

**Matchless**  
IN NAME & REPUTATION

## INSTRUCTION BOOK

**Model G/7**  
250 c.c. Side Valve

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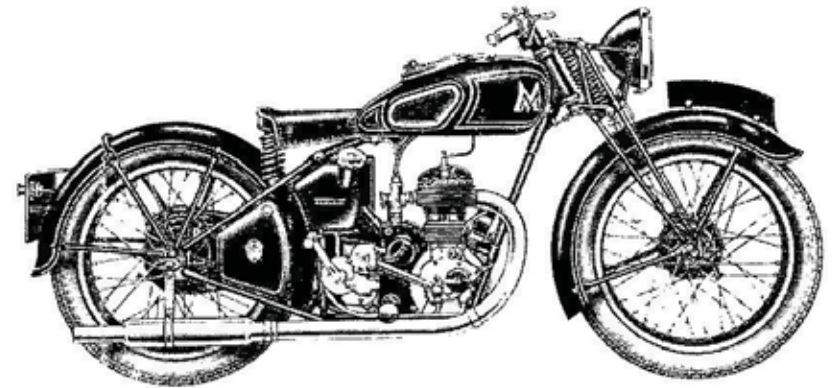


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# DRIVING AND ADJUSTMENT INSTRUCTIONS



## MATCHLESS MOTOR CYCLES (COLLIERS) LIMITED

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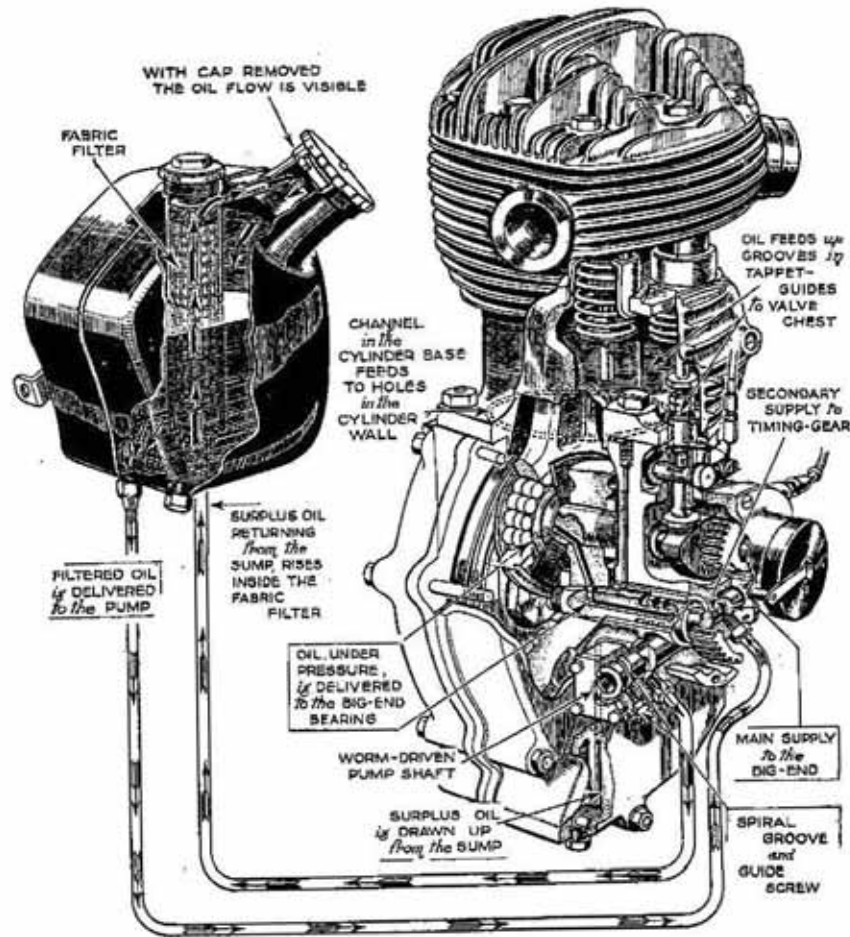
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Oiling System. Model G/7.

## GENERAL INFORMATION

### STARTING.

Before taking the cycle on the road, a new owner is advised to first sit on the saddle and to become familiar with the various controls. Neutral or free engine position of the gears is indicated by pointers on the gear change pedal, and the gear box end, and it must be observed that this neutral position is obtained before starting up the engine. The ignition is advanced and retarded by a small lever on the left handlebar and when starting this lever should be set to about its midway position. The throttle is controlled by means of a twist grip on the right handlebar and adjacent is the small lever by which the air supply is controlled. Both open by an inward movement. When starting from cold, the throttle should be not more than about one-sixth open and the air completely closed. The petrol is turned on by pressing inwards the end of the sliding plunger on the petrol tap marked PUSH ON. Assuming that the tanks have been filled and all levers set as above, to start the engine first flood the carburettor until petrol actually overflows from the vent hole in the float chamber cap. Then raise the exhaust valve by means of the handlebar lever and turn the engine over two or three revolutions, keeping the valve raised. Then turn the switch on tank panel to the position marked I.G. and C.H. and give the kickstarter pedal a vigorous push downward, releasing the handlebar valve lifter lever when the pedal is nearly at the bottom of its travel so as to take the maximum possible advantage of the flywheel momentum. Immediately the engine starts, open up the air and reduce the throttle opening to check the engine speed. Do not, under any circumstances, race the engine up from cold, but allow it to idle at a fair speed for a moment or two to warm up, and while doing so, take the opportunity of observing that the oil is circulating properly. Then, sitting astride the cycle, gently move same forward until the stand is released, after which, disengage the clutch by drawing inwards the large lever on the left handlebar. Then with the right foot firmly depress the foot-change pedal and slowly release the clutch lever while still keeping pressure upon the foot-change pedal with the right foot, when the cycle will commence to move forward. When well under way again release the clutch and engage second gear. this time by an upward pressure on the foot-change pedal with the toes of the right foot retaining the pressure as before, until the change of gear has actually taken place. Repeat the operation until top gear is reached, and endeavour to make the movements of hand and foot as simultaneously as possible, but remember that in all gear changes a steady pressure of the foot is advisable and this pressure should be maintained until the clutch lever is released. It is

**Starting—contd.**

not sufficient to jab the foot pedal and then engage the clutch. When actually in motion it will be found sufficient to merely release the clutch a trifle to ease the drive and with reasonable care changes of gear can be made without a sound. Always endeavour to make smooth silent gear changes and avoid racing the engine during the operation. With ordinary care the movements of the clutch lever and change pedal are too quick to permit of any appreciable rise in engine revolutions, but until quite conversant with rapid gear changing, it will be found desirable to close the throttle down while making a change. By suddenly engaging the clutch while the engine is racing, an enormous load is imposed on the gears and chains.

**RUNNING IN.**

For the first 500 miles at least, full throttle driving should be studiously avoided. Although mention is made elsewhere of the desirability of not exceeding 30 miles per hour during this running-in process, what is meant actually is "keep the engine well within its limits." Short speed bursts are permissible after this initial running-in, but it is recommended to avoid extended high speeds until at least 1,000 miles have been covered. At the conclusion of the first 100 miles and 500 miles running, the adjustment of tappets, chains, contact points, etc., should be checked and corrected if necessary. Subsequent to the initial settling-down process, attention to such details will only be necessary at very infrequent intervals.

**"DON'TS" IN DRIVING.**

- DO NOT omit to turn the ignition off after a run or a discha battery may result.
- DO NOT race the engine unnecessarily or let the clutch in sufficiently suddenly to cause the wheel to spin. Take a pride in a silent, smooth getaway.
- DO NOT use the brakes with violence. Brake early and drive on the throttle instead of the brakes.
- DO NOT allow the engine to labour on high gear on a steep gradient and remember that an easier, faster and better ascent can be made on the next lower gear.
- DO NOT attempt to start the engine with ignition on full advance or with throttle more than slightly open.
- DO NOT under any circumstances allow the chains to run very slack or very dry. Either will soon cause trouble, and adjustments are easy. Slack chains will inevitably cause harshness of transmission.

**"Don'ts" in Driving—contd.**

- DO NOT force the engine or drive above the maximum speed of 30 m.p.h. for the first 500 miles. Mention is made of this warning on account of the natural desire of a new owner to ascertain his mount's maximum capabilities. However, until all bearings are well run in, it is advisable to refrain from speed bursts and the accompanying possibility of seized bearings, piston rings, etc. The first 500 miles of an engine's existence is far more important than the next 5,000.
- DO NOT race the engine in neutral gear position, violently accelerate from a standstill, or drive at full speed on open throttle, etc., when in a residential district. Any motor cycle, or for that matter, any motor vehicle when so driven creates abnormal noise, and in the interests of all motorists we earnestly implore every "Matchless" owner to studiously refrain from any of the practices enumerated, or any-calculated to cause annoyance to the public in general. Recollect that the degree of silence of your cycle is judged not by the actual noise it is making, but by comparison with other noises present. For example, in a busy street your cycle might be inaudible while in a quiet narrow street of high buildings, it might be heard for several hundred yards, although in each case being driven in exactly the same manner.

## LUBRICATION.

Proper lubrication is of vital importance, and the use of only the best lubricant will be repaid many times over by long wear and good service. The following makes and grade are specially recommended: Summer—Castrol NNL, Mobiloil D, or Aeroshell; and Winter—Castrol XL, Mobiloil D, or Aeroshell.

Oil is carried in the tank underneath the saddle, and in use the level of oil in the tank should never be allowed to fall below the half-full mark. The integral oil pump is of the double-diameter single-plunger type, the larger diameter being used for exhausting the crankcase sump, and the smaller end for delivering oil to all the essential parts of the engine interior, from whence it drains into the sump to be returned to the tank. Provision is made on all models to observe the oil in circulation, and a practice should be made of checking the operation of the oiling system before each run. It is necessary to remove the oil tank filler cap when the returning oil may be observed running from the small spout immediately underneath the cap. This check should be made preferably upon starting up the engine from cold, as, owing to the fact that when stationary, oil from all parts of the engine interior drains back into the sump, and until the surplus is elevated the return is very positive, whereas normally it is somewhat spongy and mixed with air bubbles, due partly to the fact that the return oil plunger has a greater pumping capacity than that delivering fresh oil, and partly to variations in the amount of oil in response in the crankcase, according to engine speed. For example, upon sudden acceleration the return flow may cease entirely for a moment, only, of course, to resume at a greater rate than normal upon acceleration. No provision is made for external adjustment of the oil supply, the correct delivery to each part of the engine being arranged internally by suitably dimensioned passages. It might here be explained that oil is forced direct to the timing gear chamber, which, after filling same to a predetermined level, overflows into the flywheel chamber, and so drains away to the sump. Oil is also forced into the timing gear side flywheel axle bearing, and thence through a drilled passage in the flywheel to the big end bearing, the splash from which passes up into the cylinder interior. In addition to this splash, the cylinder receives oil via a direct ball valve controlled oil passage, which ensures a very adequate supply under all conditions for this, the most vital part of the engine. No attention to the oiling system is required other than observing the return of oil to the tank prior to a run, and the continual replenishment of the supply tank, the level of oil in which, as mentioned above, must be above the half-full mark, and must not be filled when the engine is cold to a level higher than one inch below the return pipe outlet.

## NOTES ON THE OILING SYSTEM.

If the engine is for any reason dismantled, the crankcase must not on any account be separated until the pump plunger has been withdrawn. To withdraw this plunger, first remove both end caps, and also the guide screw, when the plunger can be pushed out large end first. When re-assembling, the plunger must be inserted after the crankcase sections have been bolted together, and before refitting the end caps, the guide screw must be replaced, with its relieved tip engaging the profiled cam groove in the plunger. By moving the plunger to and fro while this screw is being introduced, the correct location of the groove can be easily felt, and the screw in question must be finally firmly screwed home. The entire oiling system is simplicity itself (see oiling system illustration on Page 4), only one moving part being employed, viz., the double-diameter plunger. This plunger is rotated by the engine shaft, and moves backward and forward while rotating, under the influence of the small guide screw which engages with the profiled annular groove cut in the plunger end. As the plunger moves in its housing in one direction, the large end draws oil from the sump, while at the same time the smaller end is delivering fresh oil to the various channels provided. Upon the reverse movement of the plunger the large end returns to the tank oil already drawn from the sump, while the smaller end draws a fresh charge of oil from the tank in readiness for delivery to the engine upon the following movement of the plunger. This action, of course, goes on all the while the engine is revolving, and since the exhausting end of the plunger is the larger, the engine sump is always kept clear of oil, hence the term "dry sump." At the same time a large quantity of clean, cool oil is being forced under pressure to all working parts. An efficient filter for the oil is provided in the tank consisting of a felt cartridge through which the returning oil is compelled to pass before emerging from the spout immediately underneath the tank filler cap. This cartridge filter can be readily removed by unscrewing the hexagonally-headed cap on the top of the oil tank. Monthly, or about once every 1,000 miles, this filter should be removed and carefully washed in clean petrol, while once each season, or not less frequently than once every 5,000 miles, the entire tank should be drained, thoroughly washed out with petrol, and afterwards filled to the correct level with fresh, clean oil. To avoid undue waste, it is quite permissible to arrange for this clean-out when the oil is at the lowest recommended level, although it must be pointed out that normally it is highly desirable to add fresh oil frequently in small quantities in preference to allowing the supply to become almost exhausted before refilling, the reason for this being that the more oil there is in the tank, the cooler it will keep in circulation.

### SPECIAL WARNING.

- 1.—Never mix oil of different make or grade.
- 2.—A dirty or choked oil filter cartridge will inevitably cause heavy oil consumption. If thoroughly soaking and washing in petrol does not effect a cure, fit a new cartridge. (Serial No. 3765, price 2s. 6d.)

**CHAINS.**

The primary chain and the dynamo chain both run in an oil bath case and provided that the oil level is correctly maintained will require no attention other than occasional adjustment. The inspection cap orifice on the chain case determines the correct level and it is imperative that the level is not allowed to fall more than about 3-16in. below the height of the bottom edge of this orifice. Failure to maintain this level will result in rapid chain wear and possible destruction. It is, therefore, advisable to make a practice of verifying the level weekly. The rear chain should be removed every 1,500 to 2,000 miles in summer and every 1,000 miles during winter, and thoroughly washed in paraffin. After carefully wiping it should then be immersed in a bath of molten tallow or, as a poorer substitute, ordinary engine oil. If the latter is used, the chain should be laid in soak overnight in order to ensure penetration to all link joints. If treated in this manner, at least 8,000 to 10,000 miles of satisfactory service should be obtained.

**GEAR BOX.**

Monthly, or about once every 1,000 miles, a small quantity of grease should be added, if necessary, via the aperture on the gear box top covered by an oval metal cap. This cap is slotted at one end to allow of it being twisted round to uncover the aperture. The gear box must not be entirely filled and under normal conditions the addition of about two ounces of grease every 1,000 miles will be found ample. Weekly inject a little grease at all grease gun points.

NOTE.—The greases recommended for gear box lubrication are supplied in collapsible tube containers with a suitable bent spout to facilitate injection into the gear box interior. Castolase (Medium), Mobilgrease No. 2, or Shell Motor Grease (Soft).

**DYNAMO LUBRICATION.**

Use oil very sparingly. A few drops of oil should be inserted through the lubricator on the driving end once every 500 miles, and a small quantity of grease should be pressed into the hole to be seen on the commutator end once every 1,000 miles. Avoid using too much grease or pressure, otherwise it may be forced through the bearing on to the commutator and cause trouble.

**HUBS.**

Once every 500 miles (or more frequently in continuous bad weather) a small quantity of grease should be injected into both front and rear hubs via the grease nipples provided.

**FORK SPINDLES.**

To obtain efficient fork action, adequate spindle lubrication is essential. Weekly, or at least once every 500 miles, grease should be injected until it can be observed oozing from the spindle ends.

**STEERING HEAD BEARINGS.**

Two grease gun nipples are provided, and a small quantity of grease only should be injected monthly, or once every 1,000 miles.

**BRAKE CAMS, LEVER AND ROD JOINTS.**

Inject grease sparingly into brake cam nipple about once every 1,000 miles, or monthly. Grease brake pedal bearing occasionally and oil brake rod joints frequently, particularly in bad weather.

**BOWDEN CABLES.**

A small metal clip will be observed on all the control cables. These clips cover a small bared patch on the outer casing through which lubricant can be injected by means of a specially constructed oil gun. This article is not supplied in the standard tool kit, but owners are advised to obtain one, price 5s. 9d., for their home tool kit. The operation of flooding the inner wire with lubricant takes only a few moments, and the effect upon a dry cable has to be tried to be believed. Grease is injected through the small bared patch on the outer casing and is forced through the spiral casing on to and along the inner. All that is necessary is to slide the small clip along the casing to enable the specially designed oil gun to be clamped with the bared patch occupying a central position on the rubber pad on the gun nozzle. A few turns of the screwed gun plunger then floods the entire length of the cable with lubricant.

## ADJUSTMENTS & MAINTENANCE.

### DECARBONISATION.

The period for which an engine will run satisfactorily without being decarbonised depends to a great extent upon driving conditions. Generally, however, this process should be carried out every 1,500 to 2,000 miles. The need for decarbonising will be indicated by a tendency to ping or knock when ascending hills, or upon accelerating after rounding a corner, and particularly so when the engine is hot. Although to remove carbon deposit it is only necessary to take off the cylinder head, it is advisable to remove the cylinder each 5,000 m.l. in order to also inspect the piston rings and remove any deposit from the grooves in which they operate.

### TO REMOVE CYLINDER HEAD.

First remove the sparking plug and then unscrew the cylinder head by which the head is fixed, when same can be lifted off. Should the gasket adhere to either the cylinder head or cylinder top, it should be gently eased off and deposited where damage is impossible. After carefully removing all carbon from both the piston top and interior of cylinder head, all traces of the deposit should be wiped off with a clean cloth. Before replacing the cylinder head, thoroughly clean both surfaces of the gasket and also the flat surfaces of cylinder top and cylinder head. To facilitate subsequent removal a good tip is to smear the threaded interior of the cylinder head fixing nuts with graphite grease before refitting. It is imperative that all these nuts are evenly tightened down, and to ensure this it is advised to screw them on just finger tight and then go over each in turn, slightly increasing the pressure until all are firmly and evenly tightened down. As an additional precaution it is advised to again go over these nuts upon first starting up the engine and while still warm. If the cylinder head fixing nuts have a very dry or rusty appearance, before attempting their removal thoroughly soak them with paraffin.

### TO GRIND IN VALVES.

During each alternate decarbonisation it is advisable to remove the valves and grind in to restore the seatings, also to clean the stems and guides. Having removed the cylinder head, next remove the valve chest aluminium cover, taking care not to damage the jointing washer. Then with a stout screwdriver or suitable lever raise the bottom valve spring collar, at the same time holding the valve head on its seating and withdraw the valve cotter. Then smear the valve seat with a

### To Grind in Valves—contd.

thin layer of fine grinding compound (obtainable already mixed) and after re-inserting the valve turn it backwards and forwards by means of a screwdriver operating in the slot in valve head, raising the valve off its seating and turning to a different position after each half-dozen or so back and forward movements. When the paste ceases to bite, remove the valve and wipe the seating clean. If it is observed that the whole of the seating has not the required dull matt appearance, apply another coating of paste and repeat the grinding operation. When the seating is satisfactorily restored carefully wipe away all traces of the grinding paste with a rag moistened with petrol. Before replacing the valve carefully clean the guide interior and also the valve stem. If the latter is at all discoloured with oil deposit, carefully clean off by means of very fine emery cloth held between the thumb and forefinger and rubbing up and down the valve stem. Although both valves are similar it is advisable to replace in their original position, and before refitting the valve inspection cover the tappet clearances must be carefully checked and corrected if necessary. The recommended clearance is .012in. for both inlet and exhaust.

These clearances should be accurately and constantly maintained to obtain the best results and a cheap set of engineers' feeler gauges is found very useful for checking purposes.

### VALVE TIMING.

The timing gears are marked for re-setting purposes, and the correct opening of the valves is as follows: the inlet commences to open 20 degrees, or 7/64in. before top of exhaust scavenging stroke, and closes 25 degrees, or 25/32in. up the compression stroke. Exhaust valve commences to open 25 degrees, or 31/32in. from bottom of firing stroke, and closes 25 degrees, or 7/32in. down induction stroke. To test valve timing the tappets must first be set to provide .014in. clearance. See instructions above for normal running clearances.

### IGNITION SETTING.

The correct ignition setting is 7/16in. before top dead centre with ignition fully advanced.

### TO RE-TIME IGNITION.

Remove the bakelite contact breaker cover and slacken the screw securing the contact breaker cam. Then with a small punch operating in one of the slots on this cam give a sharp but light tap. This will loosen the cam on the taper end of the shaft to which it is fitted. Now set the piston and the ignition lever in the position mentioned above, after which gently turn the cam with the fingers in an anti-clockwise direction until the contact points are just about to part, in which position carefully retighten the cam fixing screw and replace the bakelite cap. It is essential, in this ignition setting operation, to obtain exactly the prescribed piston setting on the compression stroke, i.e., the stroke at the top of which both valves are closed.

### TO ADJUST THE DYNAMO CHAIN.

Adjustment is arranged by revolving the dynamo unit in its cradle mounting, and the correct adjustment should permit a movement of about  $\frac{1}{4}$  in. to  $\frac{3}{4}$  in. as the top run of the chain is lightly pressed up and down midway between the sprockets. When checking, try a number of positions and obtain the described adjustment at the tightest place. To adjust, first slacken the dynamo clamp bolt and then twist the unit bodily in its mounting in a forward or clockwise direction to tighten. Always check the adjustment after the clamp bolt has been re-tightened. It will be found that the tension of both dynamo and primary chains can be checked by the fingers passed through the inspection cap orifice, it being, of course, necessary to remove the cap for the purpose. The cap is released upon unscrewing the knurled edge screw.

### TO ADJUST PRIMARY CHAIN.

To obtain adjustment for the primary chain, provision is made to swing the gear box bodily up in its lower fixing bolt. It will be observed that the upper fixing bolt operates in slotted holes to permit of the necessary movement. To make adjustment, the extended offside nut of the top gear box fixing bolt must first be slackened. Then to obtain the chain adjustment, first slack off the nut on adjuster bolt nearest the engine and turn the nut furthest from engine clockwise until the chain is tight, after which slack off the nut furthest from engine, and tighten down the nut nearest to engine until the correct adjustment is obtained, when securely tighten up the nut furthest from engine to lock the adjustment, and also securely re-tighten the extended offside nut on the top gear box fixing bolt. The correct adjustment (which should allow a whip or movement of  $\frac{3}{4}$  in. to  $\frac{1}{2}$  in. as the top run of the chain is lightly pressed up and down midway between the sprockets) should be obtained for the tightest place.

### TO ADJUST REAR CHAIN.

Put down centre prop stand, then slack off rear wheel spindle nuts. Then adjust chain as required by means of the bolts which pass through each of the fork ends, after which securely re-tighten spindle nuts. The correct adjustment (which should allow a whip of  $\frac{3}{4}$  in. to  $\frac{1}{2}$  in. when chain is pressed up and down) should be obtained for the tightest place.

**NOTE.**— Before tightening rear chain, the adjustment of the front chain should be inspected, and if attention to each is required, the latter should be treated first.

**IMPORTANT.** Care is necessary when tightening the rear chain to leave the wheel in correct alignment. When correct, a piece of thin string stretched taut across both wheels, about four inches from and

### To Adjust Rear Chain—contd.

parallel to the ground, should be observed to just touch each tyre at both sides of wheel centre simultaneously. Alternatively, a straight wooden batten about five feet long is a very handy article to be used for the purpose of checking wheel alignment, applied as in the case of string, parallel to and about four inches from the ground.

### TO ADJUST WHEEL BEARINGS.

To adjust either wheel bearing first slack off the offside axle nut, and also the thin lock nut on the inner side of the fork end, then with the special spanner provided turn the cone in a clockwise direction until all shake is taken up, after which slack off a trifle and re-tighten the locking nut and lastly the outer axle nut.

### STEERING HEAD ADJUSTMENT.

The steering head should be occasionally tested for correct adjustment by exerting pressure upwards from the extreme tips of the handlebars, while the steering damper, if fitted, is completely slackened off. Should any shake be apparent, the top domed nut on steering column should be slackened and the lower nut screwed down until all trace of slackness has disappeared, when the top domed nut should be again tightened down.

**IMPORTANT.**—To guard against unconsciously over-tightening the head bearings, the effect of which is extremely difficult steering, it is advisable to jack up the front of the machine (a box of suitable height—the crankcase will serve) in order that all shake may be taken up satisfactorily and the steering head left perfectly free.

### FRONT FORK SPINDLE ADJUSTMENT.

Provision is made for taking up side-to-side wear of the various fork spindle bearings. The need for adjustment will be made apparent by a click or creaking noise heard when the steering head is abruptly turned. By placing the fingers partly over the spindle link and partly upon the lug through which spindle passes first determine which spindle or spindles require adjustment. Then slack off both spindle nuts and turn the spindle bodily by means of the hexagonal offside end in a right-hand or clockwise direction to take up slack. Do not turn more than half a revolution before a retrial with the nuts re-tightened. Care is essential to guard against over-tightening when the fork will become stiff in action or most probably refuse to function. The washers which are fitted between the lug ends, and the spindle side plates are not provided for frictional purposes, but to prevent actual seizure in the event of the spindle adjustment being too tight. Never attempt to adjust more than one spindle at a time. The necessary friction damper effect is provided independently and is adjusted as follows:



Failure to obtain satisfactory petrol consumption may be due to:—

1. Late ignition setting (carefully follow instructions).
2. Bad air leaks.
3. Weakened valve springs (renew).
4. Leaky float, causing flooding (renew).
5. Taper needle extension insufficient (note position before altering).
6. Compression poor, due to worn piston rings, or defective valve seatings (test compression with wide open throttle).
7. Incorrect tappet adjustment.

### ELECTRICAL EQUIPMENT.

Miller lighting and ignition equipment is fitted, the dynamo charge rate being automatically controlled by means of a constant voltage unit. This unit functions when the dynamo-generated voltage rises above 7.3 to 7.5 volts, and under fully charged battery and no load conditions only a small current flows through the system. As load is switched on the dynamo output automatically increases to meet the demand. It is therefore only under run-down battery conditions and during daylight running that a high degree rate will show on the ammeter, and under such conditions a rate as high as 5 to 6 amps may be recorded. The normal rate, however, is between 2 and 4 amps, according to the condition of the battery. The object of this constant voltage control system is, of course, to maintain a fully-charged battery without the risk of overcharging so commonly experienced in the past with switch charging rate control and particularly so on motor cycles with their unavoidable small capacity batteries. The head lamp fitted with a filament driving light bulb in addition to a parking light bulb, and filament being brought into instant use as and when required by means of a switch on the left handlebar. As in car practice a red warning light is provided on the tank panel to remind the driver to switch the ignition off when the engine is not running and the contact breaker points are together. This light goes out immediately the dynamo is revved up to supply sufficient current to close the automatic cut-out contacts, but may glow slightly when the dynamo is generating maximum output.

### BATTERY.

**Topping Up.**—At least once a month, the vent plugs in the top of the battery should be removed and the level of the acid solution examined. If necessary, distilled water, which can be obtained at all chemists and most garages, should be added to bring the level above the top of the plates, but well short of the bottom of the vent plugs. When examining the cells, do not hold a naked light near a vent, as there is a danger of igniting the gas coming from the plates.

### Battery contd.

**Storage.**—If the equipment is laid by for several months, the battery must be given a small charge from a separate source of electrical energy about once a fortnight, in order to obviate any permanent sulphation of the plates. In no circumstances must the electrolyte be removed from the battery and the plates allowed to dry, as certain changes take place which result in loss of capacity.

### DYNAMO.

The only parts of the dynamo calling for occasional attention are the brushes and the commutator, which are readily accessible when the end cover is removed. The brushes should slide freely in their holders. They should be clean, and the face in contact with the commutator should appear uniformly polished. Dirty brushes may be cleaned with a cloth moistened with petrol. The commutator surface must be kept clean and free from oil or brush dust.

(See earlier instructions re dynamo lubrication.)

### CONTACT BREAKER (Coil Ignition).

Occasionally remove the bakelite contact breaker cover and examine the contacts. If they are burned or blackened, clean with a very fine emery cloth, and afterwards with a cloth moistened with petrol. Take care to wipe away all particles of dirt or metal dust.

### ADJUSTMENT (Coil Ignition).

The contact breaker gap is carefully set and should not be altered unless it varies considerably from the correct setting. If adjustment is necessary, it follows:—

Turn the engine until it is seen that the contacts are fully opened, then slacken the nut securing the stationary contact screw and adjust this screw until the gap is about .018 to .020. After making the adjustment, care must be taken to tighten the locking nut by which the stationary contact screw is secured.

**NOTE.**—Check contact breaker gap at 100 and 300 miles. Owing to an initial settling down, there is a tendency for the gap to decrease in the first few hundred miles of use. This may seriously affect ignition setting. Subsequently, adjustment will only be necessary at long intervals, but should be checked every 1,000 miles.

### PERIODICAL INSPECTION OF NUTS, ETC.

Satisfactory service depends largely upon the necessary immediate attention to details. The old adage "A stitch in time saves nine" applies with particular force to motor cycle maintenance. Make a point of occasionally testing with a spanner the security of all nuts. There is possibly more dissatisfaction and damage caused through neglecting such details than for any other reason. It must be remembered

### Periodical Inspection of Nuts—contd.

that a motor cycle is a highly specialised piece of engineering, and that while it does not call for great engineering skill in driving, the exercise of a little mechanical sense and the occasional use of a spanner, cleaning cloth, etc., is very necessary if the maximum service is to be obtained with the requisite degree of satisfaction. Therefore, do not wait until tomorrow, but adjust it now.

### CLEANING.

If the machine is used to any extent in bad weather, a small hose is almost indispensable for removing mud. Care should be exercised to avoid directing water on to the engine, carburettor, or other such parts. If a hose is not available, soak dirt with paraffin before removing. Do not attempt to rub or brush mud off an enamel surface when dry, or the polish will soon be destroyed. For the engine, etc., a good stiff paint brush and pot of petrol is preferable.

### TYRES AND SERVICE.

To obtain satisfactory life and service from the tyres is largely within the user's control, and the first essential to obtain this is proper inflation. The correct amount of pressure is governed substantially by the load to be carried, and it is therefore difficult to lay down a hard and fast ruling. Assuming the weight of driver to be normal, the pressures recommended may be regarded as satisfactory, and we urge all users to make a practice of checking the actual pressure by means of a low-pressure Schrader tyre gauge. This takes a few seconds only, and will amply repay the owner by reason of additional service and immunity from failures.

		Solo.	With Pillion.
Front tyre ...	26x3.25 ...	14-15 lbs. ...	14-15 lbs.
Rear tyre ...	26x3.25 ...	20-21 lbs. ...	21-23 lbs.

The above recommended pressures apply to average weight drivers. For abnormal weight drivers, or for carrying a pillion passenger, add 2 lbs. per square inch to the above only.

### CORRECTIVE MEASURES.

No adjustments should be made or any part tampered with until the cause of the trouble is known. Otherwise adjustments which are correct may be destroyed.

#### Engine Sudden Stops:—

- Petrol shortage in tank.
- Choked petrol supply pipe or tap.
- Choked main jet.
- Water in float chamber.
- Oiled-up or fouled sparking plug.
- Water on H.T. pick-up or on sparking plug.
- Choked vent hole in petrol tank filler cap.

### Corrective Measures contd.

#### Engine Fails to Start, or Difficult Starting:—

- Lack of fuel, or insufficient flooding if cold.
- Excessive flooding, allowing neat petrol to enter cylinder.
- Oiled-up sparking plug.
- Stuck-up valve, or valve stem sticky.
- Weak valve spring, or valve not seating properly.
- Too liberal throttle opening.
- Pilot jet choked.
- Contact breaker points dirty, or gap incorrect.
- Retaining clip on contact breaker cover out of position.

#### Loss of Power:—

- Valve or valves not seating properly.
- Weak valve spring or springs.
- No tappet clearance or excessive clearance.
- Lack of oil in tank.
- Brakes too closely adjusted.
- Badly fitting or broken piston rings.
- Punctured carburettor float.
- Creeping ignition lever.

#### Engine Overheats:—

- Lack of proper lubrication.
- Weak valve springs.
- Pitted valve seats.
- Worn piston rings.
- Late ignition setting.
- Punctured float, using rich mixture.
- Air control to carburettor out of order.
- Creeping ignition lever.

#### Engine Misses Fire:—

- Loose terminal on coil.
- Valve spring weak.
- Defective or oiled plug.
- Incorrectly adjusted contact.
- Incorrectly adjusted tappets.
- Defective sparking plug cable.
- Oil on contact breaker points.

#### Excessive Oil Consumption:—

- Stoppage or partial stoppage in pipe returning oil from engine to tank.
- Clogged or partially clogged cartridge filter in oil tank.  
(Drain sump and test with filter removed.)
- Badly worn or stuck-up piston rings, causing high pressure in engine crankcase.
- Air leak at rear oil pump end cap.

## LEGAL MATTERS.

NOTE.—In view of the insistent public objection to noisy motor cycles, a word of warning on this subject may not be out of place here. First, it has been noted, and freely commented upon, that much of the noise complained of is unnecessary, being due to injudicious driving as, for instance, violently accelerating from a standstill, racing the engine when stationary, driving on full throttle when ascending hills in residential districts, etc. Any motor cycle, or for that matter any motor vehicle, driven in this manner creates abnormal noise, and in the interests of all, we earnestly implore every "Matchless" owner to studiously refrain from any of the practices enumerated.

To comply with the law relating to motor cycles, every owner must:—

1. Hold a driver's licence, which can be obtained from the Chief Constable or Corporation of a County Borough, or from the County Council. The charge for this licence is 5s. yearly, and must be renewed annually from the date of issue. A motor car driver's licence covers the driving of a motor cycle.
2. Insure against Third Party Risks (other risks may also be embodied in the Insurance Policy as owner may desire, but are not compulsory by law), and obtain from the Insurance Company decided upon either a Certificate of Insurance covering the full period of twelve months, or alternatively, as is most general, a temporary Certificate, which must be produced when applying for Revenue Licence.
3. Apply to the Taxation Department of the Local Authority of the district in which the vehicle is to be ordinarily kept, for Inland Revenue Licence and Registration Form (motor cycles only). The address of the above Taxation Department can be obtained by enquiry at a Post Office.
4. The form, when obtained, must be filled in and returned, accompanied by the Insurance Certificate referred to above, and the requisite remittance, which varies according to the date of registration and the term covered.
5. See that the registration number plate is illuminated at night.
6. Never drive at a speed which is dangerous to the public.
7. Wherever necessary, give audible and sufficient warning by horn, or other instrument, of the approach of his motor cycle (except between the hours of 11.30 p.m. and 7.30 a.m.).

NOTE.—In view of the continuous alterations in road traffic regulations, new owners are advised to make further enquiries unless quite conversant with all new regulations at the date of purchase.

## GUARANTEE

We give the following guarantee with our motor cycles, motor cycle combinations and sidecars, which is given in place of any implied conditions, warranties or liabilities whatsoever, statutory or otherwise, all such implied conditions, warranties and liabilities being in all cases excluded. Any statement, description, condition, or representation contained in any Catalogue, advertisement, leaflet or other publication shall not be construed as enlarging, varying or over-riding this guarantee. In the case of machines which have been used for "hiring out" purposes, or racing, or from which the trade mark name or manufacturing number has been removed, no guarantee of any kind is given or is to be implied.

WE GUARANTEE, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, but this guarantee is to extend and be in force for six months only from date of purchase, and damages for which we make ourselves responsible under this guarantee are limited to the free supply of a new part in exchange for the part of the motor cycle, motor cycle combination, or sidecar which may have proved defective. We do not undertake to replace or refix, or bear the cost of replacing or refixing, such new part in the motor cycle, motor cycle combination or sidecar. We undertake, subject to the conditions mentioned below, to make good at any time within six months any defects in these respects. As motor cycles, motor cycle combinations and sidecars are liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear and tear, misuse or neglect.

The term "misuse" shall include amongst others the following acts:—

1. The attaching of a sidecar to the motor cycle in such a manner as to cause damage or calculated to render the latter unsafe when ridden.
2. The use of a motor cycle or motor cycle and sidecar combined, when carrying more persons or a greater weight than for which the machine was designed by the manufacturers.
3. The attaching of a sidecar by any form of attachment not provided, supplied or approved by the manufacturers, or to a motor cycle which is not designed for such use.

Any motor cycle, motor cycle combination or sidecar sent to us to be plated, enamelled or repaired will be repaired upon the following conditions, i.e., we guarantee that all precautions which are usual and reasonable have been taken by us to secure excellence of materials

**Guarantee** contd.

and workmanship, such guarantee to extend and be in force for three months only from the time such work shall have been executed or until the expiration of the six months above referred to, and this guarantee is in lieu and in exclusion of any common law or statute warranty or condition and the damages recoverable are limited to the cost of any further work which may be necessary to amend and make good the work found to be defective.

**CONDITIONS OF GUARANTEE.**

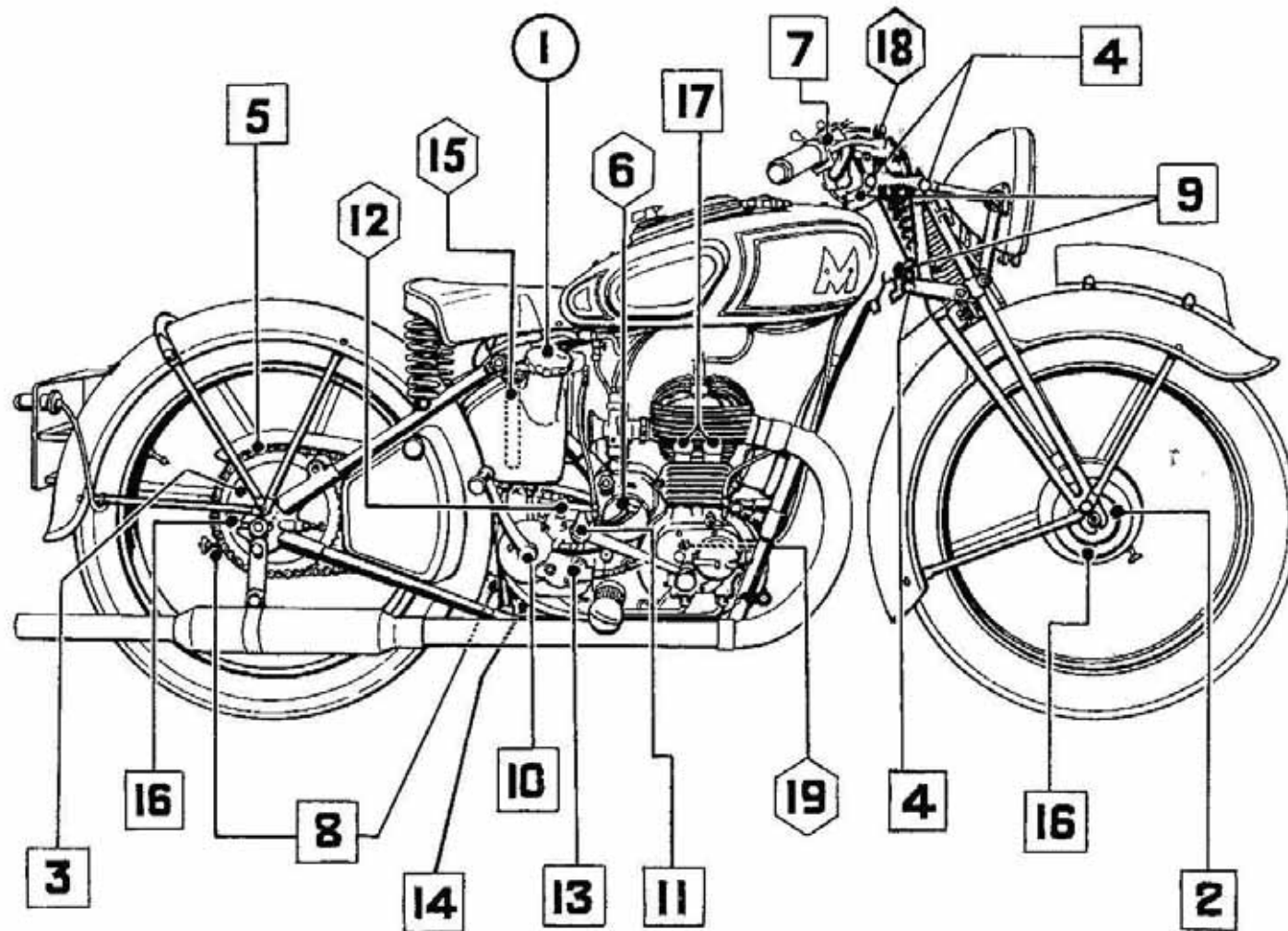
If a defective part should be found in our motor cycles, motor cycle combinations or sidecars, or in any part supplied by way of exchange before referred to, it must be sent to us CARRIAGE PAID, and accompanied by an intimation from the owner that he desires to have it repaired or exchanged free of charge under our Guarantee, and he must also furnish us at the same time with the number of the machine, the date of the purchase, or the date at which the alleged defective part was exchanged, as the case may be.

Failing compliance with the above, such articles will lie here AT THE RISK OF THE OWNER, and this guarantee and any implied guarantee, warranty or condition shall not be enforceable.

We do not guarantee specialities such as tyres, saddles, chains, magnetos, lamps, etc., or any component parts supplied to the order of the purchaser differing from standard specifications supplied with our motor cycles, motor cycle combinations, sidecars or otherwise.

**IMPORTANT NOTE.**--Any part sent to us for any reason whatsoever must bear distinctly the sender's name and address and instructions or requests relative to parts must be sent separately by letter post.

MATCHLESS MOTOR CYCLES (COLLIERS) LTD.  
PLUMSTEAD,  
LONDON, S.E.18.



### DAILY - ○

LOCATION	PART	W.D.OIL
1	OIL TANK .TOP UP	M.220

### WEEKLY - □

2	FRONT HUB	C.600
3	REAR HUB	C.600
4	FORK SPINDLES	C.600
5	REAR CHAIN	GREASE MT.
7	LEVER, CONTROL, JOINTS	M.220
8	BRAKE-ROD JOINTS	C.600
9	STEERING-HEAD RACES	C.600
10	KICK-STARTER SHAFT	C.600
11	FOOT GEAR CHANGE	C.600
13	SPEEDOMETER DRIVE	C.600
14	BRAKE-PEDAL BEARING	C.600
16	BRAKE-SHOE CAMS	C.600
17	VALVE STEMS (SPARINGLY)	C.600

### MONTHLY - ◇

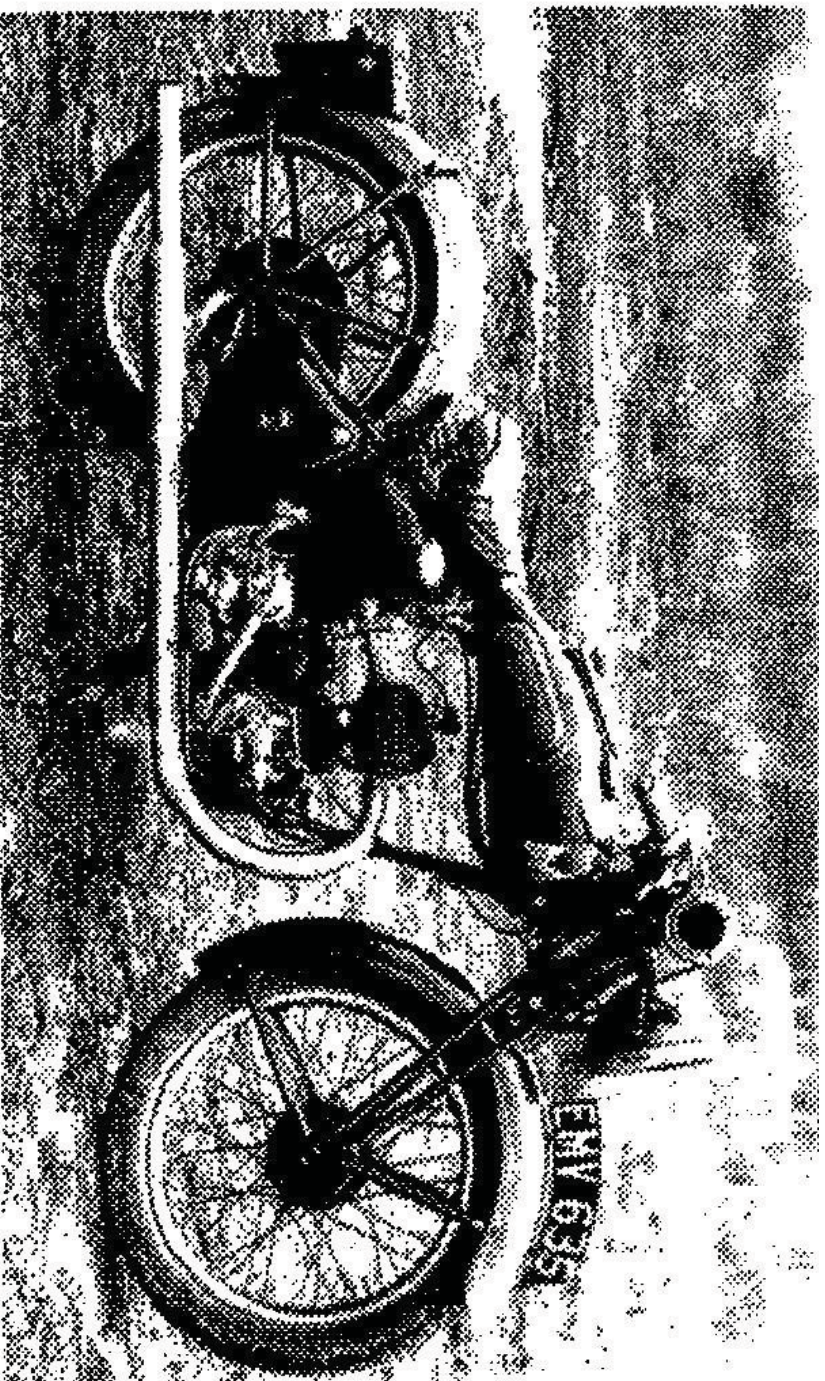
6	DYNAMO BEARING	M.220
12	GEAR BOX, TOP UP.	C.600
15	OIL FILTER. REMOVE AND CLEAN OUT.	
18	BOWDEN CABLES SPECIAL GUN	M.220
19	FRONT CHAIN CASE	M.220

### GENERAL NOTE.

OIL TANK . DRAIN & REFILL EVERY 5000 MILES. M.220  
 GEAR-BOX CLEAN OUT & REFILL C.600 WITH FRESH OIL - AFTER 1st 500 MILES

## MATCHLESS MOTOR CYCLE . TYPE 37/G.7.

### LUBRICATION CHART



*Official photograph of a 1936 Matchless G7. (PRO. W.O. 194 (45) -----)*

#### **MATCHLESS MODEL G7 246 CC SV SINGLE-CYLINDER - 1936**

During late 1936 Matchless was to supply the War Office with a quantity of its Model G7 250 cc SVs. These were all built to a standard 1937 civilian specification, with the type being destined for training purposes primarily with the Royal Corps of Signals.

Introduced into service without the usual MTF evaluation procedure, one example was eventually subjected to the standard 10,000 mile test at Farnborough, Hampshire. Following the completion of 10,333 miles, 801 of which were cross-country, the reliability of the model was described as only fair. Notable faults included considerable wear on the cylinder-bore and the loss of grease from the wheel bearings. In summary, it was suggested that a more reliable and robust motorcycle should be found for training purposes, and no further Model G7 machines were purchased.