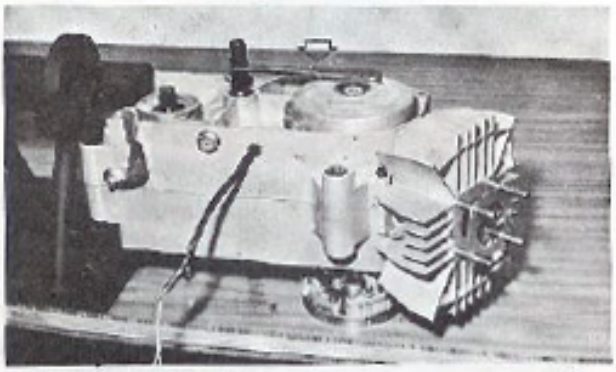


Fig. 27: To remove the magneto leave the #4 wrench in position.

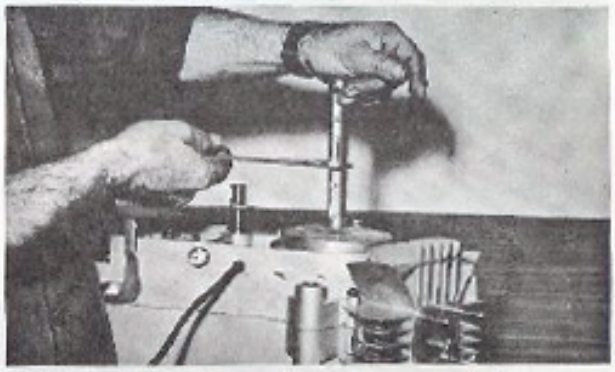


Fig. 28: Loosen and remove the retaining nut using a socket wrench.

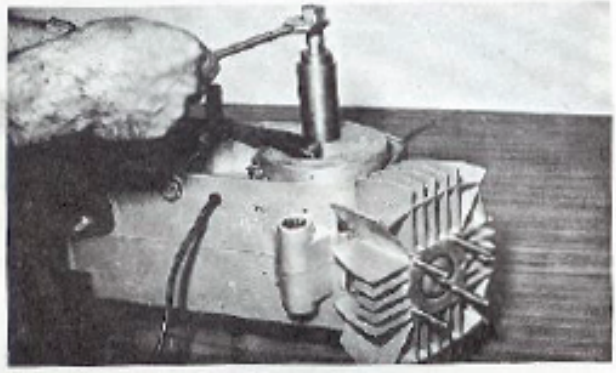


Fig. 29: Remove the Flywheel cover using extractor tool #3.

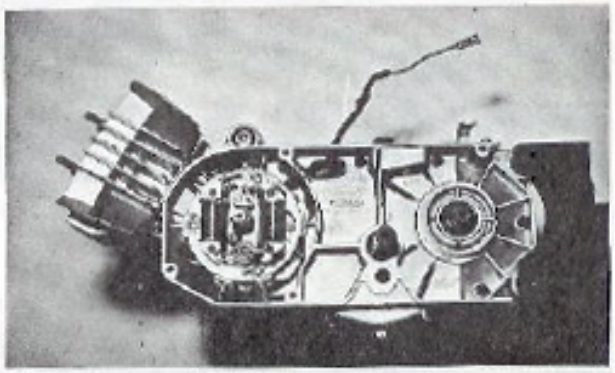


Fig. 30: The points and coils are now open for inspection.

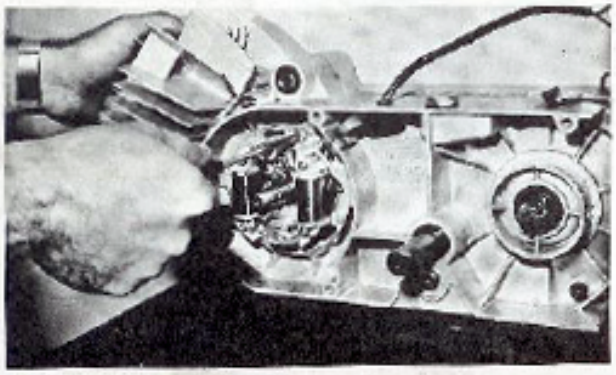


Fig. 31: Loosen and remove the 3 screws holding the magneto in place and remove the unit.

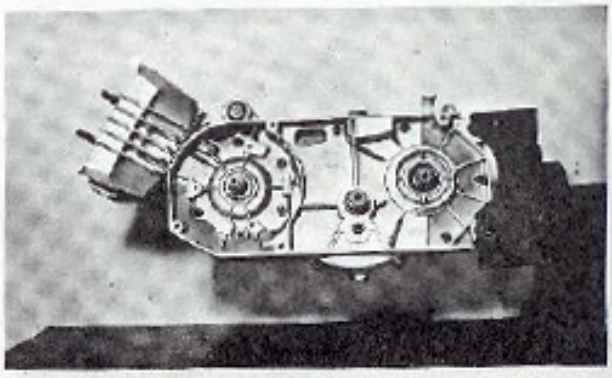


Fig. 32: This completes the lefthand side strip down.

## 5.2—PROCEDURE FOR REMOVING CYLINDER BARREL AND PISTON

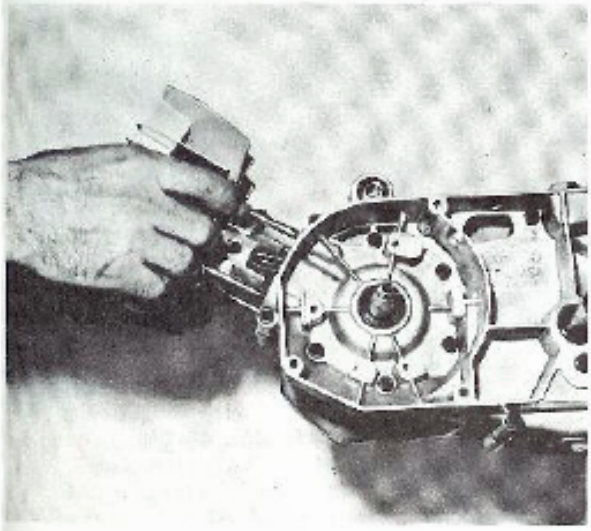


Fig. 33: Carefully slide the cylinder barrel up the cylinder head bolts.

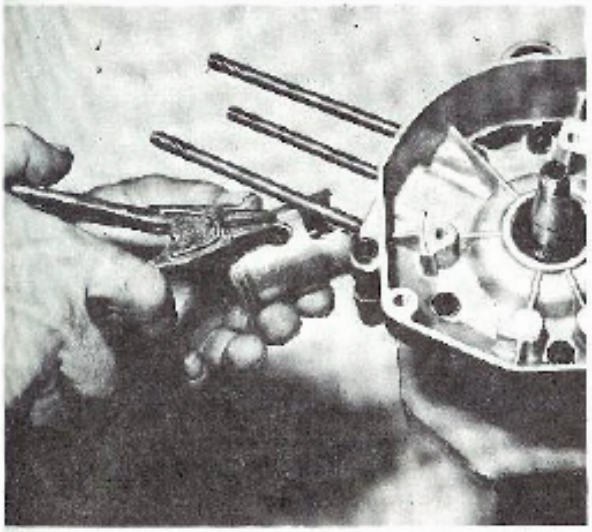


Fig. 34: Remove the circlips from each end of the wrist pin.

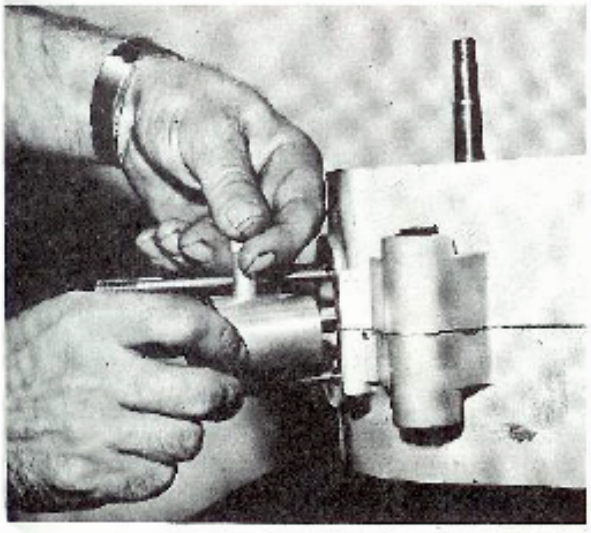


Fig. 35: The wrist pin is a slide fit on both the piston and connecting rod. Using a round bar, push the wrist pin through the piston and remove.

## 5.3 – PROCEDURE FOR DISASSEMBLING THE CRANKCASE.

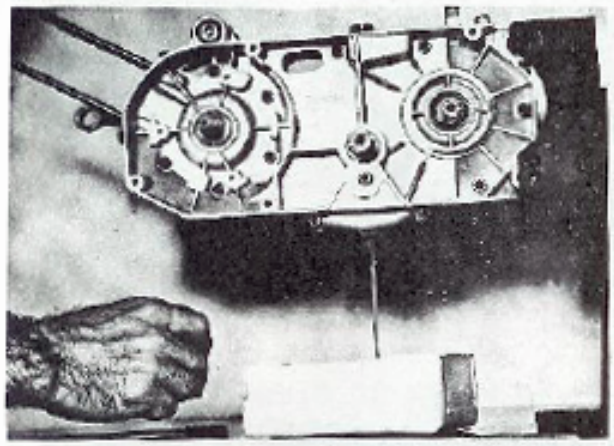


Fig. 36: To drain the engine oil, loosen and remove the drain plug on the bottom of the crankcase.

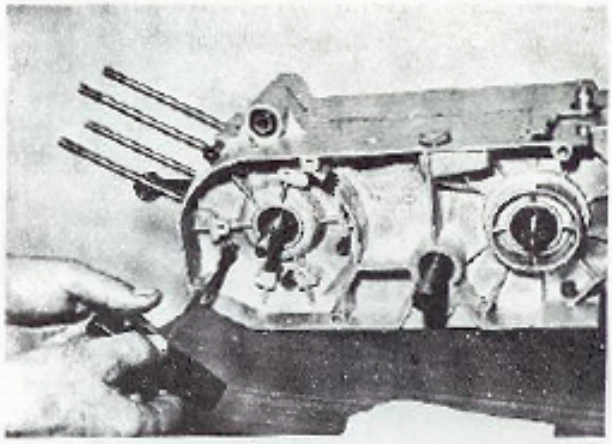


Fig. 37: Loosen and remove the 13 6mm allen screws which hold the two halves of the crankcase together.

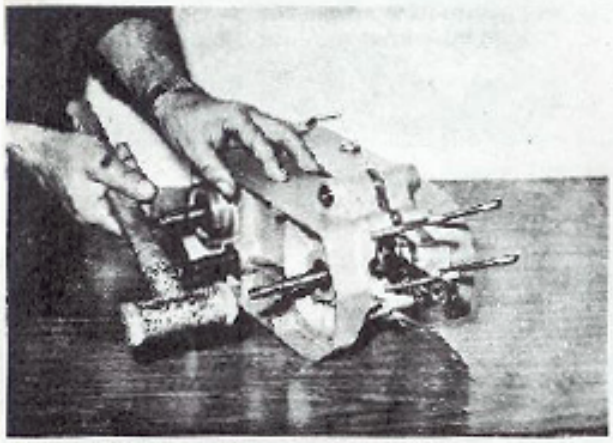


Fig. 38: Holding the pedal and the crankshafts, remove the righthand housing. If the housing will not come off, using a soft head mallet tap the 3 shafts to break the seal.

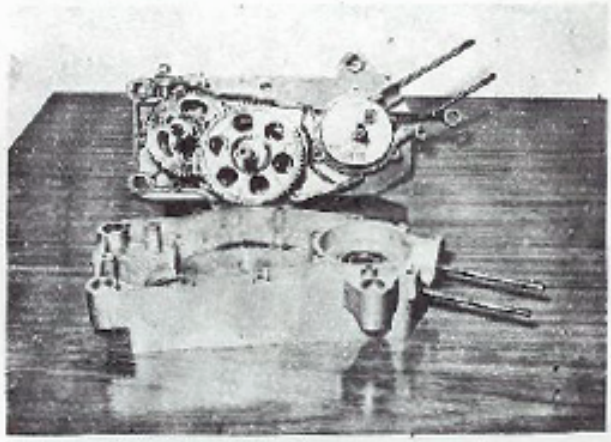


Fig. 39: With the housing removed, the gears and crankshafts are revealed. These can be removed or repaired with no special tools needed.

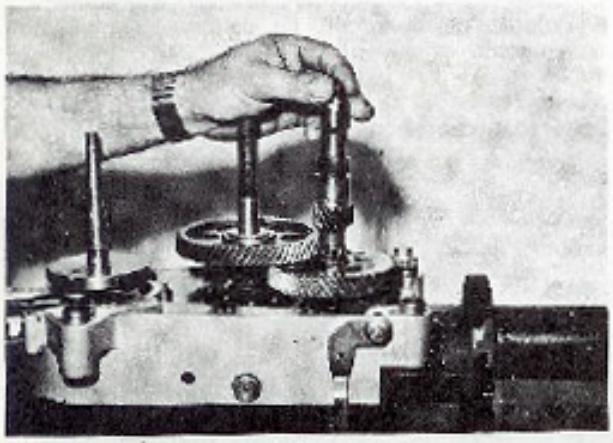


Fig. 40: Remove the driven shaft from the rear gear/shaft assembly.

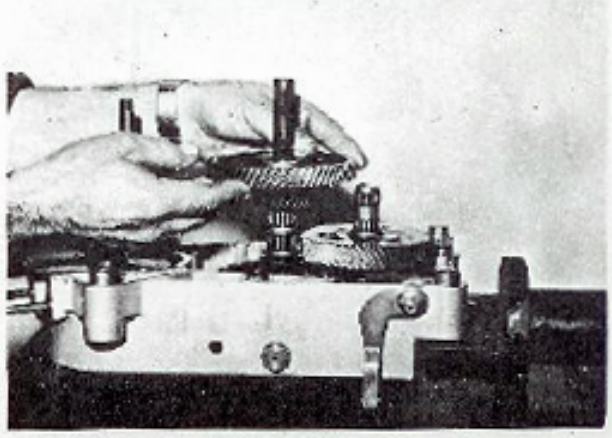


Fig. 41: Remove the gear assembly from the pedal shaft.

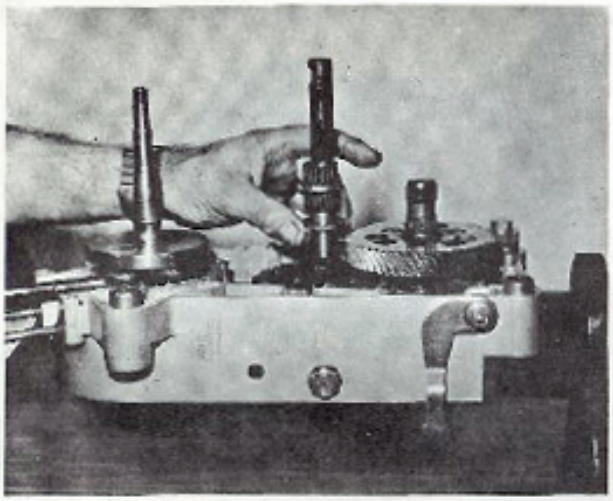


Fig. 42: Remove the roller bearings and the spacer and lower washers from the pedal crankshaft.

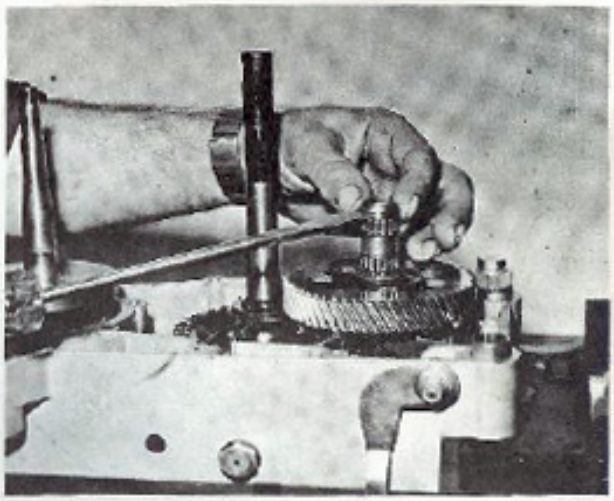


Fig. 43: Remove the retaining washer from the rear crankshaft.

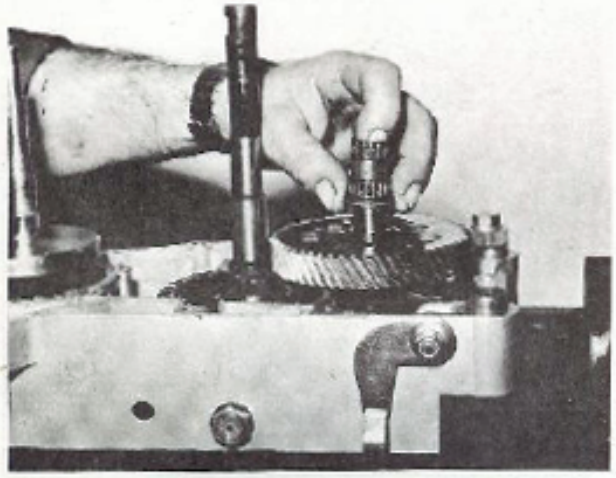


Fig. 44: Remove the roller bearing and both spacing washers.

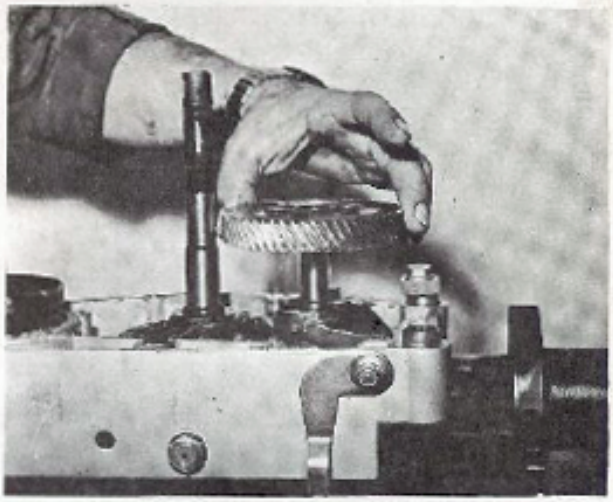


Fig. 45: Remove the rear driveshaft gear.

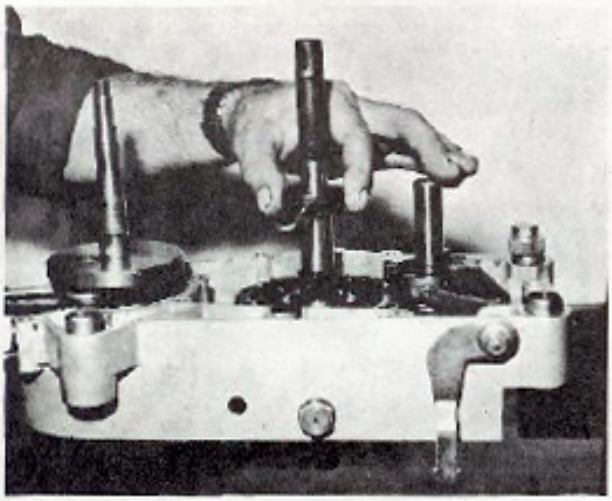


Fig. 46: Release the pedal starter spring from the crankcase and remove the entire assembly

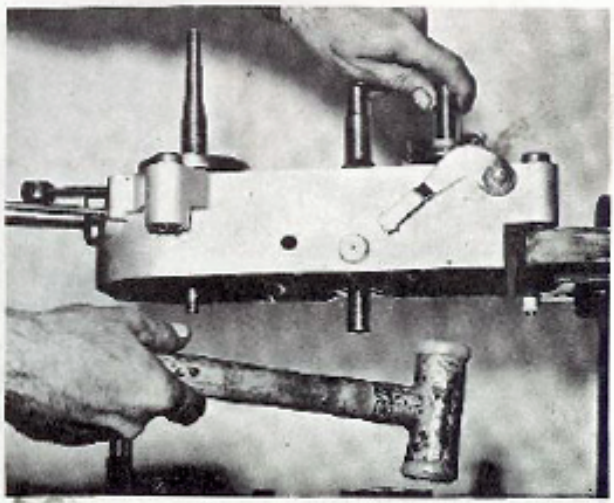


Fig. 47: Rotate the rear driveshaft until the splines are in line and gently tap out with a soft mallet.

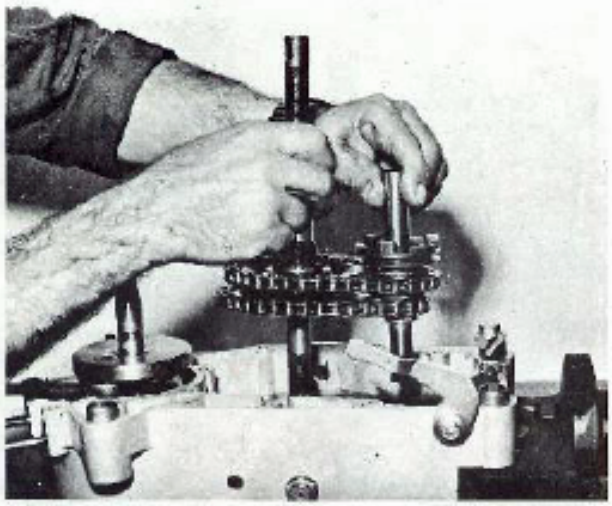


Fig. 48: Remove the pedal shaft and the rear drive shaft together.

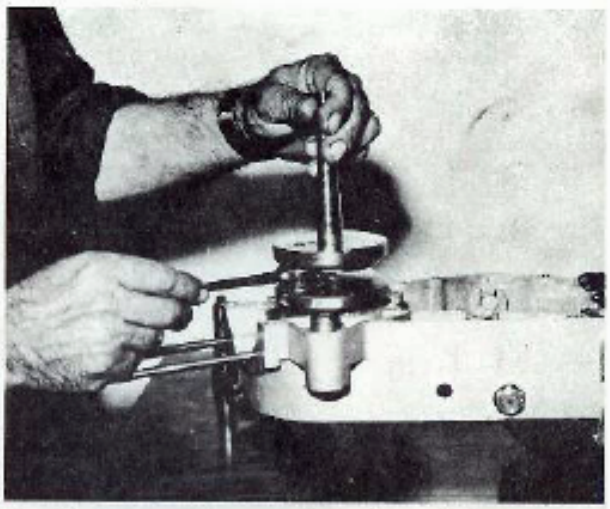


Fig. 49: Remove the crankshaft and the connecting rod as one unit.

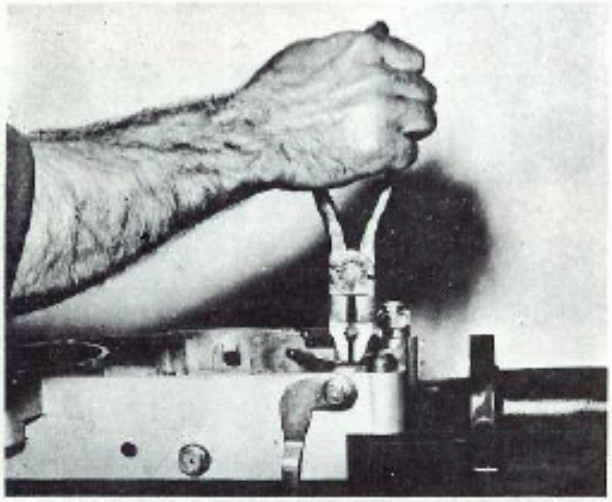


Fig. 50: Pull out the retaining pin from the clutch release shaft.

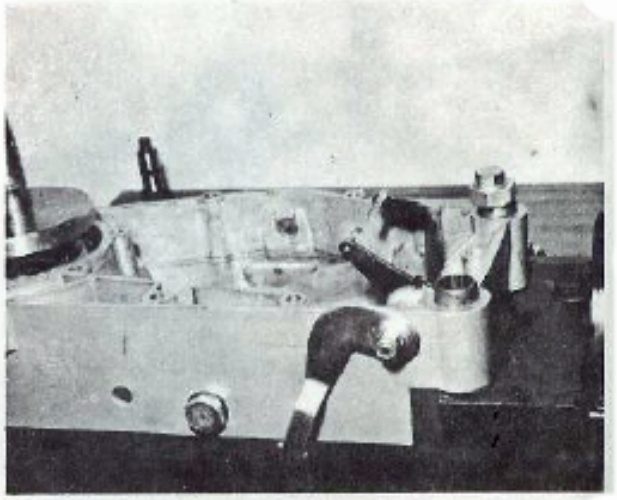


Fig. 51: Remove the nut from the clutch release shaft and take out the complete assembly.

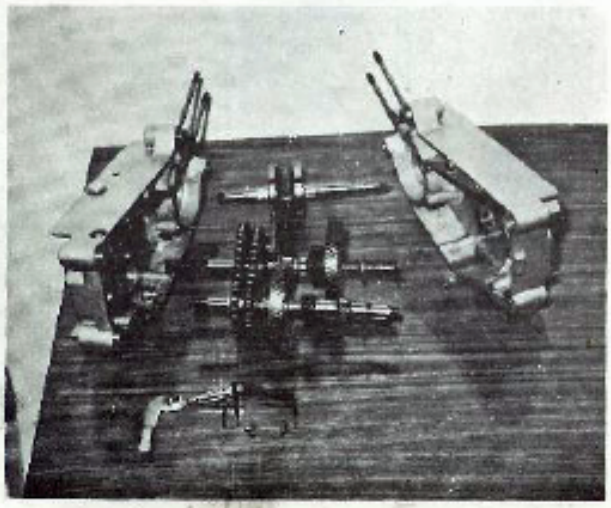


Fig. 52: Drive train with crankcase sides removed.

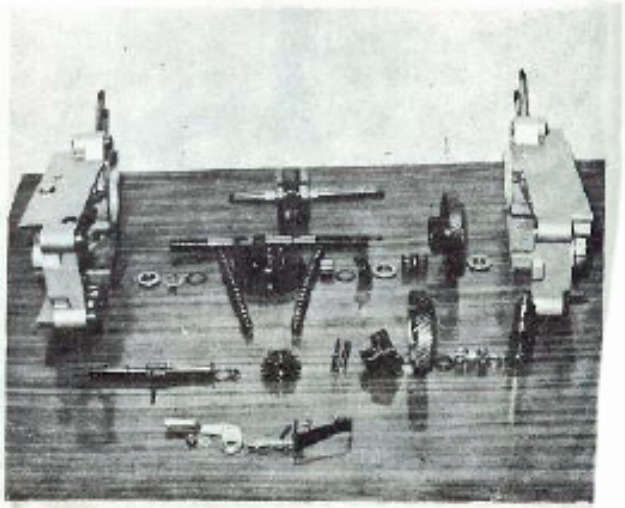


Fig. 53: Exploded view of drive chain and crankcase sides.

## 6. VARIABLE SPEED CLUTCH UNIT STRIP DOWN PROCEDURE

Fig. 54: Remove starter clutch assembly que, retaining washer. Take out the starter clutch shoes.

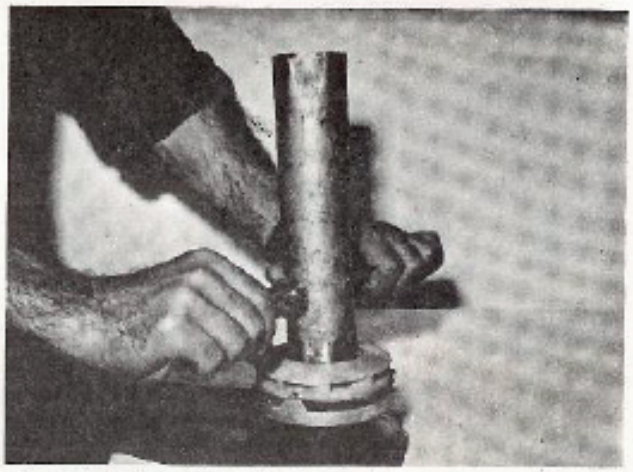


Fig. 55: Using the drive pulley clamp #2 to hold the clutch cover, loosen and remove the main retaining nut with Tool/Wrench #4.

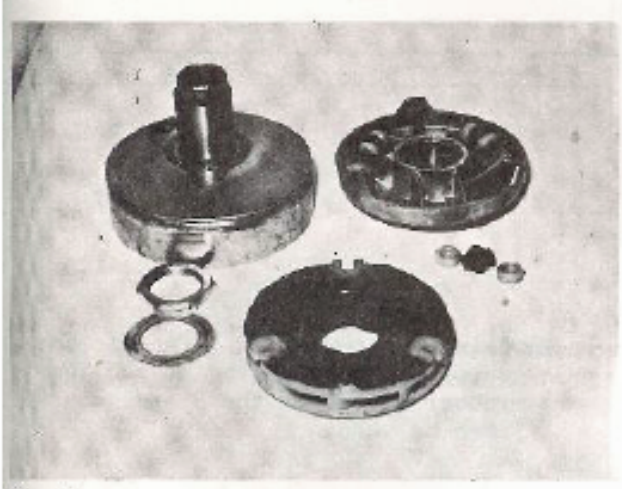


Fig. 56: The dismantled clutch assembly.

Fig. 57: To remove the clutch center bushing and bearing, first remove the large circlip.

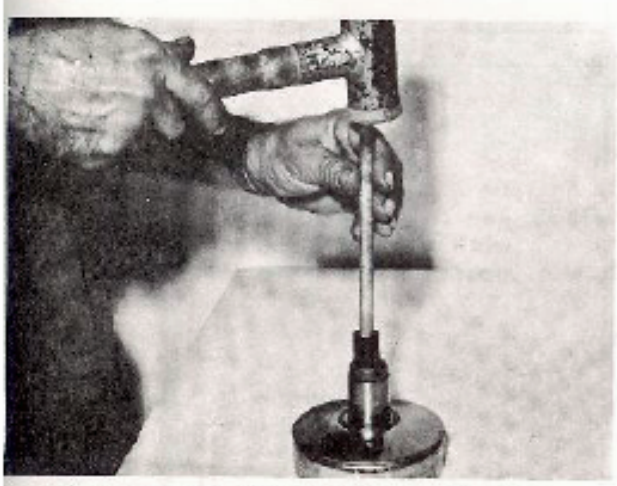


Fig. 58: Using the special tool #11, tap out the bearing and bushing.

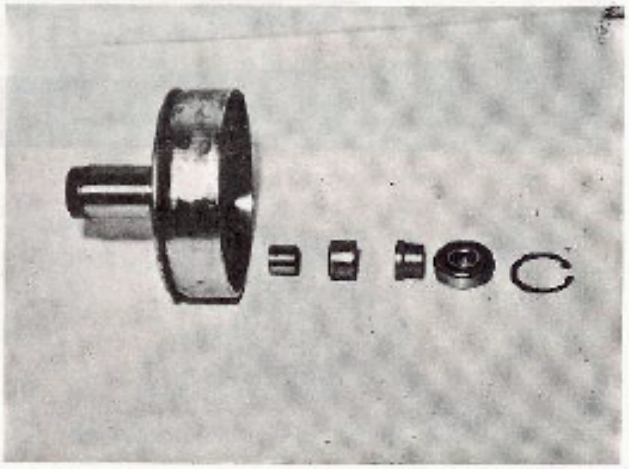


Fig. 59: The bearing and bushings with circlip. They are replaced in this order for reassembly.

## 7. PROCEDURE TO DISASSEMBLE THE CENTRIFUGAL CLUTCH PLATE

Fig. 60: The centrifugal clutch has three clutch engaging arms which open up to engage the clutch cover when the engine revolutions build up. Firstly, remove the 3 spring retaining washers with pliers.

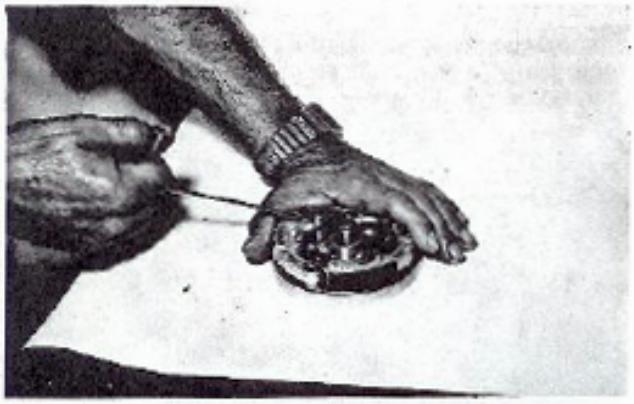


Fig. 61: Using a hooked tool, remove the retaining springs from the clutch engaging arms

Fig. 62: Using a screwdriver lift off the three clutch engaging arms. The rubber stops for the 3 arms can then be seen.

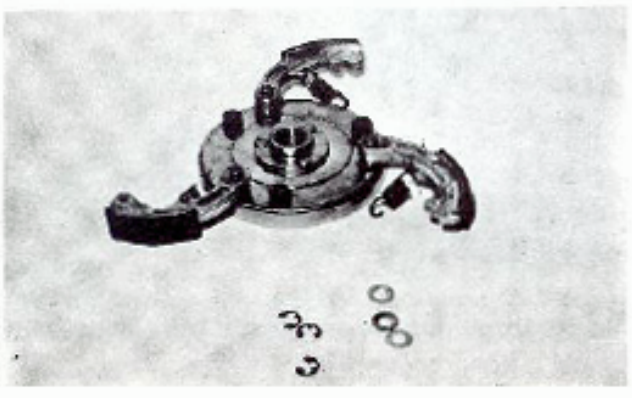


Fig 63: The centrifugal clutch assembly with the 3 retaining springs in position but with no tension.

## 8. RECOMMENDED PROCEDURES TO BE CARRIED OUT PRIOR TO ASSEMBLING THE ENGINE

Before commencing to rebuild your moped engine it is recommended that the following steps are carried out. These operations are preventive maintenance and will allow your engine a longer running life and avoid major problems.

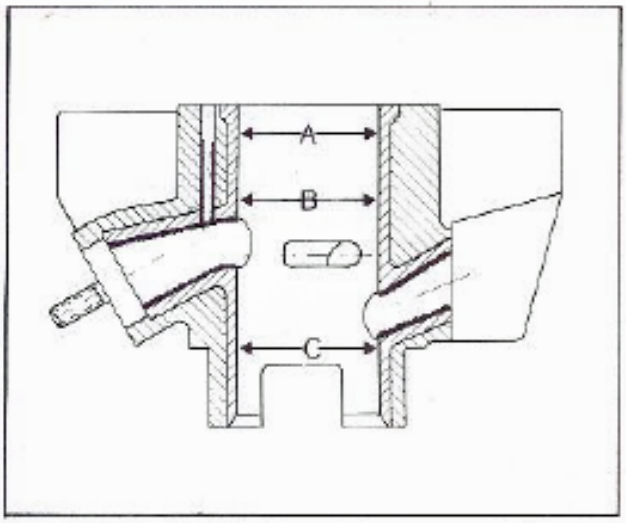



Fig.64. Using a fine grain emery paper or wire brush, remove all deposits of carbon from the following areas. Carbon build up is the major cause of lost power in two stroke engines.
1-The top of the piston.
2-Inlet and exhaust ports
3-Decompression valve and valve seat

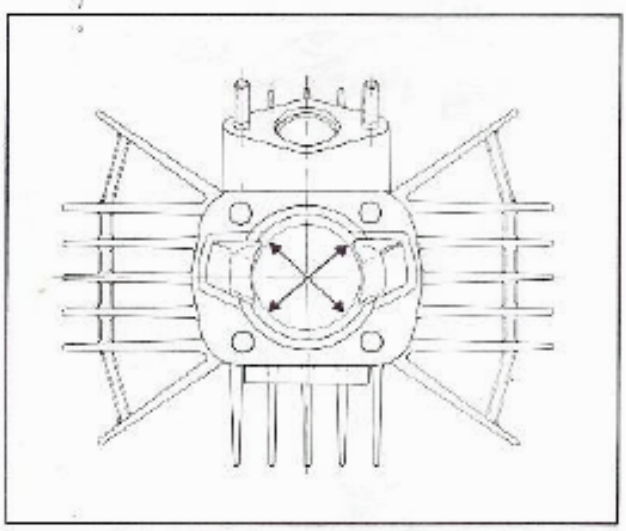


Fig. 65: Using inside and outside micrometers, measure the diameters of the piston and barrel. Any varience in these diameters means that the piston or the cylinder barrel has worn to an oval shape. This will result in a significant power loss and must be corrected.

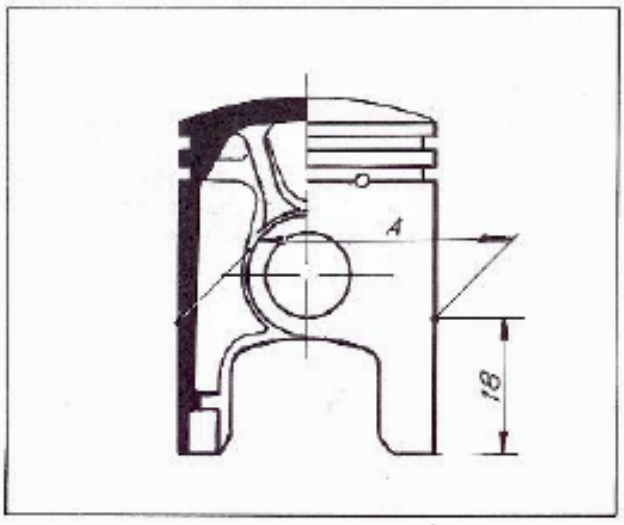



Fig. 66: Check the play between the piston and the cylinder barrel. This should be 0.05mm (.002"). When the play reaches 0.1mm(.004") the cylinder should be rebored and larger piston and rings fitted. The following oversize pistons and rings are available.

38.25mm
38.50mm
38.75mm
39.00mm

The diameter of the piston is always measured at the point shown in the diagram. From the base of the piston this measurement is 18mm (.075")

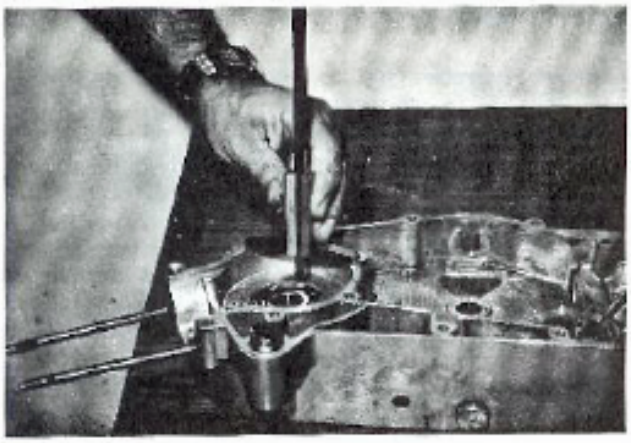


Fig. 67: Check the height of the crankshaft chamber. Using a depth gauge check the measurement from the housing to the main bearing.

This measurement should be 21mm (.826"). If the distance is greater than this figure, there are spacers of 0.2mm (.008") available which must be used to obtain the correct tolerance.
Part No. 3125220

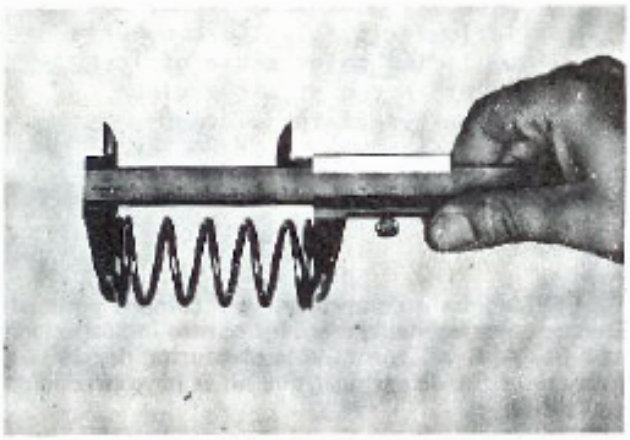


Fig. 68: Check the fatigue or wear factor of the clutch pulley spring. These springs are essential to the smooth operation of the clutch and should be replaced when the length without load is 4mm (.157") less than the rated length of 77mm (3.031") plus or minus .019".

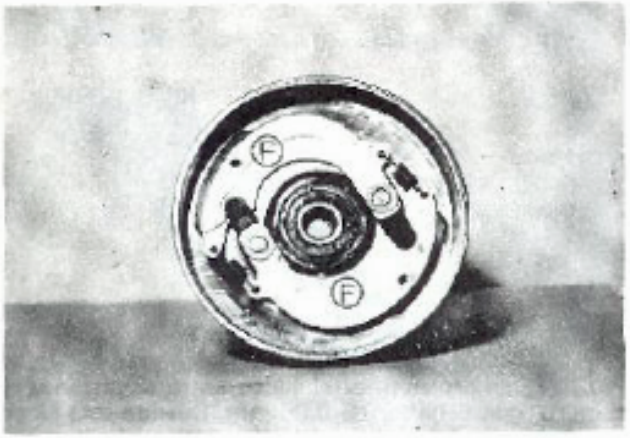


Fig. 69: Check for wear on the clutch housing and the 2 clutch engaging arms. Due to the special design of these arms, as long as they have clutch lining on them, they will operate correctly. If they need to be replaced always use ORIGINAL DERBI SPARE PARTS.

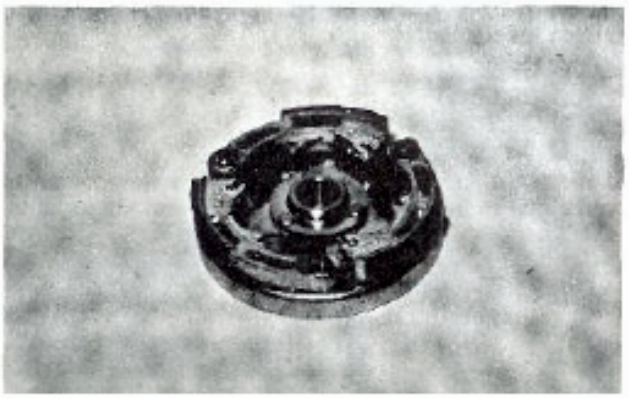


Fig. 70: When it becomes necessary to replace the clutch housing bearing, the housing should be heated to 80-90 degrees Centigrade, 176-194 degrees F. Once the above checks have been completed, the engine can then be assembled.

## 9. ENGINE ASSEMBLY PROCEDURE

Begin by assembling the crankshaft sub assembly in the left hand crankcase housing.

9.1 – Assembly of the pedal shaft unit.
These instructions are illustrated in diagram #2. This first operation is done without mounting the shafts in the crankcase housing.
First, mount on the pedal shaft (1).
Pedal friction washers (2) Dia. 19.2mm x 26.5-1mm
Pedal bushing plate (3)
Pedal plate sub assembly (4)
Pedal friction washers (5) Dia. 19.2mm x 26.5-1mm
Pedal lock washer (6)
Pedal shaft nut (7)
Lock the nut on the shaft with the lock (tab) washer (6). Fit the tip righthand pedal washer (8) Dia. 19.2mm x 26.1mm

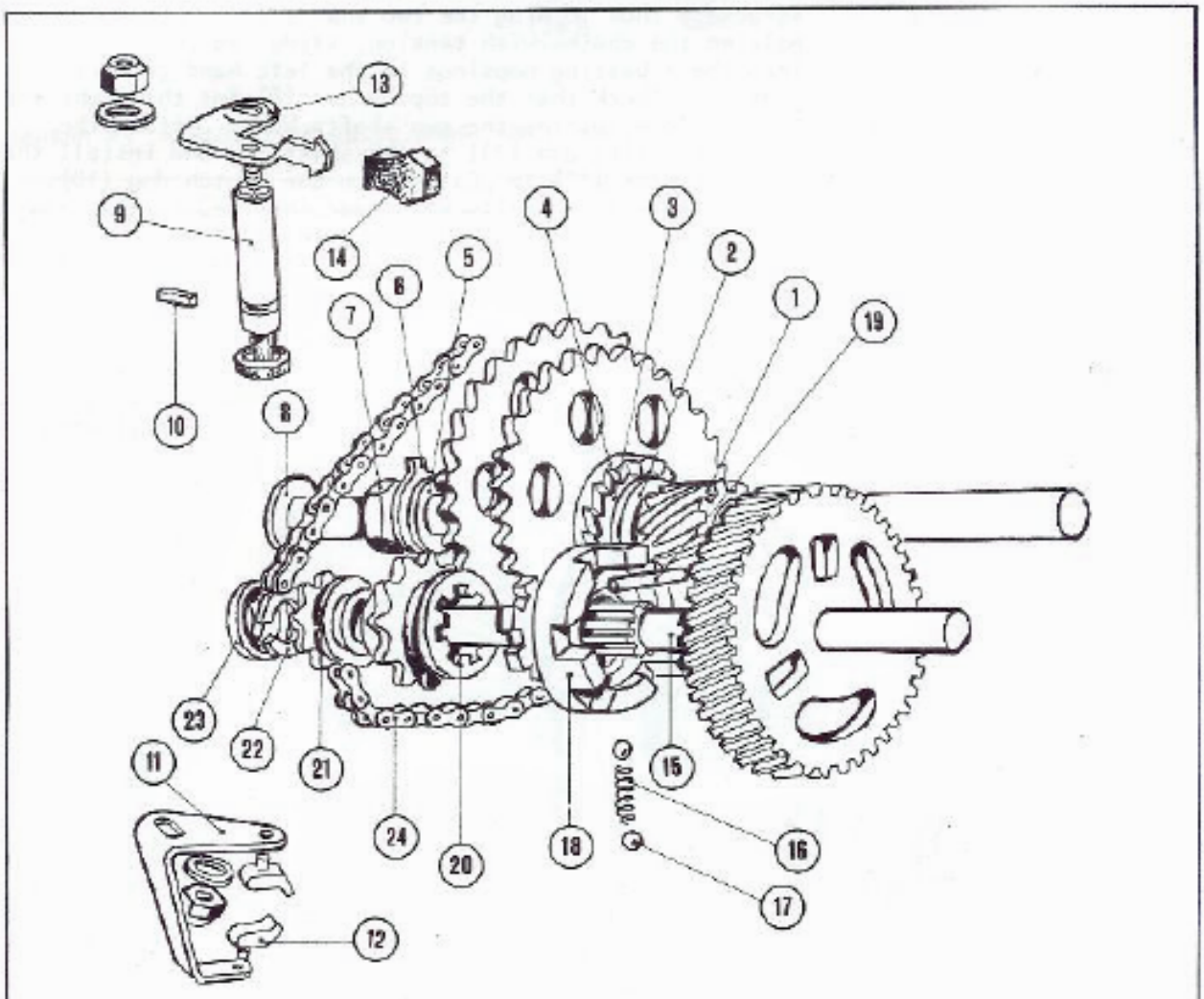



DIAGRAM #2 ASSEMBLY OF THE PEDAL SHAFT UNIT AND DRIVE SHAFT

## 9.2 ASSEMBLY OF THE DRIVE SHAFT UNIT

These instruction should be followed using diagram #2 as a guide.
All these operations are carried out before the shafts are assembled in the crankcase housing.
To assemble the drive shaft unit (15) proceed as follows. Insert the fork shaft (9) in the housing and insert the fork shaft pin (10). Bolt on the shift fork (11) using two washers and a nut. Reassemble the fork shaft lever (13) with washer and nut.
Press on the fork shaft lever rubber (14) and install the puller for locating the spring (16) in the shaft (15). Attach the two ball bearings at each end of the spring. Assemble the shifting dog (18) and turn it on the shaft to retain the spring and balls in place.
Assemble the three pedal pinion top pins (19) and slide on the right pedal pinion (20). Slide on the left pedal sprocket (21) and pedal sprocket safety washer (22) and the retaing washer (23).
Attach the two pedal chains (24) to their respective sprockets thus joining the two shafts together.
Holding the chains with tension, slide the two shafts into their bearing housings in the left hand crankcase housing. Check that the top washer (8) fot the right pedal is on before pushing the two shafts home. Attach the clutch shifting arm (11) to the shaft (9) and install the shifting tabs (12) in position on the clutch dog (18).
**NOTE!** When the two units have been inserted in the crank shaft housing the pedal plate assembly (4) must be perfectly aligned with both the right pedal pinion (20) and the left pedal pinion (21) so that both drive chains are in alignment.
If when assembled, the pinions do not line up perfectly, remove one of the two steel washers (26) #16.2 or 26.1. If necessary use alternative spacing washers part # 5529050 or 1525281 which are available from DERBI MOTOR CORPORATION OF AMERICA.

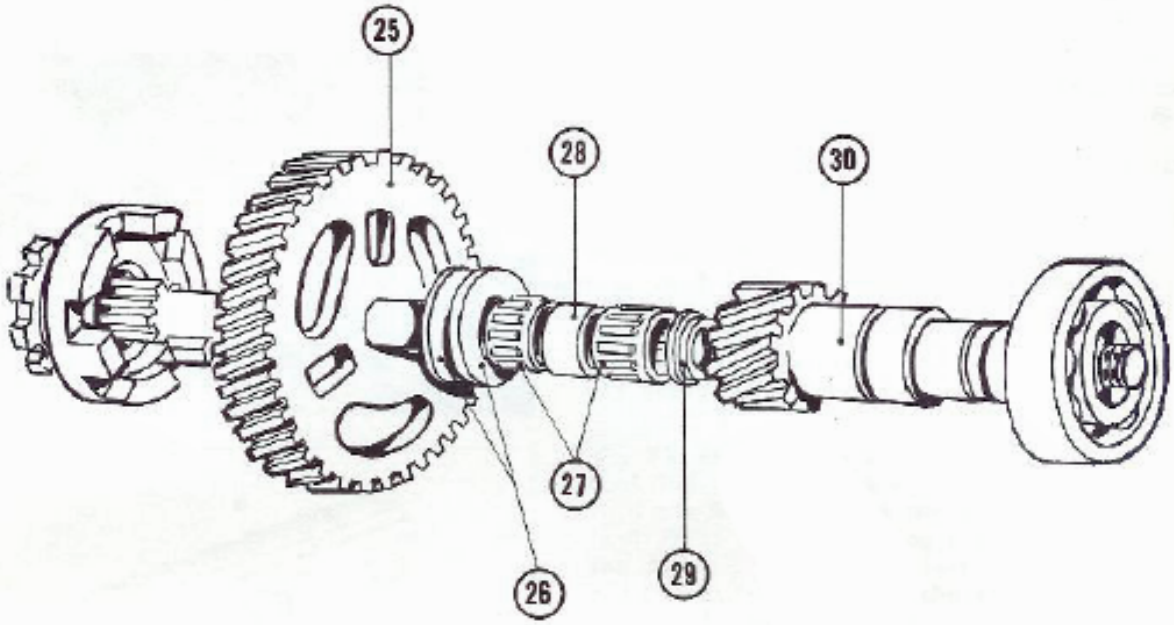



DIAGRAM #3 ASSEMBLY OF DRIVE SHAFT UNIT AND DRIVEN PULLEY SHAFT CONT'D.

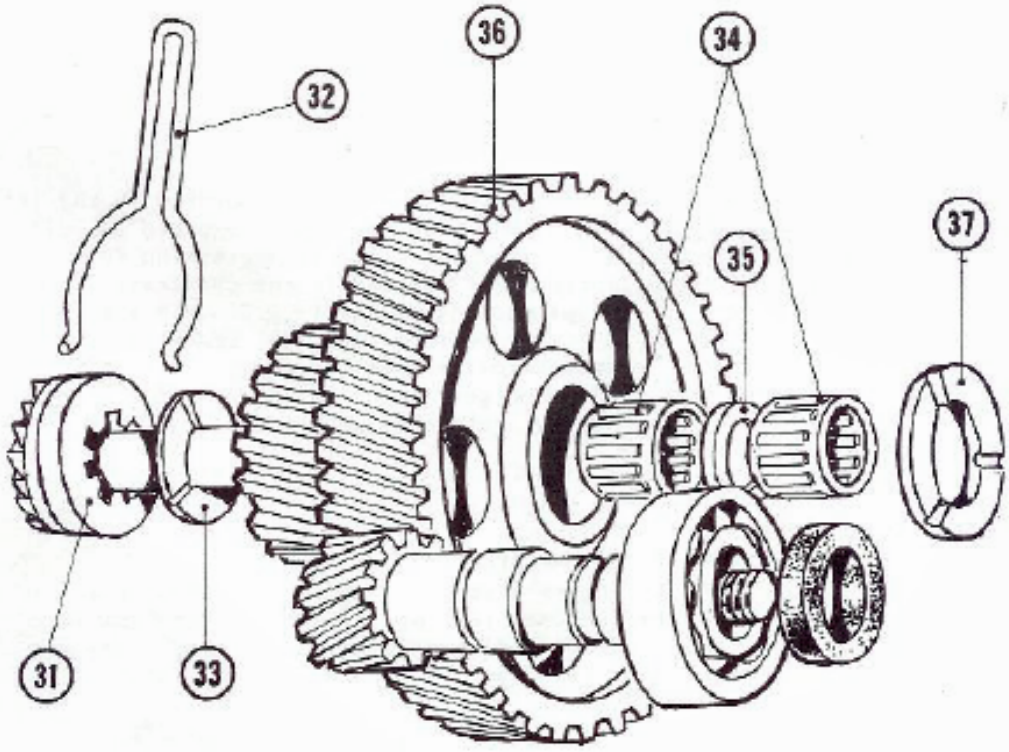



DIAGRAM #4 ASSEMBLY OF PEDAL SHAFT UNIT CONTINUED

## 9.3 — ASSEMBLY OF THE DRIVE SHAFT UNIT AND THE DRIVEN PULLEY SHAFT

These instructions should be used with diagram #3.
ASSEMBLE:
gear wheel II Z-52 (25)
2 Steel washers (26) Dia. 16.2mm x 26.1mm
1 Roller bearing cage (27) the spacer (28)
Second roller bearing cage (27)
Spacer on shaft (29)
Push on driven pulley shaft (30).

## 9.4 — PEDAL SHAFT UNIT ASSEMBLY CONT'D

These instructions shoud be used with diagram #4.
With the pedal shaft unit mounted in the left hand crank case housing we proceed as follows:
Pedal sprocket (31) with retaining fork spring (32) mounted in the crankcase. Left pedal spacing washer (33) Dia. 19.2mm x 32.3mm.
1 roller bearing cage (34) spacer (35) plus second roller bearing cage.
Slide on gear wheel and pinion (36).
Lastly, retaining washer (37). Dia. 16.2mm x 32.3mm.

NOTE! IMPORTANT.
During re-assembly of this unit check that the pinion gear (25) has clearance when turned by hand and does not foul the pinion gear (36) or the pinion gear bushing.

## 9.5 – ASSEMBLY INSTRUCTIONS FOR CRANKCASE AND OIL SEALS

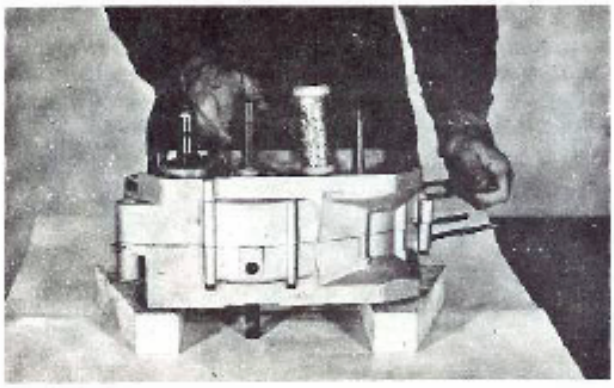


Fig. 71: After inserting the crankshaft and connecting rod in the bearing housing, place the two halves of the crankcase together as per the illustration. Tap around the outside of the casing to ensure that the two halves are joined securely. With the two halves joined check that the crankshaft and pedal and driven shafts all turn smoothly with no friction between gears or spacers. Bolt the two halves together with the 13 6mm allen head screws. Torque to 10-12 ft. lb The crankcase is now ready to insert the oil seals.

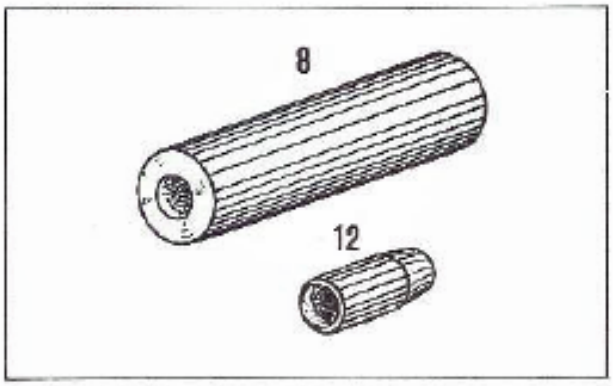



Fig. 72: Exit pinion oil seal. With protectiv tool #12 covering the spline, tap the seal into the housing using the driving sleeve tool #8 to avoid damaging the seal. Using the driving sleeve #8 insert the oil seals for the pedal shaft and the right and left crankshaft ends.

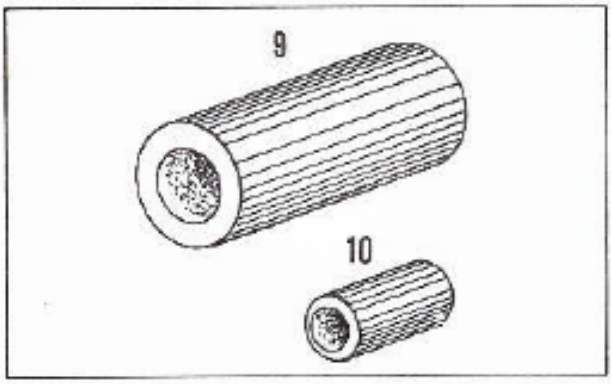



Fig. 73: Using the driving sleeve tool #10 tap into place the fork seal and finally with sleeve tool #9 insert the shift shaft housing seal.
Refill the crankcase. 400cc (0.7pint) of SAE 20W/50 or SAE 80 EP.

NOTE! When installing oil seals the flat face of the seal which carriers the part # must always be to the outside. The face of the oil sealwith the spring exposed always goes to the inside of the crankcase. Make sure that you are assembling the seal correctly.

## 10. ASSEMBLY INSTRUCTIONS FOR PISTON/CYLINDER/CYLINDER HEAD

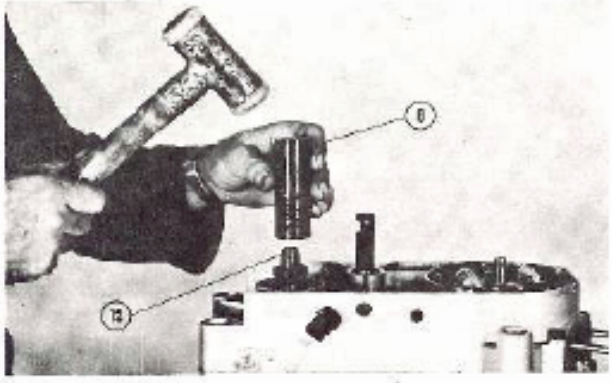



Fig. 74: Slide the wrist pin through the piston and the connecting rod bearing until the pin is in the middle of the piston. Secure the wrist pin with one circlip each side of the piston.
Carefully slide the cylinder barrel over the piston making sure that the piston rings are clear.
When the cylinder barrel is located on the crankcase, place the cylinder head in position and tighten the four retaining nuts. Torque to 1.2KG/M (8.7 lbs.).
NOTE! DO NOT OVERTIGHTEN CYLINDER HEAD BOLTS. USE EQUAL PRESSURE ON ALL FOUR NUTS.

## 11. FLYWHEEL - MAGNETO ASSEMBLY INSTRUCTIONS

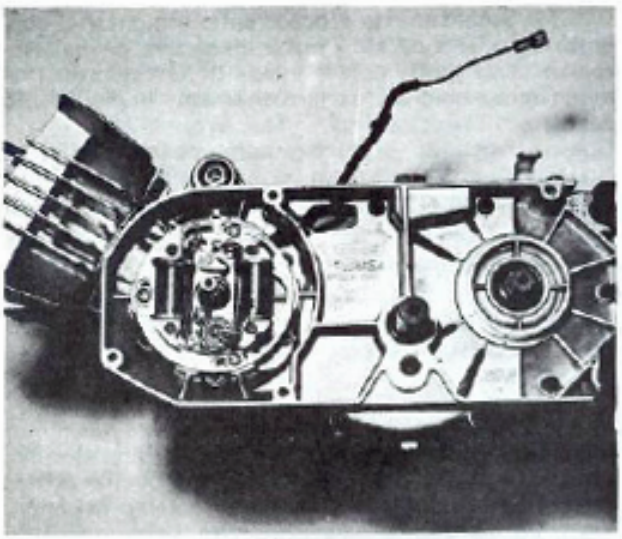


Fig. 75: Mount the coils and points holder plate on the crankcase using the three screws. Mount the woodruff key in its slot with the woodruff key, slide the flywheel into place on the crankshaft.

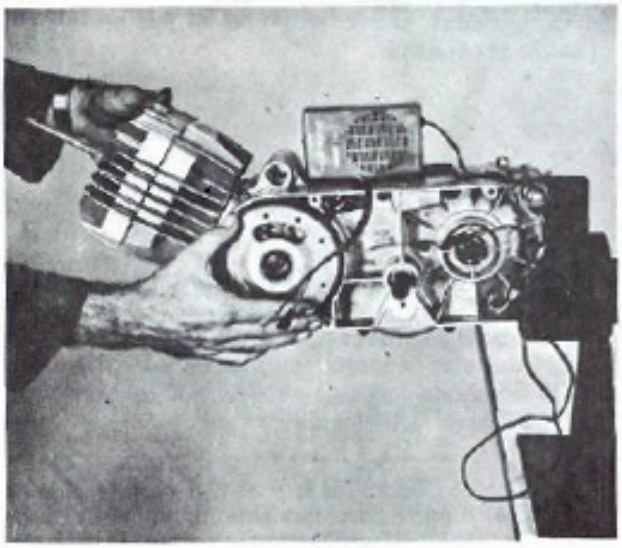


Fig. 76:Thread the piston timing tool #15 into the spark plug screw in the cylinder head. Check that the timing advance is 1.80mm (21 degrees) by using the piston timing tool #15. To determine the correct timing, use the timing indicator #16, connected to the magneto, which emits a high buzz/light when the points are open. When the points are open the timing advance should be exactly 1.80mm (21 degrees). Adjust the point gap to 0.4mm (.015) as marked on the flywheel. To adjust the gap loosen the fixing screw-check gap with feeler gauge and retighten screw.

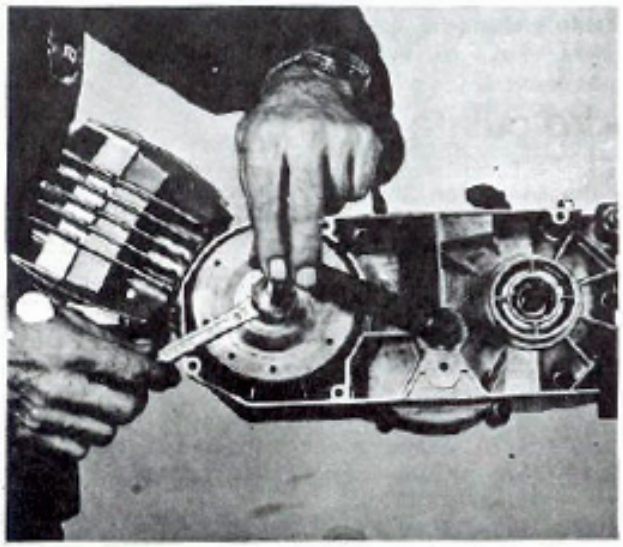


Fig. 77: After checking the point gap, make sure that the flywheel is in position and tighten the retaining nut using the locking tool #4 and a socket wrench.

## 12. DRIVE PULLEY UNIT ASSEMBLY

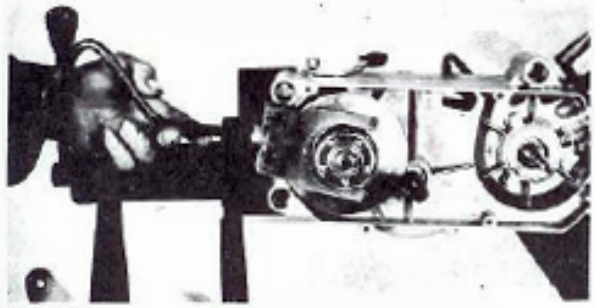


Fig. 78

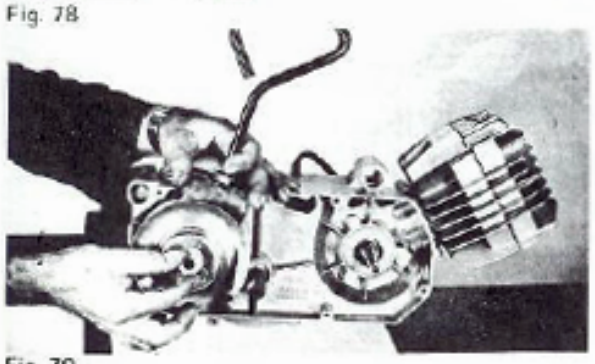


Fig. 79

These instructions should be used in following diagram #5.
FIRST assemble swing bushing (45) and RIGHT HAND swing arm bracket on to the right hand crankcase.
Assemble in the following order on the shaft:
Rear puller washer (38) Dia. 21.5mm x 30.2mm
Pulley cam cone (39)
Coil spring (40)
Inside drive cone (41)
Outside drive cone (42) using the spacer tool #5
Tab washer (43)
With the V-drive belt in position tighten the retaining nut (44) and lock in position with the tab washer (43).

NOTE! When re-assembling the unit, make sure that the driven pulley cam (39) is in perfect alignment with inner drive cone (41). Also that the outer drive cone is snug on the shaft before the final tightening of the retaining nut (44) to the tab washer (43).

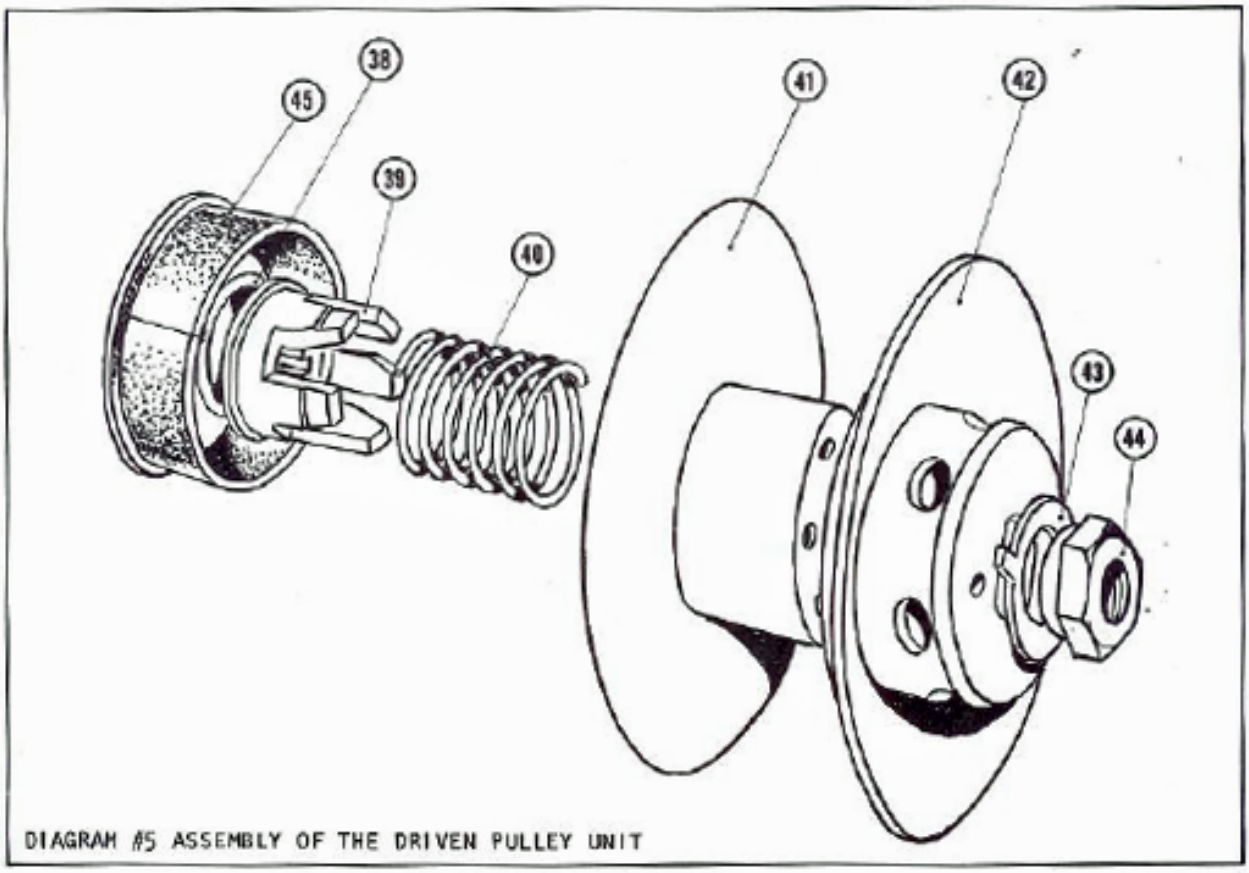
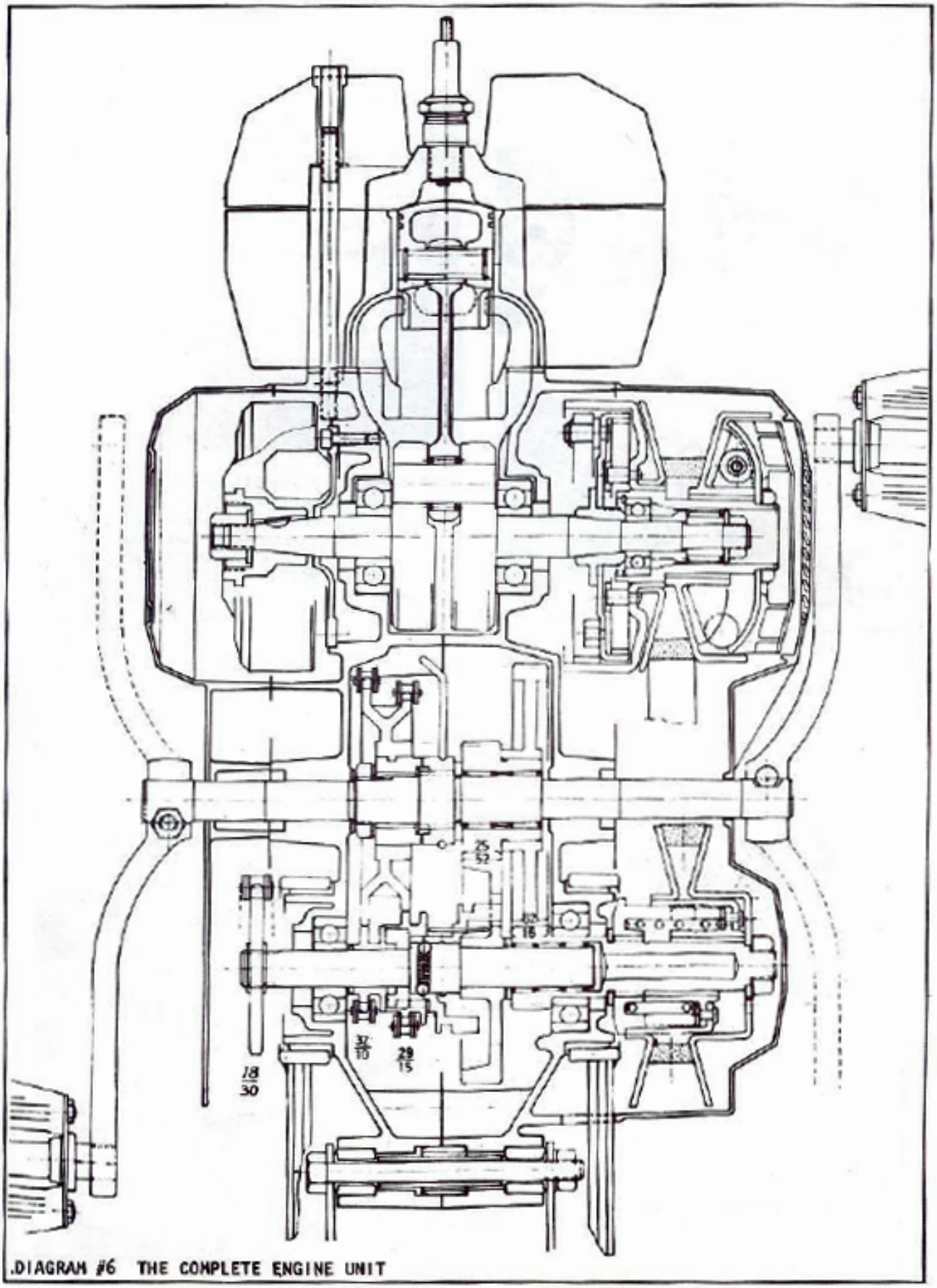



DIAGRAM #5 ASSEMBLY OF THE DRIVEN PULLEY UNIT




.DIAGRAM #6 THE COMPLETE ENGINE UNIT

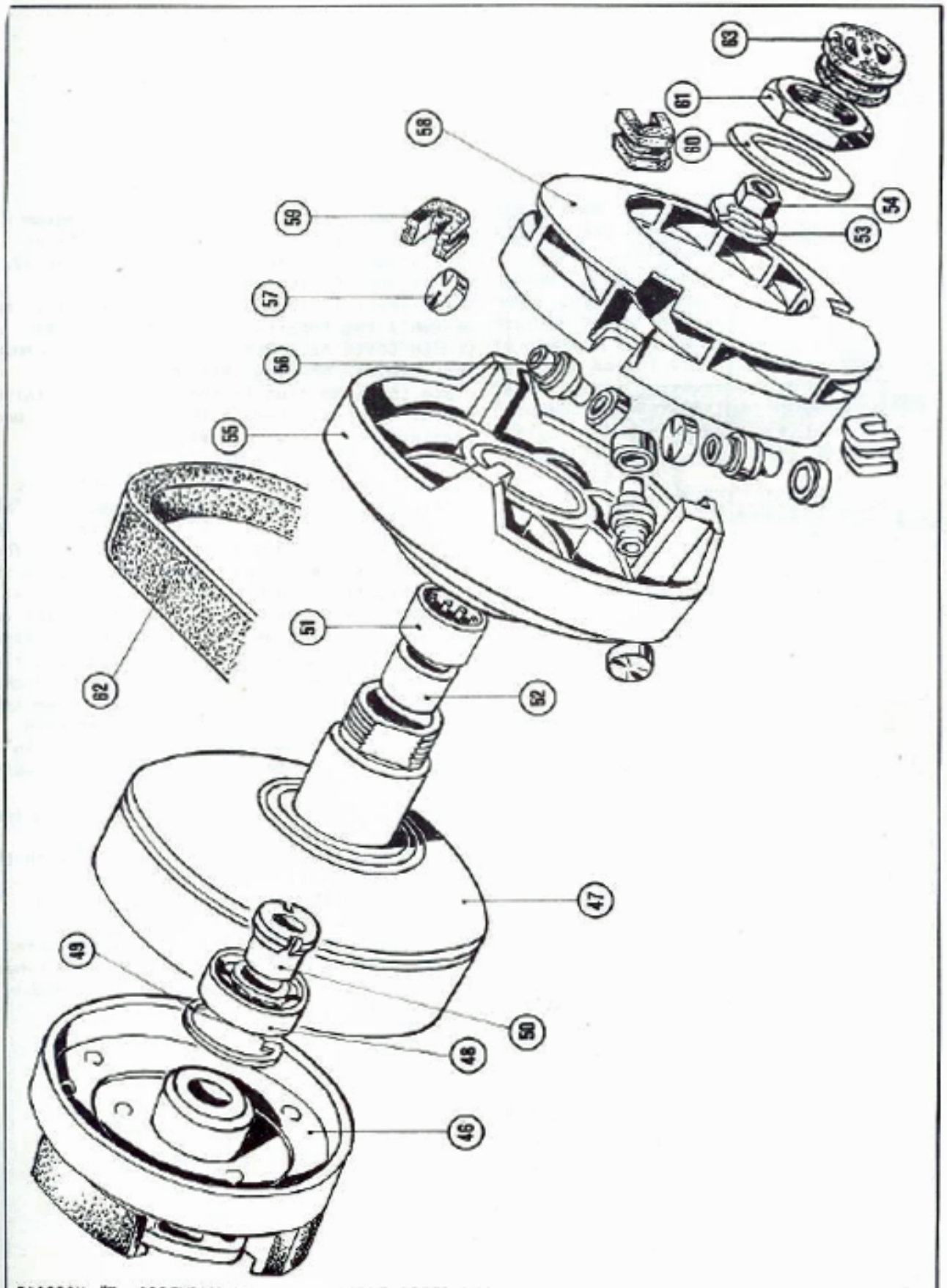



DIAGRAM #7 ASSEMBLY OF THE VARIABLE SPEED UNIT

## 13. ASSEMBLY OF THE CLUTCH VARIATOR UNIT

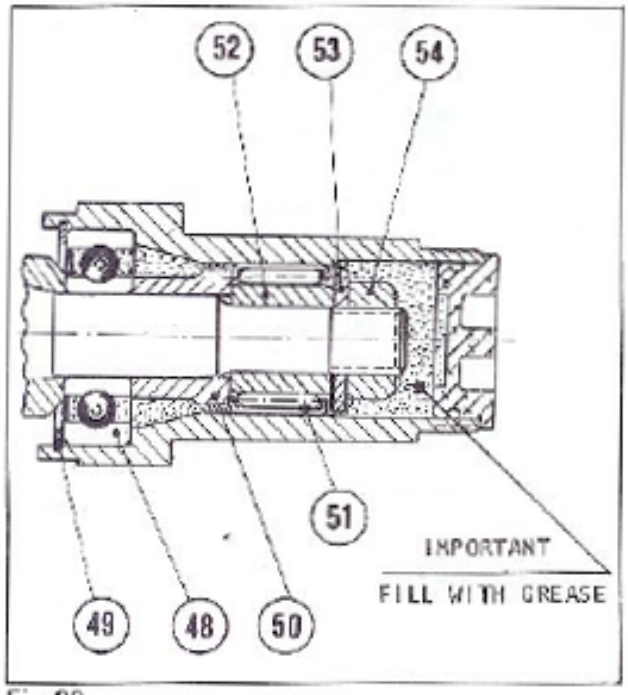


Fig. 80

NOTE! IMPORTANT. The ball bearing (48) has a shield on one side only. The bearing must be fitted as shown in the Diagram #7 with the shield facing the crankcase housing. Special care should be taken to lubricate this bearing before installation.

Special care must be taken when lubricating the inside of the BUSHING AND CLUTCH COVER SUB ASSEMBLY (47). If too much grease is used, it will ease out and into the centrifugal clutch assembly. The clutch will then cease to work making the whole drive train inoperable.

Using these instructions refer to Diagram #7. Assemble clutches (3) to assembly (46) by reversing procedure as detailed on Page 17. CENTRIFUGAL CLUTCH SUB ASSEMBLY.
Slide the unit (46) onto the crankshaft. Next assemble the interior of the BUSHING AND CLUTCH COVER ASSEMBLY (47) as follows: Mount the shielded bearing (48) using tool #7.
Place the snap ring in the spacer (50) through the other side. Locate the drive pulley needle bearing cage using tool #6.
LUBRICATE THIS SUB ASSEMBLY.
To reassemble the starter clutch shoes, we reverse the procedure shown on Page 16. CLUTCH VARIATOR SUB ASSEMBLY. The two starter shoes or arms are marked with the letter 'F'. These letters must be visible after assembly as they are designed to turn in one direction only.
Fit the sleeve bearing (52) and the outer cover sub assembly (47) onto the crankshaft. Finally place the crankshaft washer in place and tighten the retaining nut (54) by using the locking wrench #4 to prevent the crankshaft from turning. FILL THE INSIDE OF THE BUSHING WITH GREASE! and attach rubber plug as shown in Diagram 80 to prevent the grease from leaking out.
Proceed to assemble the outer unit as follows:
Slide on cover plate (55).
Place the 3 rollers (56) in position with their silent block rollers (57).
Attach centrifugal cover (58) with the 3 sliding guides (59) in place.
Place lock washer (60) in place and tighten the clutch bushing nut (61) by using the flywheel holding tool #2 to prevent the sub assembly from rotating.

## 14. REMOUNTING THE ENGINE IN THE FRAME PROCEDURE

Remove the engine from the engine stand and proceed as follows:
Replace the engine in the frame with the three mounting bolts.
Install swing arm brackets to motor using 8 bolts (4 per side) with lock washers.
Replace drive sprocket on shaft with chain in position on teeth.
Replace drive sprocket circlip.
Mount the left hand crankcase cover.
Replace header muffler assembly. Attach to chassis first with one bolt. Then to cylinder barrel with two allen screw.
Connect coil which leads to spark plug.
Reconnect carburetor and inlet manifold.
Replace top engine cover.
Replace left hand rear shock absorber mounting bolt.
Install the pedals.

## 15. DRAINING AND FILLING ENGINE OIL PROCEDURE

To carry out these three operations first remove the lefthand crankcase cover. Thus leaving the crankcase exposed.

Draining the oil remove oil drain plug under left hand side of crankcase.

Filling with oil after replacing drain plug, remove oil filler plug located on the upper left of the crankcase. Pour new oil in through hole. Oil capacity 400cc (0.7 pint).

Checking the oil level. Remove the oil level screw located under the pedal shaft on the left of the crankcase. Oil should come out of this hole if the level is correct. If not add more oil through oil filler hole.

Recommended Oil is SAE80 EP or SAE 20W/50. Do not mix oils of different brands even though they are the same grade.

## 16. COMPRESSION RELEASE UNIT STRIPDOWN AND CABLE REPLACEMENT

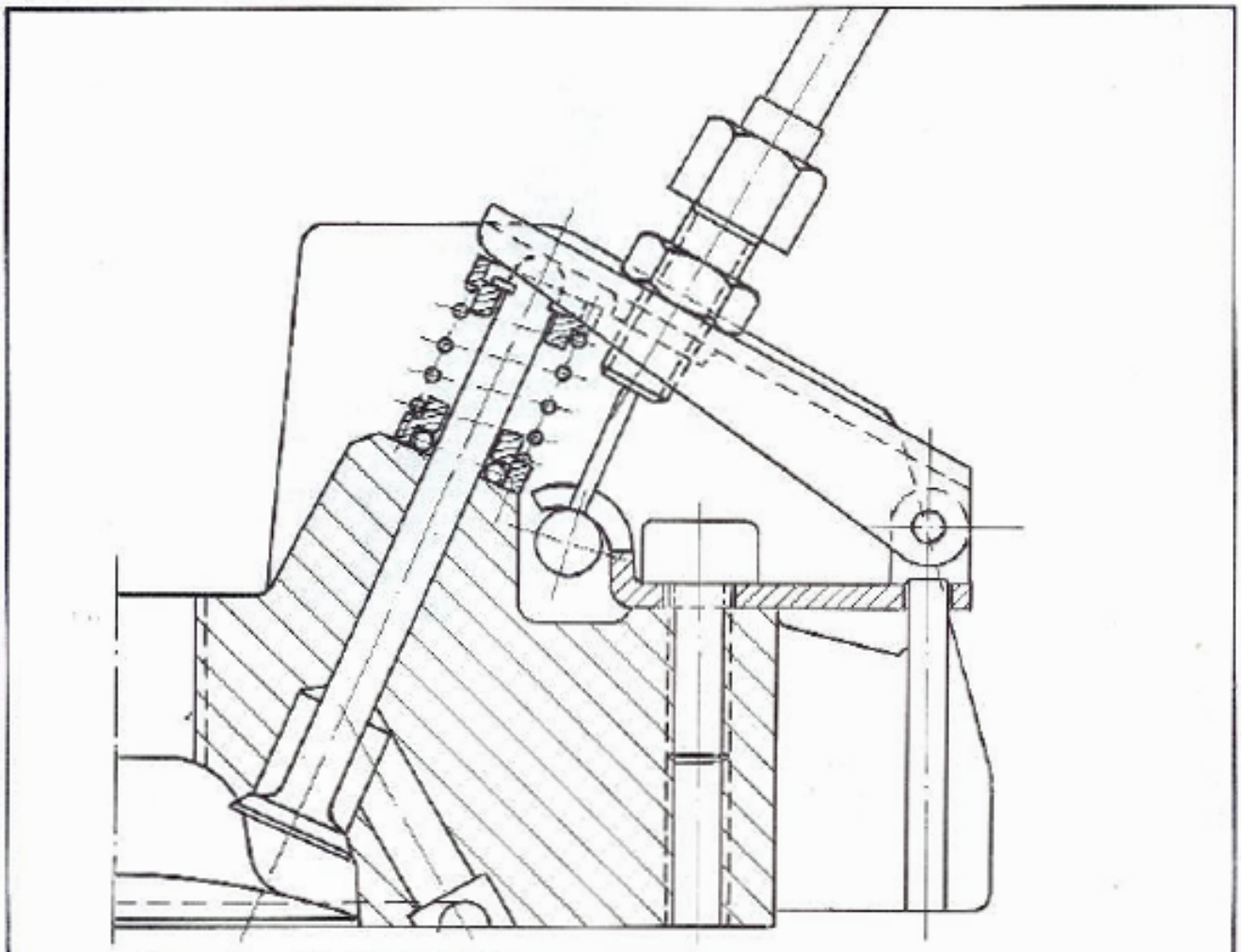


DIAGRAM #8 COMPRESSION RELEASE UNIT

16.1Replacement of compression release cable. To replace the cable, take the cable terminal (1) from its bracket on the lefthand handlebar. Loosen the cable adjustin nut (2) attached to the calve rocker arm (3) and remove the allen screw which holds the mounting bracket to the cylinder head. (6) Remove the cable.
To attach the new cable reverse the removal order. First thread the cable through the inside of the chassis and up through the center of the chassis. A small hook may be used to pull the cable up and out of the chassis. Replace the cable in its bracket on the left handlebar.
Attach the lower end to the cylinder head bracket. Replace the allen screw and tighten the bracket in place. Use the adjusting nut (20) to get the correct stroke.

16.2 Compression release unit strip down. To disassemble the unit, first remove the cable from the cylinder head as described. Remove the cylinder head by loosening and taking off the four nuts which hold it to the cylinder.
Remove the circlip(7) which holds the valve spring guides (8) to the valve (9). Remove the valve spring and guides and push the valve through the cylinder head. Replace or clean the components. Use extreme care not to damage either the valve seat or the valve. This will result in a loss of compression.

## 17. ADJUSTMENTS

Fig. 81

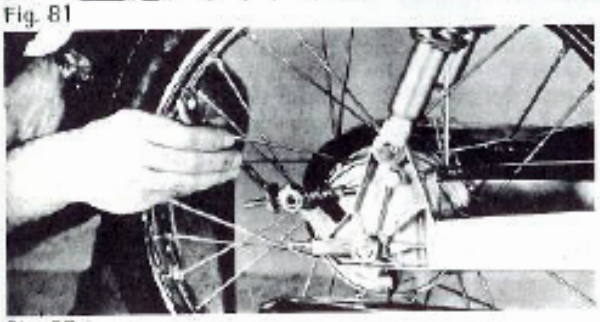


Fig. 82

Fig. 83

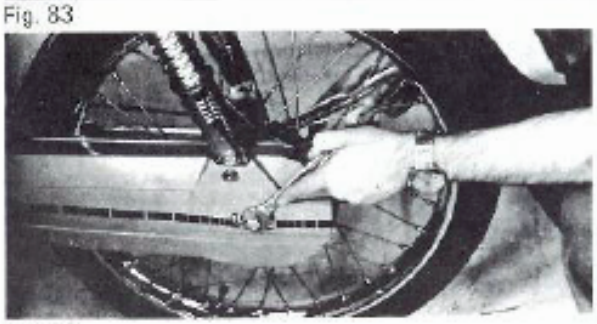


Fig. 84

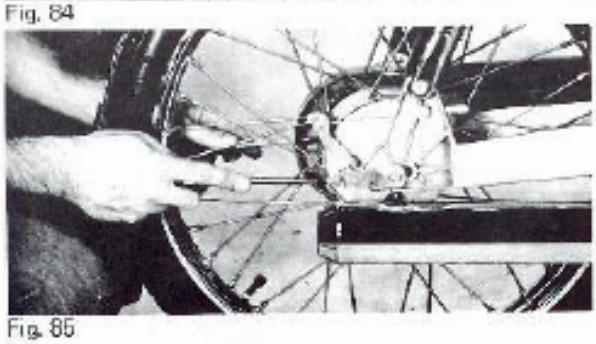


Fig. 85

After the run-in period the following routine service should be carried out. Retighten the cylinder head bolts and the three muffler header retaining bolts. Adjust the front brake Fig.81 and the rear brake Fig.82 using the correct wrench. There should always be a little play in between the brake lever and the stop before the brakes start to apply. Fig.83. Check chain tension. It should be checked with the rider sitting on the bike and should not be too tight. To adjust the chain tension, loosen the axle nuts slightly Fig.84. Adjust chain tension with the nuts on the adjusting screw backed off. When the correct chain tension is found, check that the wheel is in line with the chassis. Fig.85. Tighten adjusting screw lock nuts and re-tighten axle nuts. Engine idle speed is adjusted by the adjuster screw on the carburetor Fig.87.
The compression release adjuster is on the lower end of the cable at the cylinder head. Fig.88.

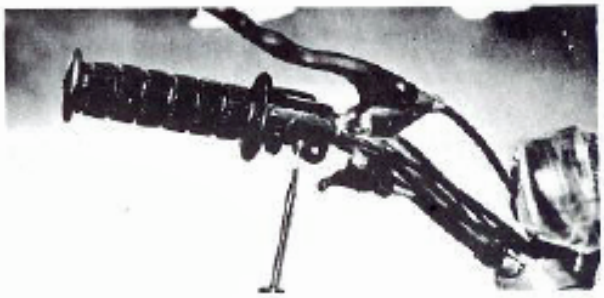


Fig. 86

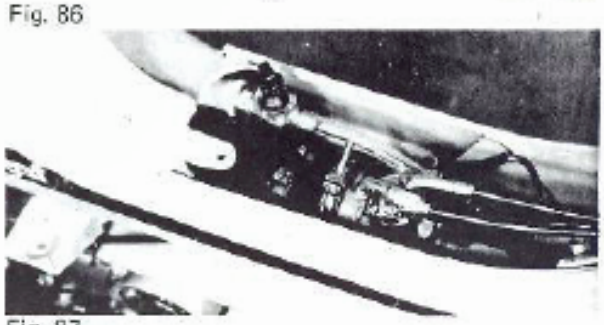


Fig. 87

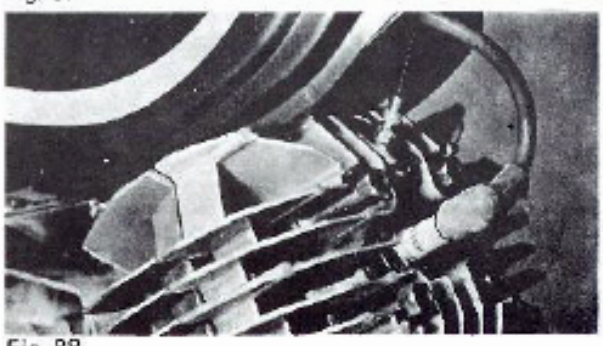


Fig. 88

## 18. REPLACEMENT OF GAS TANK AND AIR FILTER BOX

To remove the gas tank proceed as follows:
Remove chain cover by removing muffler bolt and lower shock absorber mounting bolt.
Remove two bolts holding cover to swing arm-take off chain cover.
Remove rear brake cable from operating lever.
Loosen and remove axle retaining nuts and slide out axle.
Remove rear wheel.
Take off rear fender by removing the 4 retaining screws.
After disconnecting the fuel feed pipe to the carburetor-remove the gas tank.
Reverse procedure to reassemble.

## 19. FUEL VALVE SHOUT OFF VALVE REPLACEMENT

The fuel shut-off valve can be replaced without removing the gas tank.
The fuel valve is a force fit in the gas tank. Do not try to twist the old valve out of the tank. Pry out the valve using a large screwdriver
Push the new fuel valve into the gas tank.
NOTE! Be careful to position your moped to avoid spilling the gas that remains in the tank when changing the fuel shut-off valve.

## 20. REPLACING THE DRIVE CHAIN

There are two ways to remove the chain.
(a) By following the instructions given on pages 6-7 in the section devoted to removing the motor.
(b) The second and more practical way is as follows.
Take off the chain cover by removing the rear muffler bolt and the lower left shock absorber bolt.
Remove the two screws holding the chain cover to the swing arm. Remove the chain cover.
Loosen the two axle nutsand the chain tensioning screws so that the chain is completely slack.
With the master link on the rear sprocket take off the retaining clip. Split the chain and attach the new chain to the old one at the master link. Pull the old chain off from under the moped. As the old chain comes off the new chain passes over the motor sprocket and back to the rear of the moped.
Replace the master link in both ends of the new chain and fasten the retaining clip.
Replace the chain cover.

## 21. REPLACING THE THROTTLE, COMPRESSION RELEASE AND REAR BRAKE CABLES

To replace any of these three cables. Disconnect the ends of the cables from their respective mounting points.
Remove the top engine cover and note the positions os each cable.
To replace the new cables-pass them from the bottom of the moped and up through the chassis. Take care that the cable isplaced in its original position. Pull the new cables up through the chassis by using a hooked tool. The holes in the chassis are for each cable as follows. Throttle cable, center large hole. Decompression cable, center small hole. Rear brake cable, right side hole.

## 22. CLEANING THE AIR FILTER

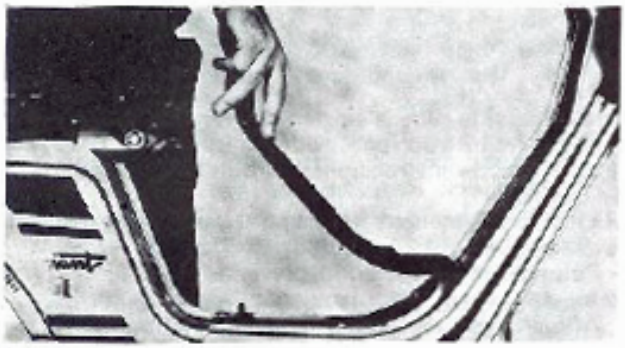


Fig. 89

The air filter is located inside the frame above the engine. To remove the filter, first remove the plastic cover from the frame.
Remove the air filter assembly by sliding it forward.
Remove the cover from the filter which is a push fit on the filter body.
Remove the filter and clean in a container of solvent. When the filter is clean remove from the solvent and allow to dry before installing in the frame.

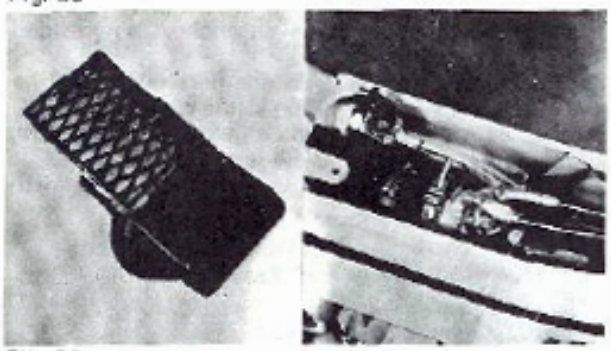


Fig. 90

## 23. EXHAUST SILENCER STRIP DOWN AND CLEANING PROCEDURE

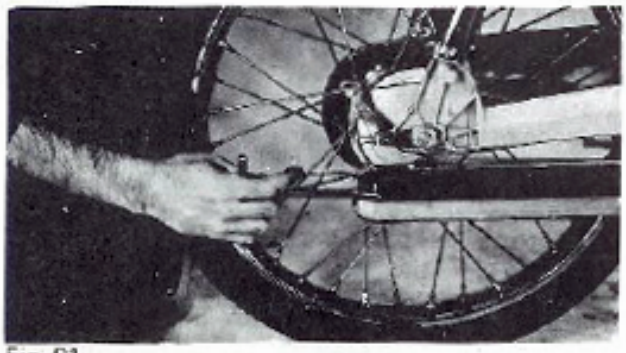


Fig. 91

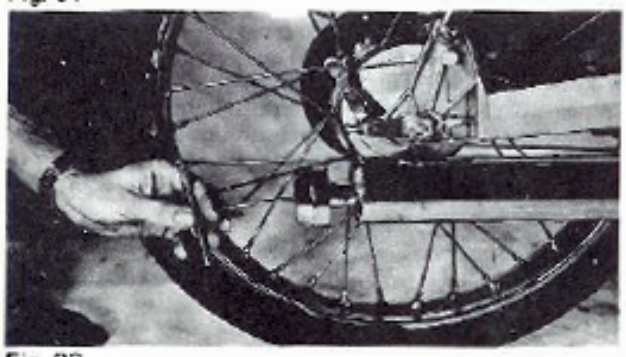
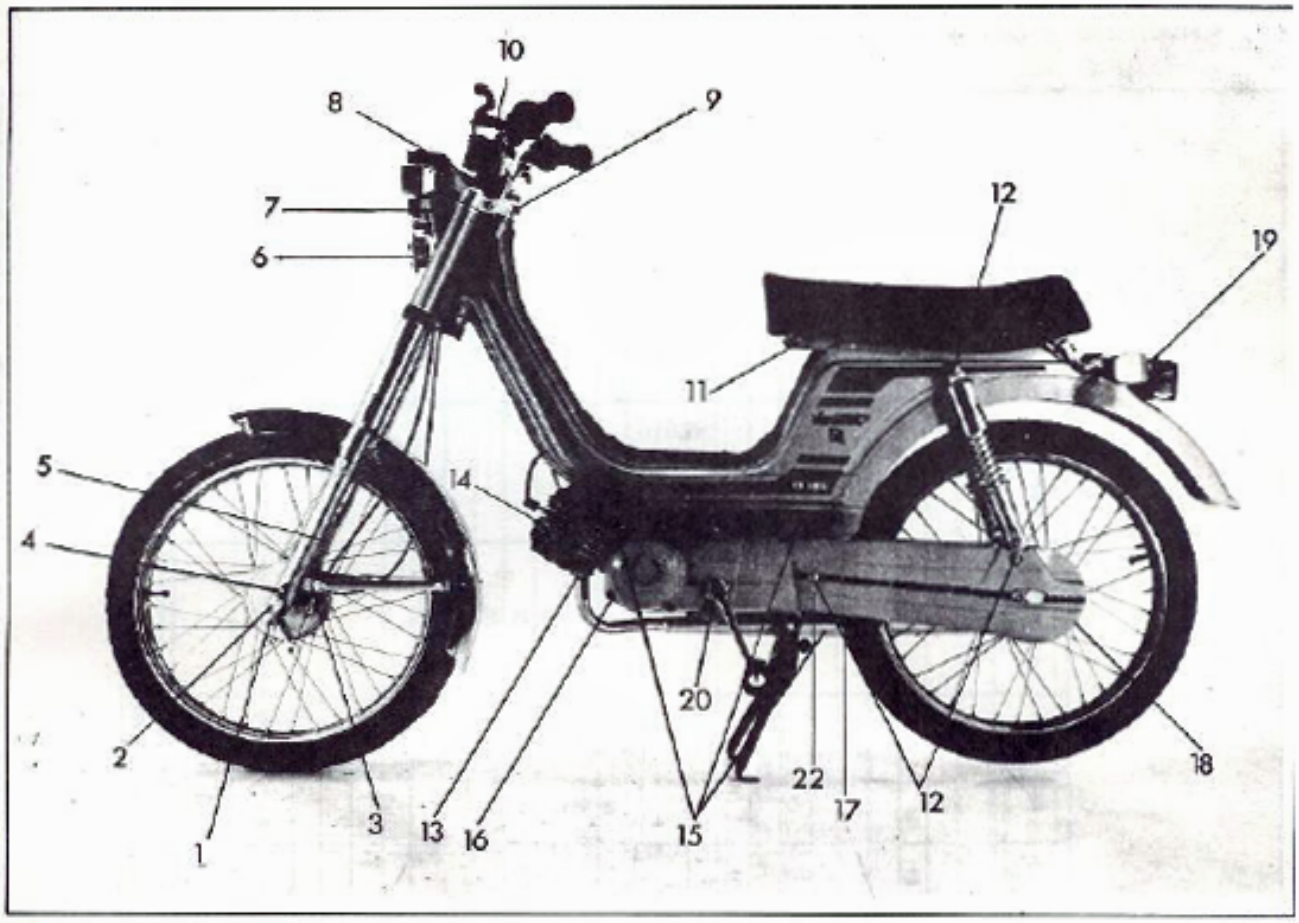


Fig. 92

The silencer had a removable baffle element. Due to the build up of carbon in this unit it should be removed and cleaned every SIX months to clean.
Loosen and remove the 10mm screw using a socket wrench. Fig.91.
Using a wire hook, pull out the silencing element Fig.92.
Clean using a stiff wire brush or similar tool and replace.

## 24. CARBURETOR REMOVAL PROCEDURE

To remove the carburetor for cleaning or repairs. Refer to Fig. 16-17-18 on page 9 of this manual and follow the procedures shown to remove the complete carburetor and




25. ROUTINE SAFETY MAINTENANCE POINTS

Regular maintenance is the best guarentee of a long lasting, trouble-free moped. It is recommended that after the first six weeks of ownership and then at regular intervals. The following check is completed and nuts and screws tightened or adjusted as required.

1. Brake lever nuts
2. Axle nuts
3. Lower front fender bracket bol
4. Fork spring screws
5. Upper front fender bracket bol
6. Horn bracket
7. Headlight bracket
8. Handlebar bracket
9. Steering tension
10. Handlebar control brackets
11. Seat brackets
12. Shock absorber mounting bolts
13. Exhaust pipe bolts
14. Cylinder head bolts
15. Engine mount bolts
16. Crankcase cover bolts
17. Muffler bolts
18. Rear sprocket bolts
19. Taillight
20. Pedal nuts
21. Chain cover bolts
22. Swing arm assembly bolts

## MAINTENANCE AND LUBRICATING CHART

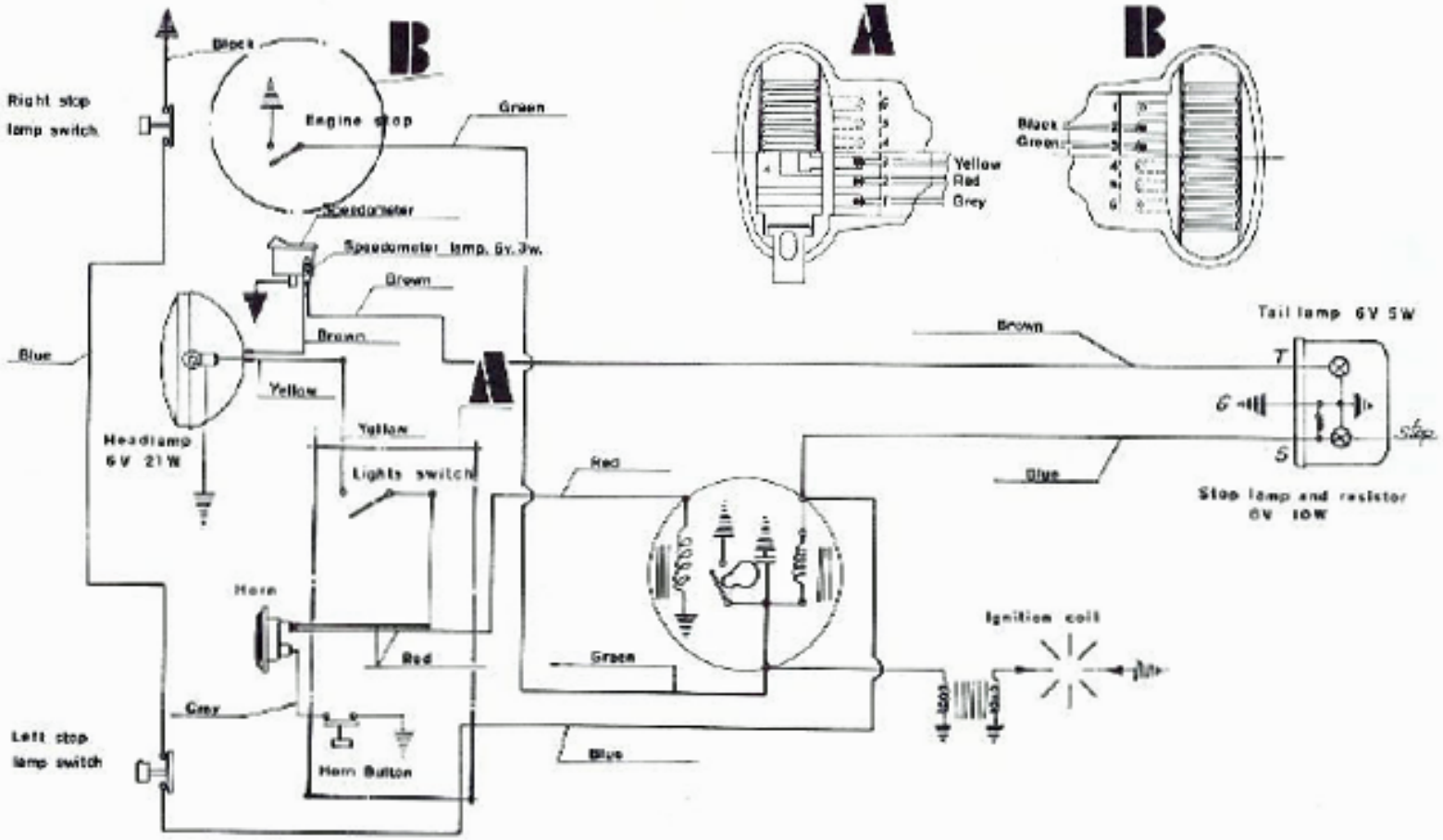
DERBI Variant

| | Before Each trip | First 300 Miles | First 900 Miles | Each 1800 Miles | Each 3600 Miles | Each 6000 Miles | Type of Lubrication |
|---|---|---|---|---|---|---|---|
| Tire Pressure | ■ | | | | | | |
| Fuel level | ■ | | | | | | |
| Cables | ■ | | ■ ● | | | | Cable Lubricant |
| Suspension Check | ■ | | | | | | |
| Lights | ■ | | | | | | |
| Brake Check | ■ | | | | ▲ | | |
| Crankcase oil | | ◆ | ■ | | ◆ | | SAE 30 |
| Transmission Belt | | ■ | | ■ | | ◆ | |
| Spark Plug | | | ▲ ✲ | ▲ | ◆ | | |
| Muffler and Silencer | | | ■ ✲ | | ■ ✲ | | |
| Tighten nuts, etc. | | | ■ | | | ■ | |
| Check spokes | | | ■ | | | | |
| Air Filter | | | | ■ ✲ | | | |
| Carburetor | | | | ▲ ✲ | | | |
| Cylindor Head, Piston | | | | | ✲ | | |
| Check Timing | | | | | ■ | | |
| Front Fork | | | | ■ | ◆ | | Grease |
| Wheel bearings | | | | | ■ ● | | Grease |
| Brake Shoes | | | | | ✲ | | |
| Pedals | | | | ● | | | |
| Steering | | | | ● | | | Grease |
| Ignition | | ▲ | | ■ | | ◆ Contact | |
| Front and Rear Brake Levers | | | ● | ● | | | SAE 10 |
| Chain | | | | ● | | | Chain Lubricant |
| Speedometer Drive | | ● | | ● | | | Grease |
| Needle bearing drive pulley unit | | | ● | ◆ | | | Grease |

CHECK-UP..... ■ REGULATING..... ▲ LUBE..... ● PARTS..... ◆ CLEANING..... ✲

## WIRING DIAGRAM

# DERBI Variant



# NOTES