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**DRIVER'S HANDBOOK  
MOTOR CYCLE, SOLO  
350 c.c. O.H.V.**

**ROYAL ENFIELD**

**MODEL WD/CO**



Driver's Handbook  
Motor Cycle, Solo  
350 c.c. O.H.V.  
ROYAL ENFIELD  
Model WD/CO



IF FOUND  
PLEASE RETURN TO

Name.....

Number.....

Unit.....

MOTOR CYCLE, SOLO  
350 c.c. O.H.V.  
ROYAL ENFIELD  
Model WD/CO

TECHNICAL DATA

<b>ENGINE.</b>	Bore ... ..	70 m.m. (2.752 ins.).
	Stroke ... ..	90 m.m.
	Capacity ... ..	346 c.c.
	Compression ratio ... ..	5 $\frac{3}{4}$ : 1 approx.

<b>GEAR RATIOS.</b>	Top ... ..	5.65 to 1
	3rd ... ..	7.9 to 1
	2nd ... ..	11.2 to 1
	1st ... ..	18.6 to 1

**TYRE SIZE.** 3.25—19in.    **RIM SIZE.** WM.2—19in.

<b>CAPACITIES AND LUBRICANTS.</b>	Petrol ... ..	2 $\frac{3}{4}$ galls. <i>including</i>
	Reserve ... ..	$\frac{1}{2}$ gall.
	Oil (Engine, 50 H.D.)	4 pints.
	Oil (Gear Box, C.600)	$\frac{3}{4}$ pint.

## OPERATION

### 1. CONTROLS.

The driver should familiarise himself with the positions and method of operation of the various controls so that their use becomes instinctive. The controls are shown diagrammatically overleaf and in most cases the method of operation is obvious. The following notes may, however, be of assistance :—

#### Exhaust Lifter.

Operate by lifting lever on left handlebar to stop engine. Can also be used when descending a very steep hill having a difficult surface. If engine is "hard to kick over" when starting, the exhaust lifter can be raised momentarily to release compression.

#### Gear Control.

Move up for change to lower gear.  
Move down for change to higher gear.

#### Kick Starter.

Operate with long swinging kick.

#### Steering Damper.

Turn to right to tighten steering.  
Not normally required except on rough cross country going.

#### Lighting Switch.

Position T gives tail light only.  
Position L gives headlamp pilot bulb and tail light.  
Position H gives headlamp main bulb and tail light.

#### Petrol Filler.

To open, turn to left till catch is felt, push down and turn further to left as far as possible, then lift off.  
To close, push down and turn to right as far as possible.

#### Petrol Taps.

To open, pull knob outward.  
To close, push knob inward.

The following controls are not shown in the diagram :—

#### Carburettor Tickler.

On top of float chamber. For flooding carburettor before starting from cold.

#### Oil Filler.

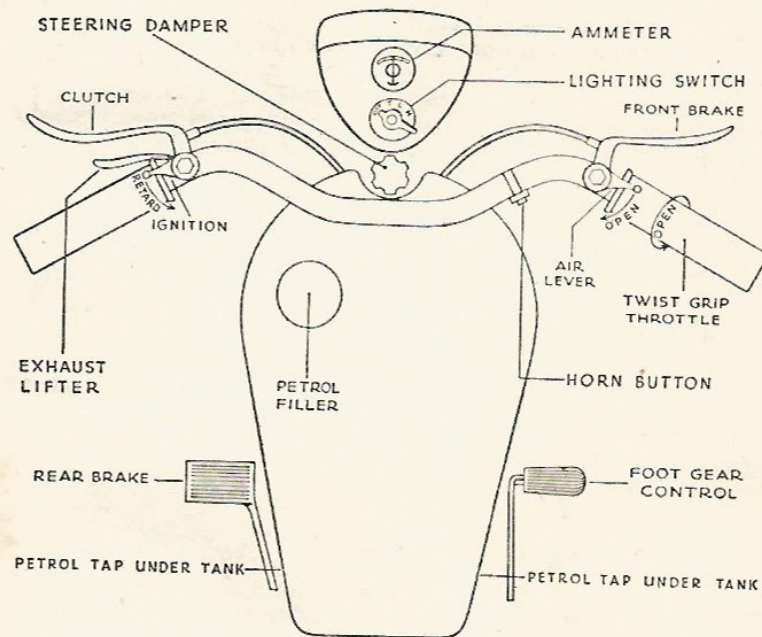
On engine crankcase. Operates same way as petrol filler.

#### Shock Absorbers.

Large hand nuts on either side of front fork. When sitting astride the motor cycle, shock absorbers are tightened by turning top of both knobs towards driver. Not normally required except on cross country going.

### 2. STARTING THE ENGINE.

Fill the tank with petrol and the oil tank in the engine crankcase with oil. 50 H.D. should be used under normal conditions, but 30 H.D. may be used in cold weather and should always be used at temperatures below 16°F. Turn on the petrol and depress the tickler of the carburettor until petrol overflows at the bottom of the carburettor body. There are two petrol taps beneath the tank, one on either side.



Control Diagram.

Use the tap on the right hand side. A reserve of petrol will thus be available by turning on the left hand tap. Place the gear control in the neutral position, partly close the air lever, slightly retard the ignition, open the throttle control about one-eighth, and smartly depress the kick starter. If the engine fails to fire first or second time, repeat with a slightly different throttle opening. The best position for starting will soon be found from experience. When starting a warm engine, do not flood the carburettor or the mixture will become too rich.

### 3. TO START THE MACHINE.

Pull up the clutch lever. Engage the lowest gear by pressing the foot control up as far as possible and then releasing it. Slowly release the clutch lever, at the same time accelerating the engine by opening the throttle slightly and the machine will move away without jar or jerk. When the machine has attained sufficient speed (about 10 m.p.h.) de-clutch, at the same time closing the throttle and changing to second gear by pressing the foot control downwards as far as it will go and then releasing it. Let in the clutch gradually and open the throttle again until the speed of the machine is sufficient to require a change into third gear (about 20 m.p.h.), when the foregoing operations are repeated. Finally, change up to top gear when sufficient speed has been attained in third (about 30 m.p.h.).

**Note.**—The above speeds are intended only as a rough guide for making a normal get-away on a level road. When starting up a steep hill rather higher speeds should be used in the intermediate gears. The following are the speeds giving maximum power in each gear: Bottom—19 m.p.h. 2nd—32 m.p.h. 3rd—45 m.p.h.

Once top gear is engaged and the machine is running at a comfortable speed, the air lever should be fully opened and the ignition fully advanced.

### 4. DRIVING HINTS.

For normal running on the level the air lever can be left fully open and the ignition fully advanced, the speed being controlled by the throttle, but when accelerating or climbing a hill it may be necessary to retard the ignition slightly

and, while the engine is cold, partly close the air lever in order to prevent "pinking" or knocking.

Never allow the engine to labour on a hill. If the machine will not climb comfortably on top gear, change down by de-clutching and moving the gear lever upwards as far as possible and then releasing it, leaving the throttle control open during the change. When in the lower gear the ignition may be advanced and the air lever opened to suit the higher engine speed. If a hill is long and steep enough to demand a change to a lower gear, it is always desirable to make this change before the engine has commenced to labour. One change low down may save two higher up and at the same time enable a faster climb to be made.

To stop the machine, close the throttle and apply the brakes. **Before coming to rest, de-clutch and engage neutral gear.** All machines are set at the Works so that the engine "ticks over" when the throttle lever is shut. To stop the engine, therefore, it is necessary to raise the exhaust lifter. Alternatively the throttle-stop can be set so as to allow the throttle to close completely.

An indicator is fitted to the foot operated gear control showing which gear is in use. **To obtain neutral from bottom or second gear,** move the control down or up half the amount necessary to engage the next gear.

Note that the positions of the handlebars, footrests and all controls (including the gear lever and the brake pedal) are adjustable. A driver cannot have proper control of his motor cycle unless he is comfortable and the controls are conveniently situated. Drivers should set the controls to suit their individual requirements.

### 5. RUNNING-IN.

All Royal Enfield W.D. Motor Cycles have slightly greater piston clearances than were fitted to civilian machines, thus minimising the risk of seizure with a new engine. Nevertheless careful running-in is highly desirable if the best results are to be obtained.

It is recommended, therefore, that a new machine should not be driven at a speed exceeding 30 m.p.h. for the first 200 miles and until at least 500 miles have been covered the throttle should not be opened above half way, except for very short periods. After this distance short bursts of speed are desirable in order to hasten the bedding down of

the thrust faces of the piston. Gradually increase the duration of these speed bursts until the machine will stand large throttle openings for indefinite periods. Note the importance of **progressively** increasing the work done by the engine. Running 1,000 miles at 30 m.p.h. will **not** bed down the piston to enable it to withstand continuous high speed running. Piston temperature is the important factor and this depends not only on speed and throttle opening, but also on how long that particular throttle opening has been sustained. Thus a machine after the preliminary 200 miles might stand full throttle for half a mile and yet pull up if driven at threequarter throttle for five miles or so.

If the engine is run too long on a large throttle opening and shows the slightest tendency to pull up or seize, **lift the clutch and close the throttle**. Even if a seizure then occurs it will do little or no damage and after cooling for a minute or two the piston will free itself. If a seizure does occur, the piston should be examined by a Workshop mechanic to have any high spots eased down.

## LUBRICATION

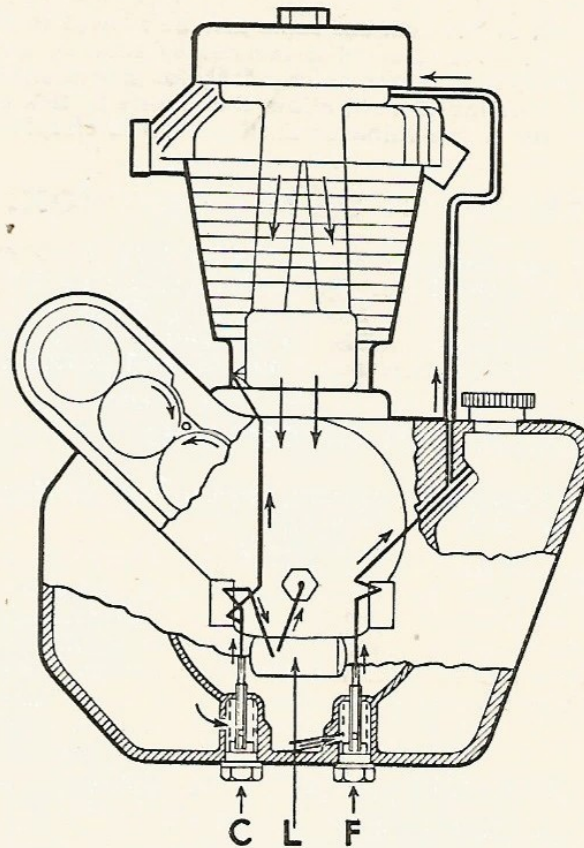
### 6. LUBRICATION OF THE ENGINE.

Never allow the oil tank to become empty. Since there is no reserve of oil in the sump, an empty tank means immediate shortage of oil to the working parts. **The oil level must never be allowed to fall below the bottom of the dipstick attached to the filler cap.** By keeping a large quantity of oil in circulation, its temperature is kept low and the oil retains its lubricating qualities for long periods. Do not, however, fill the tank within 2 inches of the top, or oil may escape from the vent in the joint at the rear of the case. A notch near the top of the dipstick marks the upper limit for filling.

The correct grade of oil for this machine in normal temperatures is

**50 H.D.**

As shown in "Periodical Attention," page 13 after the first 500 miles and subsequently every 2,000 miles the oil must be drained from the tank and the sump by removing the two filter plugs C and F. (See illustration



above.) These plugs are situated underneath the off-side of the crank case. Note that the rear plug drains the tank, the front one the sump. At the same time, the felt filter L must be removed and washed in petrol. A new felt element should be fitted every 5,000 miles. (See "Periodical Attention," page 13). The filter gauzes must be brushed with paraffin to clean them and the tank and sump swilled through with clean engine oil, allowed to drain, and refilled with fresh oil. This procedure is conveniently carried out when the engine is being decarbonised. The oil will flow more readily if the plugs are removed at the conclusion

of a ride, or the tank and sump may be allowed to drain overnight. Waste of oil is reduced by allowing the oil level in the tank to become reasonably low before draining. **After changing the oil, allow the engine to tick over gently for a few minutes until the oil is circulating.**

## 7. LUBRICATION OF THE GEAR BOX.

The gear box must be filled to the level of the filling orifice with **Oil C.600**. The oil level should be checked weekly. To fill the box remove the filling plug and pour oil in slowly. The oil will run in more readily if the engine is started up and allowed to tick over.

## 8. LUBRICATION OF CHAINS.

The front chain case must be filled with **C.600** up to the level of the overflow plug.

The rear chain must be lubricated at frequent intervals with **50 H.D.**, **C.600** or **Grease No. 2**, and should be removed about every 2,000 miles, and after washing in paraffin should be soaked in **Oil C.600** or, if available, grease to which graphite has been added, warmed sufficiently to make it fluid.

## 9. GREASE GUN AND OIL CAN LUBRICATION.

Lubricate the fork spindles, rear brake pedal, speedometer drive, and gear control spindle with the gun provided, using **Oil C.600**.

Apply oil **50 H.D.** by means of the oil can to the lubricating holes in the front fork check spring eyes, also to all control lever pivots and the exposed ends of all control wires.

The wheel hubs must be dismantled by workshops every 5,000 miles and have the bearings repacked with **Grease No. 2**.

If conditions are very arduous (i.e., very wet or sandy) this operation should be carried out every 2,000 miles or a little **Grease No. 2** inserted with a grease gun through the nipples provided.

# TROUBLE ON THE ROAD

## 10. ENGINE STOPS OWING TO LACK OF PETROL.

This is the commonest form of engine stoppage. The first symptoms are irregular firing, which is temporarily cured by closing the air lever. Make sure that there is plenty of petrol in the tank. If so, disconnect the petrol pipe at the carburettor end and turn on the tap. If a good flow of petrol occurs, the stoppage is probably in the jet itself. If the flow from the petrol pipe is restricted, the stoppage lies either in the petrol tap, or the pipe itself. If the petrol in the tank is low, turn on the left-hand tap and, if necessary blow down the vent in the petrol filler cap to clear air out of the petrol pipe.

## 11. ENGINE MISFIRES OR STOPS OWING TO FAULTY IGNITION.

The symptoms in this case are that the engine will not run regularly and is very hard to start. In other cases the engine may suddenly "cut out" without any warning. First see that the high tension lead has not become disconnected and is not worn or burnt through, allowing the bare wire to touch some metal part of the machine. See also that the plug insulator and high tension lead are not wet.

If all the above is in order remove the sparking plug and hold it with the body touching the engine cylinder, but with the terminal clear of the machine and connected to the high tension lead. Turn the engine round by the kick starter. If a good spark is obtained at the plug points, the ignition is in order and the trouble lies elsewhere. If no spark or a very weak spark is obtained, remove the plug and hold the end of the high tension wire about  $\frac{1}{4}$  in. from a metal part of the machine and rotate the engine. If a spark is obtained from the wire, the fault lies with the sparking plug. If this is oily or sooty it can be taken apart and cleaned, but if the points are red and burnt the plug has been too hot and a new one should be fitted. The gap between the plug points should be .018 in.

If the plug is satisfactory, the trouble lies in the magneto. See that the contact breaker points are clean and that they open and close properly. These should open to the thick-

ness of the gauge supplied on the magneto spanner. If necessary, remove the contact breaker by unscrewing the centre screw and clean out the housing behind it. This should be free from oil or damp.

## 12. OTHER CAUSES OF ENGINE STOPPAGE.

Other possible causes of an engine stoppage are :—

- (1) **Water in Carburettor.** The symptoms are usually intermittent misfiring and banging in the silencer following a heavy rain storm.  
The remedy is to clean out the float chamber and jets.
- (2) **Insufficient clearance at tappets.** This is evidenced by an entire lack of compression when turning over with the kick starter. The remedy is to adjust the tappets.
- (3) **Sticking Valve.** In this case there is no compression and excessive tappet clearance, the valve remaining partly open. The valve may free itself on cooling, but sometimes it is necessary to dismantle the engine to free the valve.
- (4) **Broken Valve.** This trouble is very rare and is usually caused by consistent overdriving of the machine and by neglect of the tappet clearances.  
The symptoms are that the engine "cuts out" suddenly and stops with no tappet clearance. Furthermore, it is not possible to obtain any clearance at the tappets.

**Seized Piston.** This is caused by overdriving a new machine before the engine is properly "run in." The symptoms are loss of power and a tendency to "pink," followed by the engine locking up solid. An aluminium piston will always free itself if allowed to cool. If the clutch was withdrawn and the throttle closed before the final seizure, the consequences may not be serious, but the cylinder and piston should be examined as soon as possible by Workshop mechanic to have any score marks removed. A seizure may also occur through running with insufficient oil, in which case the consequences will be far more serious.

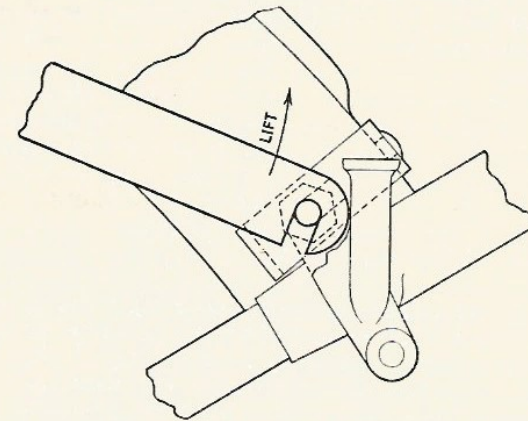
## 13. CLUTCH TROUBLE.

A slipping clutch may be caused by lack of clearance in the control (see Task 5, A1).

A binding clutch is caused by too much slack in the control wire. New clutches sometimes tend to bind until the inserts have bedded down dead level.

## 14. PUNCTURES.

To facilitate tyre repairs and removal of the rear wheel, the rear mudguard on these machines is made quickly detachable. It is only necessary to slacken the four nuts securing the mudguard stays to the rear portion of the frame and lift up the stays running from the front of the carrier to the back stays (see illustration below) when the entire assembly of mudguard, carrier, and (if fitted), pillion seat and panniers can be lifted off. If the position of a puncture is known the tyre can then be repaired with the wheel in position.



If it is required to remove the inner tube this can be done with the wheel in position by unscrewing the off-side spindle nut which brings away with it a short portion of the spindle. By springing the rear forks slightly the distance piece between the hub and the off-side fork end can be removed, leaving a gap through which the inner tube can be passed.

To remove the rear wheel, proceed as above, then remove the brake adjusting wing nut and the pin retaining the brake

anchor arm ; disconnect the rear chain at the spring link, loosen the near side spindle nut and slide the wheel out of the slotted fork ends.

To remove the front wheel, place the machine on both stands (never use the front stand alone), disconnect the front brake control and speedometer cable, loosen the spindle nuts, spring the forks slightly open and the wheel will drop out.

## 15. REMOVAL OF TYRES.

The wired-on tyres fitted are easily removed if the correct procedure is adopted. Deflate the tyre by unscrewing the inside of the valve with the key formed on the dust cap. Remove the milled locknut securing the valve to the rim and unscrew the nut on the security bolt. At a point opposite the tyre valve, press the walls of the tyre down into the well in the centre of the rim, and work the walls down into the well as far as possible in either direction. It will then be found possible to lever the cover off, starting at a point near the valve and working in either direction. When replacing the cover reverse this procedure, starting opposite the valve and finishing close to it with the tyre at the opposite side of the wheel pressed down into the rim. When only slightly inflated, see that the wired edges are in their proper places, not down in the well. As a check on this, examine the fine line moulded on the wall of the tyre near the rim. This should be about a quarter of an inch from the rim, all the way round.

**It is not always appreciated that punctures in the rear tyre can be repaired with the wheel in position.** If the puncture is caused by a nail or similar object, whose position is known, it will be found convenient to remove the mudguard, leave the wheel in position, remove one side of the cover and expose sufficient of the tube to enable the puncture to be repaired.

## PERIODICAL ATTENTIONS.

### DAILY

**Oil Tank.** Check level of oil and top up if necessary with oil M.220.

**Petrol Tank.** Check level and fill up if necessary.

**Tyres.** Examine for correct inflation. Do not rely on observation only. If in doubt, check with gauge provided and inflate to correct pressure.

**Rear Chain.** If dry lubricate freely with C.600, or, if unobtainable, 50 H.D. or Grease No. 2.

### EVERY 2,000 MILES

**Drain engine oil** from tank and engine sump when warm, i.e., after a run. **See paragraph 6.** On new and reconditioned engines this operation must be carried out after the first 500 miles.

**Rear Chain.** Remove to workshops for cleaning and attention.

### EVERY 5,000 MILES

**Engine Oil Filter.** A new felt element must be fitted.

**Gear Box.** Drain when warm, i.e., after a run and refill with oil C.600 to correct level. **See paragraph 7.** Drain plug is underneath gearbox.

**Chain Case.** Drain and remove outside half of chain case by unscrewing left foot rest nut and pulling off foot rest and chain case. Clean thoroughly, taking care not to allow oil to reach rubber sealing band. Refit and fill up to level of overflow plug with C.600.

**Magdyno.** Insert a few drops of light machine oil, or, if not available, rifle oil or 30 H.D., in the lubricator in the end cap of the dynamo.

**Magneto.** The wick lubricating the contact breaker face cam should be recharged with lubricant by workshops.

**Steering Head.** The steering head races must be dismantled and reassembled with fresh Grease No. 2 by workshops.

**Brakes.** These must be dismantled, cleaned and have the operating cams greased by workshops.

**Wheels.** These must be removed from the machine by workshops, dismantled, and the hub bearings repacked with Grease No. 2.

If conditions are very arduous (i.e., very wet or sandy) this operation should be carried out every 2,000 miles or a little Grease No. 2 inserted with a grease gun through the nipples provided.



## MAINTENANCE TASKS.

### ROYAL ENFIELD MODEL WD/CO.

Where "Inspect and Tighten" appears it must be noted that it is not intended that the nuts in question must actually be tightened every six days. They should be tested with a suitable spanner and tightened only if they move under moderate pressure. Take particular care not to over-tighten nuts or bolts of less than  $\frac{1}{16}$  in. in diameter which are easily stripped or broken.

### TASK No. 1.

#### ENGINE.

##### A. Inspect gas tight joints and tighten if necessary.

1. Cylinder head joints. Examine for leakage, which can usually be heard when the engine is running, particularly if the throttle is opened quickly. The cylinder head is secured by four nuts (beneath the sixth fin from the top) which must be tightened diagonally. Report if leak is not cured by reasonable tightening of the nuts. Make sure that leak is not at sparking plug washer or between the centre and the body of the plug.
2. Cylinder holding down bolts. (See Task 2, C 7).
3. Carburettor flange nuts.
4. Exhaust pipe. See that clips securing pipe to cylinder and silencer to pipe are secure; also brackets attaching silencer to chainstays and exhaust pipe to footrest bar.

##### B. Inspect engine mounting and tighten if necessary.

1. Engine plate bolts. (Two  $\frac{3}{8}$  in. bolts securing engine to plates and one  $\frac{9}{16}$  in. front engine attachment bolt).
2. All crankcase bolts (Seven  $\frac{1}{4}$  in. double-ended studs, three  $\frac{5}{16}$  in. nuts on nearside of case, three  $\frac{1}{8}$  in. nuts, on offside of case) and timing case screws (Nine nuts, see Task 2, C 8).
3. All brackets mounted on engine. (Horn bracket and nuts securing horn to it.)

##### C. Test tappet clearances when cold.

To be carried out only under supervision.

Correct clearances — Inlet—no clearance (just free).

Exhaust—just perceptible up and down play.

Always test valve clearances with the piston near the top of the compression stroke. If incorrect, report or adjust according to instructions. To adjust clearances proceed as follows :—

Remove tappet cover from side of cylinder and hold tappet by means of locknut (middle hexagon) and push rod end (top hexagon). Unlock nut by turning it to the left. Now hold push rod end (top hexagon) and turn push rod cup (bottom hexagon) to left or right to lengthen or shorten rod as required. Lock up locknut against push rod end and replace tappet cover. Check the adjustment after locking the locknut.

##### D. Start engine. (If difficult to start, see reasons for uneven firing given below).

1. Listen for knocks (best ascertained by quick opening and closing of throttle).
2. Uneven firing. Possible causes of uneven firing are :—
  - (a) Defective or oiled sparking plug.
  - (b) Incorrect gap at plug or contact breaker points. (See Task 3.)
  - (c) Wet on plug lead or insulator.
  - (d) Wet or grease in contact breaker housing.
  - (e) Contact breaker blade sticking.
  - (f) Contact breaker points dirty or burnt.
  - (g) Magneto slip ring dirty.
  - (h) Faulty H.T. cable.
  - (i) Mixture incorrect.
  - (j) Water or dirt in float chamber or carburettor jet.
3. Examine exhaust smoke for correct mixture or excessive oil. Exhaust should be almost invisible except on a cold day when it will be white from condensed steam. Blue-white indicates excessive oil due to worn piston rings or a defect in the return pump system. Black smoke indicates excessive petrol due to flooding or incorrect carburettor setting.

##### E. Stop engine.

1. Test for weak compression (open throttle when doing this) for :—
  - (a) Valve trouble (listen for gas escaping past valve seats).
  - (b) Piston trouble (compression disappears rapidly without making any sound).
  - (c) Gasket trouble (probably noticeable when engine was running).Report any trouble found.

##### F. Examine fins on cylinders for cracks or choked with dirt.

##### G. REPORT DEFECTS.

## TASK No. 2.

### ENGINE—LUBRICATION SYSTEM AND FUEL SYSTEM.

#### A. Check oil level and refill where necessary.

*NOTE.* This must be done daily in addition to the other tasks. Oil level must on no account be allowed to fall below the bottom of the dipstick and the tank must be kept as full as possible to within 2in. of the top.

#### B. Examine oil—if black, drain sump, clean filters and refill with clean oil (see para. 6, page 6).

#### C. Inspect oil tight joints and tighten if necessary, i.e., if showing signs of leakage.

- (1) Sump and crankcase plugs or draincocks—two filter plugs C and F at bottom of crankcase (see Lubrication Chart).
- (2) Oil pipe unions at each end of pipe leading to valve chest. *NOTE* : If the oil leak occurs beneath the adaptor screwed into the crankcase or the cylinder, the oil pipe should be removed before tightening down the adaptor.
- (3) Valve gear cover plates, i.e., thumb nut securing tappet cover. See that the washer behind this cover is in good condition and that the correct washers, one fibre, one plain steel, are fitted behind the thumb nut.
- (4) Thumb nut securing cover to felt oil filter L (see Lubrication Chart).
- (5) Oil feed nozzle in front of timing cover (large plated nut in centre of timing cover).
- (6) Screws securing oil pump cover plates (front and back of timing cover—be careful not to over-tighten these).
- (7) Cylinder base. There are five nuts (one inside tappet chest) which should be tightened diagonally. To tighten the two rear nuts use the short tubular spanner and the bent end of the tommy bar.

- (8) *Timing cover joint* Tighten the nine nuts in turn using the tubular spanner provided. Be careful not to over-tighten as this will compress the timing cover joint washer and may take up end clearance on the cam wheels.

#### D. Examine fuel system.

1. Security of tank and carburettor. The four hexagon headed pins beneath the tank should be tightened up as far as they will go. Do not leave these loose as is the practice on some other makes of machine.
2. Leaks—taps, unions, draincocks and tank. If petrol leaks at the washer above the petrol tap, loosen the union securing the pipe to the tap before attempting to screw the tap home.
3. Filters. No attention is required to the petrol filters which are fitted to the top of the petrol taps inside the tank and are cleaned by constant immersion in petrol.
4. Rubbing or kinked pipes.
5. Flooding. Flooding of the carburettor may be due to dirt beneath the seating of the fuel needle or to the clip on the carburettor float being out of engagement with the groove in the fuel needle.

#### E. Start engine, set control for slow running.

Set engine running on very small throttle opening with ignition partly retarded. Set pilot adjusting screw on side of carburettor to give maximum engine speed for given throttle position and ignition controls. If engine is now running too fast, close throttle further, if necessary adjusting throttle stop. If petrol consumption proves excessive with this setting, report for Workshops to lower taper needle in carburettor slide. Drivers are not to alter jet settings or carburettor adjustments except as described above.

#### F. REPORT DEFECTS.

**TASK No. 3.**  
**IGNITION SYSTEM.**  
**SPARKING PLUGS.**  
**CHARGING SYSTEM.**  
**BATTERY.**

**A. Magneto.**

1. Inspect and tighten if necessary sleeve nut, which tightens strap securing magneto. This nut will be found behind the magdyno. Only reasonable pressure should be applied and owing to the stretch of the strap the nut will not tighten up solid.
2. The magneto is driven by gears inside the timing case which are automatically lubricated. No attention is necessary by the driver.
3. Inspect contact breaker for correct operation as follows :—
  - (a) Cleanliness and freedom from burning of contact points.
  - (b) Contact points opening and closing correctly as engine is rotated.
  - (c) Gap between contact points correct when fully open—12 thousandths. Check this with gauge on double-ended magneto spanner.
  - (d) Advance and retard mechanism working correctly.
  - (e) If necessary clean out contact breaker housing and inside of cover, removing all traces of dirt, oil or damp.
4. Inspect insulated wires for :—
  - (a) Shorts and cracks, frayed or rubbed portions.
  - (b) Contact with hot parts of the engine.Drivers are not to alter ignition settings.

**B. Sparking Plugs.**

1. Inspect for cleanliness and cracked insulators.

2. Inspect and adjust gaps to 18 thousandths of an inch using the gauge on the single ended magneto spanner. When adjusting plug gap, set the side point not the central electrode.
3. Check for leaks and tighten if necessary, using tube spanner for this purpose.

**C. Dynamo.**

1. Inspect and tighten if necessary, mounting and assembly, cut-out mounting bolts and terminals.  

NOTE. Dynamo is held on to top of magneto by means of a metal strap. See that the bolts securing both ends of this strap are tight. Cut-out is mounted in voltage regulator unit under saddle. See that this is securely fixed—do not break seal.
2. Start engine and see that dynamo shows small charge on ammeter when main headlamp bulb is switched on.

**D. Battery.**

1. Clean battery vents.
2. Clean and smear lanoline or, if unobtainable, vaseline on the terminals.
3. Inspect mounting and terminals and tighten if necessary.
4. Top up with distilled water up to level of top of separators between plates.

When replacing battery lid do not over-tighten securing nuts as this will crack the lid.

**E. REPORT DEFECTS.**

**TASK No. 4.**  
**CONTROLS**  
**STEERING. BRAKES.**  
**WHEELS. TYRES.**

**A. Controls.**

1. Examine handlebar control levers for tightness on handlebar, freedom of operation of clutch, brake and exhaust lifter levers ; correct friction on twist grip, air and magneto levers.
2. Examine each control cable inner wire for fraying.
3. Put a spot of oil on the ends of each control wire and on the pivot pins for the clutch, brake and exhaust lifter levers ; also on the nipples where these pivot in the levers.
4. Examine each control outer cable and see that there are no sharp bends and that cables are not kinked or chafed.
5. See that there is a small amount of slack in the clutch, throttle, air, magneto and exhaust lifter controls. When in the off position adjust if necessary.

**B. Front Forks and Steering Head.**

1. Examine handlebar clamping bolts (six) and tighten if necessary.
2. Examine steering damper and make sure that the steering is free when the damper is off. To check this, if necessary, remove the pin securing the middle plate on the damper to the head lug.
3. Test for up and down play on steering head. To check the adjustment, take weight off front wheel by placing suitable box beneath the crankcase. Lift at the front wheel and examine for play in the steering head by placing one finger across the joint between the two halves of the ball race at the top of the head. To adjust, remove the steering damper control knob, loosen the nut on the pinch bolt through the ball head clip and adjust the large plated nut on top of the steering stem with the spanner provided. Remove as much play as possible but do

not adjust so tightly that the handlebar will not swing freely to full lock on either side. If doubtful whether steering damper is perfectly free, check this by removal of pin securing middle plate of damper to head lug, thus putting damper completely out of action. **After making adjustment, replace pin securing middle plate of damper and do not forget to tighten nut on pinch bolt through ball head clip.** This is very important as serious accidents have been caused through omission to do so.

4. Remove shock absorber hand nuts and check adjustment of fork links. Forks must work freely with the minimum of side play. To adjust the links proceed as follows :—*Top swivel pins*—unscrew locknut (nearside) and adjust pin as required ; finally lock up locknut. *Bottom swivel pins*—release the nuts on the fork spindles and adjust the latter with the squares provided on their ends. Each spindle is provided with a right- and left-hand thread which will open or close the fork links as required. The left-hand threads are on the offside of the machine and the locknuts are loosened by turning in the direction of the arrows on the fork links. Check adjustment after locking up the locknuts. When refitting shock absorber hand adjusters see that the ratchet plunger and spring are in position to prevent the adjustment altering. Rusting of this spring and plunger is prevented by occasional application of a spot of oil. Note that both shock absorbers are tightened by turning tops of hand nuts towards rider when in position in the saddle.
5. Examine Fork Spring and Check Springs for buckling or taking a set and report.

**C. Wheels and Brakes.**

1. Test wheels for side shake, indicating worn bearings.
5. Examine Fork Spring and Check Springs for buckling or taking a set and report.
3. Adjust brakes if required. Wheels must spin freely when brakes are off, but adjustment must be close enough to enable full pressure to be obtained without handlebar lever touching bar or brake pedal having to be pushed too far down. If brakes

are ineffective when correctly adjusted or if insufficient adjustment is available, report as a defect so that they can be dismantled and cleaned or, if necessary, relined.

#### D. Lubrication.

1. Lubricate speedometer drive angle box sparingly (using C.600 in the grease gun.) One shot of the gun is sufficient. Over lubrication of this point may affect the efficiency of the front brake.
2. Lubricate fork swivel pins and brake pedal pivot freely, using C.600 in gun.
3. Apply 50 H.D. by means of the oil can to the holes in the eyes at the top and bottom of the fork check springs (later models only).

#### E. Tyres.

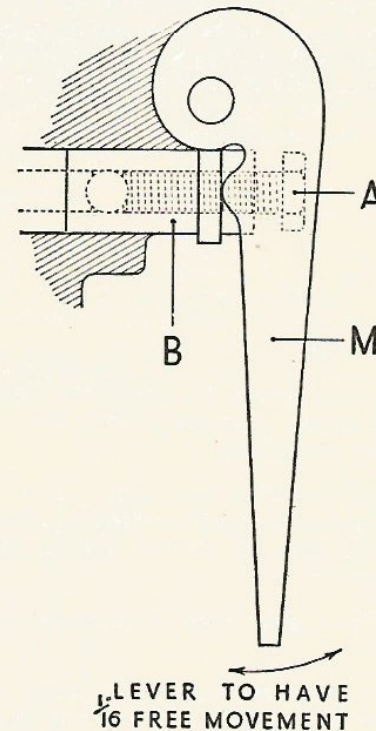
1. Check pressure with gauge and maintain carefully at recommended pressure.
2. Examine for bad cuts, flints, nails, etc.
3. Examine for rotting, grease, tar and general wear on tread.
4. Examine security bolts for tightness.
5. Examine tyre valves for tightness and for missing valve caps.
6. Examine for pronounced uneven tyre wear. This may indicate wheels out of track. Check alignment of wheels with straight edge or taut string which should touch front and rear tyres at two points each when checked on either side of machine. To correct alignment loosen rear spindle nuts and adjust one chain adjuster more than the other, taking care to keep tension correct. See Task 5, C.9. This is to be carried out only under supervision.
7. If new tyres are fitted see that these are recorded in A.B.412 with date and speedometer reading.

#### F. Attend to immediate requirements ; report defects.

## TASK No. 5. TRANSMISSION.

#### A. Examine controls.

1. Is there requisite free movement of clutch lever ? Are the clutch springs returning lever to normal after operation ? To adjust clutch control, disconnect clutch lever on gearbox from cable and hinge it back to expose adjusting screw A and sleeve B. To give more clearance to the control, turn screw A to the left, to take up clearance turn it to the right. No locknut is required as the screw and sleeve are automatically locked by the lever M when this is in position and the control wire connected.



2. Is the gear control functioning correctly ? Check with machine on stand, engine not running, moving back wheel by hand. See that gear control lever returns to normal position when released.

### B. Lubrication. Gearbox.

1. Correct level and correct grade. (Up to level of filter plug using C.600. See para. 7, page 8.)
2. Cleanliness and good condition.

### C. Security, lubrication and wear.

1. Primary chain cover secure. (Footrest nuts.)
2. Primary chain not fouling, correct tension, correct lubrication? (Fill chaincase up to level of overflow plug with C.600). Chain should have about  $\frac{1}{2}$ in. up and down free movement which can be gauged with the finger through the inspection hole. If chain is too tight or too slack it can be tensioned by loosening the nuts on the two studs securing the top and bottom of the gearbox to the engine plates and pivoting the box about the lower bolt. When the chain needs tightening, the adjusting screw between the engine plates must first be unscrewed. After the chain has been correctly tensioned, tighten up the nuts on the two studs holding the gearbox in engine plates and tighten adjusting screw between the plates hard up against the top lug of gearbox and secure with locknut. If the chain tension varies as engine is rotated by kick-starter, give correct tension at tightest part of chain. This is to be carried out only under supervision.
3. Gear box secure? Check also tightness of gearbox cover-screws, gear control lever pin and nut and kick-starter cotter nut.
4. Clutch free from oil. (See 2 above.) If clutch slip occurs when control is correctly adjusted (see Task 5, A1) and oil level is correct (see 2, above), report to workshops.
5. Lubricate gear control pivot with gun, using oil C.600.
6. Silent and easy selection of gears. Check this while riding the machine. If difficult to disengage gears, the cause is probably clutch drag owing to excessive slack in control wire. If adjustment does not cure, report as a defect so that clutch can be examined.
7. Silence in gearbox when running?

8. Rear chain cover secure?
9. Rear chain not fouling, correct tension, correct lubrication. Lubricate freely using C.600 or, if unobtainable, 50 H.D. or grease No. 2. Chain should have about  $\frac{1}{2}$ in. up and down free movement. If chain is too slack or too tight, loosen wheel spindle nuts and adjust by means of chain adjusters in rear fork ends. Take care to adjust both sides equally and tighten locknuts on chain adjusters and wheel spindle nuts. If chain tension has been altered, check adjustment of rear brake.
10. Are chain sprockets true and in alignment? Are they worn? Examine inside faces of chain links for signs of incorrect alignment. Chain out of line when wheels are in line indicates bent frame or forks.
11. If chains are very dirty or dry, remove to Workshops for cleaning and lubrication, or clean with paraffin and soak in C.600 or in melted grease to which graphite has been added. (See "Periodical Attention," page 27.)
12. Check condition of cush drive rubbers by trying to turn rear wheel with brake held on. Maximum allowable free movement of rim is about  $\frac{1}{2}$ in. Check the three cush drive nuts (at the back of the rear brake drum) for tightness.

### D. REPORT DEFECTS.

## TASK No. 6.

### FRAME AND FITTINGS. LAMPS. HORN, Etc., and GENERAL ITEMS.

**A. Examine rivetted, bolted or welded (or brazed) assembly joints for security, points of sidecar attachment.** (Examine main frame and fork lugs, particularly head lug, seat lug, rear fork ends, front fork (top middle and wheel lugs) and the four main frame bolts, i.e., backstays to seat lug, engine plates to bottom of seat tube, engine plates to chainstays, cradle tubes to bottom down tube.

**B. Examine for cracked members, especially :—**

1. Steering head cross members.
2. Engine brackets.
3. Front forks.
4. Rear forks.
5. Head lamp carrier.
6. Front down tube of frame.
7. Tank support brackets.
8. Examine for chipped or rubbed paint which may cause rust. Paint flaking off near a frame or fork joint may indicate that a fracture is about to occur.

**C. Examine frame for distortion.** (Does the frame look twisted or is the steering difficult.) Note, however, that "rolling" at low speeds may be due to tyres being too soft, steering damper binding or steering head adjusted too tight. A tendency for the machine to pull to one side when riding may be due to the rear wheel being out of alignment. (See Task 4, E6.)

**D. Examine security of all bolted and rivetted stays, brackets, hangers, etc.** (footrest hangers, lamp brackets, front and rear brackets securing battery carrier).

**E. Examine all road springs.**

1. Security of holding down bolts.

2. Rusty springs.
3. Lubrication (particularly in case of spring frame).

**NOTE.** The only springs on this model are the front fork spring and saddle springs which should be examined for security and signs of buckling or bending.

**F. Examine general security and good order of mudguards, saddle, stands, tool boxes, battery box.** Check through systematically from front to rear of machine. In particular, locknut on front attachment pin of saddle, nuts securing pannier bag carriers and prop stand.

**G. Lamps and horn.**

1. Is headlamp focussed correctly ?
2. Are lamp glasses intact ?
3. Do switches, lights, horn and other electrical devices work correctly ?

Note if lamps conform to black-out orders.

**H. General.**

1. Are any lubricators missing or damaged or oilways clogged ?
2. Has the machine been well lubricated throughout ? Lubricate any point overlooked during the carrying out of the preceding tasks. Do not over-lubricate the wheel hubs or angle box on speedometer drive. Rust or red deposit on lubricated parts indicates insufficiency of grease or oil.
3. Are footrests, handlebars or control levers bent ?

**I. REPORT DEFECTS.**

## TOOL KIT, MODEL WD/CO.

No. per set.	Part No.	Description.
1	24092	Double-ended Spanner—(.380×.343" hex.— also .380" sq.)
2	24096	" " " ( $\frac{3}{16}$ "× $\frac{1}{4}$ " Whit.).
1	29044	" " " ( $\frac{1}{4}$ "× $\frac{5}{16}$ " Whit.).
1	2976	" " " ( $\frac{3}{8}$ "× $\frac{7}{16}$ " Whit.).
1	29101	Pump Cover Pin Spanner (.255" hex. with .018" feeler).
1	16008	Magneto Spanner (.255"×.283" hex. with .012" feeler).
1	28996	Swivel Pin & Chain Adjuster Spanner (to fit $\frac{5}{16}$ " square).
1	24097	Tubular Spanner ( $\frac{5}{16}$ "× $\frac{5}{8}$ " Whit.).
1	29043	" " ( $\frac{3}{16}$ " Whit.).
1	28976	" " ( $\frac{1}{4}$ " Whit.). (For Cylinder base nuts).
1	21166	" " ( $\frac{7}{16}$ " Whit.).
1	24095	" " ( $\frac{1}{2}$ " Whit.).
1	16594	" " ( $\frac{9}{16}$ " Whit.).
1	24094	" " ( $\frac{11}{16}$ " Whit.).
1	29042	Tommy Bar (bent).
1	4272	Tyre Lever (cranked type).
2	4272A	" Levers (spoon type).
1	3482	Screwdriver, 6", wire.
1	16014	Grease Gun.
1	31290	Tyre Valve Inside Key.
1	16007	Tool Roll (with strap—less tools).

## SUPPLEMENTARY KIT.

1	27528	Oil Can.
1	27575	Pliers, 7".
1	27574	Adjustable Spanner, 7".
1	27576	Screwdriver, 6".
1	27388	Chain Rivet Extractor.
1	27387	Tyre Repair Outfit.
1	29382	Box of Spare Links ( $\frac{5}{8}$ " pitch chain).
1	27383	Packet of insulating Tape.
2	27386	Leather Straps.
1	30472	Coil of Wire (approx. 15ft.).

## NOTES.

+ brique pour supporter la moto à l'arrêt -  
 - chaîne - chaînes -  
 + grandes sautoches en toile  
 + nécessaire pour réparations des pneus et chambres -  
 + jeu de clefs complet pour moto gigot -  
 + un ensemble pour faire du work et plus croisé et (un quinton)  
 + une sautoche universelle - voir moto gigot -  
 + longues vis -  
 + jeu de clefs à bride 12-14-16-18-20-22-24-26-28-30  
 dont la longueur est 91/2 - 21 - 120 - 43 - 65 - 65 - 75  
 + clefs plates 1/16 - 15/16 - 13/11 - 13/11 - 10/9 - 8 -  
 + clefs pignons 7/8 et 6 mm  
 + une chaîne acier pour vélo en tube - 10 pignons -  
 + un manivelle - la batterie en est pas d'origine, c'est  
 une "Endor" - le pignon arrière est très fragile  
 La batterie des chaînes n'est pas celui qui convient -  
 + on obtient 1 clef à molette pour vélo, 7 pignons  
 pour une cela - on obtient une sautoche huile blanc  
 qui il faut une fosse à graisse -  
 on apprécie que le cas, leur qui était sur ma arrière  
 moto est disparu depuis que je l'ai remis en marche -  
 Puis je fais peindre le cadre au plaque avant par un peintre



NOTES.

3 filtres à huile de recharge -  
1 boîte hermétique pour joints -

NOTES.

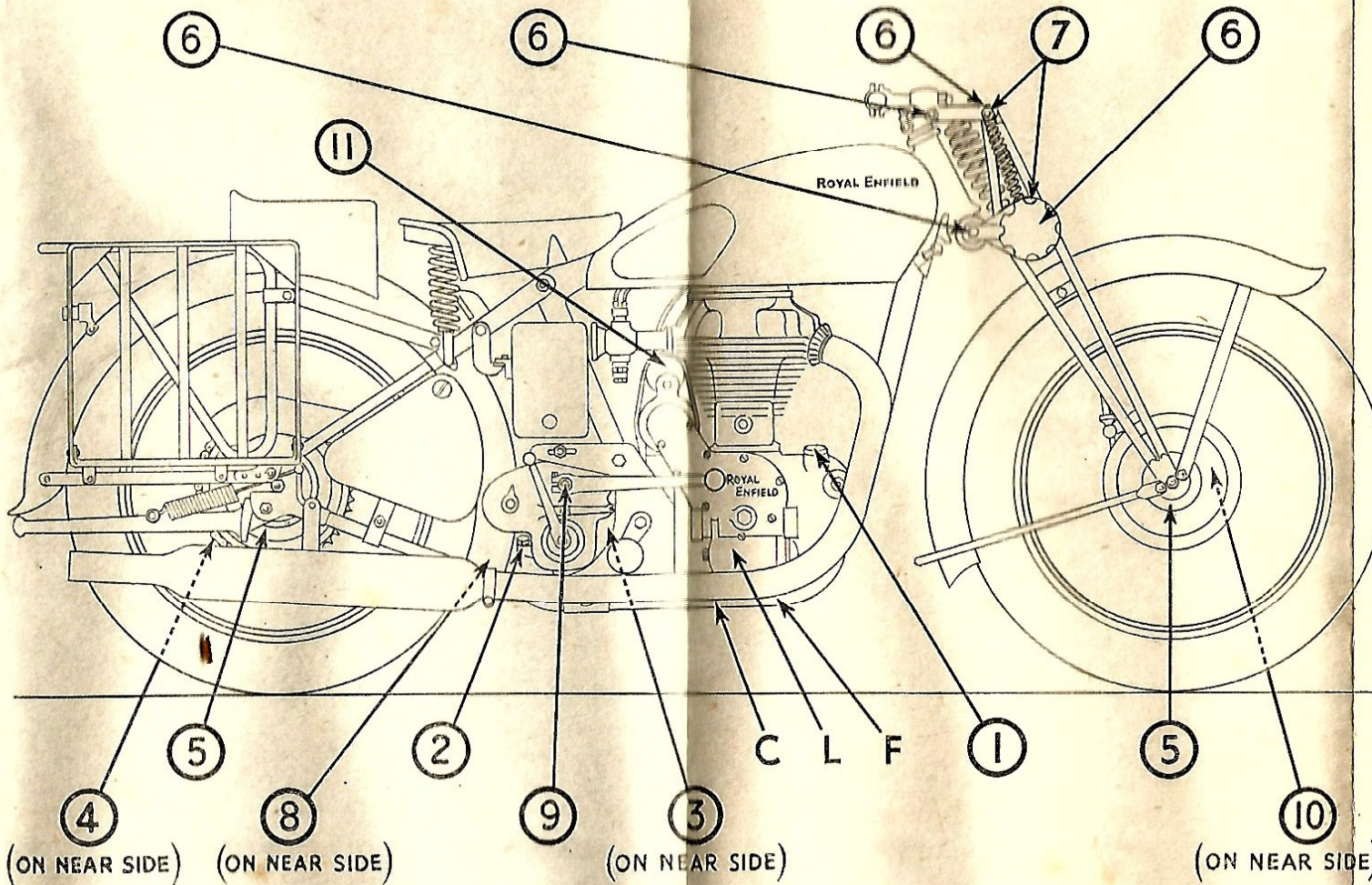
## NOTES.

Location No.	Part	Lubricant	Task No.
1	ENGINE TOP UP (Capacity 4 pints)	50 H.D.	2A
2	GEAR BOX TOP UP (Capacity $\frac{3}{4}$ pint)	C 600	5B
3	CHAIN CASE TOP UP	C 600	5C
4	REAR CHAIN	C 600	5C
5	WHEEL HUBS	GREASE No. 2	*
6	FORK SWIVEL PINS (6 Points)	C 600	4D
7	FORK CHECK SPRING EYES (4 Points)	50 H.D.	4D
8	BRAKE PEDAL PIVOT	C 600	4D
9	GEAR CONTROL PIVOT	C 600	5C
10	SPEEDOMETER DRIVE	C 600	4D
11	MAGDYNO LUBRICATOR	30 H.D. (Light Machine Oil if available)	*
OIL CAN LUBRICATION Control levers and exposed ends of control cables.			4A

\* See Periodical Attentions.

Ref. T.L.C. 359A.

### LUBRICATION CHART.



Location No.	Part	Lubricant	Task No.
1	ENGINE TOP UP (Capacity 4 pints)	50 H.D.	2A
2	GEAR BOX TOP UP (Capacity $\frac{1}{2}$ pint)	C 600	5B
3	CHAIN CASE TOP UP	C 600	5C
4	REAR CHAIN	C 600	5C
5	WHEEL HUBS	GREASE No. 2	*
6	FORK SWIVEL PINS (6 Points)	C 600	4D
7	FORK CHECK SPRING EYES (4 Points)	50 H.D.	4D
8	BRAKE PEDAL PIVOT	C 600	4D
9	GEAR CONTROL PIVOT	C 600	5C
10	SPEEDOMETER DRIVE	C 600	4D
11	MAGDNO LUBRICATOR	30 H.D. (Light Machine Oil If available)	*
OIL CAN LUBRICATION Control levers and exposed ends of control cables.			4A

\* See Periodical Attentions.

Ref. T.L.C. 359A.

**MOTOR CYCLE, SOLO, 350 c.c. O.H.V. ROYAL ENFIELD MODEL WD/CO**