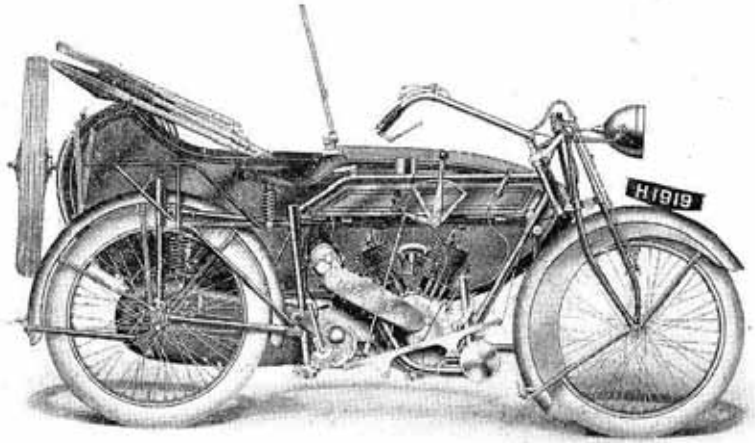
DRIVING AND ADJUSTMENT INSTRUCTIONS.



"Matchless." Model "H," 1920.

H. COLLIER & SONS LIMITED

Manufacturers.

Registered Offices and Showrooms:
44-45, PLUMSTEAD ROAD, PLUMSTEAD,
LONDON, S.E. 18, ENGLAND.

Nearest Station:
WOOLWICH ARSENAL, S.E. & C.R.

Works:
BURRAGE GROVE, PLUMSTEAD, S.E.

Telegrams & Cables - "Matchless, Woolwich."
Telephone - Woolwich 17 & 18. *Code - A B C, 5th Edition, & Private Code*

Matchless
THE PERFECT PASSENGER MOTORCYCLE

INSTRUCTION BOOK
AND
SPARE PARTS LIST

MODEL H

INTRODUCTION.

The "Matchless" of 1914 has been universally acknowledged to be the best of all pre-war passenger machines, and we feel confident that the 1919-20 Model "H" will bring forth the same comments respecting post-war outfits.

Following our previous practice of endeavouring to obtain good service by making every purchaser thoroughly acquainted with the working of his mount, we issue herewith detailed description and adjustment advice on all important units, together with useful illustrations. A careful study of the contents will enable the possessor of a Model "H" to carry out any small adjustments that may become necessary from time to time, and so obtain the best possible utility from his mount, which result is our earnest desire.

H. COLLIER & SONS, LIMITED.

General Description.

ENGINE.

The engine fitted to the Model "H" is of J.A.P. manufacture, and is of nominally 8-h.p. As will be observed from sectional illustration (page 22), it is provided with interchangeable valves, springs, guides, etc., and is also fitted with adjustable valve tappets and a simple "no-trouble" type of internal valve lifter. An ingenious system of crank pin lubrication is employed, operated by the air pressure obtained by the descending pistons, which pressure is maintained in the oil box situated on the gear side of engine by means of non-return disc valves. The system, together with an exceptionally well-designed connecting rod bush arrangement, provides practically everlasting wear. The remaining bearings are equally robust, and we have had actual experience of this engine running upwards of 20,000 miles without a single replacement becoming necessary.

GEAR BOX.

The gear box fitted to the Model "H" is, with the exception of a slight reduction in size, made possible by the use of high-grade steels and a few minor details, similar in design to its famous predecessor, the Model 8B, introduced in 1914. It is, as before, cylindrical in shape, and is mounted on the rear-engine cradle plates, the method of fixing in annular grooves ensuring constant chain alignment. As will be observed from the sectional illustration (page 25), dogs provide the top and bottom gear changes, while sliding teeth engage the middle gear. The layshaft is hollow and in one piece, fitted with bearings of generous proportions, and running on a hardened-steel shaft provided with spiral oil grooves.

The clutch is, as before, indestructible, and should be used whenever desired, i.e., when turning acute corners, traffic riding or for slow running on top gear. When kept properly lubricated the clutch forms an admirable shock absorber entirely progressive in action (attention is drawn elsewhere to the necessity and means of lubrication of clutch surfaces).

MAGNETO.

The magneto is of best English make, and is fitted directly on he rear engine plates, chain adjustment being provided for.

FRONT FORKS.

The spring forks fitted to the Model " H " are of a vastly improved design, giving an exceptionally large movement, and are so constructed as to provide a combination of fore and aft movement with that in a vertical direction. The spindles are of steel, hardened and ground, and in addition to being provided with an adequate arrangement of lubrication, are adjustable in length to enable side wear to be taken up when desired.

SPRING FRAME.

The new spring frame fitted to the Model " H " is mechanically sound in design, and, unlike many others, gives absolute rigidity in addition to an exceptionally large spring movement of approximately three inches. The movement of rear and side wheels is connected by means of an ingenious truss arrangement, the object of which is to prevent the outfit leaning when turning corners. It will be found in practice that the spring frame Model " H " is as stable and inflexible laterally as its rigid frame predecessors.

BODY.

The sidecar body fitted is the outcome of much consideration, and without detracting from a handsome outer appearance, exceptional carrying space for a spare tin of petrol, overalls, tools, etc., has been provided, thus leaving the whole of the external luggage grid available for luggage required when travelling.

WHEELS.

Patent detachable and interchangeable wheels of our own design are fitted. The driving dogs are machined from the solid bar and are hardened. The rear chain sprocket is mounted upon an independent roller bearing, and the rear wheel may be removed without in any way disturbing the transmission. The time required for changing any wheel is but a few seconds. (See Instructions.)

STARTING.

Before describing the actual method of starting, it is perhaps advisable to explain the various lever positions. Neutral or free engine positions of the gear is marked " N " on gear quadrant. Gear-changing lever must be in the position marked, thus, for starting, ignition is advanced or retarded by means of a lever fixed on left side of tank. To advance spark this lever is pushed backward ; for starting it should

be about two-thirds advanced. The throttle and air levers (if any) for carburettor both open inwards, the top lever (if any) operating the air, and the lower and longer one the throttle. For starting, throttle should be about one-sixth open, and air (if any) completely closed. The petrol is turned on when the lever on the tap to which the petrol pipe is attached is parallel to the body of the tap. Assuming that the tank has been filled with petrol and oil of the brand recommended elsewhere, and that all levers and taps have been set as above, to start engine first flood the carburettor by depressing the button on the centre of the float-chamber until the petrol overflows. With the right foot give the kickstarter a sharp and vigorous push downwards ; should the engine fail to start at the first kick allow the crank to go right back against the rubber buffer stop and kick again until the engine starts. This operation should not require at the most more than three or four attempts. On account of the mechanically-operated valve lifter and long kickstarter crank with the small gear up, the starting of the engine of the Model " H " will be found a far more simple operation than on any previous model. When the engine is started close the throttle slightly to check the speed, and seated on the cycle, depress the clutch by pressing forward with the toe—this disengages the clutch. Then shift the gear lever into first speed position, after which gently let in the clutch by releasing gently the clutch pedal. When fairly under way smartly depress clutch pedal again and simultaneously shift gear lever into second gear position, releasing pedal gently but smartly as engine takes up the drive, after which repeat the operation to obtain top gear. When thoroughly accustomed to the gear changing it will be found beneficial to check the engine speed while changing from second to top by closing the throttle slightly. This can quite easily be done by operating the gear lever with the left hand and the throttle with the right. It is possible by this latter method to change gear absolutely without a sound. In all changes of gear it is advisable to make certain that the gear lever is fairly in engagement with the notches in gear quadrant.

DRIVING.

In driving, it will be found that the " Matchless " clutch becomes almost indispensable, particularly for slow driving on top gear, rounding very acute corners, riding in traffic, etc., obviating much of the incessant gear changing necessary on most machines. The clutch surfaces being positively lubricated it is quite safe to use same in such circumstances as suggested above, and, in fact, the clutch may be slipped whenever necessary for comfortable and easy driving without the slightest fear of harmful results, provided always that the lubricating instructions appertaining to same are carefully carried out. The whole machine, in fact, should be driven like a car. In general driving it is always advisable to advance the ignition as far as possible without knocking. When ascending a steep hill, as the engine slows, care should be taken to retard the ignition just sufficiently to prevent knocking, and if a change of gear then be made the ignition should be again advanced, as the speed of the engine is increased by the use of the lower gear.

"DON'TS" IN DRIVING.

DO NOT allow the gear dogs to knock when engaging the low gear for starting. Push the clutch farther out of engagement and the knocking will cease.

DO NOT allow the engine to labour on high gear on a steep gradient. An easier, faster and better ascent can be made on the next lower gear.

DO NOT make a practice of starting on second speed.

DO NOT under any circumstances allow the chains to run very slack or very dry. Either will soon cause trouble, and adjustments are easy.

DO NOT overlook signs of harshness in transmission or fierceness in clutch operation. Both point to need of oil.

LUBRICATION.

It is practically impossible to lay down rules for engine lubrication owing to the varying conditions under which different machines are driven. The amount of oil we recommend for a normal load and at an average speed of 20 m.p.h. is approximately one pumpful to every 5 miles. This amount must be increased proportionately to all conditions above normal. The quality of oil to be used, however, is of vital importance and we particularly recommend our patrons to use only the very best brands, a good sample being Wakefield "Castrol C," Winter Grade, which will be found suitable for both winter and summer. Of equal importance to the engine is the lubrication of such parts as clutch, chains, frame joints, fork spindles, etc., which should be dealt with systematically as follows:—

CLUTCH.

Oil every 200 miles of ordinary running (*i.e.*, more often if machine is driven mainly in traffic where clutch is used frequently). Want of lubrication of the clutch surfaces will be made apparent by harsh or jerky transmission, and no such signs should be ignored. Should the oil which is injected into the reservoir on the end of clutch pedal refuse to run away, a few strokes of the tyre pump with nozzle held over the hole will drive the oil through the small tube passing into clutch interior. (See sectional drawing of gear box.) If continual trouble is experienced in this direction an oil of thinner grade should be used. Under no circumstances must the oiling of clutch surfaces be ignored. The self-filling oil injector provided renders this operation one of seconds only.

CHAINS.

It will probably be found that the chains will receive sufficient oil from the clutch and gear box if the respective lubricating instructions of these parts are carried out. They should, however, be inspected periodically, and oil injected through the inspection holes if necessary.

FRAME JOINTS (12 in number).

These joints should be lubricated with ordinary engine oil every 200 miles with oil injector provided.

FORK SPINDLE.

Every 200 miles grease should be forced through the fork spindles by means of the grease pump provided, until the grease can be observed exuding from either end of the spindle bearings. (Price's "Belmoline," Medium Grade, specially recommended as a lubricant.)

GEAR BOX.

Every 500 miles the gear box filling plug should be removed, and the box filled to overflowing when the machine is standing level with ordinary engine oil.

HUBS.

Every 500 miles (or more frequently in continuous bad weather) the hub grease caps should be removed and grease injected with the grease pump provided, until it can be seen exuding from each side of the spindle. (Price's "Belmoline," Medium Grade, specially recommended as a lubricant.)

In addition to the foregoing, all parts, such as saddle nose joint, brake and gear-rod joints, etc., should receive a few drops of oil occasionally, particularly in bad weather.

ADJUSTMENTS.

ENGINE.

To adjust valve tappets. Hold tappet head, Part No. H.E. 4794, with adjustable spanner, and slack off thin lock nut, Part No. H.E. 4107, with special thin engine spanner, then using the small end of the same spanner on the tappet body, Part No. H.E. 4090, screw up or down as desired. When the correct adjustment has been obtained the head must be securely locked with the thin locking nut.

NOTE.—The correct clearance between tappet head and valve stem when valve is on its seating is ·005, approximately the thickness of an ordinary visiting card.

TO ADJUST VALVE LIFTER WIRE.

Slack off small lock nut securing valve lifter outer casing stop, and screw the stop out until correct adjustment is obtained.

NOTE.—This adjustment can be made at either end of the outer cable, and care must be taken when adjusting to see that the valve tappets are quite free when valves are down on their seatings.

TO REMOVE CYLINDERS.

Unscrew knurled-edge cap from top of carburettor and draw out valves and cable. Then unscrew the petrol pipe union nut at tank end, after which remove inlet pipe and carburettor entirely. Next remove oil pipe; then remove both nuts securing magneto-chain case, and take off the outer half of same. Then remove the nut securing each magneto-chain sprocket, after which, with a lever behind the chain case, at each end in turn, force off the sprocket. Then remove the four bolts securing magneto platform, and after detaching ignition rod and ignition cables then remove magneto entirely. Both exhaust pipe nuts should then be unscrewed, after which sparking plugs and valve caps (if it is desired to remove the valves) should be unscrewed. The cylinder nuts should then be taken off, and with the pistons at their lowest point, the cylinders can then be removed with ease.

The return should be made in the reverse order, care being taken when refitting cylinders to keep the faces quite clean and cylinder walls smeared with oil. We recommend coating the cylinder base when ready for assembling with Seccotine or quick-drying gold size.

TO RE-TIME MAGNETO.

Revolve the engine by hand until the back piston is approximately 7/16" of an inch from the top of the compression stroke (*i.e.*, the stroke upwards immediately after inlet valve has closed). Then with ignition lever in fully advanced position, and magneto sprocket loose on shaft (the other sprocket having been previously tightened), turn the magneto armature backwards until the points are just about to break on the No. 1 cam (*i.e.*, when fibre block on bell-crank lever of contact breaker is approximately at its nearest position to rear cylinder). Holding carefully in this position tighten up the magneto sprocket nut.

NOTE.—The operation of re-timing magneto, although requiring care, does not in any way justify the alarm with which many novices view it. A good test for correct timing after the foregoing instructions have been carried out is as follows:—

Start up the engine and fully retard ignition. With throttle fully open the engine should run at about 1,000 to 1,200 revolutions per minute, *i.e.*, at about the same speed as at 20 to 25 miles per hour. If any considerable variation to this speed is obtained an alteration in the required direction should be made. When satisfied that magneto timing is correct, securely tighten the nuts which fix magneto sprockets, commencing first with the one on the cam shaft.

TO ADJUST MAGNETO CHAIN.

It will be observed that magneto-chain adjustment is obtained by sliding the magneto back upon the engine cradle plates to which it is attached. Correct chain adjustment is such that when the top of chain is lightly pressed up and down a whip of about 1/8" to 1/4" is obtained.

TO REMOVE TIMING GEAR.

Remove magneto chain case and sprockets as previously described, and take off the remaining nuts securing timing gear cover. Then pull up valve lifter wire by hand, at the same time holding the covering tube stationary. Then holding in this position, remove the slotted cap, Part No. H.E. 4323, then push the tube up until the nipple is exposed, and detach wire by pushing through the slotted side of brass yoke end. Then unscrew the brass yoke end, after which remove the hexagon screwed cap and spring, Part Nos. H.E. 4687 and H.E. 4290. Then pull upwards on valve lifter rod and at the same time gently tap off the timing gear cover until the lifter rod yields, and is free to move up and down. Care must be taken not to allow the cam wheel to come out with the cover plate, and owing to the tendency to do so, it is advisable to occasionally tap the end of cam shaft when withdrawing the cover plate to prevent this happening. The timing gear is now exposed, and valve lifter will remain in cover plate.

TO REMOVE CAM WHEEL.

Revolve the engine until the marks on timing gears coincide, then raise the back exhaust tappet with a screwdriver or some other suitable instrument and insert a distance piece (a penny or two-shilling piece will serve) between the crank case and lowest part of tappet head. The cam wheel is then free to be pulled out.

TO REPLACE CAM WHEEL AND GEAR COVER.

With back exhaust tappet raised as described above, hold all four cam levers up and gently insert camwheel with mark at the bottom to coincide with mark on small pinion. See that exhaust valve lifter is in place in cover. After carefully cleaning the faces of cover and smearing with quick-drying gold size or Seccotine, slide on to cam spindle as far as possible, then draw the lifter rod as high as possible and carefully tap the cover on until about 1/4" from the case, then push valve lifter rod down as far as possible, and then push the cover home. No force is necessary in replacing this cover, and should any difficulty be experienced in pushing valve lifter rod down as described, carefully draw the camwheel out a little. After the cover has been replaced the magneto chain, etc., should be fitted as described previously (see Magneto Timing).

GEAR BOX, CLUTCH, Etc.

To remove gear-box end plate for examination of gears remove the aluminium cap covering kickstarter ratchet pinion, then take off the small nut on the end of driving shaft and remove spring and ratchet pinion. Then unscrew the ratchet nut (screwed right-hand thread). This, with constant use, may have become tightly fixed, and some force may be required to loosen. Then remove kickstarter crank and spring and all nuts securing the end plate. Then draw off valve-lifter lever and cable attachment, after which the end plate may be gently forced off, leaving the gears exposed.

NOTE.—While the end plate is being removed a pan or some receptacle must be placed underneath to catch the oil, the bulk of which will run out. When re-assembling the faces of end plate and gear box must be thoroughly cleaned, and a new paper washer used if the old one has been damaged. Preferably coat with quick-drying gold size.

GEAR ROD ADJUSTMENT.

Should any tendency develop on the part of top or bottom gears to jump out of engagement, the adjustment of gear rod must be at once inspected. This rod must be adjusted each time an alteration is made to the position of gear box (see front chain adjustment). To test for correct setting of gear rod proceed as follows :—

Put back stand down (see instruction to remove rear wheel) and remove the bolt from top of gear rod and gently pull the rod upwards, at the same time removing rear wheel to and fro until the top gear is engaged. Then holding the rod in this position move the gear lever into top gear position, and alter the length of rod by screwing in or out of the cross head on gear-striker lever as the need may be, until the rod is of correct length to allow the bolt at the top end being introduced without any pull on rod being required. Before fixing this bolt, test in low gear in a similar manner and halve any inaccuracy, that is to say, if the rod is found to be long when offered up in low gear position, but correct in top gear, it should be shortened to make the inaccuracy equal in each. Mention is made of this owing to the fact that in order to provide for wear on the numerous joints the gear lever is given slightly more movement than necessary when new. This excess of movement is taken up by the buffer acting spring box made integral with the gear rod, and primarily intended to facilitate noiseless gear changing.

CLUTCH ADJUSTMENT.

When delivered the clutch will be found to possess a comfortable margin of grip. Slight adjustment either way can be made by tightening or slacking the spring pressure as may be desired. Should the clutch develop a tendency to slip the adjustment of the clutch pedal thrustball races must first be examined. When correctly adjusted it should be possible to rock the pedal slightly upon its bearings, and if

found tight adjustment must be made by slacking off the two left-hand thread nuts (Part No. H.G. 26), care being taken to securely lock these two nuts together after making the adjustment.

NOTE.—Spanners to fit the large locking nut securing clutch-pedal end cap and also hexagon portion of end cap itself are provided. When replacing this cap leave with oil hole uppermost, and see that the oil tube to clutch interior is quite clear. Should the clutch slip with pedal correctly adjusted remove the top portion of front chain case, and carefully tighten each clutch spring nut (Part No. H.G. 30) in turn about half a turn at a time before each re-trial. If, on the other hand, the clutch should develop a tendency to become harsh in action, although properly lubricated (see Oiling Instructions), the clutch-spring nuts should be carefully slacked out in turn about half a revolution between each re-trial. In each of these operations care must be exercised to adjust each nut a similar amount. If there is any doubt, or after entirely removing clutch-spring nuts for any purpose, these nuts should be screwed right up as far as possible, and then carefully slacked off four complete turns, each nut being treated similarly in turn, thus ensuring that all the springs are compressed equally.

POSITION OF CLUTCH PEDAL.

The clutch pedal should be set to allow the rider to control the movement of same in its entire range with both heel and toe. When assembled it is set suitable for a person of average height, but if found inconvenient to operate as described slack off the nut on the end of the anchor rod which passes through the large clip on clutch-pedal opening sleeve, and revolve the pedal to the desired position. A much easier and finer clutch manipulation will be obtainable with the clutch pedal set correctly. The clip nut mentioned does not need excessive tightening.

CHAINS.

TO ADJUST FRONT CHAIN.

Slack off the nuts securing the ends of gear box straps, and using the kickstarter crank as a lever, revolve the gear box in its housing in the required direction (that is, backwards as in starting the engine for tightening chain, and the reverse direction for slacking). Care must be taken after adjustment has been made to securely tighten the gear-box strap nuts. Correct adjustment of chains should allow a whip of 3/8" to 1/2"

when chain is pressed up and down. This may be ascertained through the inspection hole in chain case immediately opposite the top side of chain.

IMPORTANT NOTE.—Owing to the method of obtaining chain adjustment by revolving the gear box, the gear-operating rod must also at the same time be adjusted to correct length after altering position of gear box to adjust front chain. (For instructions see Gear Rod Adjustment.)

TO ADJUST REAR CHAIN.

Put down rear stand (see instructions to Remove Rear Wheel) and slack off **large nut only** on the left side of rear wheel, and also the large nut on right side. Then screw up an equal amount each side chain adjuster nut (*i.e.*, small nut at end of fork end) until a whip of 3/8" to 1/2" is obtained by pressing chain up and down. This may be ascertained through inspection hole in side of chain case. In making this test, tension or chain should be tried in a number of places, and the correct adjustment obtained for the tightest place. When correct adjustment has been obtained securely tighten each of the large nuts.

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

FRONT FORKS.

Adjustment of front fork spindles for side wear. The need for adjustment at this part will be apparent by a creaking noise when steering head is turned abruptly with machine stationary, and such adjustment should be carried out as follows :—

First ascertain which spindle or spindles require adjustment, then slack off grease cap and securing nut of same side slightly, and also slack off large nut on opposite side. Then to tighten turn the spindle itself in a left-hand direction not more than half a turn at one time, and while still holding spindle tighten the small nut and grease cap, after which large lock nut should be secured. Care is necessary in this operation to guard against over tightening, when the fork will be stiff in action, and will most likely refuse to function.

TO ADJUST STEERING HEAD.

The steering head should be occasionally tested for adjustment by exerting pressure upwards from the extreme tips of the handlebars. Should any shake be apparent slack off handlebar clip bolt and tighten down the large nut which encircles the handlebar stem until all signs of slackness have disappeared, after which securely tighten clip bolt nut.

NOTE.—Want of adjustment will also make itself felt by a distinct tendency of the front wheel to wobble when the hands are removed from handlebar.

WHEELS.

ADJUSTMENT OF WHEEL BEARING.

A periodical examination of wheel bearing adjustment should be made when machine is on the stands, and any wheel requiring attention should be removed (see Removing Wheels). The large octagonal lock nut should then be slacked off with the special spanner provided, and the threaded cup turned with the hooked end of same spanner in a right-hand direction until all shake is taken off, after which the locking nut must be securely tightened, after which the adjustment of bearing should be verified.

NOTE.—It is advisable to tap the spanner with a small hammer when tightening this large nut to guard against any possibility of same slacking off in use.

TO REMOVE REAR WHEEL.

Put down rear stand. (The easiest method of lifting rear of cycle on to the stand is to hold the cross bar of stand with the left foot and raise the weight of cycle from the lower pair of mudguard stays, which latter are amply strong enough to allow of this treatment. Mention is made of this method owing to the fact that most motorcyclists lift the rear of cycle from the luggage carrier, and on account of the height of this part of the Model "H" lifting from same is very difficult.) Entirely remove the small nut on left-hand end of spindle and slack off only the right-hand side large nut. Then turn the spindle until the handle on same is in line with the slot in fork end, in which position it can be entirely withdrawn and the wheel removed without disturbing transmission in any way. To replace, hold the wheel up until the spindle can be inserted to carry the weight, then turn the wheel slowly, and at the same time force over towards the transmission side until the driving dogs engage, then holding the handle of spindle in line with the slot in fork end, push right home. Then give the spindle a quarter of a turn when the handle will be across the slotted fork end, and holding in this position replace small nut on left-hand side and securely tighten large nut on right-hand side.

NOTE.—It will be found advisable to hold the right-hand side chain adjuster tight against the inside of fork end while the flattened collar on spindle is being passed through.

TO REMOVE FRONT WHEEL.

Put down front stand. Slack off nuts on front brake pad holder clips and turn the pads outward. Then remove spindle nut and washer, when spindle can be withdrawn and wheel removed. When replacing care must be exercised when setting and fixing the brake pad holders. These should each be set an equal distance from wheel rim and in line with same, and in addition the clip nut must be securely tightened.

NOTE.—Wheel must be replaced with the driving dogs on left side as seen when seated.

TO REMOVE SIDECAR WHEEL.

Put down side stand only. Remove nut and washer from spindle end and withdraw, when wheel is free to be removed.

NOTE.—When replacing fix wheel with driving dogs on left side as seen when seated.

STANDS AND MUDGUARDS.

Owing to the very rapid movements of the spring frame and forks, considerable strains are imposed on the mudguards which must necessarily be attached to unsprung parts, and must always remain radial with the wheels. To obviate any mudguard breakages exceptionally robust guards are fitted in addition to enormously strong stays. As a further precaution all the stands are fixed both to frame ends and mudguards in such a manner as to help support the latter instead of remaining a dead weight on them as is usual. It is, therefore, of great importance that the stands themselves should be kept tight, and also that the stand-clip screws are carefully tightened down after use (but not excessively). In each case the stand fixing bolt is provided with a locking nut, and we particularly recommend that these bolts and nuts be inspected occasionally and if necessary screwed in until the stand is quite stiff to operate. This care, in addition to having the desired effect as regards mudguard support, will prevent any stand rattle which is common to many machines.

STOPPAGES AND THEIR CAUSES.

ENGINE SUDDENLY STOPS. Probable cause :—
- Petrol low in tank.
- Dirt in petrol pipe.
- Choked jet.
- Water in float chamber.
- Choked petrol tap.
- Air lock in tank.

ENGINE RUNS BADLY. Probable cause :—
- Valve sticking.
- Weak valve springs.
- Plug points too close.
- Water on plugs.
- Air leakage (due to nuts of inlet pipe or carburettor being loose).
- Paraffin in petrol or bad petrol.
- Valve seating badly burnt.
- Sooty plugs.
- Faulty magneto contacts.

ENGINE WILL NOT START. Probable cause :—
- Valve or valves stuck up.
- Contact breaker arm stuck.
- Water on plugs.
- Choked jet.
- Valves stretched and not seated properly.

LEGAL MATTERS.

To comply with the law relating to motorcycles the owner of a 'Matchless," Model " H," 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 5/- yearly, and must be renewed annually from the date of issue. A motor-car driver's licence covers the driving of a motorcycle.
2. Register his motorcycle either through a Borough Council or a County Council. This may be registered anywhere, and not necessarily in the particular County or Borough in which the rider resides. Application forms may be obtained from the authorities, and must be returned, duly filled in, with a fee of 5/-, and the numbers assigned must be affixed to the machine in the usual way. The registration holds good until the ownership of the machine is changed.

   If the machine changes hands the registering authorities must be notified, and a reduced fee of 1/- paid by the new owner, to whom the old numbers will be transferred. If the first owner wishes to keep the old numbers for a new machine he must cancel the registration, and take out a fresh registration for the new machine, asking the authorities to allot the old numbers to his new mount.
3. Take out an Inland Revenue Licence, which has to be obtained for all motor vehicles. For a motorcycle the charge is £1 per annum, but where a machine is purchased after September 30th in any year, 10/- will cover the remaining three months of that year. Forms for this purpose may be obtained at any Post Office.
4. See that his front plate is illuminated at night on both sides. See that his machine, if used with sidecar, is provided with a lamp on the extreme near side of same showing a light forward, and is also provided with a lamp which shows a red light to the rear. The law regarding this latter does not state any particular place in which the rear lamp must be fixed.
5. Never drive at a speed which is dangerous to the public.
6. Whenever necessary, give audible and sufficient warning by horn or other instrument of the approach of his motorcycle.

For registration purposes, the following particulars will be required:—

Weight of cycle unladen	300-lbs.
Weight of sidecar (if requested only) ..	200-lbs.
If sidecar is detachable (if requested only)	Yes.
Description or type of motorcycle ..	" Matchless " Motorcycle.
Position of front number plate	On front mudguard, visible from either side.
Position of rear number plate	On back-end of carrier, behind saddle and visible from the rear.

INTRODUCTION.

We have pleasure in presenting this Spares List for the "Matchless" "H" Combination 1919-1920 Model.

Every part likely to be required can readily be found by reference to illustrations contained therein.

Every part has a distinctive number, and care should be taken to order correct part, calling same by the name specified, and giving the part number.

Read carefully rules on page 19.

We are at all times willing to give estimates for parts or repairs, and also to give all customers the benefit of our advice regarding any query.

H. COLLIER & SONS LIMITED.

TERMS OF BUSINESS.

Our invariable rule in this department is nett cash with order. Remittance to £1 in value may be sent by Postal Order, but over this amount it is advisable to remit by cheque. Cheques to be made payable to H. Collier & Sons Ltd., and crossed. When making remittance by Telegraph Money Order, the name and address of sender should be included, as, unless this is done, the Post Office do not give this information in the telegram. We frequently receive Telegraph Money Orders without sender's name, with the result that we cannot trace from whom the amount is sent, and we have to wait until customer writes complaining about delay before the matter can receive any attention. If remittance is not sufficient to pay for postage or carriage, goods will be sent "carriage forward."

Repairs must be paid for on or before delivery.

The prices in this list are subject to alteration without notice.

DEPOSIT ACCOUNT.

We strongly advise all owners of "Matchless" motorcycles to take advantage of our Deposit System. It often occurs that parts are required by return, but customer not having a current account, there is the inevitable delay of *pro forma* invoice being sent, and we have to wait receipt of his remittance before the goods can be despatched. This delay causes considerable inconvenience to the party concerned, and can be avoided by opening a Deposit Account.

A remittance of not less than £2 entitles a customer to this form of account, and when goods are ordered by 'phone, telegram or letter they will be despatched at the earliest possible moment by the quickest route. Invoices will be sent for all goods supplied, and a statement will be rendered showing amount of deposit in hand when required, and customers will be notified immediately their deposit becomes exhausted, so that they may renew same. We are at all times prepared to return balance of deposit upon request.

Kindly note, when ordering, to mention "Deposit" or quote reference as shown on monthly statements.

SPARE AND REPLACEMENT PARTS.

A special department of our factory deals with the supplying of spare parts and replacements for all the models which we have manufactured.

An expert staff is retained whose records of our old models is so extensive that owners can rely upon the correct part being supplied if same is available. We cannot guarantee to supply every part for machines manufactured prior to 1912, but every effort possible is made to supply parts which may be found necessary.

REPAIRS.

In case of extensive structural repairs being required, we strongly advise all owners to send machines to our works for attention. It is obvious that manufacturers can do this kind of work better than any general repairer.

OVERHAULING.

When sending us a complete motorcycle, engine, gear box or other part with the request that we overhaul same, we understand by the term "overhaul" that it is to be entirely dismantled, thoroughly renovated, any worn part renewed and put in perfect working order. In case a customer desires only certain parts attended to, explicit instructions should be given us to that effect, otherwise cost may be far in excess of what is anticipated.

ESTIMATES.

It is becoming a general practice for customers when sending their engines or complete motorcycles to us for repairs, to request a detailed estimate for the necessary repairs before proceeding with the work.

We are always pleased to furnish these estimates, but it must be distinctly understood that only approximate quotations can be given, as, when re-erecting, it is often found that other repairs or new parts are necessary, which it was impossible to locate when dismantling.

In some instances, when an estimate has been submitted, several of the items quoted for are questioned as being unnecessary or not required. We may say that we only include in our quotation new parts and repairs that we consider essential to make the machine satisfactory and suitable for the road.

We much prefer not to undertake a repair (neither do we accept any responsibility) when the estimate for same has been curtailed by the owner, as the parts he may delete are probably the most important to obtain good results.

If an estimate is not accepted, *i.e.*, the parts returned to the owner in their original condition, a nominal charge is made for taking down and re-assembling.

Repairs must be paid for on or before delivery.

RULES TO BE OBSERVED.

1. Parts sent us for repair, replacement, or as pattern must bear distinctly sender's full name and address. Instructions regarding same must be sent under separate cover, otherwise goods may lie at our works and not be unpacked until instructions regarding same are received.

2. All goods must be consigned to us carriage paid.

3. Do not enclose cash (whether in the form of coin or paper) with goods. Remittance should be sent by letter post for your own protection.

4. Customers having no account with us should not fail to remit at the time of order and also to include postage.

5. When customer has no account, a Telegraph Money Order will ensure immediate attention.

6. When making enquiries respecting any part on order or repair it is advisable to quote date of order.

7. In case of doubt regarding correct name of part required, it is advisable to send old part as pattern.

DAMAGE IN TRANSIT.

Our responsibility ceases when goods leave our works, and claims must be made on carriers in the event of damage being done.

SECTION H.E. AND H.M.D. ENGINE AND MAGNETO (Complete.)

B

			£	s.	d.
H.E.	3081	Bush for flywheel spindle (transmission side) ..		5	1
,,	209	Bush for flywheel spindle (timing gear side) ..		5	1
,,	3980	Bush for camwheel spindle (crankcase side) ..		3	5
,,	4693	Bush for camwheel spindle (timing gear cover side)		3	5
,,	3979	Bush for exhaust lifter cam spindle		1	9
,,	206	Bush for gudgeon pin		3	5
,,	4833	Bush for big end (middle rod)		5	1
,,	4832	Bush for big end steel bush forked rod ..		5	1
,,	4834	Bush for big end bronze bush for steel liner ..		5	1
,,	5064	Ball bearing for transmission side	1	1	3

C

			£	s.	d.
H.E.	4528	Cylinder only (front)	3	8	0
,,	4529	Cylinder only (back)	3	8	0
,,	260	Cylinder holding-down stud			4
,,	303	Cylinder holding-down nut for same			4
,,	4950	Cylinder valve cap (exhaust)		4	3
,,	881	Cylinder valve cap (inlet)		4	3
,,	5057	Copper and asbestos washer for same ..			4
,,	5052	Compression or priming tap		5	1
,,	5053	Washer or priming washer			2
,,	3918	Crankcase half (timing gear side)	3	8	0
,,	873	Crankcase half (transmission side)	2	11	0
,,	4053	Crankcase half (transmission side ball bearing)	2	19	6
,,	4034	Crankcase (bottom bolt)			10
,,	18	Crankcase 5/16" bolt, short			11
,,	17	Crankcase 5/16" bolt, long			11
,,	4	Crankcase 3/8" bolt, long			8
,,	3	Crankcase 3/8" bolt, short			7
,,	20	Spacing collar for same (long)			7
,,	19	Spacing collar for same (short) 3/8"			7
Std.	4	Nut for 5/16" crankcase bolt			2
,,	3	Nut for 3/8" crankcase bolt			4
H.E.	4948	Crankcase apex bolt			10
,,	3574	Crankcase apex bolt nut			4
,,	3975	Crankcase oil box plug		1	6
,,	884	Connecting rod (middle)	1	1	8
,,	885	Connecting rod (forked)	1	13	7
,,	39	Connecting rod (complete with bushes)	4	0	0
,,	4520	Camwheel only		16	2
,,	4691	Camwheel shaft		4	3
,,	4692	Camwheel shaft lock nut			10
,,	40	Camwheel complete (assembled)	1	1	3
,,	3922	Cam lever (front inlet)		6	5
,,	3924	Cam lever (front exhaust)		6	5

			£	s.	d.
H.E.	3923	Cam lever (back inlet)		6	5
,,	3925	Cam lever (back exhaust)		6	5
,,	3958	Cam lever pivot pins		2	7
		Cable for sparking plugs see magneto P. No. 38.)			

D

			£	s.	d.
H.E.	4472	Drain plug (crankcase)			10

E

			£	s.	d.
H.E.	1A	Engine plate (front left)		4	8
,,	1	Engine plate (front right)		4	8
,,	2A	Engine plate (back left)		10	4
,,	2	Engine plate (back right)		10	4
,,	16	Engine lug bolt back			9
Std.	1	Nut for same			5
		Engine plate fixing bolts (see crankcase bolts P. No. 20)			
		Exhaust lifter (see valve lifter P. No. 26)			
		Exhaust valve (see valves)			
H.E.	15	Engine lug bolt (front)			9
Std.	1	Nut			5
H.E.	10	Exhaust pipe (front)		3	11
,,	11	Exhaust pipe (back)		8	1
,,	12	Exhaust pipe (tail)		8	10
,,	4012	Exhaust pipe union nut		2	7
,,	37	Exhaust pipe union nut collar			3
H.F.B.	4	Spacing tube between silencer supports ..		1	9
H.E.	13	Exhaust tail pipe clip lug		2	8
,,	21	Tail pipe support bolt			10
,,	22	Tail pipe support bolt, long distance piece ..			10
,,	23	Tail pipe support bolt, short distance piece ..			7

F

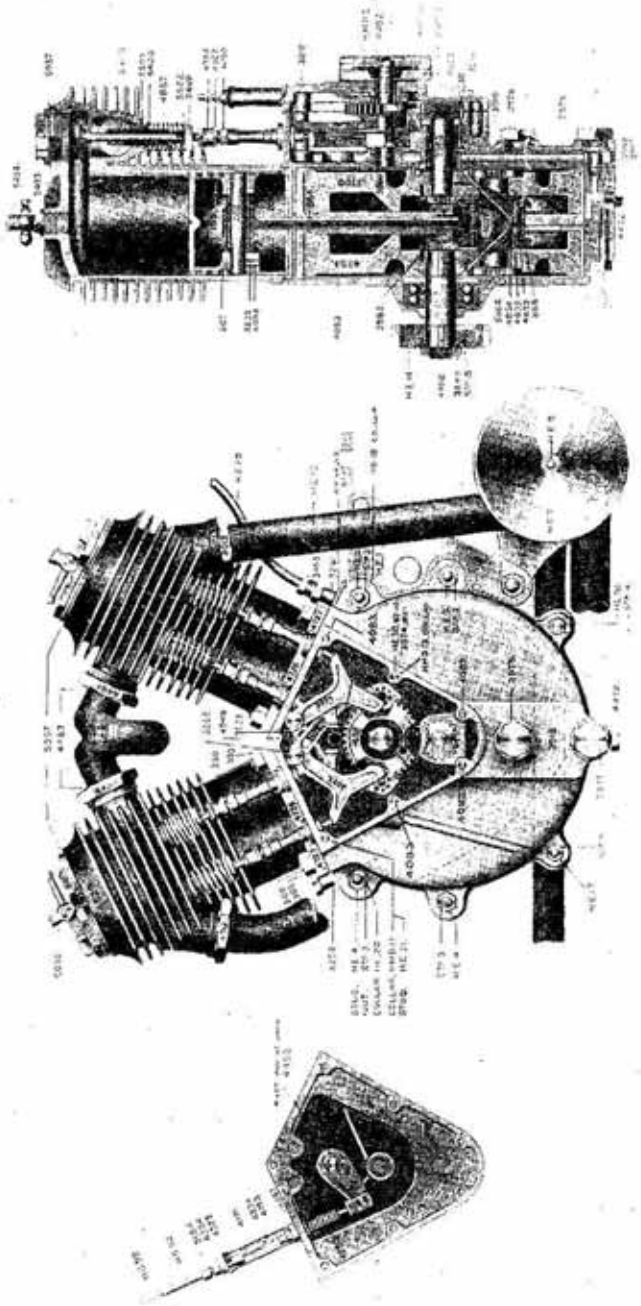
			£	s.	d.
H.E.	3561	Flywheel (transmission side)	1	5	6
,,	3709	Flywheel (timing gear side)	1	5	6
		Flywheel spindles (see spindles P. No. 24)			

G

			£	s.	d.
H.E.	208	Gudgeon pin		5	2
,,	4232	Gudgeon pin fixing grub screw			2
,,	4059	Wire for securing same			2
		Guides for valves (see valves P. No. 24)			
		Guides for valves (see tappets P. No. 24)			

I

			£	s.	d.
H.E.	5	Inlet pipe (only)		7	9
,,	4484	Inlet pipe union nut		2	7
,,	4483	Inlet pipe taper collar		1	2



K

			£	s.	d.
H.E.	4102	Key for flywheel shafts			5

M

			£	s.	d.
H.M.D.	5	Magneto drive sprocket		3	4
H.E.	4082	Nut for securing to cam wheel shaft			3
H.M.D.	8	Magneto chain		11	4
,,	12	Magneto chain case (back only)		8	2
,,	4	Magneto chain case (front only)		5	9
,,	19	Magneto chain case complete		13	11
,,	13	Magneto chain case spacing collars			2
,,	1	Magneto platform bracket (short side)		3	7
,,	2	Magneto platform bracket (long side)		3	11
,,	14	Bolt for securing to engine plate			2
Std.	12	Washer for securing to engine plate			1
H.M.D.	6	Magneto base bolt			9
		Magdyno (unit only)	25	10	0
,,	16	Sparking plug cable terminal only			2
,,	17	Sparking plug cable (rear cylinder)		2	2
,,	18	Sparking plug cable (front cylinder)		3	6
,,	15	Magneto (unit only)	10	6	3
,,	5	Magneto sprocket (see also magneto parts) ..		3	4
		Magneto Nut (see also magneto parts)			3

N

			£	s.	d.
,,	3879	Non-return valve grating (inside timing case) ..		1	9
,,	4085	Non-return valve disc			2
,,	4084	Screws for fixing grating			2
		Nuts for cylinder studs (see cylinder)			
		Nut for crankcase bolts (see crankcase)			

O

			£	s.	d.
H.E.	3626	Oil union (non-return valve seating)		1	1
,,	3993	Oil union (non-return valve disc)			2
,,	3252	Oil plug top (behind rear cylinder)		1	2
		Oil box plug (see crankcase)			
,,	29	Oil pipe only		4	5
,,	35	Oil pipe top union nut			7
,,	3453	Oil pipe bottom union nut			7
,,	3451	Oil pipe union body		1	2

P

			£	s.	d.
H.E.	195	Piston only	1	5	6
,,	41	Piston complete with rings and gudgeon ..	2	2	6
,,	42	Piston with gudgeon pin and screw	1	12	0
,,	207	Piston ring		3	5
,,	230	Pinion wheel (small timing gear)		5	1
,,	33	Petrol pipe		5	4

S

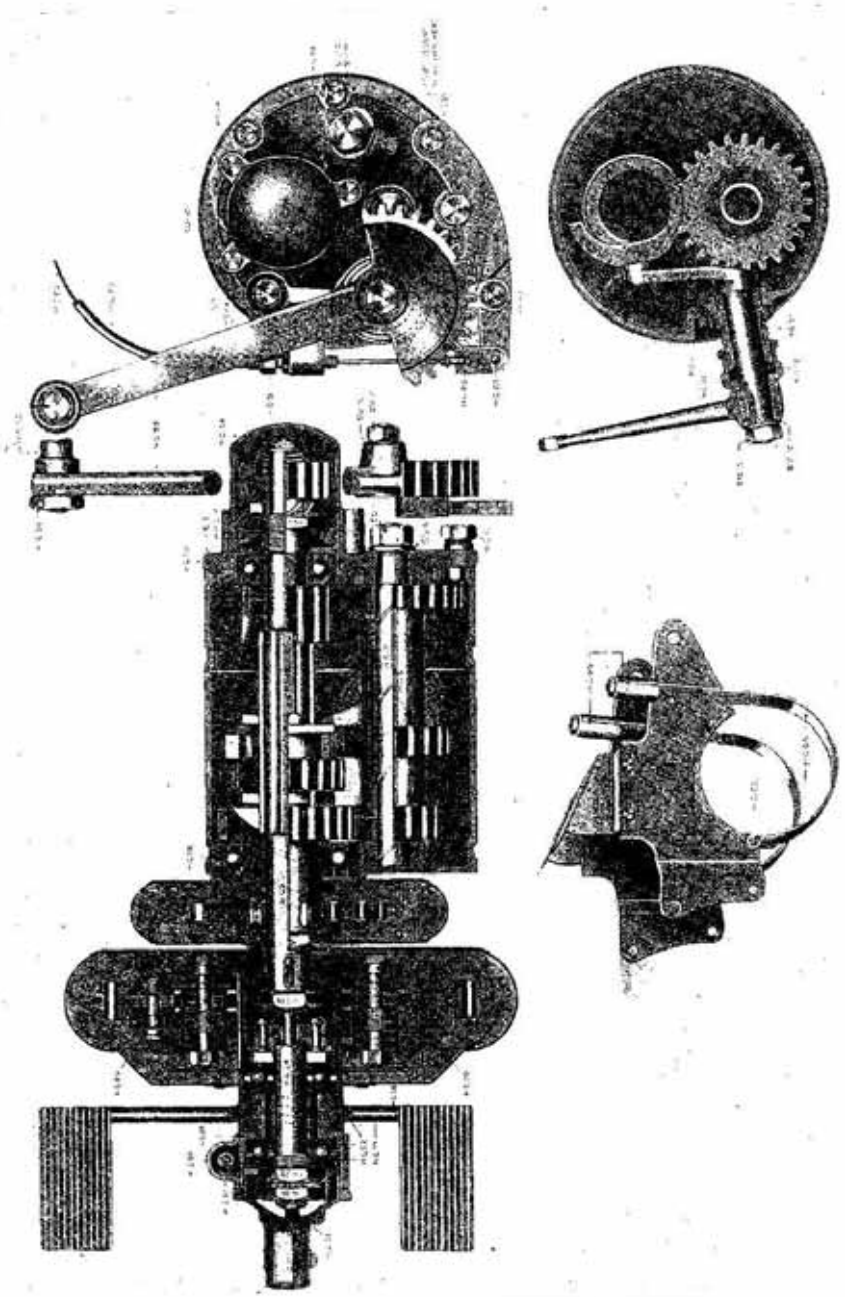
			£	s.	d.
H.E.	4308	Shaft for flywheel transmission side (ball bearing)		7	8
,,	3431	Shaft for flywheel (transmission side)		7	8
,,	3953	Shaft for flywheel (valve gear side)		7	8
,,	4078	Shaft for flywheel (crank pin)		7	8
,,	3249	Nut for fixing crank pin			7
,,	214	Nut for drive side shaft (flywheel end) ..			7
,,	3249	Nut for drive side shaft (sprocket end) ..			7
,,	4606	Nut for gear side shaft			7
,,	3582	Locking screw for shaft fixing nuts			2
,,	26	Sparking plug		5	0
,,	38	Sparking plug washer			2
		Stud for holding down cylinder (see cylinder)			
,,	4083	Stud for holding down valve gear cover (short)			4
,,	30	Stud for holding down valve gear cover (medium)			5
,,	31	Stud for holding down valve gear cover (long)			5
,,	3574	1/4" nut for above			4
		Spring for valve, etc. (see valves)			
,,	24	Silencer complete		10	0
,,	6	Silencer case and straps only		5	4
,,	7	Silencer end cap		2	0
,,	8	Silencer rod		1	1
Std.	4	Nut for same			2
H.E.	14	Sprocket for transmission		8	9
,,	3249	Nut for fixing same			7
,,	4102	Key for fixing same (see keys P. No. 28)			
Std.	15	Lock screw for nut			1

T

			£	s.	d.
H.E.	4090	Tappet body (short or long)		1	9
,,	4794	Tappet head		1	9
,,	4107	Tappet head lock nut			7
,,	43	Tappet complete (short)		4	1
,,	44	Tappet complete (long)		4	1
,,	4726	Tappet guide (inlet)		4	3
,,	4727	Tappet guide (exhaust)		4	3

V

			£	s.	d.
H.E.	3919	Valve gear aluminium cover	1	3	10
		Studs for fixing (see studs)			
,,	5505	Valve stem only (inlet or exhaust)		7	11
,,	45	Valve complete with spring, cap and cotter (inlet or exhaust)		9	3
,,	4857	Valve spring			7
,,	5406	Valve spring washer			7
,,	5502	Valve spring collar			7
,,	3469	Valve cotter			2
,	5408	Valve guide (inlet or exhaust)		3	5



			£	s.	d.
H.E.	4688	Valve lifter cam and rod attached		10	11
,,	4290	Valve lifter spring			5
,,	4687	Valve lifter rod guide		2	2
,,	4191	Valve lifter tubular spacing sleeve		1	2
,,	4323	Collar or cap for same			10
,,	4954	Valve lifter wire adjuster and nut		1	2
,,	4324	Collar or support for same		1	2
,,	4193	Valve lifter rod brass yoke end		1	2
,,	4234	Valve lifter wire brass nipple			4
		Valve cap (see cylinder)			
		Vacuum valve (see non-return valve P. No. 23)			
		Valve gear small pinion (see pinion P. No. 23)			
H.G.	92	Valve lifter cable (inner)			10
,,	93	Valve lifter cable (outer)		3	10
		Valve lifter cable nipple (gear box end)			1
,,	91	Valve lifter adjuster and nut			9
,,	88	Valve lifter adjuster support		1	8
,,	86	Valve lifter cable yoke			9
,,	87	Pin for same			5
,,	79	Valve lifter lever with stop pin only		3	4
,,	82	Valve lifter lever pawl			9
,,	85	Valve lifter lever pawl spring			1
,,	83	Valve lifter lever pawl stud or bolt			9
Std.	4	Nut for same			2
H.G.	80	Spigot washer for bearing of valve lifter lever..			4
,,	81	Thick washer for bearing of valve lifter lever ..			2
,,	35	Stud for mounting bearing of valve (see gear box)			

GEAR BOX.

SECTION H.G.

			£	s.	d.
H.G.	58	Gear box shell	1	10	10
,,	59	Gear box end plate		18	9
,,	34	Gear box end plate stud (short)			5
,,	35	Gear box end plate stud (long)			5
,,	37	Gear box paper joint washer			1
Std.	5	Gear box end plate nuts			2
H.G.	43	Special end plate nut for K.S. spring			8
,,	40	Filling oil plug			11
,,	41	Drain oil plug			8
,,	47	Gear striker		5	4
,,	53	Gear striker lever		3	9
,,	48	Gear striker key			3
Std.	3	Gear end nut			4

			£	s.	d.
H.G.	51	Gear striker sleeve or bush		1	11
,,	46	Gear striker gland nut		1	11
,,	49	Gear striker gland nut lock nut			9
,,	50	Gear striker felt washer			1
,,	52	Gear striker shoe		2	11
,,	5	Layshaft (complete with bushes)	1	9	2
,,	6	Layshaft bush		2	11
,,	7	Layshaft spindle		5	3
Std.	1	Layshaft spindle nut			4
H.G.	9	Main driving shaft	1	1	6
,,	2	Sleeve pinion		18	7
,,	70	Large sleeve pinion bearing		15	0
,,	17	Sleeve pinion sprocket 17 teeth		9	5
,,	1	Sleeve pinion sprocket nut			10
Std.	15	Sleeve pinion sprocket nut lock screw			1
H.G.	76	Sleeve pinion sprocket key			3
,,	15	Sleeve pinion felt washer			6
,,	69	Driving shaft bearing K.S. end		13	3
,,	3	Sliding pinion		12	5
,,	4	Low speed loose pinion		7	8
,,	48	Driving shaft key			3

Clutch Parts.

			£	s.	d.
H.G.	95	Clutch driving sprocket (with rings)	1	11	4
,,	42	Clutch plate front (assembled)		18	3
,,	98	Clutch plate back (assembled)		16	8
,,	23	Clutch rings (renewed at works only. 2 rings)		19	8
,,	28	Clutch spring			5
,,	27	Clutch spring thimble			9
,,	29	Clutch spring stud			5
,,	30	Clutch spring stud nut			4
,,	36	Nut for securing back clutch plate			5
Std.	15	Lock screw			1
H.G.	26	Clutch draw pin nuts (L.H. thread)			5
,,	25	Clutch draw pin peg washer			3
,,	24	Clutch draw pin (with rivets)		3	0
,,	99	Clutch pedal complete	1	15	6
,,	33	Clutch pedal portion only		11	5
,,	23	Clutch pedal opening sleeve only		6	6
,,	60	Clutch pedal opening sleeve clip..		2	9
,,	61	Clutch pedal anchoring rod		1	9
Std.	4	Clutch pedal anchoring rod nuts			2
H.G.	74	Clutch pedal end cap (with oil-tube)		6	10
,,	73	Clutch pedal end cap lock nut		3	4
,,	75	Clutch pedal end cap oil hole cover			2
,,	22	Clutch pedal ball thrust race		2	4
,,	100	Sets of balls (26 in all)		2	4

Kickstarter.

			£	s.	d.
H.G.	55	Kickstarter crank		17	0
,,	57	Kickstarter crank pedal pin		3	8
,,	56	Kickstarter crank pedal pin nut			10
,,	38	Kickstarter crank fulcrum pin		2	1
Std.	3	Kickstarter crank fulcrum pin nut			3
,,	10	Kickstarter crank fulcrum pin washer			1
H.G.	45	Kickstarter crank return spring			5
,,	39	Kickstarter crank stop stud			16
,,	44	Kickstarter crank stop stud rubber buffer			8
Std.	5	Kickstarter crank stop stud nut			2
,,	12	Kickstarter crank stop stud washer			1
H.G.	11	Kickstarter ratchet pinion		6	4
,,	12	Kickstarter ratchet pinion spring			1
,,	18	Kickstarter ratchet pinion spring nut			5
,,	10	Kickstarter ratchet nut		4	5
,,	13	Kickstarter ratchet nut felt washer			5
,,	14	Kickstarter ratchet gland nut		1	2
,,	54	Kickstarter aluminium cap		2	9
Std.	16	Kickstarter aluminium cap screws			2

Fixing Straps.

H.G.	65	Gear box strap only		3	8
,,	66	Gear box strap cap		2	5
Std.	4	Gear box strap nut			2
H.G.	63	Gear box strap securing pin			8
Std.	14	Gear box strap securing pin split pin			1

For engine plates, etc., see Section H.E. engine

GEAR LEVER QUADRANT AND ROD.

SECTION H.G.L.

H.G.L.	1	Top portion gear quadrant (gate)		4	0
,,	2	Bottom portion gear quadrant		4	0
,,	3	Gear lever		9	3
,,	4	Gear lever ball screw			3
,,	5	Gear lever ball		1	0
,,	6	Gear lever spring washer			1
,,	7	Gear lever spring washer cap			5
,,	8	Gear lever bush			11
,,	13	Gear quadrant bolt			6
Std.	5	Gear quadrant bolt nut			2
H.G.L.	14	Gear quadrant fixing stud			4
,,	15	Gear quadrant fixing stud nut			6
,,	23	Gear rod complete		11	10
,,	10	Gear rod top portion			9
,,	18	Gear rod top yoke end		1	10
,,	19	Gear rod top yoke end bolt			4

			£	s.	d.
Std.	5	Gear rod top yoke end bolt nut			2
H.G.L.	11	Gear rod spring box or thimble		1	8
,,	12	Gear rod spring box cap			9
,,	20	Gear rod springs			2
,,	21	Gear rod bottom portion		3	10
,,	16	Gear rod bottom portion cross head			9
Std.	5	Gear rod bottom portion cross head nut			2
,,	12	Gear rod bottom portion cross head washer			1
H.G.L.	17	Gear rod bottom portion joint link		1	0
,,	19	Gear rod bottom portion joint link yoke end bolt			4
Std.	5	Gear rod bottom portion joint link yoke end nut			2
,,	4	Nut for securing both portions of rod			2

FRAME AND PARTS.

SECTION H.F.

H.F.	28	Cycle main frame	7	12	6
,,	34	Bottom back wheel fork	2	9	10
,,	11	Bottom back wheel fork hinge spindle		2	1
Std.	1	Bottom back wheel fork hinge spindle nut			5
,,	8	Bottom back wheel fork hinge spindle washer			2
H.F.	9	Bottom back wheel fork bush		2	8
,,	37	Back wheel vertical arch	2	19	8
,,	19	Back wheel vertical arch yoke end bolt		1	6
,,	120	Back wheel vertical arch yoke end bush			9
Std.	3	Back wheel vertical arch yoke nut			3
,,	10	Back wheel vertical arch yoke washer			1
H.F.	139	Back wheel vertical arch lubricator No. 19			10
,,	32	Top back wheel fork	1	15	3
,,	81	Top back wheel fork hinge spindle		2	4
Std.	1	Top back wheel fork hinge spindle nut			5
,,	8	Top back wheel fork hinge spindle washer			2
H.F.	9	Top back wheel fork hinge spindle bush		2	8
,,	19	Top back wheel fork yoke end bolt		1	6
Std.	3	Top back wheel fork yoke end bolt nut			3
,,	8	Top back wheel fork yoke end bolt washer			2
H.F.	120	Top back wheel fork yoke end bush			9
,,	139	Top back wheel fork lubricator No. 19			10
,,	74	Main frame triangular extension R.H.		17	4
,,	75	Main frame triangular extension L.H.		17	4
,,	72	Luggage carrier	1	1	9
,,	21	Luggage carrier fixing bolt (saddle end)			8
Std.	3	Luggage carrier fixing bolt nut			3
,,	3	Luggage carrier fixing nut (back end)			3
H.F.	54	Rear frame springs		4	9
,,	21	Rear frame spring fixing bolt			8
Std.	3	Rear frame spring fixing bolt nut			3
H.F.	106	Back wheel stand	1	5	0
,,	59	Back wheel stand bolt			8
Std.	3	Back wheel stand bolt nut			3
H.F.	24	Right side chain adjuster assembled		2	0
,,	25	Left side chain adjuster assembled		1	3

Side Frame.

			£	s.	d.
H.F.	80	Main side frame	8	15	6
,,	104	Main side frame attachment nut			11
,,	105	Main side frame attachment spring washer			2
,,	116	Main side frame front stay complete		14	4
,,	117	Main side frame rear stay complete		13	8
,,	141	Main side frame front stay (bare)		7	0
,,	142	Main side frame rear stay (bare)		6	3
,,	62	Stay adjusting yoke end		3	3
,,	61	Stay adjusting yoke end lock nut			9
,,	63	Stay yoke end bolt			8
Std.	5	Stay yoke end bolt nut			2
H.F.	64	Stay eye bolt		1	7
Std.	2	Stay eye bolt nut			5
H.F.	83	Side wheel fork	2	10	0
,,	82	Side wheel fork hinge spindle		2	1
Std.	1	Side wheel fork hinge spindle nut			5
Std.	8	Side wheel fork hinge spindle washer			2
H.F.	9	Side wheel fork hinge spindle bush		2	8
,,	139	Side wheel fork lubricator No. 19			9
,,	89	Side wheel vertical arch	1	9	4
,,	19	Side wheel vertical arch yoke end bolt		1	6
,,	120	Side wheel vertical arch yoke end bush			9
Std.	3	Side wheel vertical arch yoke end nut			3
Std.	10	Side wheel vertical arch yoke end washer			1
H.F.	140	Side wheel vertical arch oil conductor No. 3			8
,,	84	Back and side wheel arch truss (complete)	3	0	3
,,	143	Back and side wheel arch truss (bare)	2	9	2
,,	62	Back and side wheel arch truss adjusting yoke end		3	3
,,	61	Back and side wheel arch truss adjusting lock nut			9
,,	63	Back and side wheel arch truss yoke end bolt			8
Std.	1	Back and side wheel arch truss yoke end nut			5
H.F.	54	Side frame spring		4	9
,,	21	Side frame spring lower bolt			8
Std.	3	Side frame spring lower bolt nut			3
H.F.	118	Side wheel stand		11	9
,,	96	Side wheel stand bolt			4
Std.	4	Side wheel stand bolt nut			2

SIDECAR BODY AND FITTINGS.

SECTION H.B.D.

			£	s.	d.
H.B.D.	20	Sidecar body complete with screen and bearer bars	17	12	6
,,	12	Sidecar body front bearer bar		3	5
,,	25	Sidecar body front bearer bar coach bolt			1

			£	s.	d.
H.B.D.	24	Sidecar body front bearer bar coach bolt nut			2
,,	3	Sidecar body front bearer bar strap and body bracket		1	9
Std.	3	Sidecar body front bearer bar end nut			3
H.B.D.	14	Sidecar body front bearer bar end spring washer			3
Std.	10	Sidecar body front bearer bar end plain washer			1
H.B.D.	11	Sidecar body rear bearer bar		2	9
,,	9	Sidecar body rear bearer bar coach bolt			2
,,	24	Sidecar body rear bearer bar coach bolt nut			2
,,	13	Sidecar body rear bearer bar coach bolt washer			4
,,	7	Sidecar body front spring		5	9
H.F.	87	Sidecar body front spring pad lug bolt			5
Std.	4	Sidecar body front spring pad lug bolt nut			2
H.F.	85	Sidecar body front spring pad lug plate		1	1
H.B.D.	8	Sidecar body rear spring		3	3
,,	10	Sidecar body rear spring top bolt			9
Std.	3	Sidecar body rear spring top bolt nut			3
H.F.	47	Sidecar body rear spring bottom bolt (left)			6
Std.	3	Sidecar body rear spring bottom bolt nut			3
H.F.	21	Sidecar body rear spring bottom bolt (right)			8
Std.	3	Sidecar body rear spring bottom bolt nut			3
H.B.D.	16	Sidecar body luggage grid only	1	2	6
,,	19	Sidecar body luggage grid folding stay			9
,,	18	Sidecar body luggage grid fixing link (left)		1	9
,,	26	Sidecar body luggage grid fixing link (right)		1	9
Std.	5	Sidecar body luggage grid fixing nuts (lower)			2
,,	12	Sidecar body luggage grid fixing nut washer			1
H.B.D.	28	Sidecar body luggage grid top fly nut		1	5
,,	15	Sidecar body luggage grid spare wheel strap		1	1
Std.	3	Sidecar body luggage grid spare wheel fixing nut			3
		Sidecar body wind screen complete (apron 7/6)	2	10	0
H.B.D.	29	Hood complete	4	4	0
,,	53	Hood bracket (right)		4	0
,,	54	Hood bracket (left)		4	0
,,	55	Hood fixing nut			4
,,	56	Hood fixing nut spring washer			1½
,,	57	Sidecar body door handle		3	0
,,	58	Turn button for hood fabric			3

FRONT FORK.

SECTION H.F.F.

			£	s.	d.
H.F.F.	47	Fork girder (right side)	1	16	6
,,	48	Fork girder (left side)	1	17	0
,,	32	Fork crown and head stem		16	11
,,	30	Fork crown ball race		3	2
,,	42	Fork head clip only		11	2
,,	8	Fork head clip pinch bolt			10
Std.	3	Fork head clip pinch bolt nut			3
H.F.F.	16	Forkhead clip sleeve (with race)		5	11
,,	7	Forkhead clip sleeve (less race)		3	6

			£	s.	d.
H.F.F.	31	Frame ball race		2	5
,,	55	Fork spring box (assembled)	1	14	8
,,	33	Fork spring box only		15	0
,,	27	Fork spring box top cap		3	4
,,	18	Fork spring box bottom cap		3	4
,,	20	Fork spring plunger rod		4	2
,,	21	Fork spring plunger rod washer			2
Std.	2	Fork spring plunger rod nuts (each)			5
H.F.F.	25	Fork main spring		3	3
,,	26	Fork auxiliary or buffer spring		1	5
,,	28	Fork recoil spring			8
,,	13	Plunger rod bolt			6
Std.	3	Plunger rod bolt nut			3
H.F.F.	34	Bottom fork link (right side)		1	11
,,	34A	Bottom fork link (left side)		2	1
,,	22	Top fork link (right side)		2	3
,,	22A	Top fork link (left side)		2	6
,,	19	Long fork spindle		7	2
,,	36	Short fork spindle		6	1
,,	15	Left side fork spindle lock nut			5
Std.	3	Spindle nut (right side)			3
,,	10	Spindle washer			1
H.F.F.	14	Spindle grease cap			5
,,	44	Fork link sleeve		4	9
,,	45	Fork link sleeve nuts (each)			9
Std.	14	Split pin for securing			1
H.F.F.	54	Front wheel stand		11	6
H.F.	96	Front wheel stand bolt			4
Std.	4	Front wheel stand bolt nut			2
H.F.F.	35	Fork complete (not including stand and mudguard)	10	5	6

MUDGUARDS AND MUDSHIELD.

SECTION H.M.

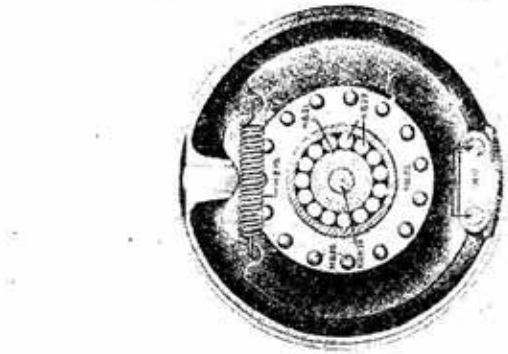
			£	s.	d.
H.M.	9	Front mudguard	1	10	6
,,	10	Back mudguard	1	3	10
,,	12	Side mudguard	1	5	10
,,	4	Front mudguard stay			11
,,	7	Front mudguard stay bolt (top)			3
Std.	5	Front mudguard stay bolt nut			2
H.M.	7	Front mudguard side wing bolt			3
Std.	5	Front mudguard side wing bolt nut			2
H.M.	3	Front mudguard stay bolt (bottom)			4
Std.	11	Front mudguard stay bolt washer			1
H.M.	6	Front number plate	1	2	
Std.	16	Front number plate bolt			2
,,	24	Front number plate bolt nut			2

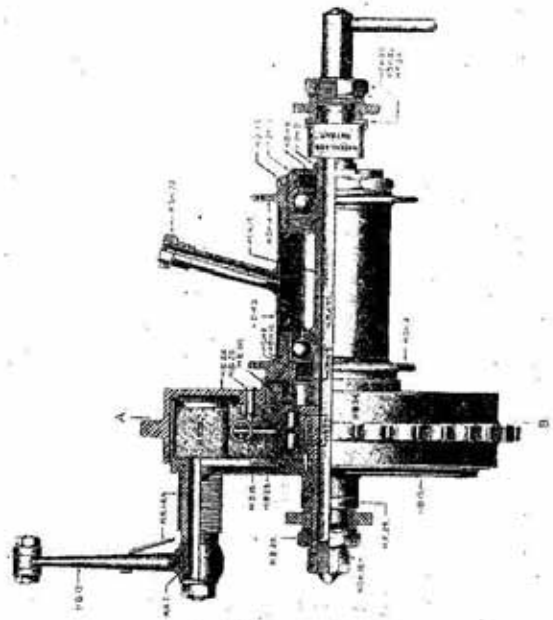
			£	s.	d.
H.M.	17	Back mudguard left side 1st stay		1	2
,,	18	Back mudguard right side 1st and 2nd stay		1	1
,,	18	Side mudguard left and right 1st and 2nd stay		1	1
,,	19	Back mudguard left side 3rd stay		1	0
,,	20	Back mudguard left side 2nd stay		1	0
,,	21	Back mudguard right side 3rd stay		1	0
,,	21	Side mudguard left and right side 3rd stay		1	0
,,	7	Back and side mudguard stay bolt (top)			3
Std.	5	Back and side mudguard stay bolt nut			2
H.M.	3	Back and side mudguard stay bolt (bottom)			4
Std.	11	Back and side mudguard stay bolt washer			1
H.M.	3	Back and side mudguard fixing bolt			4
Std.	4	Back and side mudguard fixing bolt nut			2
H.M.	15	Stand fixing wing screw		1	8
		Mudshield (complete with fittings)		13	9
,,	22	Mudshield only		10	2
,,	26	Mudshield rod		1	4
Std.	4	Mudshield rod end nuts (each)			2
,,	11	Mudshield rod end washer			1
H.M.	7	Mudshield fixing bolts (each)			4
Std.	5	Mudshield fixing bolt nut			2

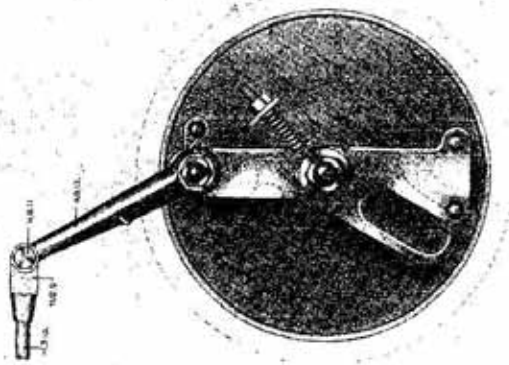
TANKS AND FITTINGS.

SECTION H.T.

			£	s.	d.
H.T.	1	Tank (less all fittings)	3	4	0
,,	26	Tank (complete with all fittings)	4	16	6
,,	19	Tank (with housing for electric switch, and less all fittings)	3	7	0
,,	3	Ignition lever		3	2
,,	6	Ignition lever spring washer			1
,,	7	Ignition lever spring washer cap			4
,,	8	Ignition lever spring washer cap nut			5
,,	4	Ignition rod (standard)		1	4
,,	27	Ignition rod (for magdyno)		1	4
,,	9	Petrol tap and filter		4	2
,,	10	Drain tap		1	9
,,	11	Gauze strainer		1	9
,,	12	Glass top filler cap (petrol compartment)		2	0
,,	13	Plain top filler cap (oil compartment)		1	7
,,	15	Tank fixing bolts (each)			6
,,	16	Tank fixing bolts rubber pad			5
,,	17	Tank fixing bolts rubber pad washer			2
,,	25	Semi-automatic oil pump complete	1	3	6
Std.	15	Fixing screws for oil pump complete			2
		Oil pump glass barrel		1	0
1177		Regulating screw complete with gland nut and N.P.		2	0
		Oil pump plunger knob			9
1179		Spindle		1	3







REAR BRAKE AND PARTS.

SECTION H.B.			£	s.	d.
H.B.	36	Brake drum (less sleeve)	1	18	3
,,	47	Brake drum assembled with bearing	2	14	6
		Brake drum cover plate (with shoes, etc.)	1	6	8
,,	48	Brake drum cover plate (bare)		8	6
18/18A		Brake shoes (per pair)		15	3
,,	12	Brake shoe expander		5	9
,,	13	Brake shoe expander lever		5	0
Std.	3	Brake shoe expander end nut			4
H.B.	7	Brake shoe expander key			6
,,	14	Brake lever pull-off spring			5
,,	19	Brake shoe internal spring			8
,,	17	Brake shoe stud connecting link			3
,,	21	Brake drum centre sleeve		8	11
,,	22	Brake drum rollers (each)			2
,,	23	Brake drum bearing cap		2	9
,,	25	Brake drum centre sleeve nut			9
,,	35	Brake drum centre sleeve washer			3
,,	4	Brake lever (right side)		7	0
,,	6	Brake lever (left side)		7	6
,,	5	Brake lever left side cross head		1	4
Std.	4	Brake lever left side cross head nut			2
,,	11	Brake lever left side cross head washer			1
H.B.	3	Brake pedal shaft		4	4
Std.	3	Brake pedal shaft end nut			3
H.B.	7	Brake pedal shaft key			6
,,	28	Brake pedal shaft sleeve, assembled with anchor plate		8	2
,,	1	Brake pedal shaft sleeve nut			9
,,	46	Brake rod complete		4	0
,,	10	Brake rod only		3	4
,,	9	Brake rod yoke end		1	10
,,	11	Brake rod yoke end bolt			4
Std.	5	Brake rod yoke end bolt nut			2
,,	4	Brake rod nut			2

FRONT BRAKE.

Front brake pad only			7
Front brake pad and holder (left side)		3	0
Front brake pad and holder (right side)		3	0
Front brake pad and clip		1	5
Front brake pad and nut			6
Front brake arch		10	6
Front brake adjusting rod pinch bolt			4
Front brake adjusting rod pinch bolt nut			2
Front brake adjusting rod pinch bolt washer			1
Front brake adjusting rod only		1	2

			£	s.	d.
		Front brake cable and spring box (assembled)		5	0
		Front brake cable only (inner and outer) ..		2	6
		Front brake handlebar lever		12	10
		Front brake handlebar lever fulcrum bolt ..			6
		Front brake handlebar lever fulcrum bolt nut			3
		Front brake handlebar lever body fixing screw			1

CHAIN CASES AND CHAINS.

SECTION H.C.C.

			£	s.	d.
H.C.C.	1	Rear chain case complete	2	17	3
		Top portion only	1	2	0
		Bottom portion only	1	2	0
		Rear portion only		16	6
,,	2	Front chain case complete	1	15	3
		Top portion only		16	6
		Bottom portion only	1	2	0
Std.	16	Chain case screws			2
H.C.C.	11	Rear chain case bolt			9
Std.	4	Rear chain case bolt nut			2
H.C.C.	17	Special chain case bolt (for speedometer drive)			9
		Slide for covering hole for clutch pedal.. ..			6
		Slide for covering hole for brake expander ..			6
,,	7	Front driving chain	1	11	6
,,	14	Front driving chain connecting pin only ..			3
,,	8	Rear driving chain	1	10	6
,,	15	Connecting link only			11
,,	16	Cranked connecting link only			10

NOTE.—For bolts supporting front chain case see tail pipe support (section H.E. engine) and footboard bolt (section H.F.B. footboards).

WHEELS AND HUB PARTS.

SECTION H.D.H.

			£	s.	d.
H.D.H.	5	Wheel complete (with tyre). Clincher £8 8s. 6d. Dunlop	8	10	6
,,	13	Wheel complete (less tyre)	3	13	0
,,	12	Wheel only (less hub parts)	2	10	3
,,	17	Hollow wheel spindle		10	2
,,	6	Screwed adjusting cup		7	6
,,	7	Screwed adjusting cup lock nut		3	2
,,	8	Hub felt gland washer			2
,,	9	Hub gland cap washer			3
,,	10	Hub fixed cup			8
S.T.D.	7	Sets of balls		1	9

			£	s.	d.
H.D.H.	16	Tyre (cover only) 28" x 3". Clincher Dreadnought, £4 2s. Dunlop rubber studded extra heavy 4-ply	4	4	0
,,	14	Tyre inner tube		13	6
,,	15	Security bolt			9
,,	31	Front wheel axle		3	5
,,	31	Side wheel axle		3	5
,,	32	Rear wheel axle with large nut and washer ..		5	7
,,	28	Hub lubricator grease cap			6
,,	1	Rim only		7	6
,,	29	Spoke only			1
,,	30	Nipple only			2

FOOTBOARDS AND PARTS.

SECTION H.F.B.

			£	s.	d.
H.F.B.	1	Footboard only		9	0
,,	3	Footboard rod		1	7
,,	8	Footboard cross tube			6
,,	2	Footboard rod (rear) link			11
,,	6	Footboard right front distance tube			11
,,	7	Footboard left front distance tube		1	1
,,	9	Footboard left rear (inside and outside) distance tube			9
,,	10	Footboard right rear distance tube			8
,,	4	Footboard centre front packing piece		1	9
,,	5	Footboard centre rear packing piece			9
Std.	1	Footboard rod end nut			5
,,	8	Footboard rod end washer			2

TOOL KIT.

SECTION H.T.K.

			£	s.	d.
H.T.K.	1	Oil injector		2	4
,,	2	6" combination pliers		4	10
,,	3	6½" wire screwdriver		1	7
,,	4	Double-box spanner to suit 3/8" and 1/2" nuts		1	10
,,	5	Double-box spanner to suit 1/4" and 5/16" nuts		1	10
,,	6	Single-box spanner 1·101 hex.		2	1
,,	7	Tubular key and tommy for clutch nuts ..			9
,,	8	Grease gun		7	3
,,	9	Tyre lever		1	1
,,	10	Tyre pump		11	0
,,	11	6" adjustable spanner		7	6
,,	13	Hub adjusting spanner		1	1
,,	14	Tool roll		3	4
,,	15	Tool roll and kit complete	2	3	9
		Cylinder base nut spanner		1	11
		Double-end engine spanner for tappets ..		2	10
		Valve cap tubular key		2	6

CARBURETTOR PARTS.

	£	s.	d.
Complete carburettor	2	18	0
Carburettor float only		2	0
Carburettor needle valve		2	0
Carburettor needle valve cotter or clip ..			4
Spare jets (each) standard			4
Spare jets (specially calibrated) each		2	0
Carburettor control (complete)	1	1	0
Carburettor control lever only		12	0
Carburettor control cable only		3	3
Carburettor control throttle valve only ..		5	0
Carburettor control throttle valve spring ..			6
Carburettor control ebonite knob			6
Carburettor jet holder		2	0
Carburettor float chamber cap		5	0
Carburettor float tickler only (plunger, spring and cap)		2	0

SADDLE AND PARTS.

SECTION H.F.

			£	s.	d.
H.F.	137	Saddle top and hinge complete	1	9	2
„	53	Saddle spring		2	1
„	21	Saddle spring bottom bolt			8
Std.	3	Saddle spring bottom bolt nut			3
H.F.	134	Saddle nose steel bush			9
„	135	Saddle nose steel bush bolt			6
Std.	4	Saddle nose steel bush bolt nut			2

HANDLEBAR.

	£	s.	d.
Handle bar bare	1	7	6
Handlebar with grips only	1	11	2
Handlebar with grips and brake lever, cable, etc.	2	3	10
Handlebar grip only (open end)		1	9
Handlebar grip only (closed end)		1	10

MAGNETO AND PARTS.

	£	s.	d.
Complete magneto (Thomson Bennett, Blic or M.L.)	10	6	3
Rear cylinder cable		2	3
Front cylinder cable		2	6
Carbon brush holder complete with brush ..		5	6
Carbon brush only			10
Contact breaker complete	1	16	0
Contact breaker screws (each)		10	6

FROM H/2

		£	s.	d.
	Carbon brush holder complete with brush...		5	6
	Carbon brush only			10
	Contact breaker complete	1	16	9
	Contact breaker screws (each)		10	6
	Sprocket fixing nut only			4
	Sprocket fixing nut washer			1
	Sprocket (see section H.M.D.)			
	Driving chain (see section H.M.D.)			
	Sparking plug (Lodge type)		5	0
	Sparking plug washer			2

EQUIPMENT.

SECTION H.E.Q.

H.E.Q.	25	Sidecar stepboard		8	10
,,	26	Sidecar stepboard clip			8
,,	27	Sidecar stepboard bolt			10
Std.	1	Sidecar stepboard bolt nut			5
H.E.Q.	28	Sidecar stepboard packing piece (long) ...			7
,,	29	Sidecar stepboard packing piece (short) ...			7
		Speedometer complete	6	5	0
		Speedometer instrument only ... ... (with bracket 10/- extra)	2	17	0
		Speedometer shaft only (inner and outer)...	1	4	0
		Speedometer drive box only (driving box and drive bracket)	1	3	0
,,	24	Speedometer crown wheel only		3	0
,,	1	Speedometer drive bracket (driving box and drive bracket)		1	6
,,	2	Speedometer drive bracket bolt			5
		Acetylene lamp set complete, comprising head, side and tail lamps and all fittings brackets, etc., (fitted)	9	0	0
		Head lamp only	2	13	6
,,	15	Head lamp bracket (right side)		6	0
,,	16	Head lamp bracket (left side)		6	0
		Head lamp glass only		2	6
		Head lamp reflector only		14	9
		Head lamp burner only		1	6
		Head lamp rubber tubing (per foot) ...			8
		Head lamp generator only	1	8	6
		Head lamp generator bracket		5	6
		Side lamp		13	0
		Side lamp glass			6
		Side lamp burner			5
		Side lamp bracket with coach bolts, nuts and plate		2	6
	14	Side lamp bracket coach bolt			1
		Side lamp rubber tubing (per foot) ...			8
		Side and tail lamp generator	1	8	6
		Side and tail lamp generator bracket ...		5	6
		Tail lamp only		5	6

	Tail lamp burner only		
	Tail lamp burner dust cap		
	Tail lamp rubber tubing (per		
	Tail lamp rubber tubing ½-in		
	Tail lamp rubber tubing ⅜-in		
	Brass tubing (side and tail la		
	Brass tubing saddle clip (each		
	Electric head lamp bracket (r		
	Electric head lamp bracket (l		
	Electric head lamp (with bull		
	Electric head lamp bulb only 18 c.p.		
	Electric head lamp glass ...		
	Electric head lamp reflector		
	Electric side lamp		
	Electric side lamp bulb ...		
	Electric side lamp glass and Electric rear lamp ...		
	Electric rear lamp bulb ...		
	Spare bulbs in case (1 of each,		
	Head lamp cable		
	Side lamp cable		
	Rear lamp cable		
	Cable (dynamo to switch boar		
	Cable (sidecar junction box to		
	Sidecar junction box only		
	Battery in case		
	Battery only		
	Battery case only		
	Cable clip 1½-in.		
	Cable clip ⅝-in.		
	Cable clip ½-in. (3 parts) ...		
	Magdyno outfit complete ...		
	Switch box complete ...		
	Switch box (arm button & s		

HORN.

	Lucas No. 60 bulb horn, ebon finish		
	Lucas electric horn for elect ment only		
	Autokrat electric horn ...		

TYRE PUMP.

	Tyre pump complete ...		
	Rubber tube connection only		
	Wooden handle only		
	Cup washer for plunger		