Lambretta 150 ld

MAIN FEATURES

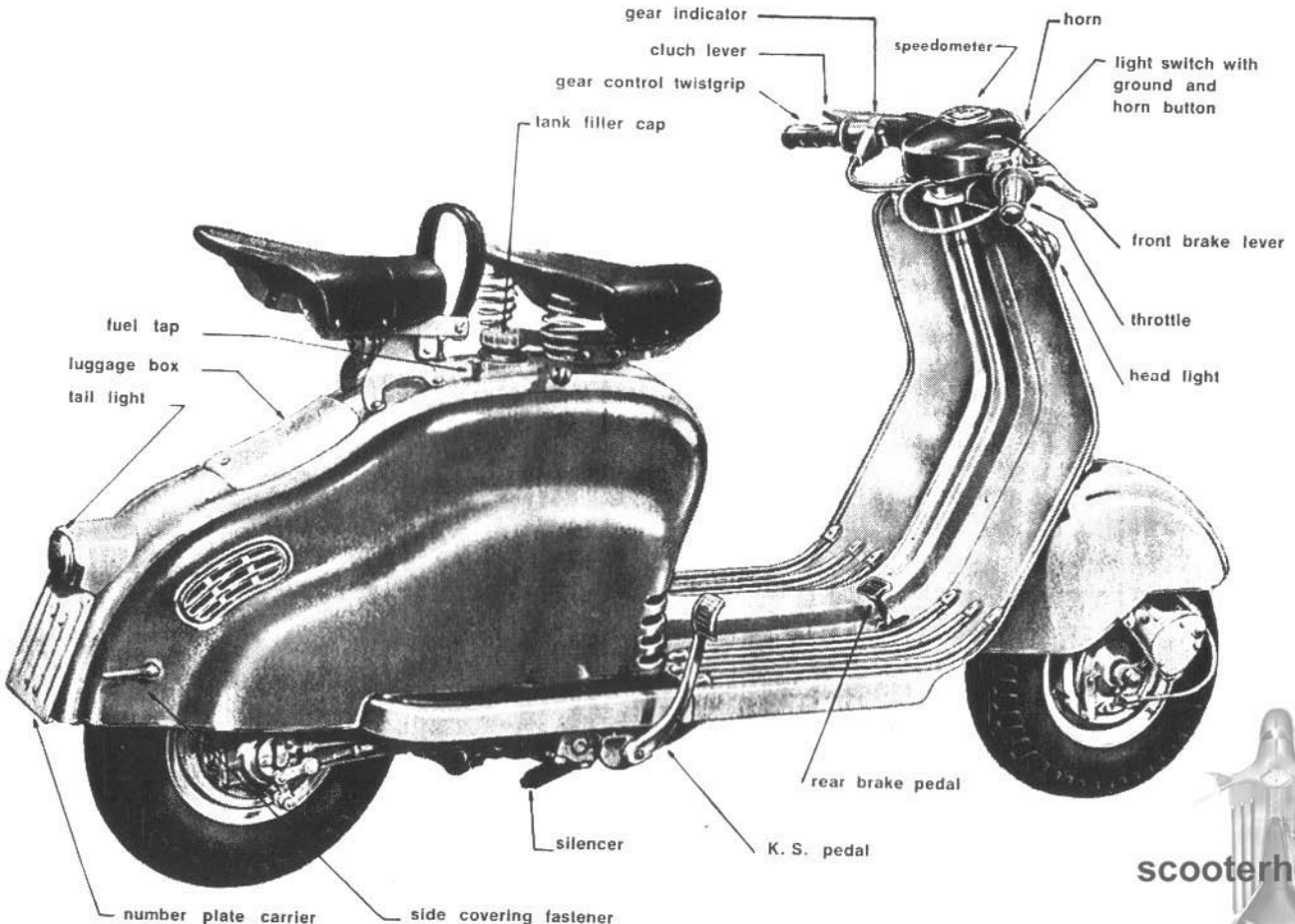


Fig. 1

MAIN FEATURES

Overall length	70" (1,770 m)
Overall height	38" (0,960 m)
Ground clearance	4-3/8" (0,110 m)
Width (Handlebar)	29" (0,740 m)
Wheelbase	50-1/2" (1,281 m)
Unloaded weight	198 lbs (90 kg)
Max speed	47-50 m.p.h. (75-80 km/h)
Fuel consumption	110 ÷ 120 m.p.g. at cruising speed

UPHILL

low gear	35 % gear ratio 1:12,9
second gear	20 % gear ratio 1: 7,5
top gear	10 % gear ratio 1:4,75

2-STROKE SINGLE CYLINDER ENGINE

Capacity	148 cc.
Bore	2,244" (57 mm)
Stroke	2,283" (58 mm)
Compression ratio	6,5
HP output max	6
r.p.m.	4600

Cylinder of high quality wear-resistant cast iron
Cylinder head of light alloy, die cast
Cast piston wear resistant of light alloy
Connecting rod of high-tensile steel with needle bearings on big end
Built-up crankshaft carried in ball bearings
Lubrication by petroil

CARBURETTOR

DELL'ORTO MA 19B4 carburettor incorporating:
— starter device
— petrol filter
— silencing air cleaner, with intake in « calm air »
Choke 0,748 (19 mm); max jet 0.0295" (75/100 mm).

IGNITION

by flywheel magneto and outside high tension coil.
Automatic advance mechanism - 4-pole magneto (27 watt).
Side-located spark plug. Heat range: 225 Bosch Scale.

Note - In order to obtain good spark plug function, it is important that the following rules are followed:
— ensure that the right type of plug is used
— screw in by hand whenever possible; tighten with box spanner.
At every 1250/1550 miles:
— clean plug insulator
— check electrode gap - 0.6/0.7 mm.
It is advisable to change the plug after approx. 3750/4000 miles, even if old plug is not giving trouble.

STARTING

by pedal.

COOLING

Forced draught cooling by fan fitted on the flywheel.

CLUTCH

Multi-plate type running in oil bath operated by lever on the left twistgrip. Adjusting device, just near the lever.

GEARBOX

3-speed. Constant mesh gears in oil bath made of high-tensile steel. Hand control by left twist grip and flexible cable. Gear position indicator near the twistgrip.

TRANSMISSION

From engine to gearbox by bevel gears; from gearbox to the rear bevel gears by torsion shaft especially efficient against sudden variations of the revolution rate. Bevel gears running in oil bath. The shaft is enclosed in the transmission case.

FRAME

The frame is of a large steel tube section ensuring highest rigidity and eliminating vibration.

SUSPENSION

The front suspension (fig. 2) is realized by means of trailing links. Each trailing link is connected to a lever bearing an end ball which compresses a progressive type spring, located inside the fork tubes (A). This group is hermetically protected against water and dust and operates in the grease enclosed within the boxes (B) the result being longer working life and non maintenance.

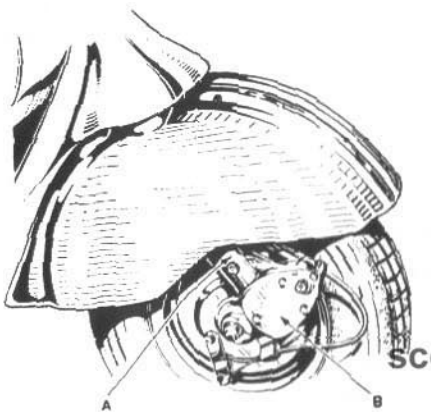


Fig. 2

The rear suspension (fig. 3) is designed with a long swinging arm, consisting of the transmission case, and pivoting on a robust pin incorporated in the frame. Through its movement the swinging arm loads the suitably supported torsion bar made of high- tensile steel set in casing (A).

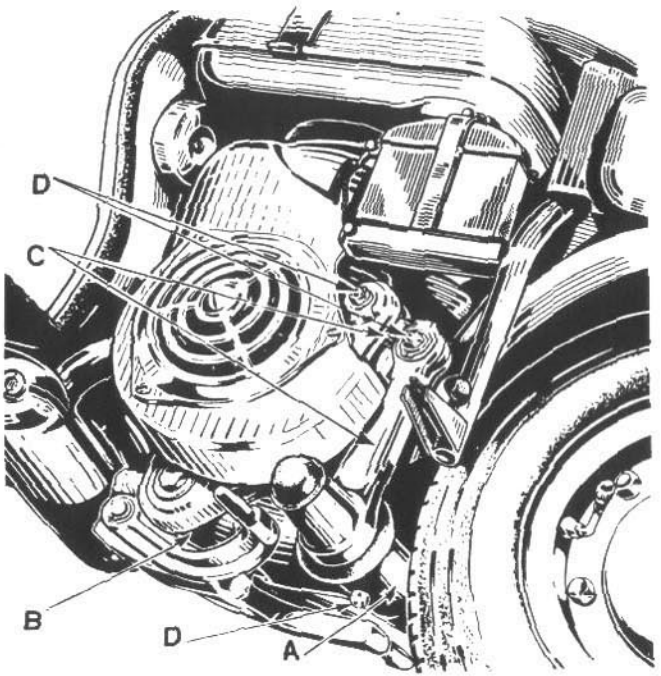


Fig. 3

The swings of the engine group are transmitted to the torsion bar by means of return levers (C), which are properly proportioned in order to reduce the torsion bar angle when the load increases.
The fitting of a hydraulic damper remarkably increases springing comfort.
The release lever knuckles and the bronze bushing for the torsion bar lever are lubricated by means of grease guns (D).

BRAKES

Internal expanding type brakes with flexible control, operated by hand on the front wheel and by pedal on the rear wheel.

WHEELS

Interchangeable. The rear wheel is detachable like motor car wheels. Easy dismantling of the pressed steel sheet rims. 4.00-8" tyres. Inflating pressure: 15 lbs/s.i. for the front tyre, 27 lbs/s.i. for the rear tyre with pillion rider.

TANK

Capacity: 1,55 gals (7,1 lt) including 1 1/4 pt. (0,7 lt) reserve. 3-way tap: C = closed - A = open - R = reserve.

ELECTRICAL SYSTEM

a) **with pilot light** (see diagram fig. 44 - Lambretta 125 LD, page 64)
By alternating current generator. Headlight with 6 V - 25/25W twinfilament bulb and 12V-10W pilot lamp. Tail light with red gem and 6V-3W bulb. Illuminated speedometer with 6V-1,5W bulb.
Lighting switch with separate controls, on the right handlebar for:
— pilot light
— main beam and dipped beam
— ignition earthing
— horn.

b) **Electrical system with parking light** (diagram fig. 6):

By alternating current generator supplying L.T. current to 6V-25/25W twin-filament bulb located in the head lamp, 6V-1,5W bulb located in the tail lamp and 6V-1,5W illuminated speedometer bulb. Moreover it charges a 6V-4Ah battery, through a rectifier. The battery supplies direct current to the 6V-5W bulb located in the head lamps as well as to the 6V-1,5W bulb located in the tail lamp, which constitute the pilot light and parking light.
The battery may be either of dry or of common lead acid type.

Lighting switch with separate controls, on the right handlebar, for pilot light, main beam and dipped beam, ignition earthing and horn.

TOOL KIT

1 Double tubular spanner (21-14 mm = 0,827" — 0,551") for spark plug and wheel nuts
-- Double spanner (14-27 mm = 0,551" - 1,06") for rear wheel hub nut
1 Double spanner (10-14 mm = 0,394" — 0,551") for cap screws of hexagon socket type
1 Double spanner (8-10 mm = 0,315" — 0,394")
1 Spanner (3,5 mm = 0,1378") for cap screws of hexagon socket type
1 Screwdriver
1 Point file

The tool bag is located inside the luggage box.

ACCESSORIES

Pillion seat, spare wheel support with carrier. All accessories can be supplied with all necessary fittings.

SAFETY-LOCK

Key safety-lock, on handlebar.

LUBRICATION

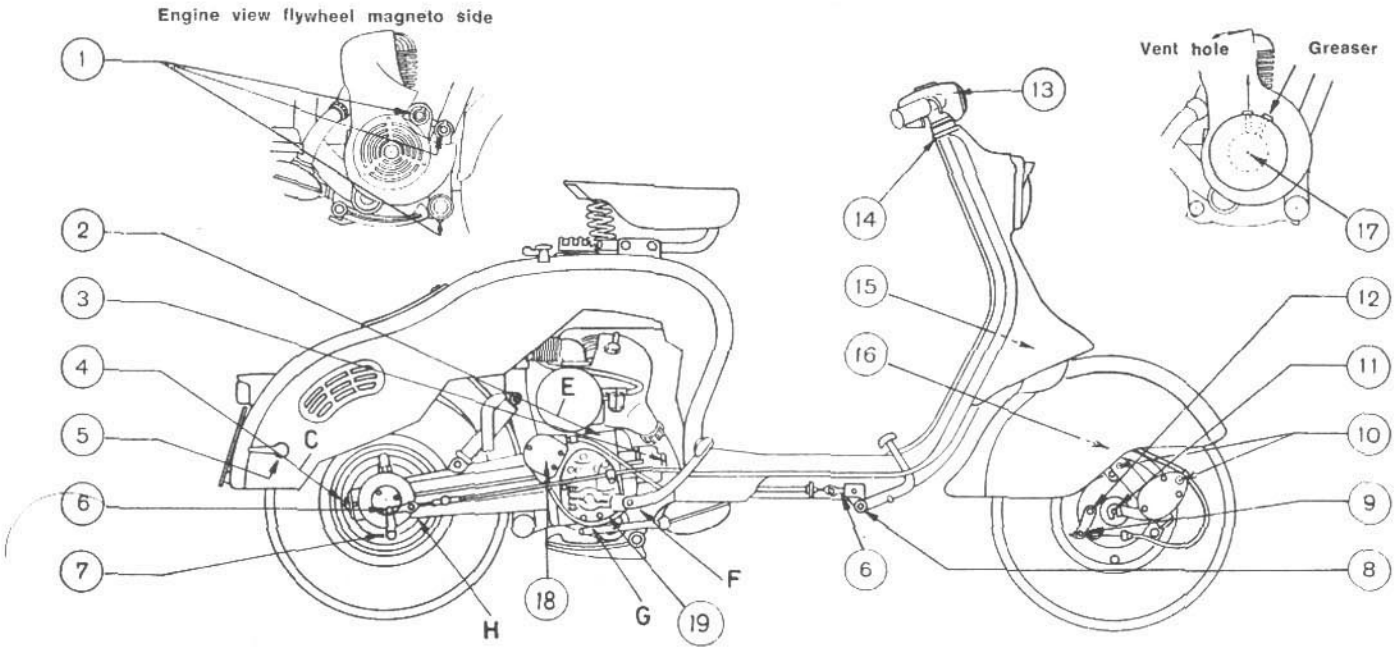
LUBRICATION TABLE

Position	PARTS TO BE LUBRICATED	OPERATIONS	INTERVAL	LUBRICANT
—	Engine	Mix petrol with 8 % oil	for first 900 miles.	BP ENERGOL two stroke
		Mix petrol with 6 % oil	after 900 miles	
2*	Gear box	Check level & refill to mark	every 900 miles.	BP ENERGOL Motor Oil SAE 30
		Change oil (needed quantity grs. 540)	after first 300 then every 1800 miles.	
3 6 9	Clutch control cable & links Rear brake cable & links Front brake cable & links	Lubricate	when assembling	BP ENERGREASE A 1
12 13	Front brake cam pin H/bar control & lever knuckles	Lubricate with oiler	every 900 miles.	BP ENERGOL Motor Oil SAE 30
1 7 8	Rear susp. knukles & links Rear brake cam pin Rear brake pedal links	Lubricate with grease gun	when assembling and every 900 miles.	BP ENERGREASE A 1
5 16 18	Side panel locking assemblies Front suspension springs Gear change control box	Coat with grease	when assembling or repairing.	BP ENERGREASE A 1
10	Front suspension link box	Lubricate with grease gun	when assembling and after every 1800 miles.	BP ENERGREASE A 1
19	Kickstart box group	Coat with approx. 2 ½ ozs grease Lubricate satellite gear shaft through nipple	when assembling and after every 3000 miles.	BP ENERGREASE A 1
11	Front wheel bearings	Lubricate with grease gun	when assembling and after every 1800 miles.	BP ENERGREASE L 3
17**	Flywheel side main bearings	Pack with grease	when assembling and after every 4000 miles.	BP ENERGREASE L 3
14 15	Steering ballraces Steering ballraces	Coat with grease	when assembling or repairing.	BP ENERGREASE L 3
4	Rear crown wheel & pinion	Replenish level - needed quantity grs. 120-130	when assembling and after every 1800 miles.	BP ENERGOL Motor Oil SAE 140

* Position 2 - Pour oil in plug hole E until it flows from plug hole F. After this add a further 1/8 pt. (approx.). The quantity of oil in gear box group should be 1 1/8 pts. From engine No. 130.780 of 150 LD model and from engine No. 28.180 of 125 LD model, to change oil or to refill to level in the crankcase, the proper oil quantity will not be 1/8 pt. as above mentioned, but oil shall be added until it flows steadily out of the new leve hole set laterally on the cover (cluich side). Tighten breather and inject 2-3 c.c. grease

** Position 17 - Inject grease though grease nipple until some comes out of breather

LUBRICATION DIAGRAM



C - Rear trans. oil filler plug.
E - Gear box oil filler plug.
F - Gear box oil level plug.
G - Gear box oil drain plug.
H - Rear trans. case drain plug.

Fig. 4

ELECTRICAL EQUIPMENT

DESCRIPTION

The electrical equipment is fed by the flywheel magneto supplying an A. C. low tension current to the double filament headlamp, 6V-25/25W, the rear light, 6V-1,5W, and through a rectifier maintains the charge in the 6V-4Ah accumulator battery. This battery supplies direct current to the 6V-5W festoon bulb in the headlamp and to the 6V-1,5W rear light, which form the parking lights.

The whole circuit is controlled from the main switch on the right-hand side of the handlebars (see fig. 1).
The current for the speedometer 6V-1,5W light is taken from the junction box in the headlamp (see wiring diagram, fig. 6).
Table at page 20 lists the electrical apparatus of the equipment with their principal characteristics and part numbers.

SCHEMATIC LAYOUT ELECTRICAL EQUIPMENT

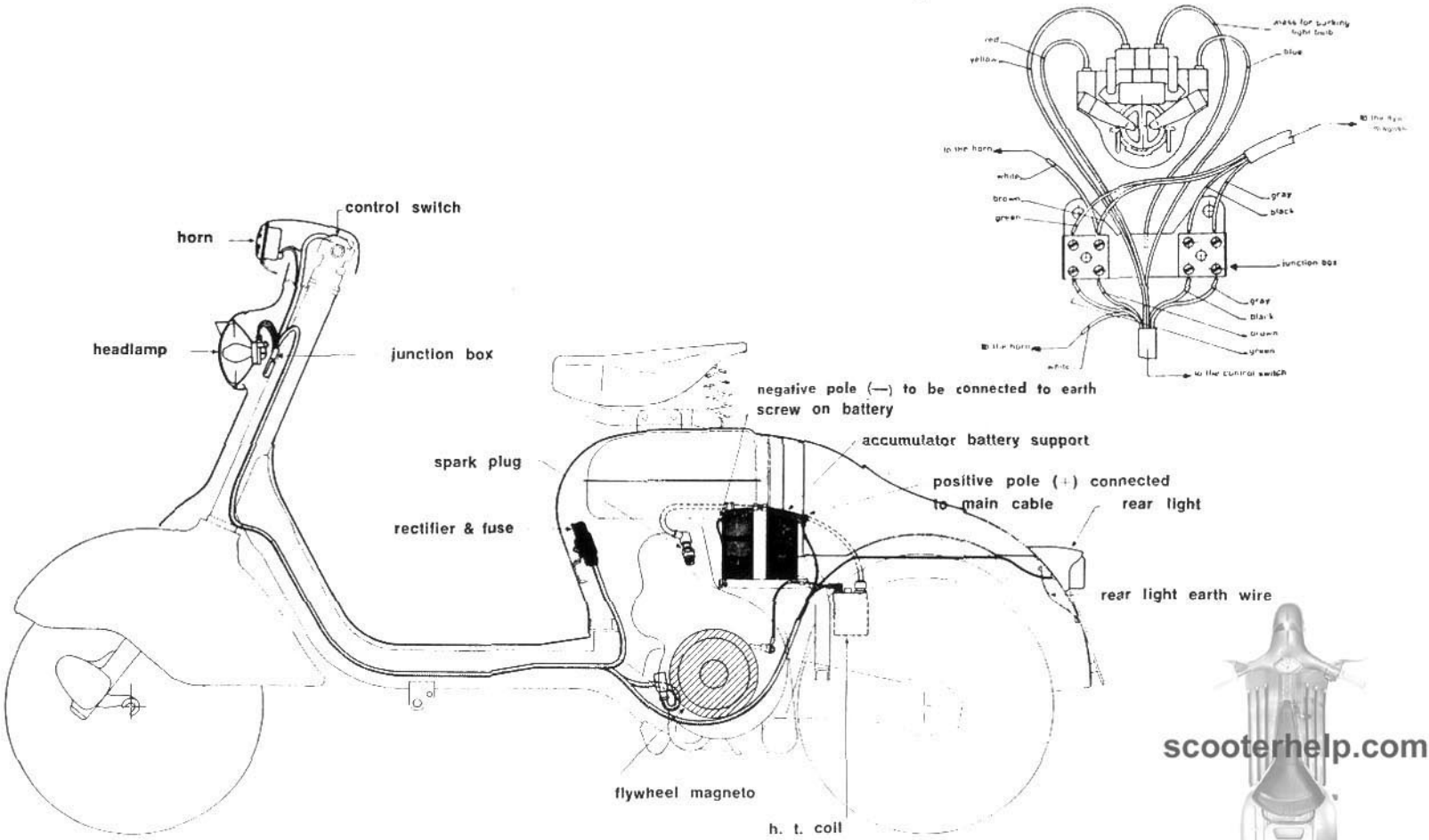


Fig. 5

ELECTRICAL EQUIPMENT COMPONENTS CHARACTERISTICS

DESCRIPTION	Part No.	CHARACTERISTCS
Flywheel magneto Marelli Filso	 12 M 1231 12 M 1241	Bob-weight type of automatic advance External H.T. coil Output ≥ 6 V at 3,000 r.p.m. with resistance load at 1.33Ω Corresponding power - ≥ 27 W Magnetic plane = 10° ± 2°; cam grade ≤ 0,5 μ CLA Static unbalance = a couple of 4 g.cm. Point aperture = 0.35 ÷ 0,45 mm Ignition advance setting = 24° ÷ 26°
Rectifier with fuse	11 A 1191	Semi-wave type Capacity: 1.5 A continuous - feed tensione = 20 V max. Outup: 8 V - inverse current ≤ 3 mA Drop in voltage with 1,5 d.c. ≤ 0,9 V d.c.
External H.T. coil Marelli Filso	12 A 1456 11 M 1196	Open circuit coil Alternating current
BULBS Double filament Headlamp City light Rear light Speedo light	 2 A 117 8 A 146 8 A 605	 Double filament 6 V - 25/25 W Bayonet type fitting 6 V - 5 W festoon. 39 mm long 6 V - 1.5 W festoon. 39 mm long 6 V - 1.5 W to suit speedometer bulb holder
Main switch	12 A 1715	
Horn	12 A 1731	A.C. at 6.5 V Absorbed current ≤ 3 A Efficiency: ≥ 84 Phon at a distance of 10 metres
Battery	11 A 1175	6 V - 4 Ah. Non-spill type at 90°

ELECTRIC WIRING CIRCUIT

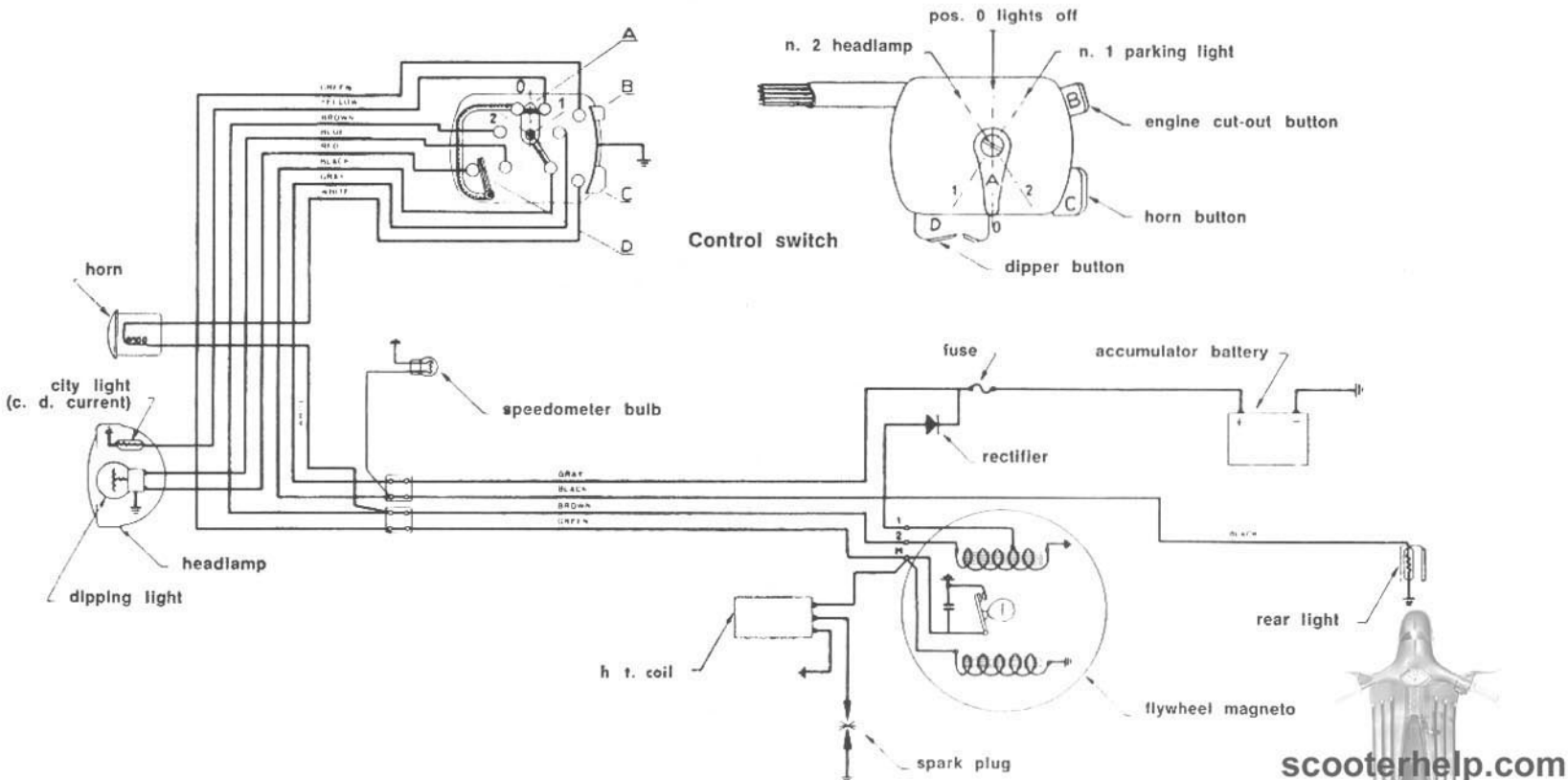


Fig. 6

3 - As per dry cell type.

4 - As per dry cell type.

5 - As per dry cell type.

6 - As per dry cell type.

7 - Check acid density.

The density of 1,26 (equal to 30° Beaumé) is the reading for a fully charged battery, while a reading of 1,21 (25° Bé) indicates that the battery needs charging as soon as possible to avoid plate corrosion. Should the readings be lower, then corrosion has already set in and it is advisable to send the battery to the manufacturers.

After charging, shake the battery to ensure the removal of gases, then check level and top up to right degree.

For the first charge, follow strictly the makers' instructions, which are attached to each battery. In hot climates the density reading should be 1,21 (25° Bè) at 15° C both after the first charge and during normal functioning.

CHECKING OF THE BATTERY CHARGING CIRCUIT

With the **engine running** at the speeds indicated below, measured with a revolution counter placed by hand on the flywheel lock nut (see fig. 7), the following values

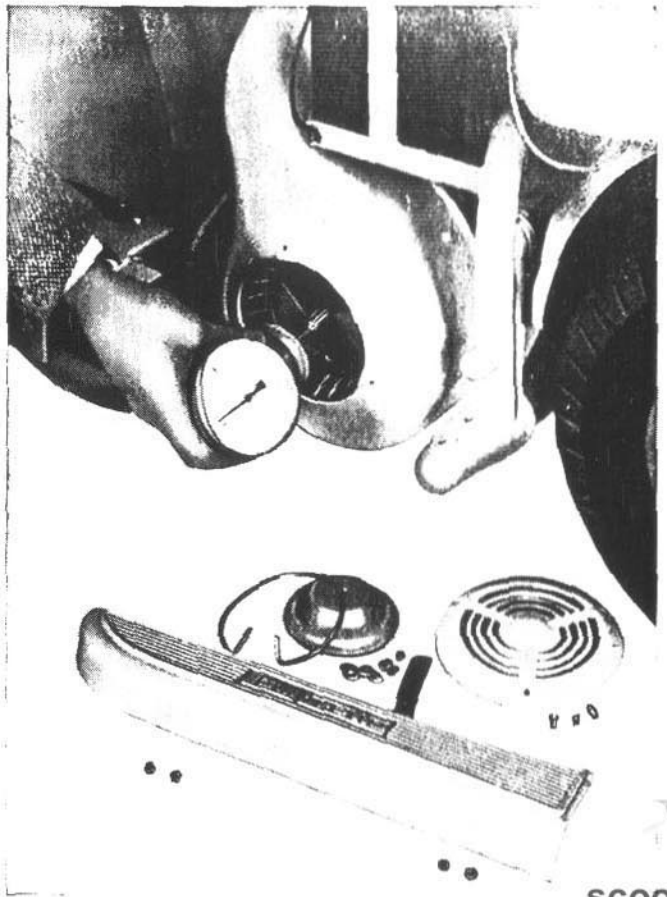


Fig. 7

should register on the ammeter, which is inserted between the positive battery pole and the main circuit cable as shown on fig. 8. (Battery positive pole to ammeter negative pole - positive ammeter pole to main cable).

— 5,000 r.p.m. - 0,9 A
— 3,000 r.p.m. - 0,4 A

These figures should be read with the handlebar switch lever in the **0 position** (lights off).

If these values do not reach the above minimum readings, the cause can be one of the following:

— Faulty rectifier (loss of current) - substitute.
— Burnt fuse (parking light not working) - substitute.
— Flywheel magneto demagnetized (low headlamp light) - remagnetize or substitute.

CHECKING OF ELECTRIC CIRCUIT

By measuring the inverse current from battery to circuit, the current dispersion, with engine cut out, can be checked. The value measured with a milliammeter inserted between battery positive pole and the main cable terminal as shown in fig. 9, should not be more than 3 mA (Battery positive to milliammeter positive - milliammeter negative to main cable).

The above check is to be carried out with the swicth lever on 0 (lights off). If the reading is higher, this denotes an excessive current dispersion which can, in the long run, discharge the battery. This current dispersion can be caused by:

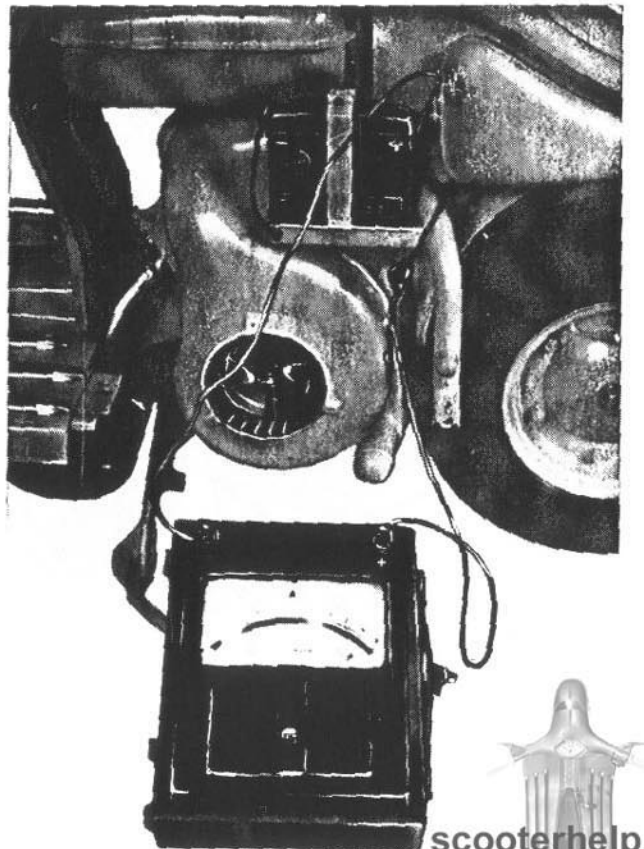


Fig. 8

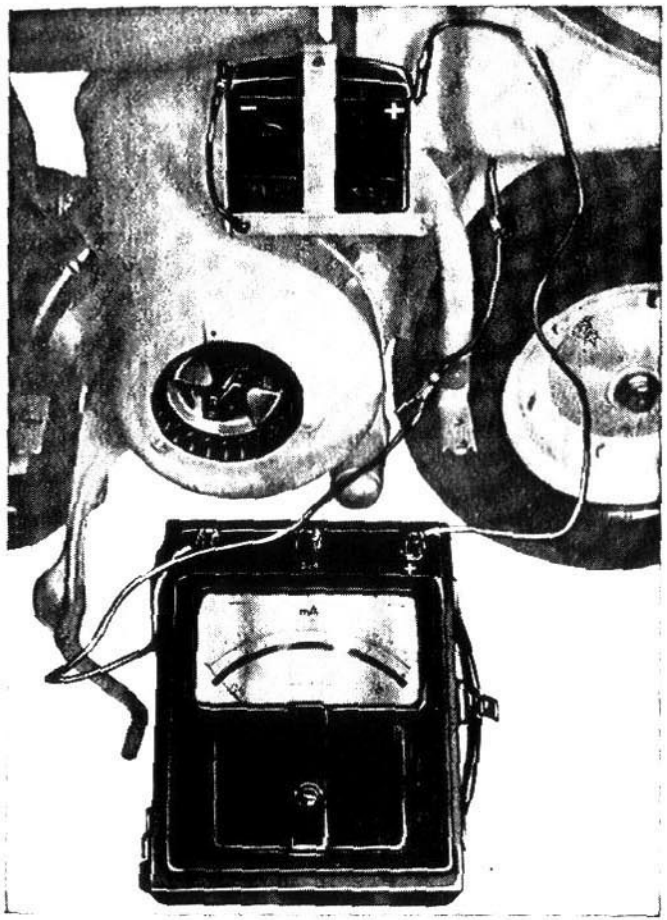
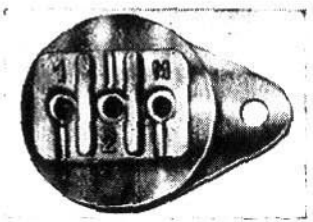


Fig. 9

— Faulty insulation of wires and cables, bad connections, which can be easily rectified.
— A faulty rectifier, in which case this should be replaced.



NOTES

Should be flywheel magneto be dismantled from the engine, care should be taken on refitting to ensure that all cables are correctly connected to their proper terminals on the flywheel. (See fig. 10).
A wrong connection, will result in a very low headlamp light.
Should the battery for same reason not give current the **parking lights**, when the machine is at a standstill, will not light, although the headlamp festoon and rear lamp, fed by the rectified current from the flywheel magneto, will still light at a reduced intensity. It is necessary to immediately have the battery checked and rectified.

ENGINE-CARBURETTOR
KICK STARTER

GENERAL OUTLAY OF ENGINE WITH GEARBOX AND TRANSMISSION

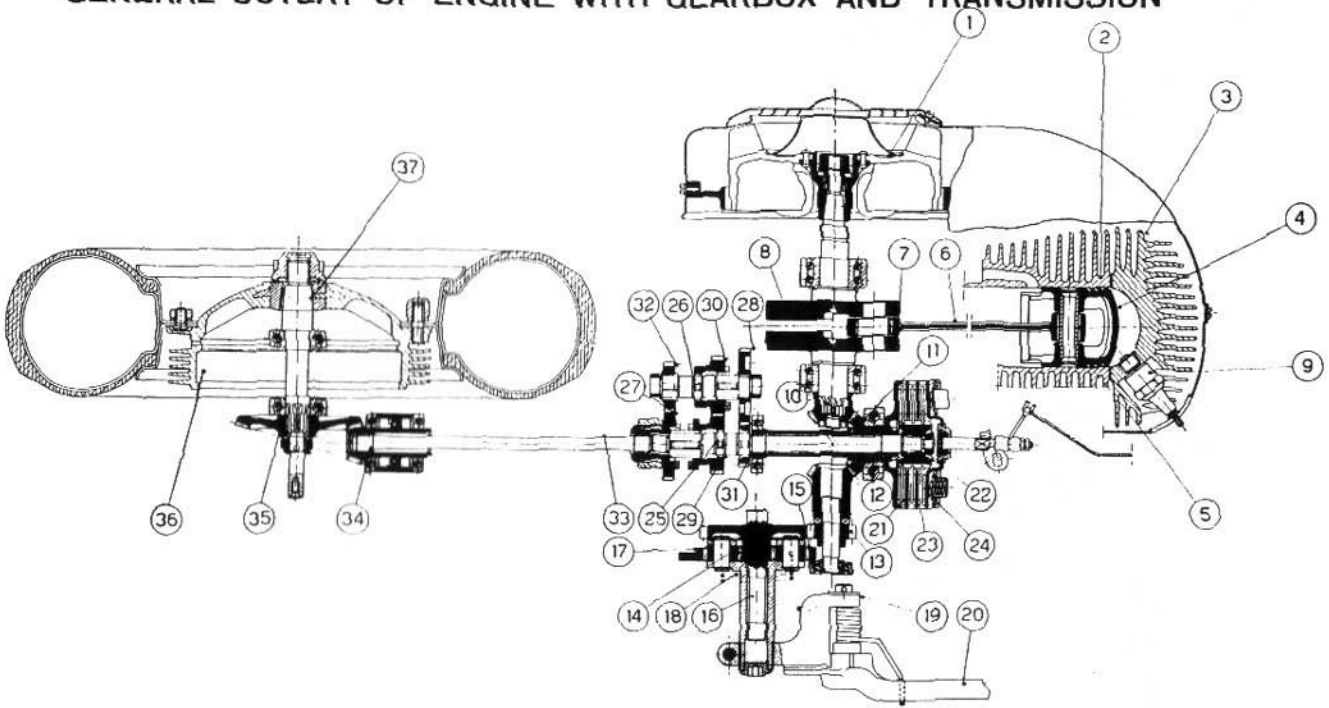


Fig. 11

LEGEND

(1) Flywheel magneto
(2) Engine cylinder
(3) Cylinder head
(4) Piston
(5) Gudgeon pin
(6) Connecting rod
(7) Needle bearing
(8) Crankshaft
(9) Spark plug
(10) Crankshaft drive bevel pinion
(11) Clutch drive pinion
(12) Kick start bevel pinion
(13) Kich start pinion
(14) Kick start quadrant gear
(15) Kick start satellite gear
(16) Satellite gear support shaft
(17) Kick start crown wheel
(18) Kick start pedal main spring
(19) Kick start pedal boss
(20) Kick start pedal
(21) Clutch bell housing
(22) Clutch splined collar
(23) Clutch drive disc
(24) Clutch driving disc (cork lined)
(25) Primary shaft
(26) Layshaft
(27) Primary 3rd gear
(28) Layshaft 1st gear
(29) Primary 2nd gear
(30) Layshaft 2nd gear
(31) Primary 1st gear
(32) Layshaft 3rd gear
(33) Torsion bar
(34) Rear drive bevel pinion
(35) Rear drive crown wheel
(36) Rear wheel complete
(37) Stub axle

DELL'ORTO MA 19 B 4 CARBURETTOR WITH F 18 FILTER

Air slide	75
Needle	D1 on 2nd notch
Atomizer	255/B
Main jet	75
Minor jet	40
Starter jet	55
Float	6,5 grams.
1st hole min.	∅ 0.85
Air screw. min. opening	1 ½ turns
Filter	F. 18

In order to improve the engine air intake, with the resultant cutting down of noise, the air intake for the carburettor is now no longer a direct one from the atmosphere, but through a chamber situated in the luggage box fitted in the frame. This chamber draws the air through two slots in the frame. See fig. 12.
The air thus entering the chamber, deposits most of its impurities, and then, via a rubber connection, passes through the filter to the engine.

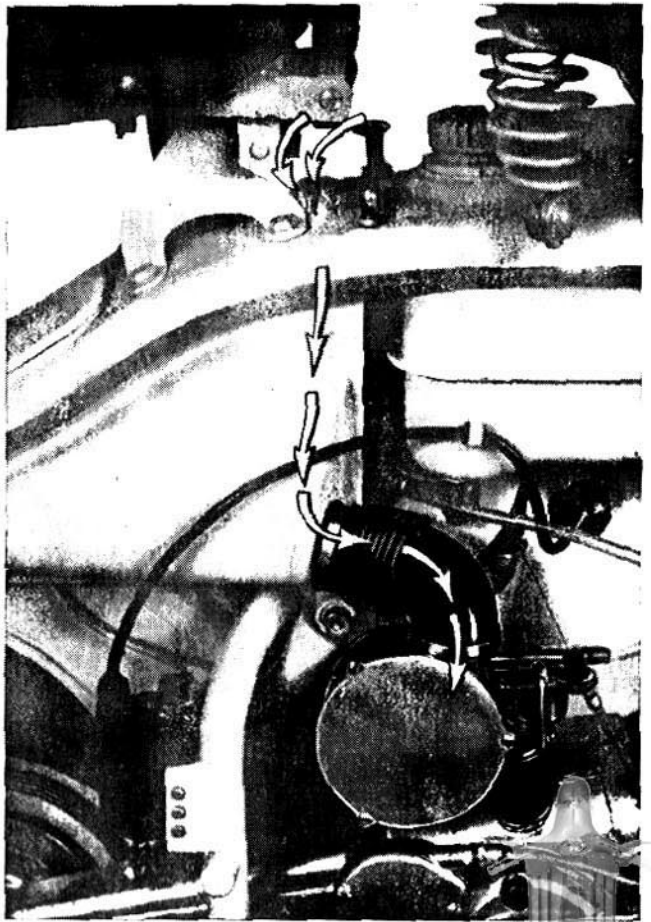
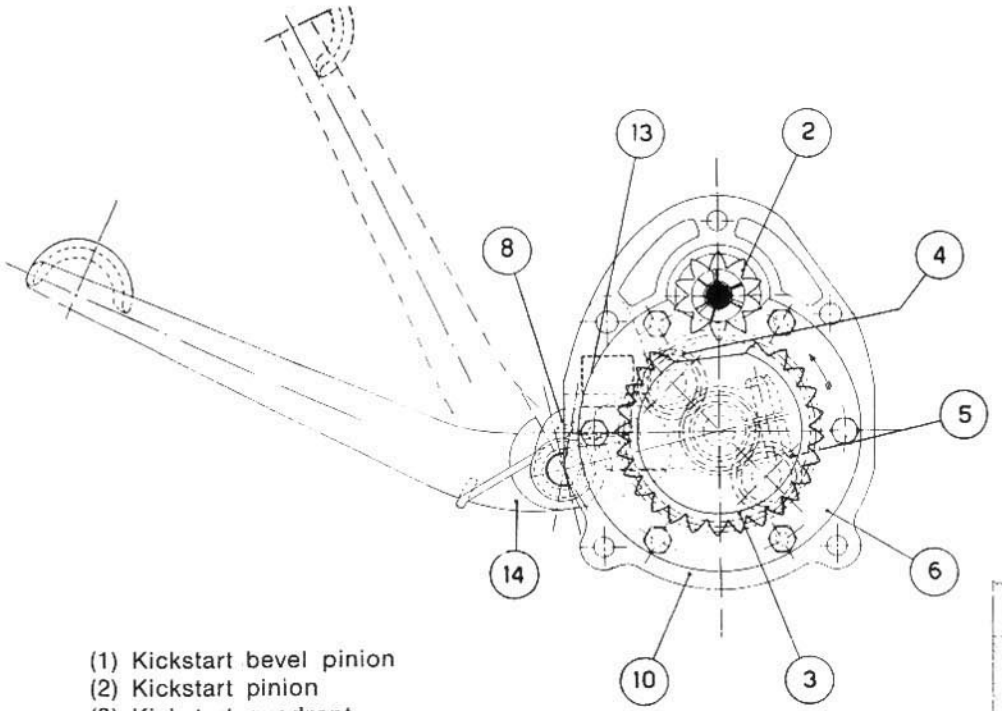


Fig. 12

EPICICLOID GEAR TYPE KICK START



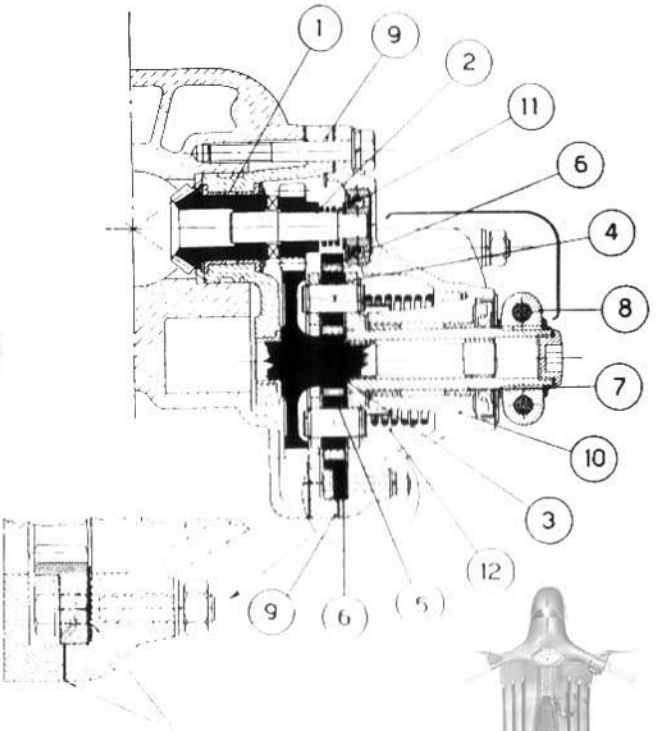
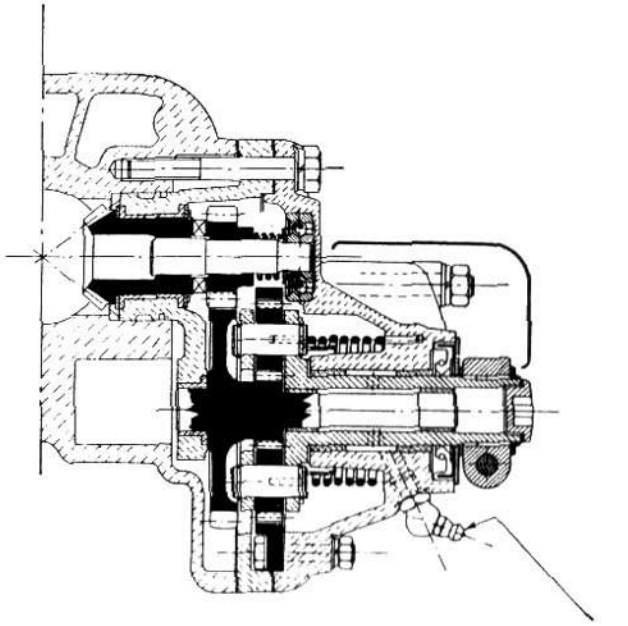


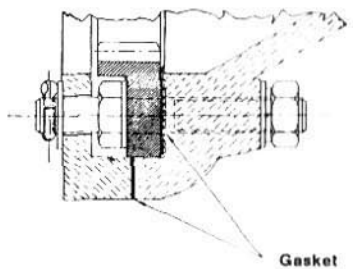
Fig. 13

(1) Kickstart bevel pinion
(2) Kickstart pinion
(3) Kickstart quadrant
(4-5) Satellite gears
(6) Crown wheel
(7) Satellite gear support shaft
(8) Kickstart pedal boss
(9) Kickstart body
(10) Kickstart cover
(11) Kickstart pinion spring
(12) Kickstart pedal main spring
(13) Kickstart pedal buffer
(14) Kickstart pedal



particular A (box-cover union)

Greaser



Gasket

Fig. 14

In order to obtain a prompt and easier action of the engine through the kick start pedal, an epicicloid system of straight gears has been introduced to transmit this action from the pedal to the crankshaft. This particular group will give a transmission ratio of 1 to 10,9 between these two items, with the advantage that with the angular movent allowed to the kick start pedal, two revolutions of the engine are obtained, thus ensuring a good spark for the ignition.

The group works as follows (see fig. 13):

Pressing of the kick start pedal rotates the two satellite gears (4 and 5) which, having to rotate around the crown wheel (6), fixed by screws to the body, impose a rotary movement in the quadrant (3), while the quadrant gear (3) meshes with the kick pinion (2). This, in turn, through its teeth, drives the bevel pinion (1), which motions the crankshaft.

DISMANTLING AND RE-ASSEMBLY OF KICK START GROUP

Preliminary Operations (fig. 15)

Op. 1. Dismantle the right-hand footboard of the scooter, by unscrewing the 4 nuts fixing this to the frame. (8 mm box spanner).

Op. 2. Place a tray under the engine to collect the oil, as indicated in fig. 15. Unscrew the oil plug situated under the engine crankcase (10 mm allen key).
This operation is required only with oil lubricated kick-starter.

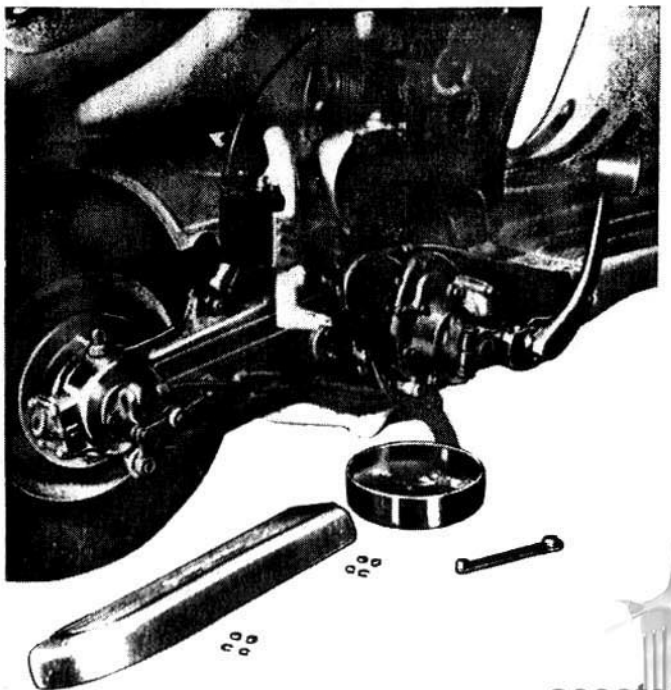


Fig. 15

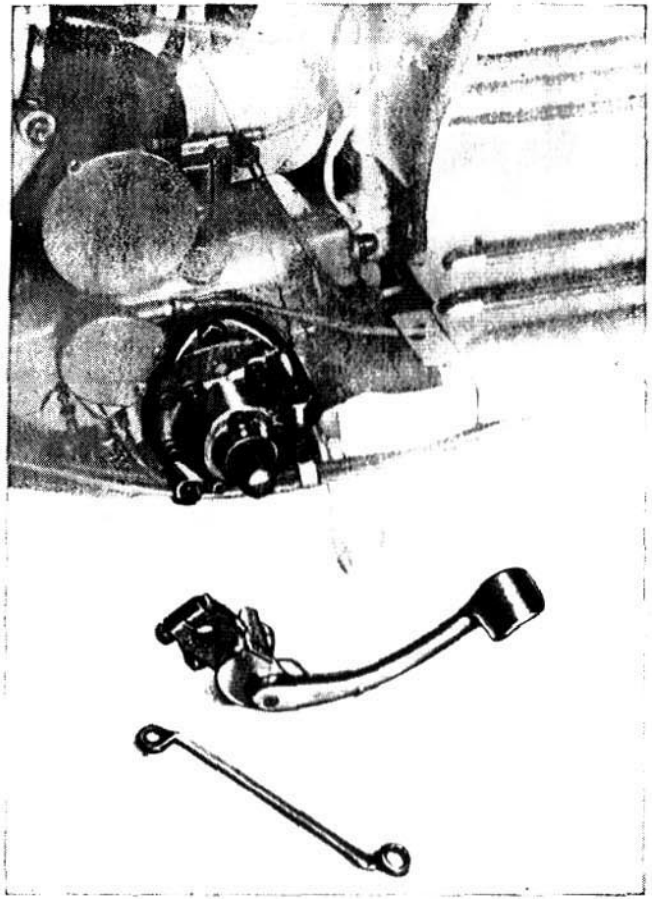


Fig. 16

Dismantling the Kick Start Pedal (fig. 16)

Op. 1. Extract circlip on pedal boss (straight type circlip pliers).

Op. 2. Unscrew bolt securing boss to shaft (14 mm ring spanner).

Op. 3. Draw off pedal. (If this is found difficult, use a screwdriver as a lever between boss and cover).

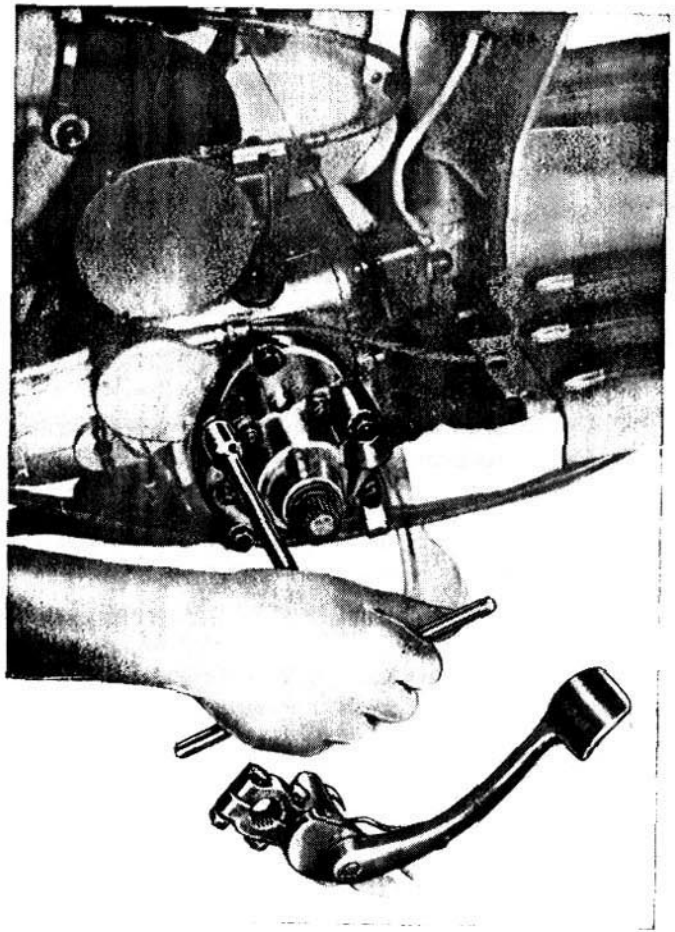


Fig. 17

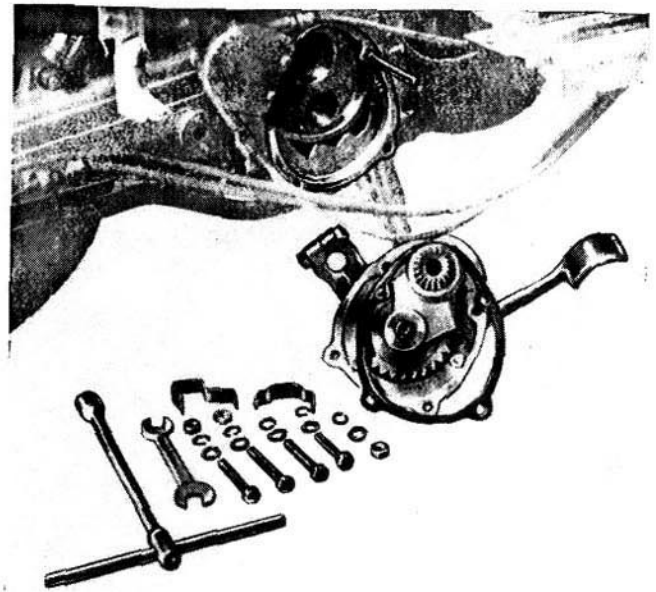


Fig. 18

Dismantling Kick Start Group from Crankcase (fig. 17 and 18)

Op. 1. *Unscrew the 4 bolts fixing group to the crank-*case, by means of a 14 mm box spanner. With-draw, together with the cable clips.
Unscrew reference pin nut by means of a 12 mm flat spanner.

Op. 2. Take off Kick Start Group from crankcase. Care must be taken during this operation to avoid damaging the surface faces of the group and crankcase.

Fig. 19

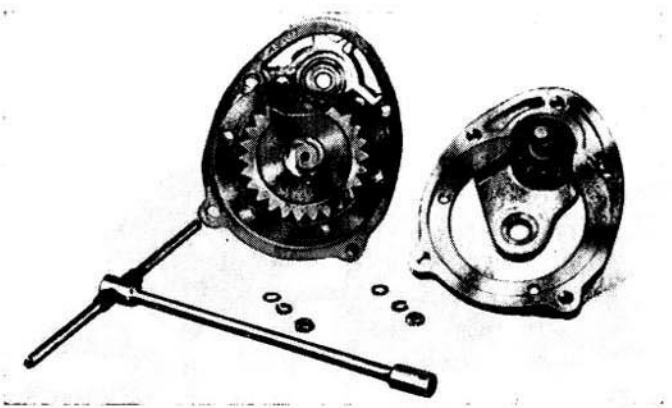


Fig. 20

Complete Dismantling of Kick Start Group

Op. 1. Unscrew the 2 nuts of the kick start cover fixing pins (fig. 19). Separate the group as shown on fig. 20 (10 mm box spanner).

Note: On new machines, where the kick start group assembly is secured by plain washers and pins fitted on bolts, replacing split washers and nuts, the taking off of the group shall be made by taking the pins out of their seats (detail A fig. 14).

Op. 2. Take away circlip holding satellite gear support shaft to cover. (Straight type circlip pliers) (fig. 21).

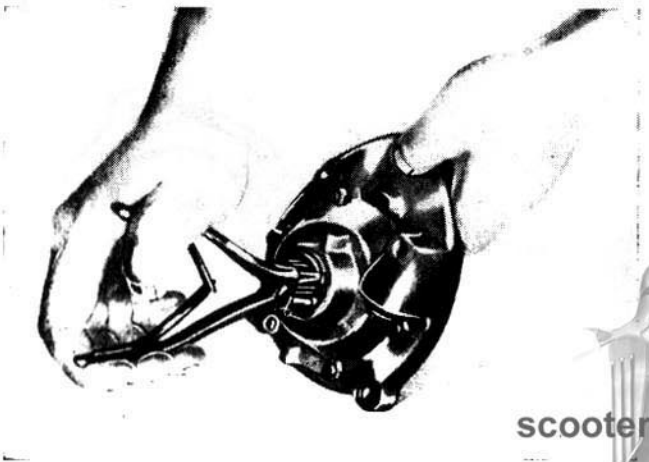


Fig. 21

Fig. 22

Fig. 23

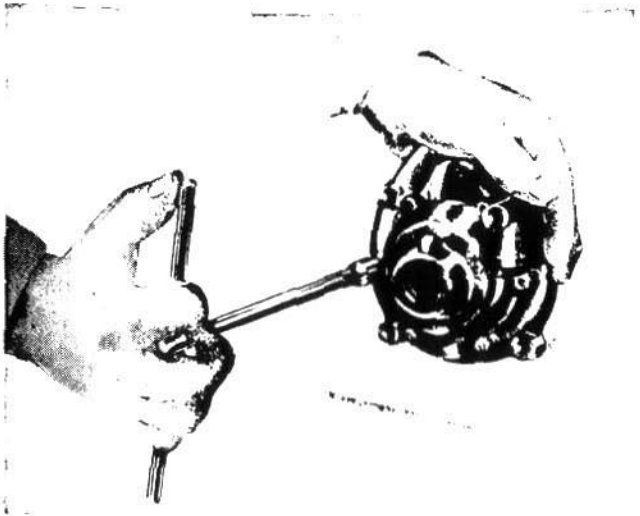


Fig. 24

Op. 3. Dismantling of parts (fig. 22):
- — quadrant complete with gear
- — satellite gear support shaft
- — *kickstart lever main spring.*

Op. 4. *Take off bevel pinion circlip by means of* straight circlip pliers. Slip off bevel pinion, collecting relative washers (fig. 23).

Op. 5. Unscrew 6 nuts locking crown wheel to cover (10 mm box spanner). (*This operation should* only be carried out when changing crown wheel (fig. 24).

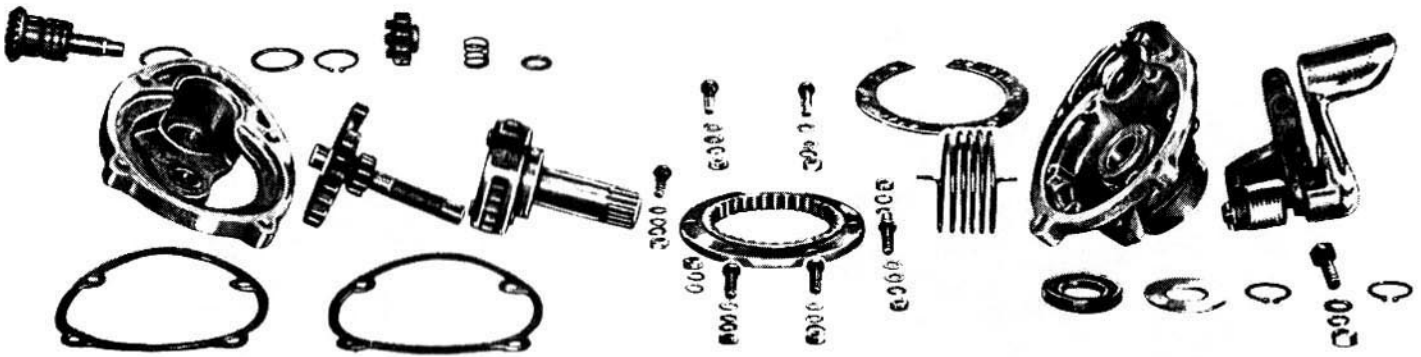


Fig. 25

The figure 25 shows all the parts making up the group.

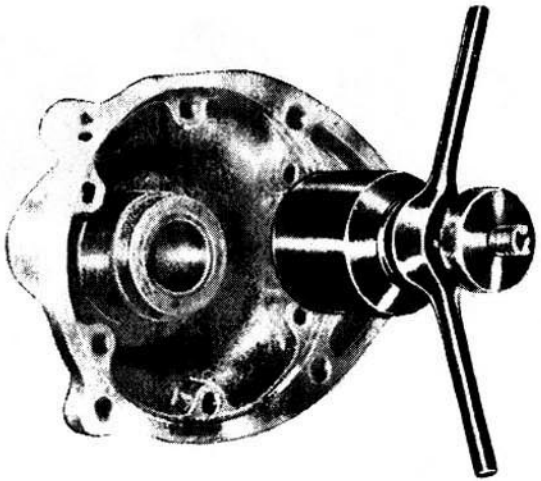


Fig. 26

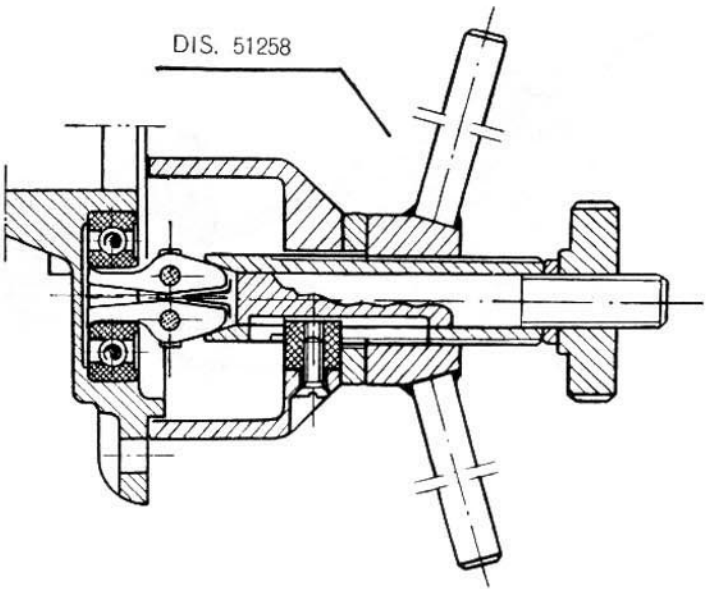


Fig. 27

Op. 6. Should the pinion shaft bearing in the cover need replacing, use extractor No. 51258. (Fig. 26-27).

RE-ASSEMBLY

The re-assembly of the kick start groups is carried out, in general, by following the dismantling operation inversely.

Note: When re-fitting the crown wheel, it is necessary to ensure that the relative gasket is placed between the wheel and group body, and that the fixing bolts are fitted with the proper washers.

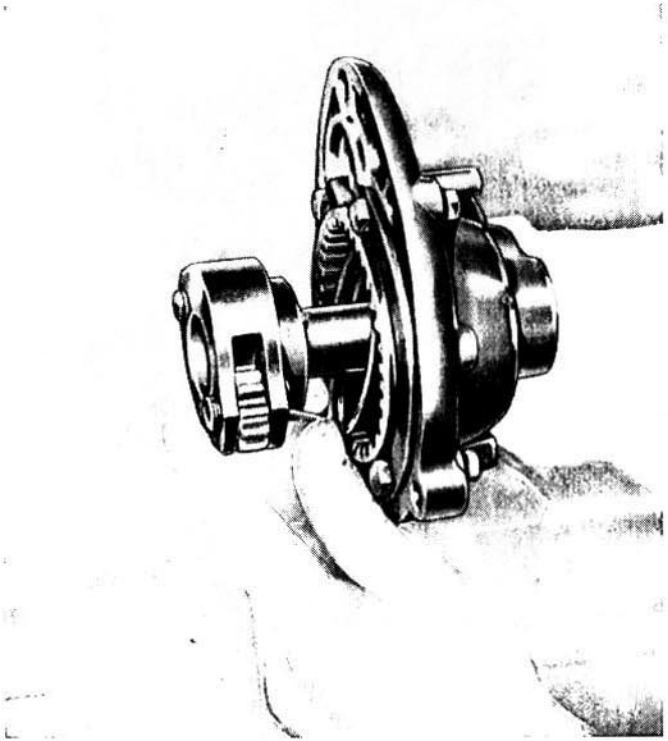


Fig. 28

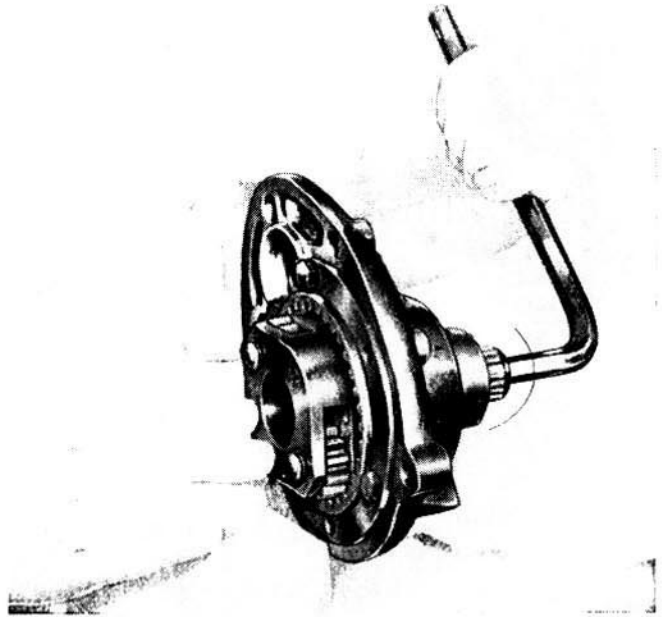


Fig. 29

Kick Start Pedal Main Spring Reloading

Assembly of Kick Start Pedal and quadrant complete

Op. 1. Fit one end of the main spring into the appropriate hole in the kick start cover; slide the satellite support shaft sufficiently into the cover to

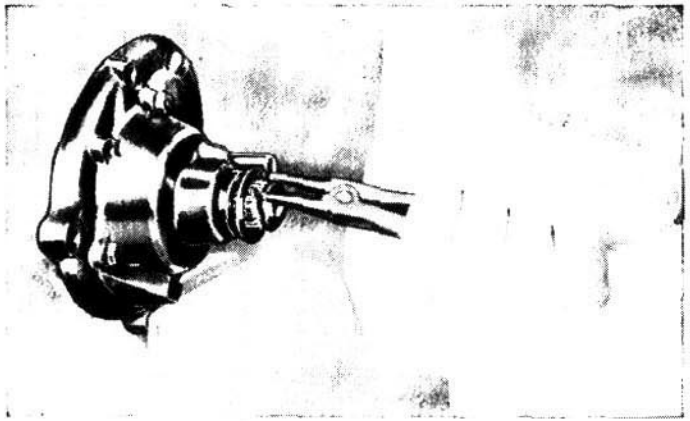


Fig. 30

allow the insertion of the other end of the spring into the hole in the satellite pin (fig. 28).

Op. 2. *Rotate satellite support shaft ½ a turn before* meshing the satellite gears to the crown wheel (10 *mm* spanner or allen key) (fig. 29).

Op. 3. Fit the washer and circlip, after having ascertained that the oil seal is fitting perfectly in its seat (fig. 30).

Op. 4. Assemble kick start pedal, but, before doing so, turn satellite gear support shaft a fraction of a turn, loading main spring, to ensure that in the

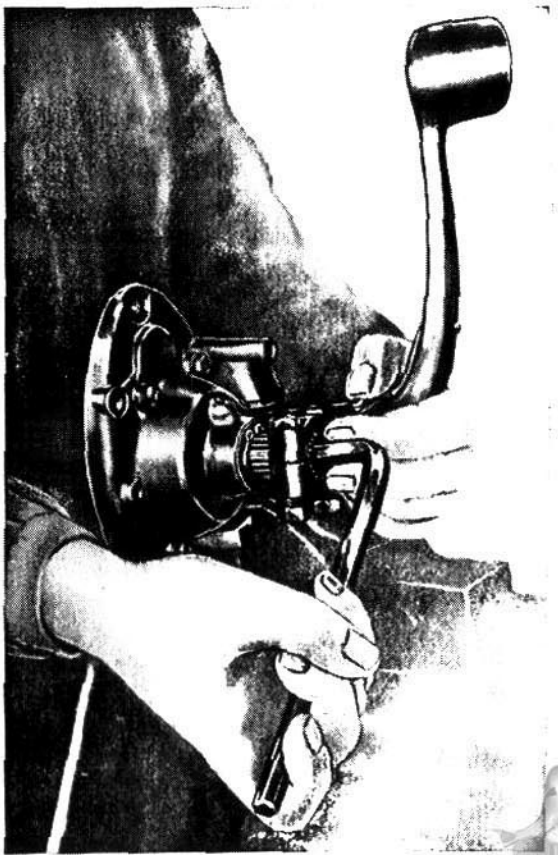


Fig. 31

lever rest position, the flange of the shaft does not touch the ball bearing seat (fig. 31).

Op. 5 Fit kick start lever circlip.
When assembly is completed, the kick start pedal is with its stop face resting against the rubber buffer on the kick start cover (fig. 32).

Fig. 32

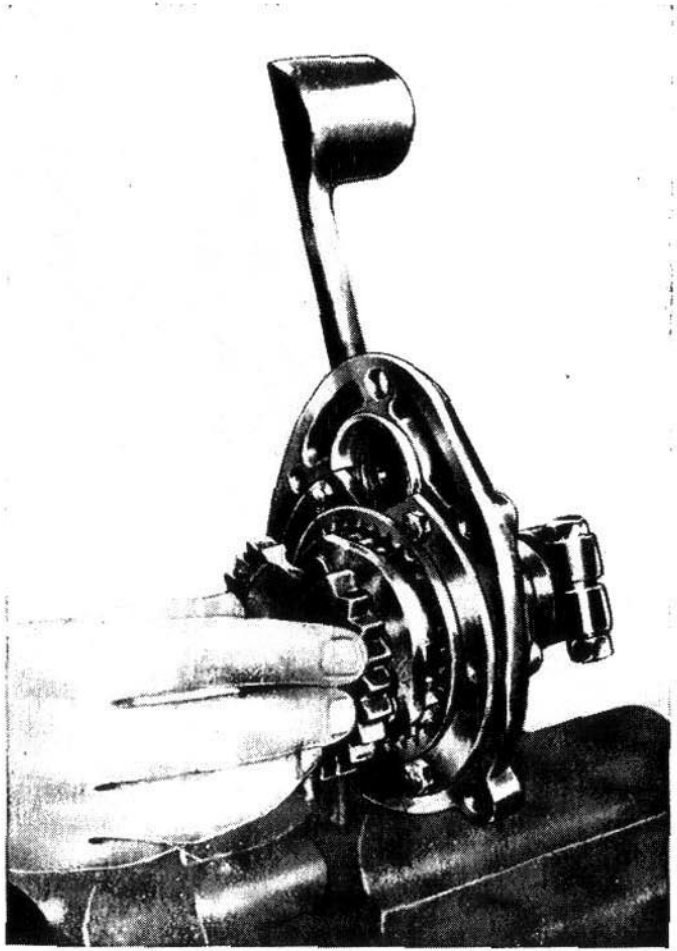


Fig. 33

Op. 6. Assemble the quadrant gear complete in the position as shown on fig. 33.
The rest position of the quadrant should be such as to allow the free rotation of the kick start pinion (fig. 13).

Op. 7. Fit the group into the seat in the crankcase and fix by means of its bolts, after having lubricated as indicated on page 14.

Op. 8. Screw in oil plug. Re-fill crankcase with oil to correcte level.

Note: Op. 8 is required only with oil lubricated kick-starter.

SPEEDOMETER EXTRACTING
RE-FITTING AND REAMERING OF SMALL END BUSH HEAD LAMP BEAM SETTING

SPEEDOMETER FITTING DIAGRAM

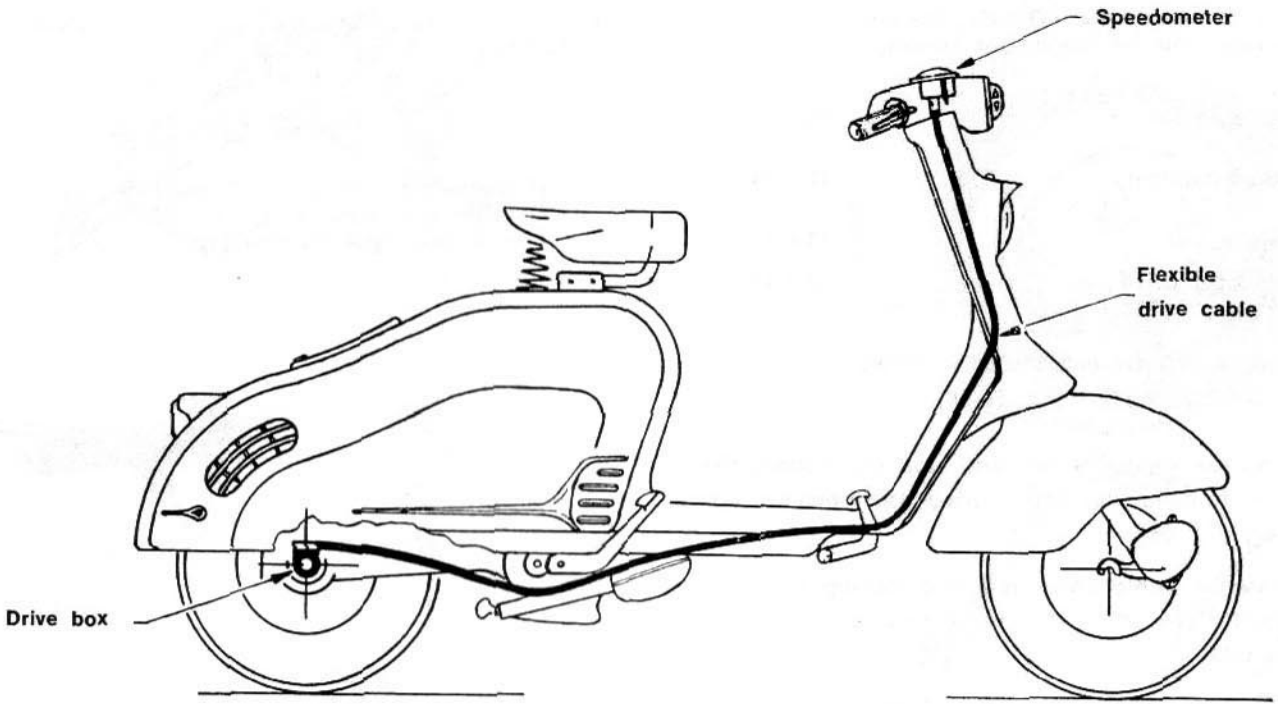


Fig. 34

SPEEDOMETER

On the Lambretta 150 LD 1957, the speedometer is incorporated into the handlebar cowling (see fig. 34).

The following table lists the speedometer group components:

Description	Part. No.	Characteristics
Speedometer	12 A 1416	(1 revolution = 1 meter) Illuminated dial. Bayonet type lamp 6 V - 1.5 W. Helical gear type Ratio 12/10.
Drive box	11 A 1156	
Flexible drive cable	12 A 1421	

DISMANTLING OF HANDLEBAR COWL AND SPEEDOMETER (fig. 35-36).

(1) Unscrew central screw and side clip screws fixing cowl to handlebar. (Screwdriver and 8 mm box spanner) (fig. 35).

(2) Unscrew cable anchoring ring locking screw (see point A. fig. 36). Lift cowl to facilitate further operations.

(3) Withdraw speedometer light bulb holder from its seat. (This operation serves also when bulb is to be changed). During successive operations, ensure that the bulb does not receive knocks which will cause damage.

(4) Unscrew the speedometer cable fixing ring and draw out end of cable.

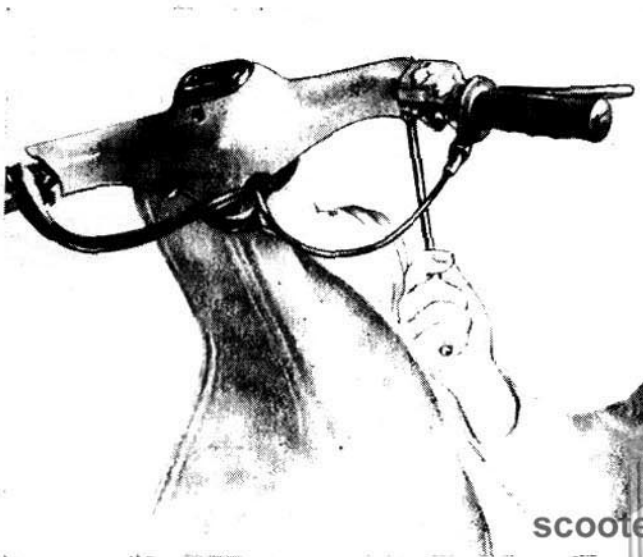


Fig. 35

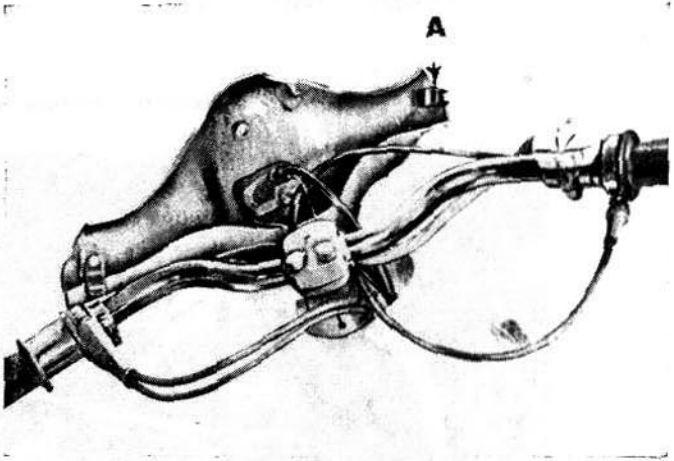


Fig. 36

(5) To dismantle speedometer from handlebar cowl, unscrew the bracket knurled nut then, with light hand pressure, pull speedometer out from the outside of cowl.

Note: To free the cowl entirely, it is necessary to disconnect the horn wires from the horn.

DISMANTLING OF SPEEDOMETER DRIVE BOX

To dismantle the speedometer drive box, after removing the side panel, the following operations are necessary (fig. 37):

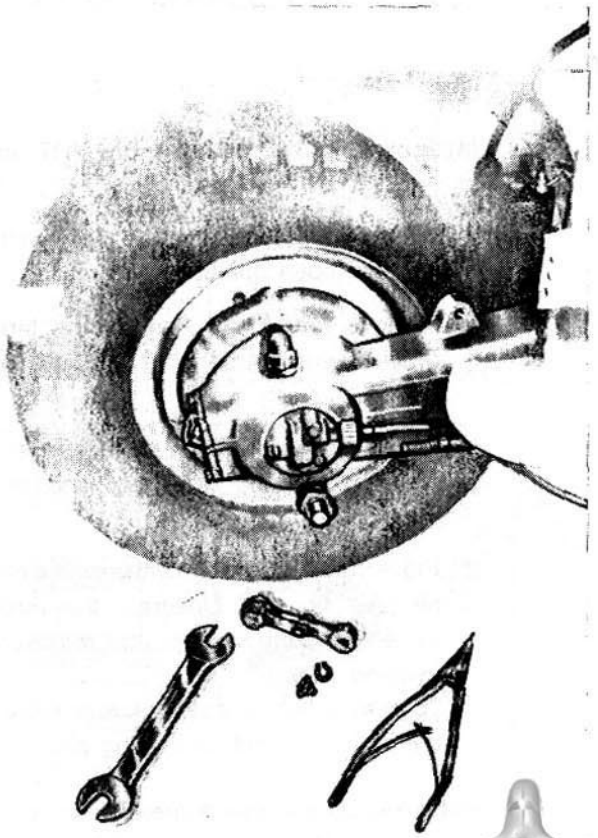


Fig. 37

(a) Loosen brake cable screw. (17 mm open spanner).

(b) Unscrew the rear brake cam shaft grease nipple (15 mm open spanner).

(c) Remove rear brake lever fixing circlips, and withdraw levers from their shaft. (Straight type circlip pliers).

(1) Loosen lock ring fixing speedometer cable to bracket on drive box. Draw out end of cable from its seat.

(2) Place tray under rear of transmission case to collect oil (see fig. 38). Unscrew the three speedometer drive box fixing screws, and remove box from transmission case.
To dismantle the speedometer drive bevel gear, on the stub axle, pull out fixing pin.

Note: Should the speedometer inner cable need replacing, this can be done by disconnecting the cable from the speedometer and drawing out the inner cable, without dismantling the outer cable from its clips.

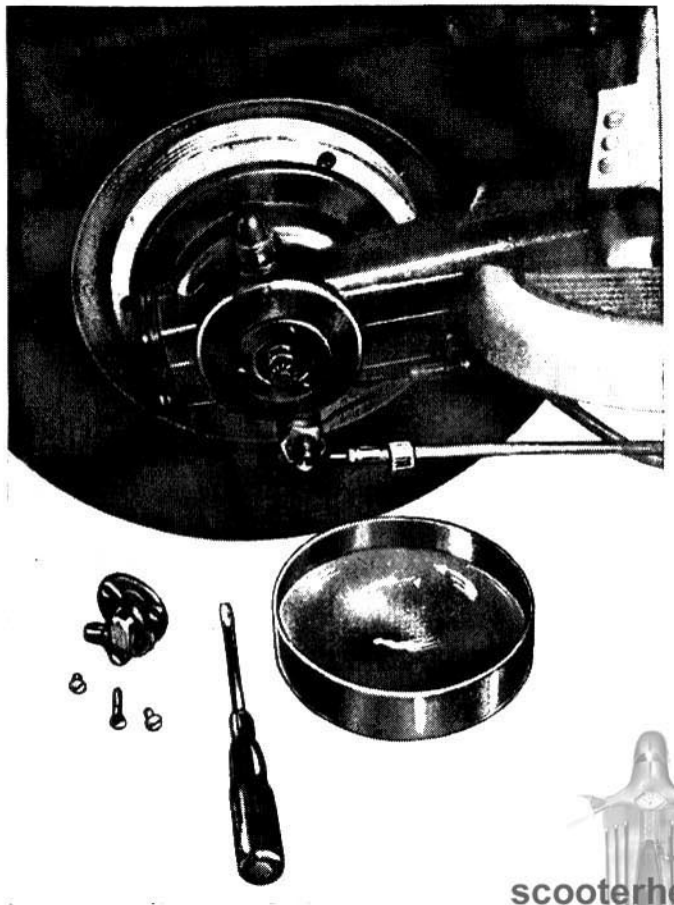


Fig. 38

RE-ASSEMBLY

To re-assemble the above group, proceed in the opposite manner to the above. Refill oil to level in drive box.

EXTRACTING, RE-FITTING AND REAMERING OF SMALL END BUSH

Preliminary operation

— Place a rag around the connecting rod in crankcase to avoid particles of small end bush falling into crankcase during reamering.

Extraction

— Place tool No. 54361 on crankcase as shown in figure 39, after having well cleaned the surface face; rotate crankshaft so that the small end bush centre coincides with that of the tool.
— Fit pin (1); screw in bush (3); fit washer (7) and nut (2).
— Screw bush (5) until it locks connecting rod.
— Tigten tool gently by means of distance pieces (6) and the four stud nuts.
— Screw nut (2) with 27 mm spanner until small end bush is completely extracted.

Re-fitting

To re-fit a 16 mm small en bush, place tool 54361 as for extraction. To re-fit a 14 mm small end bush, centre up tool with pin (1) inserted in con rod small end, as shown on fig. 40.

— Set bush on pin (1), placing it so that the slot and oil holes all coincide with those on the connecting rod when pressed home.
— Place pin (1) in body (4) and screw nut (2) until small end bush is in place in the connecting rod.

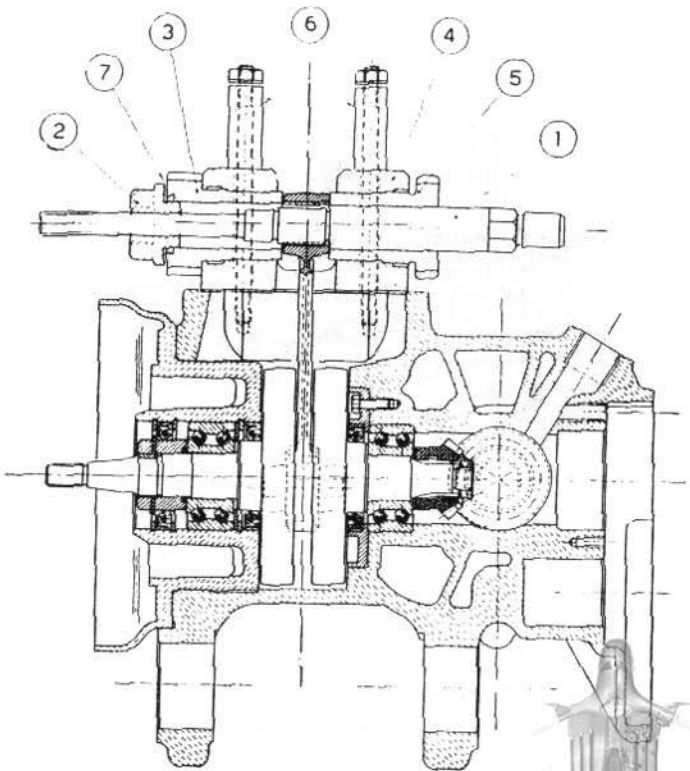


Fig. 39

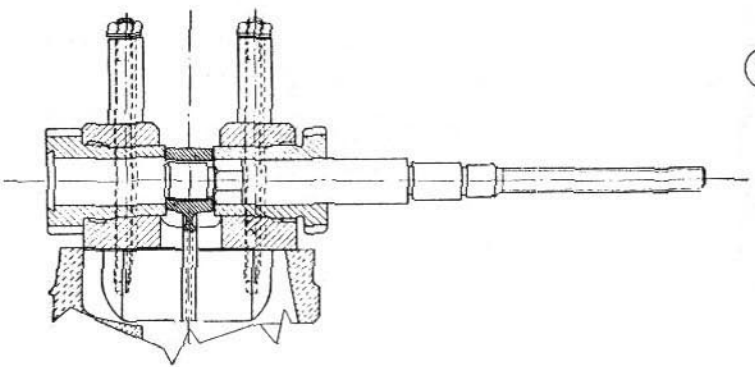


Fig. 40

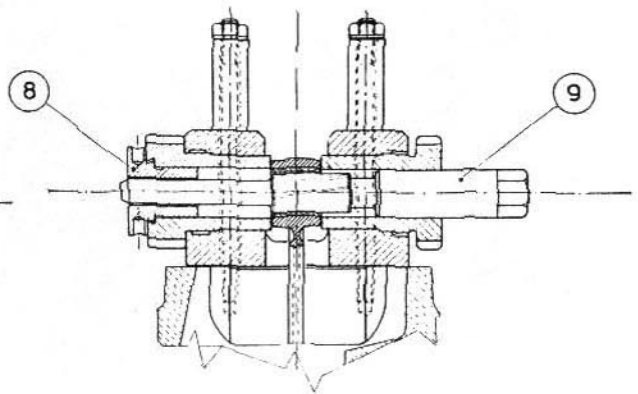


Fig. 41

Reamering

— Fit reamer (9) eccentrical guide bush (8) into body (3) as illustrated in fig. 41.
— Ream slowly until correct dimensions for small end bush and gudgeon pin are obtained (see tolerance tables on page 56).

N.B.: Use reamer No. 54362/14 for 14 mm small end bush and No. 54362/16 for 16 mm small end bush.

INSTRUCTIONS FOR SETTING HEAD LAMP BEAM

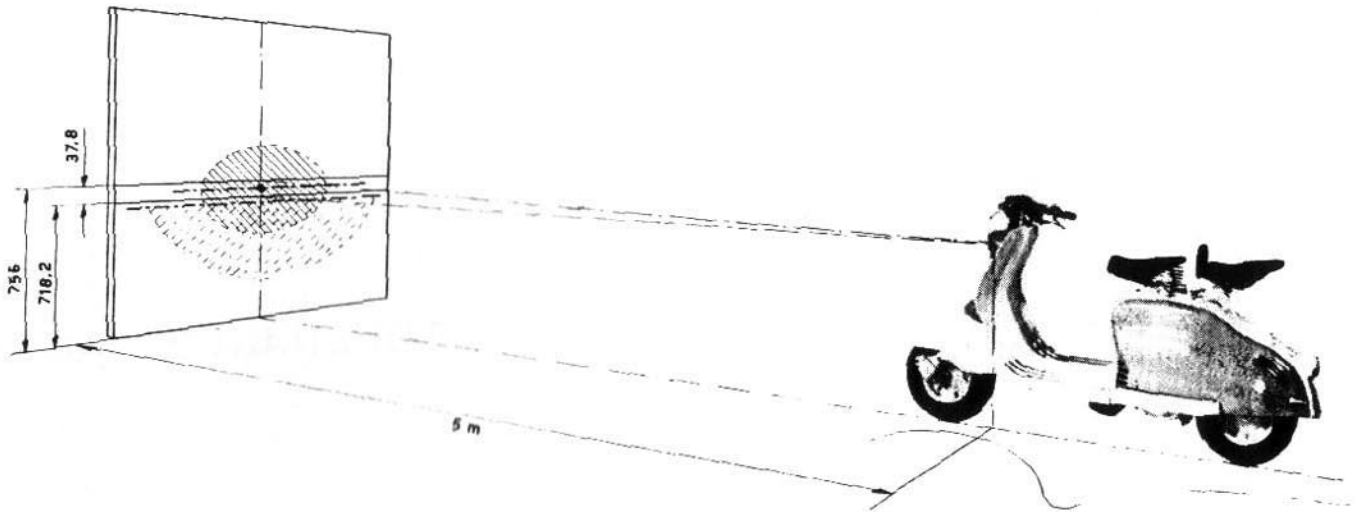


Fig. 42

After having placed bulb in its holder and the holder on to the reflector, proceed to set the main beam. This, under all conditions of load, with its centre projected on to a screen placed at a distance of 16 ft. 6 ins. should be straight and no higher than 29 3/4 inches from the ground (see fig. 42). The adjustment is effected by keeping the three rim fixing screws slack and moving the headlamp rim by hand so as to rotate the reflector until the prescribed position is reached. Then tighten the three screws.

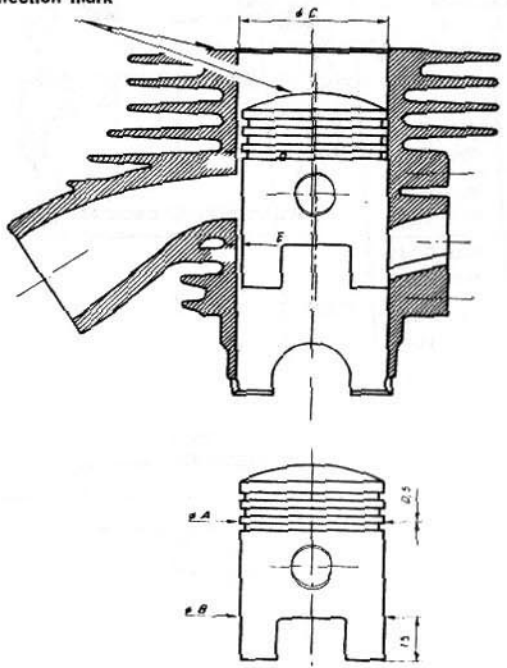
It is also necessary to check the driving light so that, under all load conditions, the upper demarcation line between the dark zone and the illuminated zone should be horizontal, and its height from the ground must not be more than 28 1/4 inches i.s. 19/20 of the main beam height from the ground (see fig. 42).

TOLERANCE TABLES

ASSEMBLY TOLERANCES AND WEAR LIMITS FOR CYLINDER AND PISTON

(table I)

Selection mark



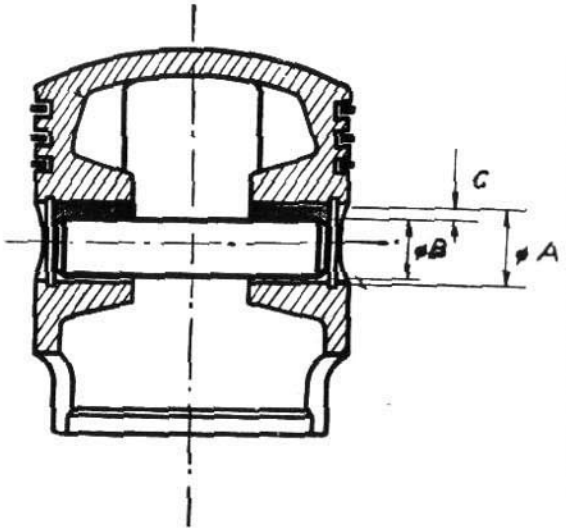
Operatoin	Grades	Cylinder size Ø C 11 M 201	Piston Dimensions to be measured at Gudgeon Pin hole centre line			Assembly axial clearance		Wear Limits in D mm
			Part. No.	Position	Dimensions mm	Position	Dimensions mm	
Standard size Cylinder Bore	I Grade —	57.000	11 M 1021	Ø A	56.865 56.871	D	max 0.141 min 0.129	0.220
		57.006		Ø B	56.953 56.959	E	max 0.053 min 0.041	
	II Grade 0	57.007		Ø A	56.872 56.878	D	max 0.141 min 0.129	
		57.013		Ø B	56.960 56.966	E	max 0.053 min 0.041	
	III Grade +	57.014		Ø A	56.879 56.885	D	max 0.141 min 0.129	
		57.020		Ø B	56.967 56.973	E	max 0.053 min 0.041	
First oversize Cylinder Bore	I Grade —	Rectified to 57.200	11 M 1022	Ø A	57.065 57.071	D	max 0.141 min 0.129	0.220
		57.206		Ø B	57.153 57.159	E	max 0.053 min 0.041	
	II Grade 0	57.207		Ø A	57.072 57.078	D	max 0.141 min 0.129	
		57.213		Ø B	57.160 57.166	E	max 0.053 min 0.041	
	III Grade +	57.214		Ø A	57.079 57.085	D	max 0.141 min 0.129	
		57.220		Ø B	57.167 57.173	E	max 0.053 min 0.041	

The Grade marks +, 0, —, are stamped on:
Cylinder: Top face;
Piston: Crown

ASSEMBLY TOLERANCES AND WEAR LIMITS FOR CYLINDER AND PISTON

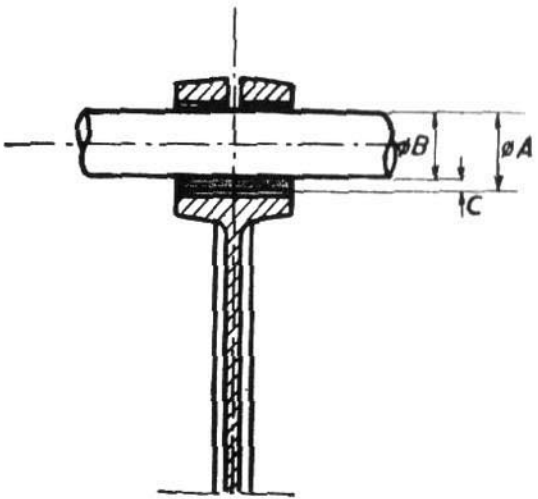
Operation	Grades	Cylinder size Ø C 11 M 201	Piston Dimensions to be measured at Gudgeon Pin hole centre line			Assembly Clearance		Wear Limits in D mm
			Part. No.	Position	Dimensions mm	Position	Dimensions mm	
Second Oversize Cylinder Bore	I Grade —	Rectified to 57.400 57.406	11 M 1023	Ø A	57.265 57.271	D	max 0.141 min 0.129	0.220
				Ø B	57.353 57.359	E	max 0.053 min 0.041	
	II Grade 0	57.407 57.413		Ø A	57.272 57.278	D	max 0.141 min 0.129	
				Ø B	57.360 57.366	E	max 0.053 min 0.041	
	III Grade +	57.414 57.420		Ø A	57.279 57.285	D	max 0.141 min 0.129	
				Ø B	57.367 57.373	E	max 0.053 min 0.041	
Third Oversize Cylinder Bore	I Grade —	Rectified to 57.600 57.606	11 M 1024	Ø A	57.465 57.471	D	max 0.141 min 0.129	0.220
				Ø B	57.553 57.559	E	max 0.053 min 0.041	
	II Grade 0	57.607 57.613		Ø A	57.472 57.478	D	max 0.141 min 0.129	
				Ø B	57.560 57.566	E	max 0.053 min 0.041	
	III Grade +	57.614 57.620			57.479 57.485	D	max 0.141 min 0.129	
				Ø B	57.567 57.573	E	max 0.053 min 0.041	

The Grade marks +, 0, —, are stamped on.
Cylinder: Top face;
Piston: Crown.



ASSEMBLY INTERFERENCES AND WEAR LIMITS BETWEEN PISTON AND GUDGEON PIN

Operation	Piston Ø A	Gudgeon Pin Part No.	Gudgeon Pin Ø B	Interference and Clearance C	Wear Limits
Standard size pin	± 0.003 16	11 M 346	+ 0 — 0,011 16	— 0,003	0,030
First oversize pin	± 0.003 16,1	11 M 347	+ 0 — 0,011 16,1	+ 0.014	
Second oversize pin	± 0.003 16,2	11 M 348	+ 0 — 0,011 16,2		

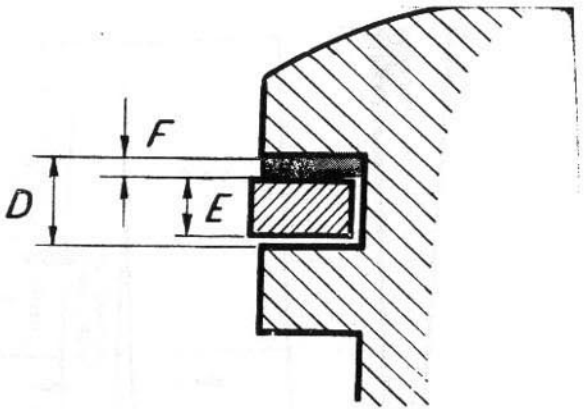


ASSEMBLY TOLERANCES AND WEAR LIMITS BETWEEN GUDGEON PIN AND SMALL END BUSH

Operation	Small End Bush 11 M 1046 ∅ 11 M 1416 Ø A	Gudgeon Pin Part No.	Gudgeon Pin Dimensions mm	Clearance C mm	Wear Limits mm
Standard assembly	+ 0,016 + 0,027 16	11 M 346	+ 0 — 0,011 16	0,038	0,050
First oversize	+ 0,016 + 0,027 16.1	11 M 347	+ 0 — 0,011 16,1	0,016	
Second oversize	+ 0,016 + 0,027 16,2	11 M 348	+ 0 — 0,011 16,2		

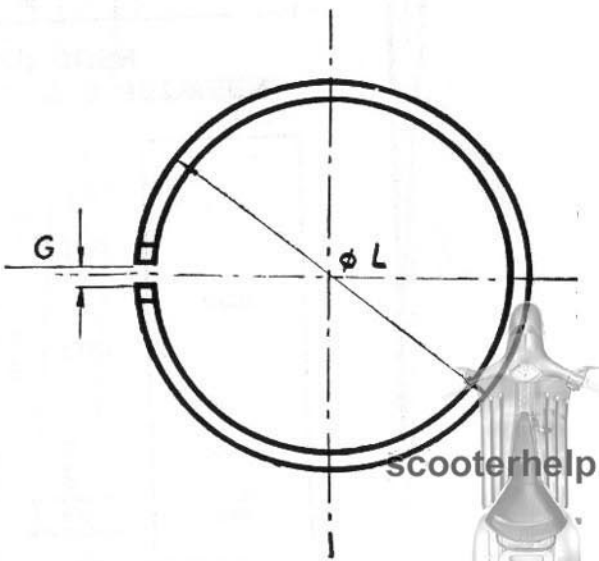
PISTON RING
ASSEMBLY, AXIAL CLEARANCE AND WEAR LIMITS

Ring Grooves D			Piston Ring 11 M. 324 E	Assembly axial clearance F	Wear Limits
I	2	+ 0,07 + 0,04	2 + 0 — 0,025	I 0,04 ÷ 0,095	0,15
II	2	+ 0,07 + 0,02		II 0,02 ÷ 0,095	
III	2	+ 0,07 + 0,02		III 0.02 ÷ 0,095	

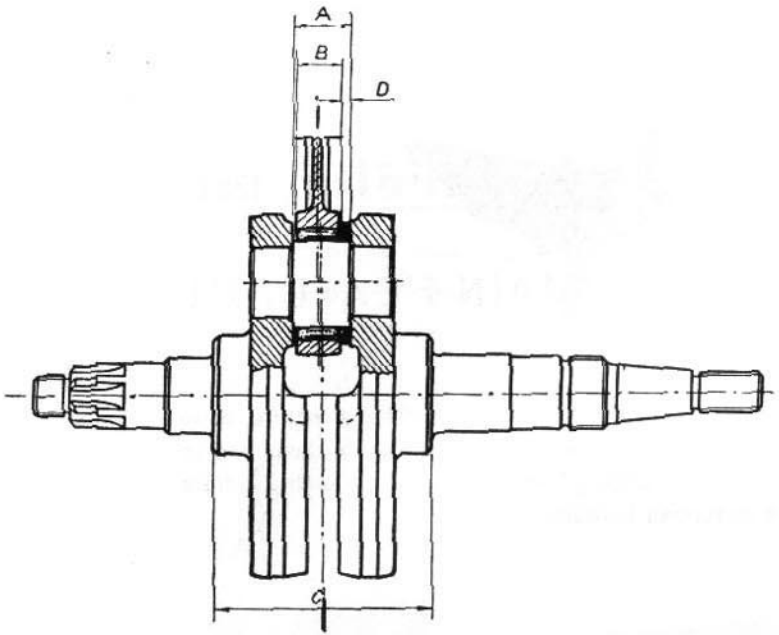


ASSEMBLY TOLERANCES AND WEAR LIMITS FOR PISTON RING END GAP

Piston Ring Part Number	Piston Ring External Diameter Ø L	End Gap with Piston Ring in Working Position G	Wear Limits
11 M 324	57	0,35 + 0,15 — 0	1
11 M 334	57,2		
11 M 335	57,4		
11 M 336	57,6		



ASSEMBLY TOLERANCES AND WEAR LIMITS BETWEEN CRANKSHAFT AND CONNECTING ROD



Crankshaft big end Pin width 11 M. 1191 11 M. 1426	Connecting Rod big end width 11 M. 1046 11 M. 1416	Crankarm width	Lateral Assembly Clearance
A	B	C	D
+ 0 — 0,110	— 0,032 — 0,075	+ 0 — 0,2	0,225
14	13,85	56	0,072

Table No. 2 lists tolerance and wear limit values between crankshaft and connecting rod valid for engines the number of which is over No. 282.500.

Crankshaft big end Pin width 11 M. 1191	Connecting Rod big end width 11 M. 1416	Crankarm width	Lateral Assembly Clearance
A	B	C	D
+ 0 — 0,110	— 0,032 — 0,075	+ 0 — 0,2	0,122
14	13,80	56	0,275

Lambretta 125 ld

MAIN FEATURES

The 125/LD Lambretta is, in its general structure, similar to the 150/LD, which has been amply described in the previous pages. The few details in which it differs are described hereafter.

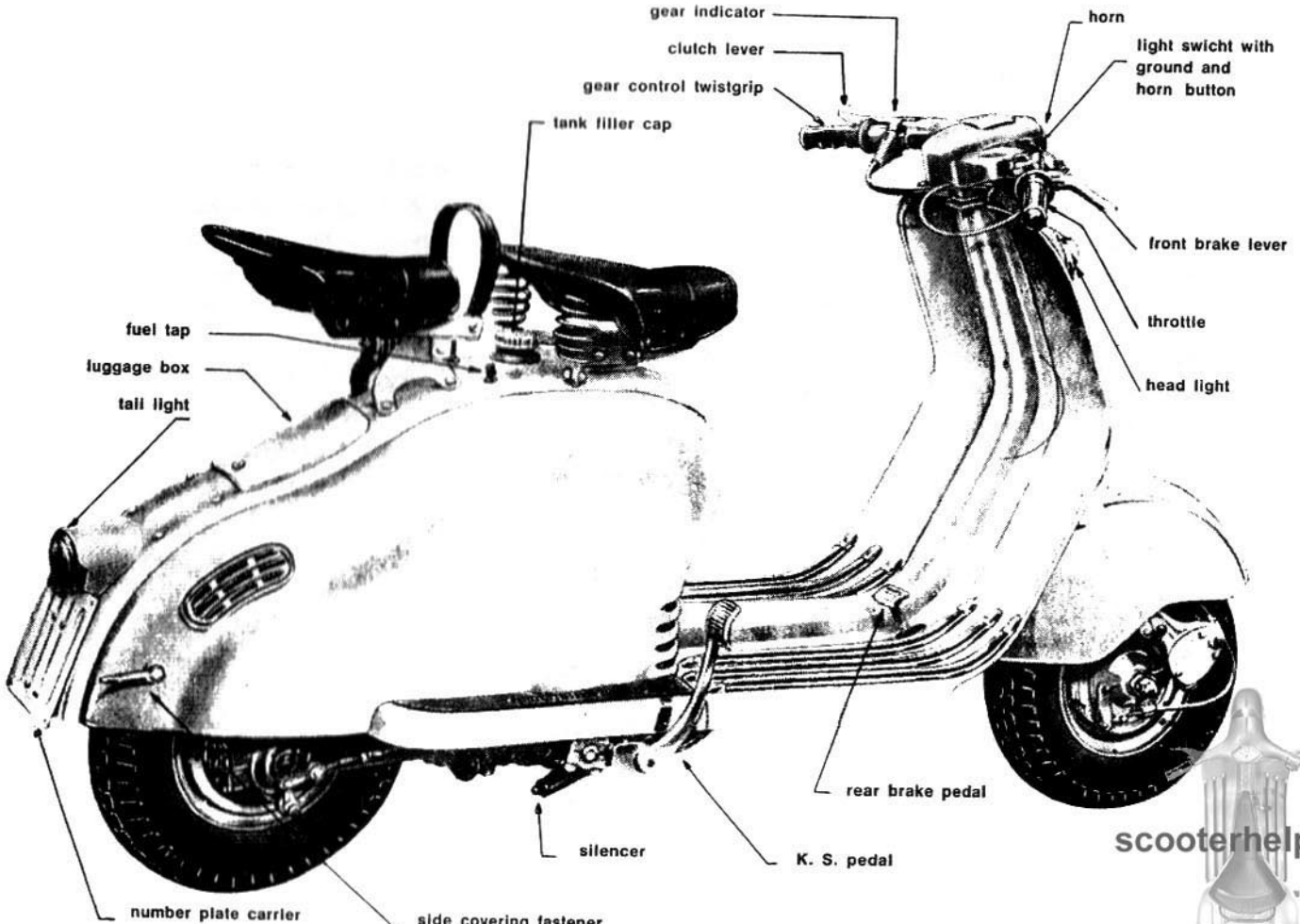


Fig. 43

MAIN CHARACTERISTICS

Overall length	70"	(1,770 m)
Overall height	38"	(0,960 m)
Ground clearance	4 3/8"	(0,110 m)
Maximum width (handlebar)	29"	(0,740 m)
Wheelbase	50 1/2"	(1,281 m)

Dry weight (without accessories) lbs. 194 (86 kg)
Maximum speed 45 ÷ 47 m. p. h. (70 ÷ 75 km/h)
Consumption at cruising speed 110 ÷ 130 m. p. g.

UPHILL

1st	gear 28 % with transmission radio	1 : 15,2
2nd	gear 18 % with transmission ratio	1 : 8,8
3rd	gear 8 % with transmission ratio	1 : 5,13

SINGLE CYLINDER TWO STROKE ENGINE

Capacity	123 c.c.
Bore	2,047" (52 mm)
Stroke	2,283" (58 mm)
Compression ratio	*6,3*
Maximum output	5 H.P.
R.p.m.	4,600

WHEELS

Interchangeable. The rear wheel is detachable like motor car wheels. Easy dismantling of the pressed steel sheet rims. 4.00-8" tyres. Inflating pressure: 11 lbs/s.i. for the front tyre, 24 lbs/s.i. for the rear tyre with pillion rider.

CARBURETTOR

Dell'Orto Carburettor type MA. 18 B4 with F. 18 Filter

The Dell'Orto MA. 18. B4 carburettor, is very similar to that fitted to the 150 c.c. LD, therefore the rules regarding adjustment of the latter can be applied to the *125 c.c. LD, bearing in mind the following:*

Air slide valve	75
Needle	D1 at second groove
Atomizer	255/B
Main jet	*68*
Pilot jet	40
Starter jet	55
Float	6,5 grammes
1st hole min.	∅ 0.85
Slow running adjustment schew	*1 1/2 turns*
Filter	F. 18

ELECTRICAL EQUIPMENT

Circuit with City Lights

The electrical circuit of the 125/LD is fed direct from the flywheel magneto, which supplies current to the headlamp bulbs, rear light, horn, and through the H.T. coil to the spark plug.
All controls are concentrated in the main switch situated on the right hand side of the handlebar.
The current for the speedometer bulb 6 V - 1,5 W is taken from the junction box in the headlamps (see wiring diagram fig. 44).
The following table lists all the components of the electrical equipment with the respective characteristics and part numbers.

N.B.: The first 6,000 125/LD Lambrettas are fitted with the horn (6A.301) which is connected direct to the main switch (12A.1761). On later machines, the horn will be connected through the juncion box in the headlamp. Fig. 45 gives the wiring diagram relating to the first 6,000 machines.

ELECTRICAL APPARATUS CHARACTERISTICS

DESCRIPTION	PART NUMBER	CHARACTERISTICS
Flywheel Magneto Marelli Filso	 11/b M 1321 11/b M 1331	Fixed advance. External. H.T. coil Output: ≥ 6 V at 3000 r.p.h. with resistance load of 1.33 Ω Corresponding power: ≥ 27 watt Magnetic plane = 10° ± 2°; cam grade ≤ 0.5 μ CLA Static unbalance = a couple of 4 g.cm. Ignition advance setting 24° ÷ 26° Point aperture: 0.35 ÷ 0.45 mm
H.T. coil Marelli Filso	12 A 1466 11 M 1196	Open circuit type - a.c. current.
BULBS: Headlamp bulb City ligth bulb Rear light bulb Rear light bulb Speedometer bulb	 2 A 117 7 A 146 8 A 146 8 A 601 —	 Twin filament - 6 V, 25/25 W - bayonet type socket 12 V, 10 W festoon - 39 mm long 6 V, 5 W festoon - 39 mm long (when speedometer light is not fitted) 6 V, 3 W festoon - 39 mm long (when speedometer light is fitted) 6 V, 1.5 W - Bayonet type on speedometer socket
Electric horn Standard From machine 6001 up to machine 6000	 12 A 1731 6 A 301	 - A.C. type - working current 6.5 V - absorbed current ≤ 3 A - Efficiency ≥ 84 Phons at 10 mt distance
Handlebar switch Final type up to machine 6000	 12 A 1726 12 A 1761	 — —

ELECTRICAL WIRING SYSTEM

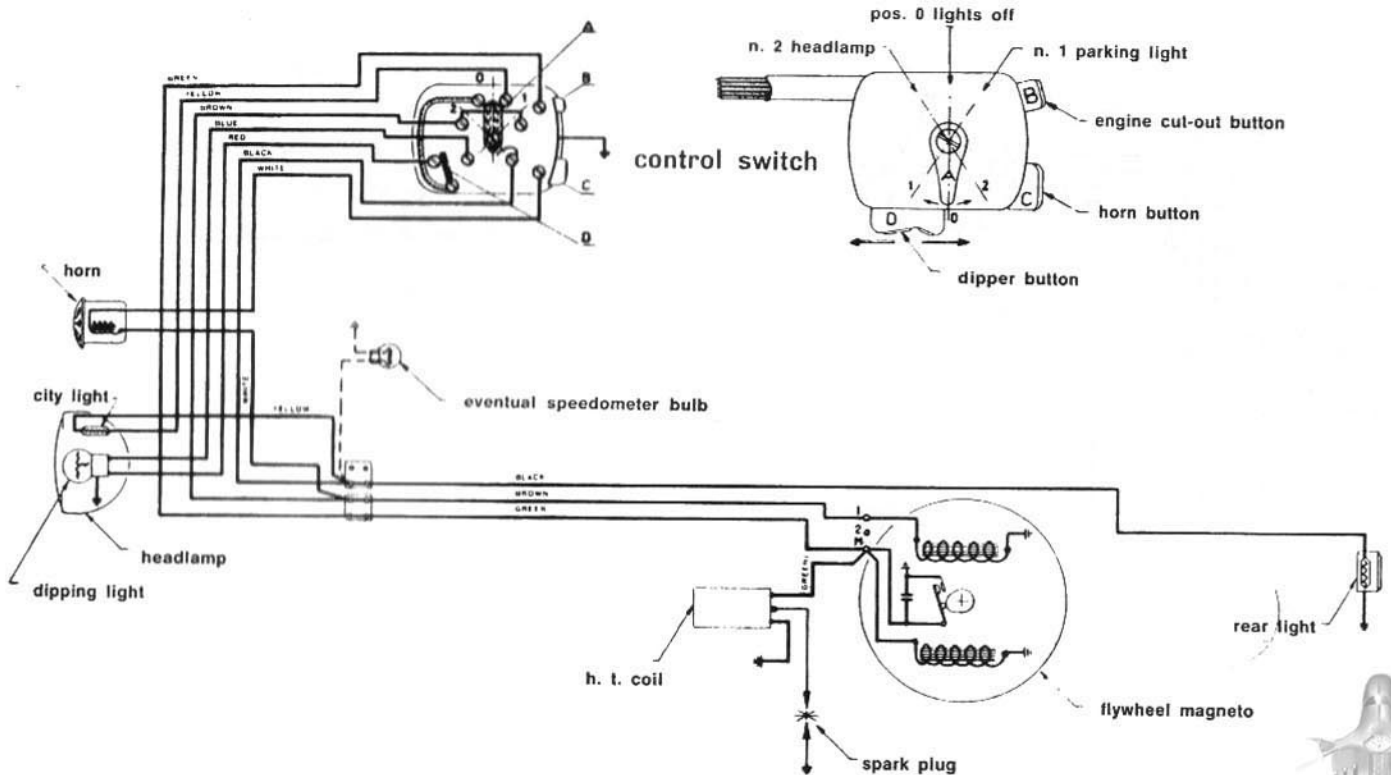


Fig. 44

ELECTRICAL WIRING SYSTEM OF TRANSICTION

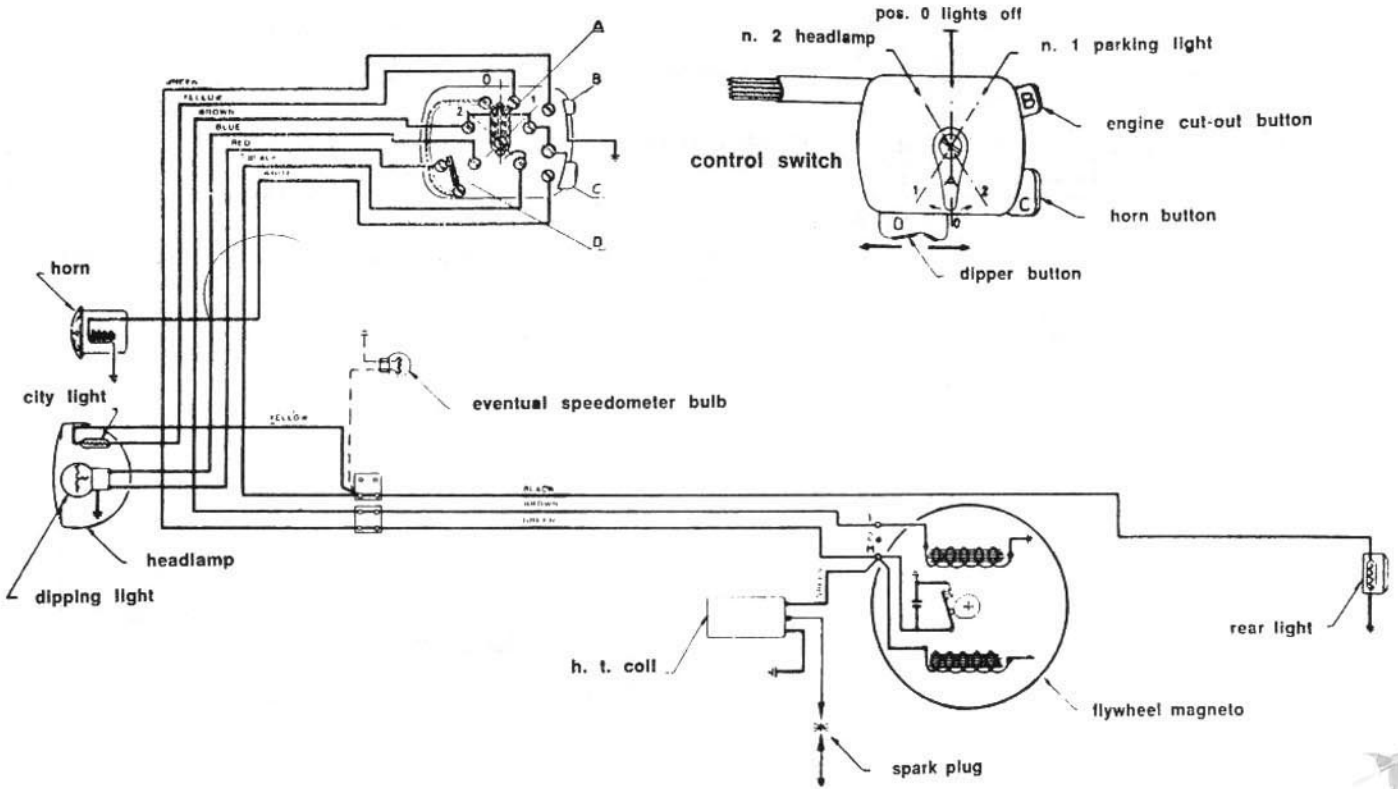


Fig. 45

IGNITION ADVANCE SETTING

The control and adjustment operations for the ignition advance are identical to those established for the 150/LD, except for the following readings:

For advance angle setting of 26° - 4,60 mm

For advance angle setting of 24° - 4,000 mm

For readings lower than 4,00 mm, rotate stator plate **clockwise**; for readings higher than 4,60 mm rotate **anti-clockwise.**

Note: The readings are to be carried out with flywheel magneto fitted on crankshaft.

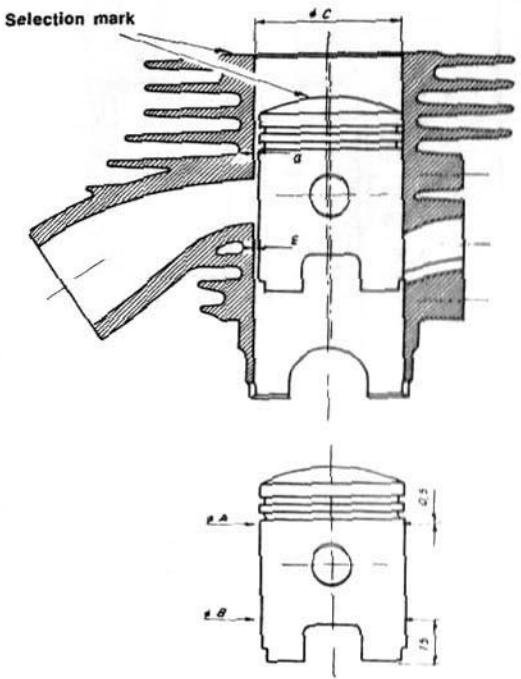
DISMANTLING AND RE-ASSEMBLY

The operations and use of tools necessary for the dismantling and re-assembly of the 125/LD, are the same as described for the 150/LD, with the exception of the tool No. 49194 (pincers for fitting piston complete with ring) which is substituted by tool number 39847.

TOLERANCE TABLES

ASSEMBLY TOLERANCES AND WEAR LIMITS FOR CYLINDER AND PISTON

(table I)



Operation	Grades	Cylinder size ⌀ C 11/b M 220	Piston Dimensions to be measured at Gudgeon Pin hole centre line			Assembly axial clearance		Wear Limits in D mm
			Part. No.	Position	Dimensions mm	Position	Dimensions mm	
Standard size Cylinder Bore	I Grade —	52.000 52.006	11/b M 1306	⌀ A	51.885 51.891	D	max 0.121 min 0.109	0.220
				⌀ B	51.955 51.961	E	max 0.051 min 0.039	
	II Grade 0	52.007 52.013		⌀ A	51.892 51.898	D	max 0.121 min 0.109	
				⌀ B	51.962 51.968	E	max 0.051 min 0.039	
	III Grade +	52.014 52.020		⌀ A	51.899 51.905	D	max 0.121 min 0.109	
				⌀ B	51.969 51.975	E	max 0.051 min 0.039	
Frist Oversize Cylinder Bore	I Grade —	Rectified to 52.200 52.206	11/b M 1306	⌀ A	52.085 52.091	D	max 0.121 min 0.109	0.220
				⌀ B	52.155 52.161	E	max 0.051 min 0.039	
	II Grade 0	52.207 52.213		⌀ A	52.092 52.098	D	max 0.121 min 0.109	
				⌀ B	52.162 52.168	E	max 0.051 min 0.039	
	III Grade +	52.214 52.220		⌀ A	52.099 52.105	D	max 0.121 min 0.109	
				⌀ B	52.169 52.175	E	max 0.051 min 0.039	

The Grade marks +, 0, —, are stamped on-
Cylinder: Top face;
Piston: Crown.

ASSEMBLY TOLERANCES AND WEAR LIMITS FOR CYLINDER AND PISTON

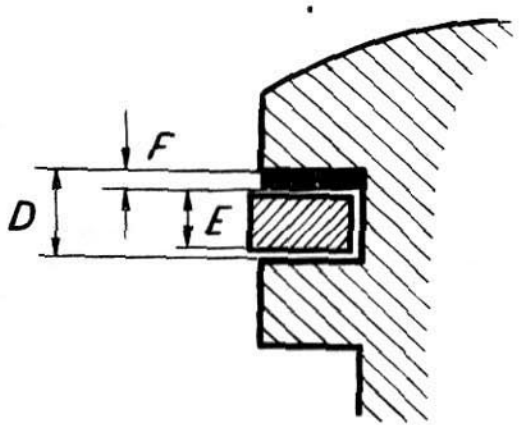
(table II)

Operation	Grades	Cylinder size Ø C 11/b M 220	Piston Dimensions to be measured at Gudgeon Pin hole centre line			Assembly axial clearance		Wear Limits in D
			Part. No.	Position	Dimensions mm	Position	Dimensions mm	mm
Second Oversize Cylinder Bore	I Grade —	Rectified to 52.400 / 52.406	11/b M 1326	Ø A	52.285 / 52.291	D	max 0.121 / min 0.109	0.220
				Ø B	52.355 / 52.361	E	max 0.051 / min 0.039	
	II Grade 0	52.407 / 52.413		Ø A	52.292 / 52.298	D	max 0.121 / min 0.109	
				Ø B	52.362 / 52.368	E	max 0.051 / min 0.039	
	III Grade +	52.414 / 52.420		Ø A	52.299 / 52.305	D	max 0.121 / min 0.109	
				Ø B	52.369 / 52.375	E	max 0.051 / min 0.039	
Third Oversize Cylinder Bore	I Grade —	Rectified to 52.600 / 52.606	11/b M 1326	Ø A	52.485 / 52.491	D	max 0.121 / min 0.109	0.220
				Ø B	52.555 / 52.561	E	max 0.051 / min 0.039	
	II Grade 0	52.607 / 52.613		Ø A	52.492 / 52.498	D	max 0.121 / min 0.109	
				Ø B	52.562 / 52.568	E	max 0.051 / min 0.039	
	III Grade +	52.614 / 52.620		Ø A	52.499 / 52.505	D	max 0.121 / min 0.109	
				Ø B	52.569 / 52.575	E	max 0.051 / min 0.039	

The Grade marks +, 0, —, are stamped on·
Cylinder: Top face;
Piston: Crown.

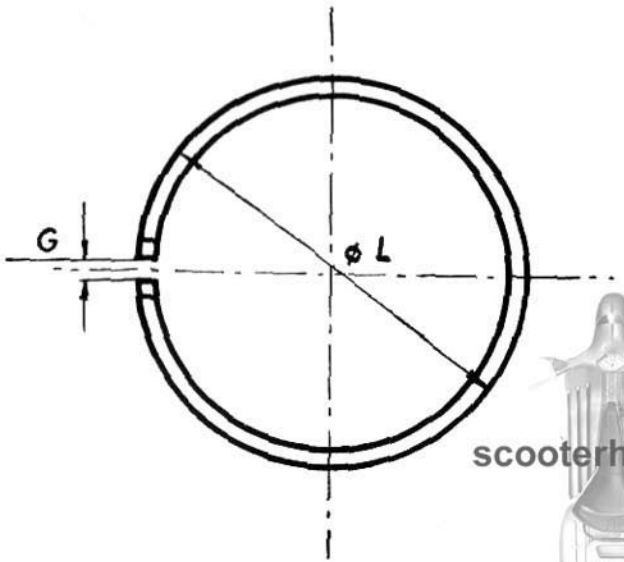
PISTON RING
ASSEMBLY, AXIAL CLEARANCE AND WEAR LIMITS

Ring Grooves D	Piston Ring 3 M. 324 E	Assembly *axial clearance* F	Wear Limits
I 2 + 0,07 + 0,04	2 + 0 — 0,025	I 0,04 ÷ 0,095	0,15
II 2 + 0,07 + 0,02		II 0,02 ÷ 0,095	



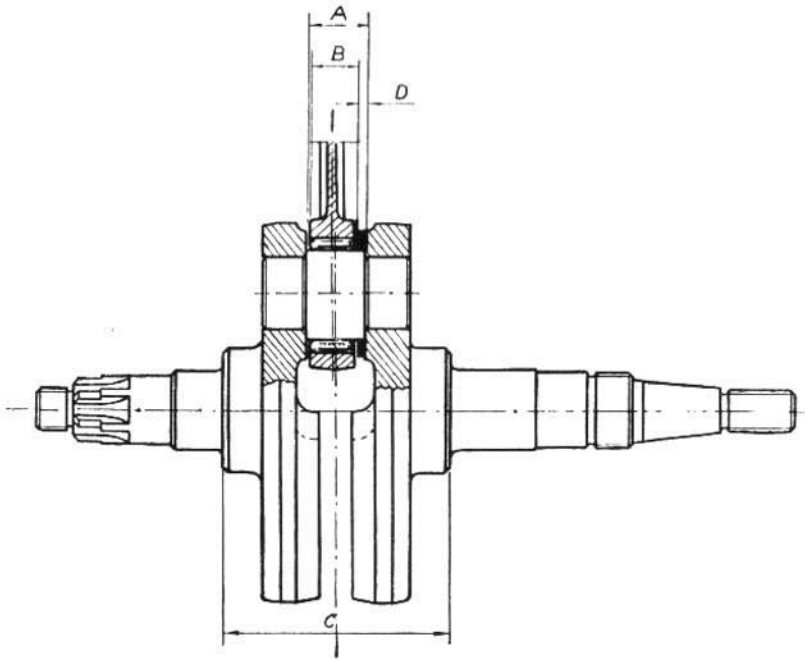
ASSEMBLY TOLERANCES AND WEAR LIMITS FOR PISTON RING END GAP

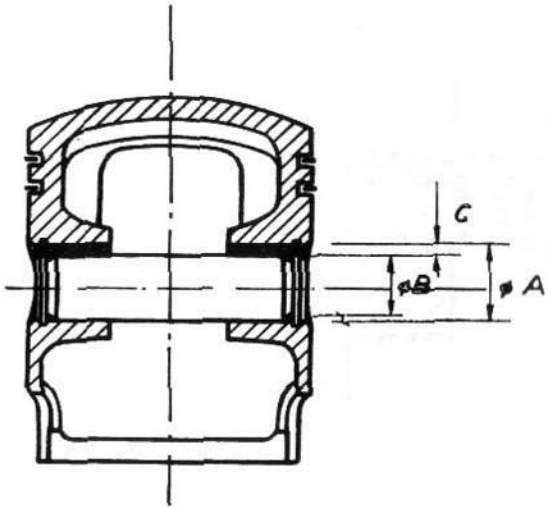
Piston Ring Port Number	Piston Ring External Diameter Ø L	End Gap with Piston Ring in Working Position G	Wear Limits
3 M 324	52	0,35 + 0,15 — 0	1,0
3 M 346	52,2		
3 M 347	52,4		
3 M 348	52,6		



ASSEMBLY TOLERANCES AND WEAR LIMITS BETWEEN CRANKSHAFT & CONNECTING ROD

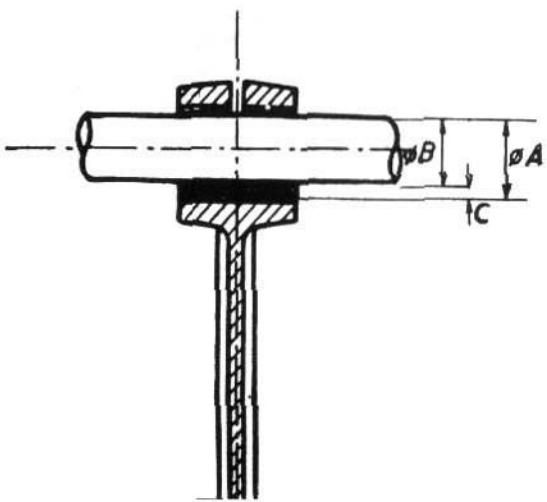
Crankshaft big end Pin width 11 M. 1191 11 M. 1426	Connecting Rod big end width 11 M. 1046 11 M. 1416	Crankarm width	Lateral Assembly Clearance
A	B	C	D
14 + 0 — 0,110	13,80 — 0,032 — 0,075	56 + 0 — 0,2	0,225 0,072





ASSEMBLY INTERFERENCES AND WEAR LIMITS BETWEEN PISTON AND GUDGEON PIN

Operation	Piston Ø A	Gudgeon Pin Part No.	Gudgeon Pin Ø B	Interference and Clearance C	Wear Limits
Standard size pin	± 0.003 16	11/b M 362	+ 0 — 0,011 16	— 0,003 + 0,014	0,030
First oversize pin	± 0.003 16,1	11/b M 363	+ 0 — 0,011 16,1		
Second oversize pin	± 0.003 16,2	11/b M 364	+ 0 — 0,011 16,2		



ASSEMBLY TOLERANCES AND WEAR LIMITS BETWEEN GUDGEON PIN AND SMALL END BUSH

Operation	Small End Bush 11 M 1046 -o 11 M 1416 Ø A	Gudgeon Pin Part No.	Gudgeon Pin Dimensions mm	Clearance C mm	Wear Limits mm
Standard assembly	+ 0,016 + 0,027 16	11/b M 362	+ 0 — 0,011 16	0,038 0,016	0,060
First oversize	+ 0,016 + 0,027 16,1	11/b M 363	+ 0 — 0,011 16,1		
Second oversize	+ 0,016 + 0,027 16,2	11/b M 364	+ 0 — 0,011 16,2		

TOOL LIST

Part. No.	DESCRIPTION
2002/00300	Screwdriver
2012/10-12	10-12 mm Double-ended spanner
2012/15-17	15-17 mm Double-ended spanner
2020/00080	8 mm Box spanner
2020/00100	10 mm Box spanner
2020/00140	14 mm Box spanner
2026/14-15	14-15 mm Double-ended ring spanner
2028/10	10 mm allen key
2050/1	Circlip pliers
2424/40	Screw type grease gun with flexible tube
2430/00001	Tecalemit PH. 1703 connection
7.A. 1296	Oil plug spanner (in machine tool kit)
51258	Kickstart cover bearing extractor
54361	Small end bush extractor - re-setting and reamering set
54362/14	14 mm small end bush hand reamer
54362/16	16 mm small end bush hand reamer

N.B. - All spanners are of standard type.

For dismantling and re-assembly of all other parts of Lambretta 150 LD, 1957 model, it is necessary to use all the tools provided for Lambretta 150 LD, old model, except for the tools listed herebelow which have been slightly altered.

New Part. No.	Old Part. No.	DESCRIPTION
55355	49225	Bevel pinion locking spanner
55356	49256	Clutch splinied collar holding tool
55357	49189	Crankshaft bevel gear extractor

INNOCENTI

INDEX

LAMBRETTA 150 LD

MAIN FEATURES

LUBRICATION

ELECTRICAL SYSTEM

ENGINE - CARBURETTOR - KICK STARTER

SPEEDOMETER EXTRACTING - RE-FITTING AN REAMERING OF SMALL END BUSH - HEAD LAMP BEAM SETTING

TOLERANCE TABLES

LAMBRETTA 125 LD

MAIN FEATURES

TOLERANCE TABLES