Matchless

IN NAME & REPUTATION

INSTRUCTION BOOK

AND

SPARE PARTS LIST

MODELS

X/2 and X/R2

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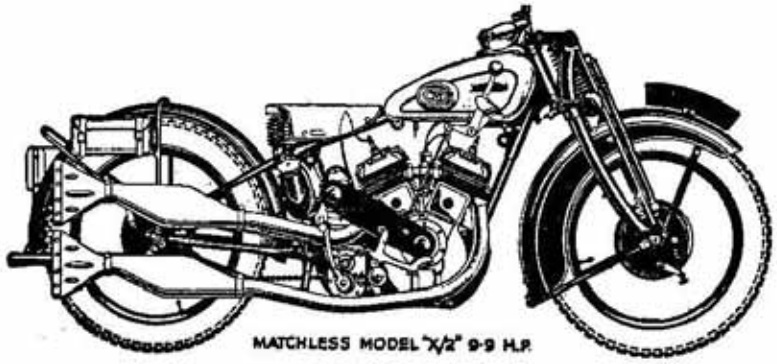
DRIVING & ADJUSTMENT INSTRUCTIONS.



MATCHLESS MOTOR CYCLES

(COLLIERS) LIMITED,

Manufacturers,

Registered Offices:

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INTRODUCTION.

A PERSONAL MESSAGE TO ALL "MATCHLESS" OWNERS.

It is our sincere desire that you obtain from your "Matchless" the service, comfort, enjoyment, and innumerable miles of low cost travel that we have earnestly endeavoured to build into it.

A motor cycle, it must be remembered, is a highly specialised piece of engineering, and 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. In the following pages we give without going into intricate technical detail, much valuable information that you should have, in order to give your cycle the careful attention which it merits. Neglect to make necessary adjustments, or only casual attention to the lubrication of important parts, will soon neutralise the best efforts of the designers who have wholeheartedly devoted their skill and knowledge to the production of this ideal machine, and may bring needless trouble and expense to its owner.

The Section dealing with Spares has been compiled to enable customers to correctly specify their requirements when renewals become necessary. On Pages 26 and 27 clear instructions will be found re ordering of spare parts, and also particulars of our Deposit Account System.

MATCHLESS MOTOR CYCLES (COLLIERS) LTD.

GENERAL INFORMATION.

TAKING OVER A NEW MACHINE.

Before describing the actual method of starting, it is perhaps advisable to explain the various lever positions. Neutral or free engine position of the gear lever (about one third forward from rearmost position in quadrant) is at a point where the small extension in gear quadrant engages with a slot in the gear lever. The engine must always be started with the gear lever in this neutral position.

Ignition is advanced or retarded by means of a lever on left side of handlebar. To advance the spark this lever is drawn inwards; for starting it should be about two-thirds advanced.

NOTE.—When cycle is provided with twist grip control for throttle, both air and ignition levers are fixed on right handlebar, the longer lever operating the ignition advance and retard.

The throttle and air levers for carburettor both open inwards, the top lever operating the air and the lower and longer one the throttle (see note above). For starting purposes the air should be completely closed, the throttle slightly opened only and the ignition about two-thirds advanced. A small milled edge screw at the bottom of mixing chamber controls the air supply to pilot jet. This screw is accurately set at the works, but on account of variation in fuel or temperature, it may be found desirable to alter the adjustment occasionally. It should be explained, therefore, that by unscrewing, more air is admitted thereby weakening the mixture or vice versa, screwing in enriches the mixture by decreasing the air supply. This adjustment only affects carburation on very small throttle openings, and dead slow running. The taper needle attached to the throttle piston controls the petrol supply on large throttle openings. To weaken the mixture this needle must be lowered or alternatively to enrich it is necessary to raise same. These remarks are intended only to roughly convey some idea of the carburettor working and owners are advised to refrain from making any adjustments without good cause.

The petrol is turned on when the hexagonal end of the petrol tap sliding plunger is pushed in as far as it will go. 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 carburettor by depressing the button on the float chamber until the petrol overflows, then raise the valves by lifting the left side handlebar lever, and at the same time, with the right foot give the kick-starter pedal a sharp and vigorous push downwards, releasing the valve lifter when the starter crank is about half-way down. This operation should not require at the most more than three or four attempts.

Taking Over a New Machine—contd.

When the engine is started close the throttle slightly to check the engine speed, and seated on the cycle, disengage clutch by drawing inward the lever which is situated on the left side of handlebar. Then shift gear lever backward into first gear position, after which gently engage the clutch by releasing slowly the lever which has already been drawn inward.

When fairly under way, smartly declutch and simultaneously shift gear lever forward into second gear position, at the same time releasing clutch lever gently but smartly as engine takes up the drive, after which repeat the operation to obtain top gear. 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 general driving it is always advisable to advance the ignition as far as possible without causing 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. For descending exceptionally steep and dangerous hills the middle gear may be engaged, enabling the frictional resistance of the engine to assist in retarding the descent. We do not, however, under any circumstances, recommend using the bottom gear for this purpose, as by so doing, an abnormal and unfair strain would be imposed upon the rear driving chain under certain circumstances.

It is advisable to ease the clutch slightly when rounding acute corners or when travelling slowly on top gear. If this practice is adopted from the first, much unnecessary gear changing will be avoided.

"DON'TS" IN DRIVING.

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 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 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. Slack chains will inevitably cause harshness of transmission.

"Dont's" in Driving—contd.

DO NOT force engine or drive above a 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, etc., 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 standstill, or drive at full speed on full 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.

ENGINE.

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. After extensive tests we have decided to recommend Wakefield Castrol X.L. as the most suitable oil, and advise all owners to use this and no other. Oil is carried in the tank underneath saddle and in use the level of oil in the tank should never be allowed to fall below the ½ full mark. The integral oil pump is of the single plunger double diameter 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. By removing the oil tank filler cap the oil can be observed returning via the small spout immediately underneath the cap, and it is only by this that the owner can determine at a glance that the oiling is functioning

Engine—contd.

correctly. Therefore, upon starting the engine prior to each run it is desirable to raise the oil tank filler cap in order to observe the return flow of oil. No provision is made for external adjustment of the oil supply, the correct delivery to each part of engine being arranged internally by suitably diameter 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 bearings, the splash from which passes up into the cylinder interiors. In addition to this splash the cylinders are provided with a direct oil passage ensuring an adequate supply under all conditions for this, the most vital part of the engine. No attention to this 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 ½ full mark and must not be filled when engine is cold to a level higher than 1in. below the return pipe outlet.

The identifying letters used by most Oil Firms denoting the different grades in which that oil is supplied are imitated, so that it is essential, when ordering oil, to specify the brand as well as the grade. Say "Castrol X.L." not just "X.L." As an additional precaution it is advisable to buy from the branded cabinets or from sealed packages. See from where your oil is drawn.

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 reassembling, this plunger must be inserted after crankcase sections have been bolted together, and before refitting the end caps the guide screw must be replaced with its relieved tip engaging the profile 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 extremely simple, only one moving part being employed, viz., the double diameter plunger. This plunger is rotated by the engine shaft, and moves backwards 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 small end is delivering fresh oil to the various channels provided. Upon the reverse movement of the plunger the large end returns to the tank the 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 plunger is the larger one, 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. A filter for the oil is provided in the supply tank immediately under the filler cap. This filter should be removed and cleaned in petrol at least once every 500 miles, while once each season or not less frequently than once every 3,000 miles, the entire tank should be removed, thoroughly washed out with petrol, and after refitting, filled to correct level with fresh clean oil. To avoid undue waste it is quite permissable 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.

CHAINS.

The primary chain is normally lubricated by oil mist from the crankcase release valve, which mist settles out in the chain cover and is led by means of a suitable duct into the chain path. For all ordinary purposes this method of lubrication is entirely satisfactory. It is desirable, however, to inspect the primary chain occasionally, and to remove it once every 3,000 miles and thoroughly wash in paraffin to remove all grit. It should then be carefully wiped and afterwards be immersed in a bath of lubricant and allowed to thoroughly soak. The rear chain must be similarly treated, but at more frequent intervals, say every 1,500 to 2,000 miles in summer and every 1,000 miles during the winter months. If carefully treated in this manner, and kept constantly in correct adjustment, at least 10,000 miles and 15,000 miles of satisfactory service should be obtained from the primary and rear chains respectively. (See Care and Adjustment of Chains).

GEAR BOX.

Once every 500 miles a grease gun full of Wakefield Castrolease (Light) should be injected into the gear box via the small grease nipple provided on the filling plug. Occasionally this filling plug should be removed in order to verify the level of lubricant in the box. The correct level is just above the top of the boss into which the filling plug screws. Therefore, when this plug is removed the grease should overflow, and if the above mentioned injections do not maintain this correct level, the interval between each should be reduced accordingly.

FORK SPINDLES.

Every 500 miles the fork spindle bearings should be flooded with a good quality grease, preferably Tecalemit Grease or Wakefield Castrolease. This flooding process is one of a few seconds only by means of the special grease gun provided. This requires merely holding the nozzle end against the rounded nipples on fork spindles and given a few sharp strokes.

HUBS.

Every 500 miles (or more frequently in continuous bad weather) the lubricators in the centre of both front and rear hubs should have a small quantity of grease forced through them. (Wakefield Castrolease suitable).

NOTE.—Castrolease can be obtained in special push-down lid canisters for easily filling the grease gun in ½lb., 1lb., and 2lb. sizes.

GEAR ROD JOINTS, ETC.

In addition to the foregoing, all parts such as brake and gear rod joints, etc., should receive a few drops of oil occasionally, particularly in bad weather. Bicycle lubricating oil or engine oil.

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 pink 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 heads, it is advisable to remove the cylinders each 5,000 miles in order to also inspect the piston rings and remove any deposit from the grooves in which they operate.

TO DECARBONISE.

First remove sparking plugs to avoid damage and unscrew all the fixing bolts for cylinder heads, which latter will then be free to be removed. The carbon deposit should then be scraped off the piston tops and also from the interior of the heads, after which all traces of the

To Decarbonise—contd.

deposit should be carefully wiped off with a clean calico rag, and the heads replaced. When fixing the cylinder heads care must be taken to see that the gaskets are clean, and after introducing all the bolts they should each be tightened down in turn finger tight only. Then going round each in turn, slightly increase the pressure to each until all are firmly and evenly tightened right home. Lastly, before leaving the job, start up engine and when warm, go over each bolt again, when it will be found that a slight extra turn will be possible.

TO GRIND IN VALVES.

During each alternate decarbonisation, it is desirable to remove the valves and grind in to restore the seatings, clean the stems and guides, etc. This must, of course, be done while the heads are removed. Having removed the heads and valve inspection covers, gently force the bottom valve spring cap up with a stout lever, at the same time holding the valve head down on its seating until it is possible to withdraw the valve cotter. Then smear a little grinding paste on the seatings and with a screwdriver in the slot in valve head gently move the valve to and fro (never rotate completely) raising the valves of their seatings between each few movements. When the grinding paste ceases to bite remove the valves and wipe the seatings clean, and if necessary apply another coating of paste and repeat the process. Generally, one application only is sufficient to restore the seatings of either inlet or exhaust valves, but it may happen that the latter will require a second application to remove all traces of pit marks. Having restored the valve faces, carefully clean off all traces of the grinding paste and thoroughly wipe both valve stems and valve guides, when the valves may be replaced, care being taken not to mix their respective positions. Before refitting the valve inspection covers, check the tappet clearances, which should be .004 for the inlet and .006 for the exhaust. These clearances should be constantly and accurately maintained to obtain the best results as regards silence of valve gears, and a cheap set of engineers' feeler gauges will be found very useful for checking purposes.

TO ADJUST INLET OR EXHAUST TAPPETS.

Hold the body portion of tappet requiring adjustment (bottom large hexagon) with spanner provided, and slack off nut securing tappet heads. Then screw heads down or up, as required, until correct clearance is obtained, after which securely lock in position with lock nut. Always check for correct adjustment after tappet head lock nuts have been secured.

TO EXPOSE TIMING GEAR.

First detach rear brake rod from foot pedal by removing split pin and washer. Next detach outer half of magneto chain cover and remove the nuts securing each of the magneto chain sprockets. Then

To Expose Timing Gear—contd.

by means of a suitable lever (a motor tyre lever will serve) applied to the rear of each sprocket in turn gently force same off their respective shafts. Next remove the special stud and screw securing the inner half of magneto chain case which may then be taken away. Now, after removing all the screws securing the timing gear aluminium cover, same may be gently prised off, exposing the timing gears.

NOTE.—Owing to the fact that normally about one half-pint of oil is maintained in the timing gear chamber, a pan or some receptacle should be provided to catch the oil as the cover is being removed. This oil need not necessarily be replaced upon refitting the cover, as immediately the engine is restarted the oiling system will commence to build up the required level. It is, however, desirable to apply oil generously to any part removed upon its replacement to provide adequate lubrication until such time as the oil level is automatically restored.

TO REMOVE CAM WHEEL.

Having exposed the timing gears as alreary directed, gently turn the engine until both marks on cam wheel and small pinion coincide, when by raising the front inlet valve by means of a screwdriver or suitable lever, the cam wheel will be free to be withdrawn.

TO REPLACE CAM WHEEL.

Unless help is available to raise the inlet valve as directed above it is necessary to hold same in a raised position by inserting a block of suitable height between the cylinder base and the lower valve spring cap. Then holding all four cam levers up with the fingers gently insert the cam wheel with its marked tooth gap coinciding with the marked tooth of the small pinion. After carefully cleaning the faces of the timing gear case and cover, and smearing the latter with quick-drying gold size, gently apply the cover with screw holes in correct register, when all fixing screws should be thoroughly and evenly tightened down with a good stout screwdriver. After the cover has been fixed, the magneto chain case back, magneto sprockets, and chain may be fitted and magneto retimed as described below.

TO RE-TIME MAGNETO.

Revolve the engine by hand until the back piston is approximately seven-sixteenths 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. Holding carefully in this position, tighten up the magneto sprocket nut.

To Re-time Magneto—contd.

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 1,500 to 1,600 revolutions per minute, i.e., at about the same speed at 25 to 28 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, after which the magneto chain case outer half may be re-fixed and brake rod re-connected.

NOTE.—No. 1 cam is the one nearest back cylinder.

TO ADJUST MAGNETO CHAIN.

It will be observed that the adjustment of magneto chain is obtained by sliding the magneto platform along the engine cradle plates by means of the adjuster bolt passing through a small lug on the left side plate. To adjust chain, slack off the four gear box fixing stud nuts and screw the special double-headed adjuster nut clockwise or right-hand to tighten chain or vice versa to slacken. After obtaining the correct adjustment (see note below), care must be exercised to securely tighten down the four gear box stud nuts.

NOTE.—Correct chain adjustment is such that when the top side of chain is lightly pressed up and down a whip or movement of $\frac{1}{2}$in. to $\frac{3}{4}$in. is obtained.

CARE OF DRIVING CHAIN AND ADJUSTMENT.

As already mentioned, the front chain is normally kept well lubricated by oil mist from the crankcase release valve, which mist settles out in the chain cover and is led, by means of a suitable duct, into the chain path. Although for all ordinary purposes, this method of lubrication is quite satisfactory, if the maximum degree of service is desired it is advisable to entirely remove the chain once every 3,000 miles and thoroughly soak and wash in paraffin. After carefully wiping it should be immersed in a bath of hot grease or preferably one of the special chain greases obtainable. After a thorough soaking, it should be allowed to drain, and is then ready for re-fitting. The rear chain should be similarly treated, but at more frequent intervals, not more than 1,500 to 2,000 miles in summer and 1,000 miles in winter. If treated in this manner, at least 10,000 and 15,000 miles of satisfactory service should be easily obtained from the front and rear chains respectively.

TO ADJUST FRONT CHAIN.

Adjustment of the front chain is arranged by sliding the gear box bodily forward or backward, as the need may be, upon the rear engine cradle plates under which it is mounted. A screwed draw bolt is provided forward of the gear box, operating through a bar fixed between the two cradle plates. To tighten the front chain first slack off the four gear box holding down nuts and also the bolt which passes through the cradle plates immediately above the gear box. Then turn the adjuster bolt anti-clockwise or left-hand to tighten or vice versa to slacken the chain tension. When the correct adjustment has been obtained (see note below) all the gear box fixing bolts and nuts previously loosened must be very securely retightened.

NOTE.—Correct chain tension should allow a whip or movement of $\frac{3}{8}$in. to $\frac{1}{2}$in. as chain is pressed lightly up and down.

TO ADJUST REAR CHAIN.

Put down rear 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 tighten spindle nuts. Tension of chain should be tried in a number of places, and the correct adjustment (which should allow a whip of $\frac{3}{8}$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 front chain should be inspected, and if attention to each is required, the latter should be treated first.

IMPORTANT.—Care is necessary when tightening rear chain to leave the wheel in correct alignment. When correct, a piece of thin string stretched taut across both wheels, and about four inches from and 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 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, the top cap nut on steering column should be slacked off and the lower nut screwed down until all traces of slackness have disappeared, when the top 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 under crankcase will serve) in order that all shake may be taken up satisfactorily and the steering head left perfectly free.

TO ADJUST FORK SPINDLES.

Provision is made for taking up side or end wear of the various fork spindle bearings. The need for adjustment will be made apparent by a click or creaking noise when the steering head is abruptly turned. By placing the fingers partly over the spindle link end and partly upon the lug through which the spindle passes, first ascertain which spindle or spindles require adjustment. Then after slacking off both end nuts, turn the spindle bodily by means of its hexagonal end L.H. or contra-clockwise to take up slack or vice versa to slacken. Do not turn more than half a revolution before a re-trial, and care is essential to guard against over-tightening, when the fork will become stiff in action or most probably refuse to function. The fibre 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. The necessary friction damper effect is provided independently and is adjusted as follows :--

TO ADJUST FORK ACTION DAMPER.

The fork action damper can best be adjusted while cycle is actually in motion and a badly corrugated surface such as may be found on many bus routes provides the best condition for the purpose. The ebonite damper hand nut should be screwed sufficently tight to make the fork action sluggish under such circumstances as those described and will subsequently require very little variation for other conditions of road surface to provide the maximum degree of comfort.

TO ADJUST WHEEL BEARINGS.

To adjust either rear or front wheel bearings, slack off the left side spindle nut, and with the smaller thin cone spanner provided, slack off the thin adjusting cone lock nut, after which with the larger spanner, turn the adjusting cone in the required direction, i.e., clockwise to tighten, after which lock the adjusting cone in position with the lock nut provided, and lastly carefully retighten the axle nut.

IMPORTANT NOTE.—It must be understood that taper roller bearings must not be adjusted tightly, and unless a trifling amount of slackness is observed it is possible quite unknowingly to impose an enormous crushing strain on the slightly tapered rollers without same being made apparent by undue friction. This slight slackness must, therefore, always be maintained.

INCORRECT ADJUSTMENT OR MISUSE OF BRAKES.

With the highly efficient brakes fitted, harsh application is liable to result in heavy tyre wear. Particularly does this apply if the brake coupling is not correct, thereby allowing a large proportion of the braking effect to be taken by one wheel only. The instructions given hereafter regarding brake synchronisation should be carefully

Incorrect Adjustment or Misuse of Brakes—contd.

followed, and under no circumstances, other than emergency, should the brakes be applied sufficiently harshly to cause either of the wheels to stop revolving or to cause a squeak of protest from the tyres.

BRAKE CONTROL ADJUSTMENT.

Owing to the fact that the foot operation of the front wheel brake is effected through a Bowden cable, it is necessary, in order to obtain the correct and maximum braking effect, to adjust the controls so that the front brake is applied slightly before the rear. To do this both wheels should be jacked up on stands and during the process of setting the knurled adjusting nuts, the brake pedal should be lightly applied and the controls so adjusted that when it becomes difficult to move the front wheel against the action of the brake, the effect is only just noticeable on the rear wheel. When correctly adjusted, both wheels must of course turn freely when the brake pedal is released, and upon applying a moderate pressure to the brake pedal it should be observed that application of the hand brake lever does not cause any additional movement of the front brake expander lever, this indicating that the brake in question is in full engagement. Any tendency for the back wheel to squeak or skid upon a moderately strong application of the brake pedal indicates that the adjustment of the front brake foot operated cable is not sufficiently in advance of the rear, and in such a case the remedy is to either tighten up the front adjustment slightly or alternatively slacken the rear.

GEAR BOX.

The construction of the gear box is roughly as follows :—The body or shell consists of an aluminium casting secured to the rear engine cradle plates by means of four studs which pass through slotted holes in an aluminium bridge piece forming the magneto support, the object of these slotted holes being to provide independent adjustment of either the gear box location for front chain adjustment or the bridge pieces itself for magneto chain adjustment. The shell carries a main and also a secondary shaft upon each of which is mounted three gear wheels providing three speeds. Two pairs of these wheels remain constantly in mesh. The remaining two gears are arranged to slide upon their respective shafts, to which they are fixed rotationally by means of keys or splines. Engagement with the constant mesh gears is arranged by means of dogs machined on the sides of the various gear wheels and the position taken up by the sliding wheels is accurately located by an internal indexing spring plunger. The actual sliding movement is imparted by means of a lever operating in a suitably shaped gate or quadrant, to which lever is attached a rod connected to a lever on the gear box shell, which imparts the movement to the two sliding gears referred to. The clutch consists of cork and ferodo faced sliding plates, kept in contact with plain metal plates by

Gear Box—contd.

means of six springs, the pressure of which is released at will by means of a hand lever operating through the medium of a Bowden cable, a quick thread worm, and a long push rod passing through the main-shaft. In driving, it should always be remembered that the engine gives best results when running smoothly. It should not be driven at low speeds on top gear with full throttle as this will cause snatch in the transmission, leading to heavy tyre wear and unevenly worn chains. The gears should be freely used, and at the least sign of jerkiness when hill climbing, or running slowly on the level, a change to a lower gear should be made. It is not possible to lay down hard and fast rules on this matter, as conditions vary to such a large extent as the result of the load carried, wind, velocity, etc. Generally speaking, however, it is desirable to change down to second speed on the level when the speed falls below 16m.p.h., and on a steep hill when the speed falls below 22 to 24m.p.h., or to bottom gear if the speed on second falls below 12 to 15m.p.h. In all circumstances, recollect that the gear box is provided for use.

TO INSPECT GEAR BOX INTERIOR.

To remove gear box end plate for examination of gears, first detach front cylinder exhaust pipe, then disconnect the clutch control wire by slackening off the adjustment, when the nipple can be slipped out of the small operating arm. After removing the seven nuts securing cover plate, gently draw off the latter.

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 the end plate and the 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 or seccotine before assembling.

CLUTCH ADJUSTMENT.

In the event of clutch slip being experienced, the adjustment of clutch operating cable should be suspected. When correctly adjusted it should be possible to move the clutch actuating worm (part to which lower end of cable is attached) to and fro slightly with the fingers and if this free movement cannot be felt, the cable stop should be adjusted accordingly. If necessary, the bolt securing the clutch worm lever may be slackened and the worm portion revolved slightly back to provide a slacker adjustment, or forward to tighten. Should the clutch on the other hand develop harshness even with correctly adjusted chains, the clutch plates should be carefully removed and smeared with a mixture of powdered graphite and water worked up into a paste. Oil should not be used under any circumstances.

ADJUSTMENT OF GEAR CONTROL ROD.

After an adjustment has been made to the primary chain, the position of the gear lever in relation to the gear quadrant should be checked, as owing to the slight movement of the gear box, some correction may be necessary. As mentioned earlier, the gears are actually positioned internally by means of a spring plunger operating in recesses cut in the gear striking fork; therefore they do not depend upon the gear quadrant entirely for correct meshing. To check the gear rod for correct adjustment, place the gear in middle position and then remove the small yoke end pin which connects the top end of gear rod to the gear lever. Then after making certain that the gear is correctly located in middle position by the indexing plunger inside gear box (the action of this spring plunger will be felt upon exerting light pressure up and down to the gear rod) adjust the length of the gear rod if necessary by screwing the top yoke end up or down as the need may be, until the pin can be freely inserted, leaving the gear lever more or less floating in the middle position of gear quadrant, then refix the split pin securing the yoke end and also the locking nut for same.

CARBURETTOR ADJUSTMENT.

Although owners are advised to refrain from tampering with the setting of the carburettor without good cause, a rough idea how this unit functions and how adjustments may be effected is given below. The correct level of petrol is maintained by means of a float and needle valve operating in much the same manner as the ball float and valve of an ordinary domestic water cistern. The correct level is obtained by the carburettor manufacturers, and no alteration under any circumstances should be made. In the event of a leaky float or worn needle valve, the part in question should be replaced. Control over the main petrol supply to the engine is obtained firstly by the jet or orifice, and secondly by a taper needle passing through the jet and attached to the throttle valve. As the throttle valve is opened a smaller part of the taper needle comes into operation, thereby increasing the passage for the petrol. This needle being adjustable in length provides a fairly wide range of control without actual alteration to the jet size. A pilot or slow running jet is provided to take care of slow running or idling, and a throttle stop controls the actual speed at which the engine runs when the throttle is closed to the maximum extent possible in which position the engine should run or " tick over," to use an expression favoured by motor cyclists, slowly but positively. The correct setting of the main jet should permit of full air being used when running fast on full throttle. To test for correct setting, start up engine, and after allowing a few seconds to warm up, fully retard the ignition and fully open throttle. If it is now possible to open the

Carburettor Adjustment—contd.

air beyond the ⅓ or ½ open position it would indicate a too large jet, and the needle attached to throttle valve must be lowered or lengthened. This needle, it should be explained, is secured by a flat strip cotter engaging with a small notch in the needle. Several of these notches are provided to permit adjustment. When correct, the engine should commence to splutter immediately the air lever is opened more than about ⅓, but should run satisfactorily on the fully closed air position. Under no circumstances should the engine be run for more than a few seconds in this fully retarded fully opened throttle position. The only other adjustments are the air supply to the pilot jet and the throttle stop. The adjusting screw for the pilot jet air supply will be observed at the base of the mixing chamber. Screwing in enriches the mixture and, vice versa, unscrewing weakens. It must be clearly understood that adjustment to this screw affects the mixture only on extremely small throttle openings. Having set the throttle stop screw to give the desired idling engine speed, the pilot jet air screw is turned in the required direction to give even firing. The adjustment is not particularly sensitive, and no difficulty should be experienced in finding the correct position, when the locking nut should be tightened down to prevent any movement by vibration. Adjustment, if any, should be made to this air screw while the engine is warm and the ignition fully or nearly fully advanced. We mention this in order to remove the possible impression that the pilot jet setting is not correct should the engine stall when started up from cold. Once correctly set the pilot jet should not require attention except perhaps in extremes of temperature.

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 below 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 Passenger.
Front wheel 26x3.25 ...	16-18lbs.	... 15-16lbs.
Rear wheel 26x3.25 ...	21-22lbs.	... 24-26lbs.
Front wheel 27x4 ...	13-14lbs.	... 13-14lbs.
Rear wheel 27x4 ...	18-20lbs.	... 20-22lbs.

CUTS IN TYRES.

Any but superficial rubber cuts are a menace to the whole tyre structure. The tyre casing retains its strength only so long as the whole of its plies are unbroken. If two or three strands are severed, the whole tyre casing is weakened and a large burst may result. The penetration of wet and road matter results in rapid deterioration of the casing material to which it may gain access. Covers should be periodically examined, and any cuts, other than those purely superficial, efficiently repaired.

CONCUSSION BURSTS.

If a tyre when travelling and bearing its share of the load, comes into contact with an obstruction, the impact, which is a product of the load carried and the velocity of the vehicle, may reach an extremely high figure and produce an excessive localised strain upon the material forming the casing, and a resultant fracture. The tread rubber, owing to its nature, may not show perceptible signs of bruising or damage as the result of even the most severe blow. An incorrectly inflated tyre is more susceptible to damage resulting from such blows than one inflated to the recommendations overleaf.

TO REMOVE REAR WHEEL.

First jack the rear of cycle up on to the rear stand. Then disconnect the rear brake rod cross head by withdrawing the split pin by which it is attached to the brake shoe expander lever, and also disconnect the rear chain connecting link, after which release the wheel axle nuts. The wheel is then ready to be removed by drawing same backward until the axle is free from the slotted fork ends, at the same time twisting the wheel in the fork to release the brake cover plate anchorage.

NOTE.—See instructions re wheel alignment when refitting wheel (to adjust rear chain).

TO REMOVE FRONT WHEEL.

Jack both wheels up on their respective stands (front stand only is not sufficient to provide a safe balance if cycle is solo), then remove the nut securing the expander lever and gently force this lever off the splined end of the expander to which it is attached. Next withdraw the two cables from their slotted anchorage, and after slacking off both axle nuts, gently force out each washer from the recesses in the fork ends in turn with a stout lever, at the same time exerting pressure downwards upon the wheel, which will then fall out of position.

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 the security of all nuts. There is possibly more dissatisfaction and damage caused through neglecting details than for any other reason. It must be remembered 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 of service is to be obtained with the requisite degree of satisfaction. Therefore, do not wait until to-morrow, but adjust it now.

CLEANING.

If the machine is used to any extent in the bad weather, a small hose is almost indispensable for removing mud. Care should be exercised to avoid directing water on to the engine and magneto, 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, magneto, etc., a good stiff paint brush and a pot of petrol is preferable.

IMPORTANT NOTE.—Upon no account should ordinary metal polishes be used upon chromium plated parts, as almost without exception such polishes contain oleic acid which attacks chromium. Should the chromium plating become dirty or lacking in lustre, a little "Goddard's Silver Plate Powder" should be used. This powder, incidentally, is obtainable at any domestic store. Reckitt's "Karpol" is also recommended for cleaning purposes.

CORRECTIVE MEASURES.

No adjustment should be made nor any part tampered with until the cause of the trouble is known. Otherwise adjustments which are correct may be destroyed.

Engine Suddenly Stops:—

(1) Petrol shortage in tank.
(2) Choked petrol supply pipe or tap.
(3) Water in float chamber.
(4) Oiled up or fouled sparking plug.
(5) Water on magneto pick-up or sparking plug.

Engine Fails to Start:—

(1) Lack of fuel or insufficient flooding if cold.
(2) Oiled up sparking plug.
(3) Stuck up valve or valve stem sticky.
(4) Weak valve spring or valve not seating properly.
(5) Too liberal throttle opening.
(6) Contact breaker sticking.

Loss of Power:—

(1) Valve or valves not seating properly.
(2) Weak valve spring or springs.
(3) No tappet clearance or excessive clearance.
(4) Lack of oil in tank.
(5) Brakes too closely adjusted.
(6) Badly fitting or broken piston rings.
(7) Punctured carburettor float.
(8) Silencer choked with carbon deposit.

Engine Overheats:—

(1) Lack of proper lubrication.
(2) Weak valve springs.
(3) Pitted valve seats.
(4) Worn piston rings.
(5) Late ignition setting.
(6) Punctured float, causing rich mixture.
(7) Air control to carburettor out of order.
(8) Silencer choked with carbon deposit.

Engine Misses Fire:—

(1) Valve spring weak.
(2) Defective or oiled plug.
(3) Incorrectly adjusted contact breaker.
(4) Incorrectly adjusted tappets.
(5) Defective sparking plug cable.
(6) Contact breaker arm sticking.

LEGAL MATTERS.

NOTE.—In view of the growing public objection to noisy motorcycles, a word of warning on this subject may not be out of place here. Firstly, 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, the owner of a "Matchless" Model X 2 or X/R2 must:—

1. Hold a driver's license, which can be obtained from the Chief Constable or Corporation of a County Borough, or from the County Council. The charge for this license is 5/- yearly, and must be renewed annually from the date of issue. A Motorcar driver's license covers the driving of a Motorcycle.
2. Apply to the Taxation Department of the Local Authority of the district in which the vehicle is to be ordinarily kept, for Inland Revenue License and Registration Form RF 1/2 (Motorcycles only). The address of the above Taxation Department can be obtained, by enquiry, at a Post Office.
3. The Form RF 1/2, when obtained, must be filled in and returned, accompanied by the requisite remittance which varies according to the date of registration and the term to be covered. For a full year, January 1st to December 31st, the fee is £3 (solo) or £4 with sidecar attached. In some districts evidence that the vehicle to be licenced is new and has not previously been registered may be demanded. A Manufacturers' or Agents' Invoice will serve.
4. See that his front plate is illuminated on both sides at night.
5. Never drive at a speed which is dangerous to the public.
6. Wherever necessary, give audible and sufficient warning by horn or other instrument, of the approach of his motor cycle.

For registration purposes the following particulars will be required:—

Weight of cycle unladen (with equipment required by Law), 360lbs.
Type or Model, "Matchless" Model X 2 or X/R2.
Manufacturers' horse-power, 9.9.

NOTE.—The above weight applies only to machines without electrical equipment. For Equipment "B" add 30lbs.

GUARANTEE.

We give the following guarantee with our motorcycles, motorcycle 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 motorcycle, motorcycle 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 motorcycle, motorcycle 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 motorcycles, 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 to a motorcycle by any form of attachment not provided or supplied by the manufacturers, or to a motorcycle which is not designed for such use.

Any motorcycle, motorcycle 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 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 motorcycles, motorcycle 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 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, warrantee or condition shall not be enforceable.

We do not guarantee specialities such as tyres, saddles, chains, lamps, etc., or any component parts supplied to the order of the purchaser differing from standard specifications supplied with our motorcycles, motorcycle 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.

MACHINE NUMBERS.

The frame number will be found stamped on the right hand side of lug under saddle.

The engine number is stamped on the aluminium crankcase, transmission side, immediately beneath cylinder base.

MATCHLESS MOTOR CYCLES (COLLIERS) LTD.

INTRODUCTION.

We have pleasure in presenting this Spares List for the " Matchless " Models X/2 and X/R2.

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

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

Read carefully rules on Pages 26 and 27.

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

MATCHLESS MOTOR CYCLES (COLLIERS) LTD.

TERMS OF BUSINESS.

Our invariable rule in this department is net 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 Matchless Motor Cycles (Colliers) Ltd., and crossed. When making a 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 by whom the amount is sent, and we have to wait until customer writes complaining about delay before the matter can receive attention. If remittance is not sufficient to pay for postage or carriage, goods will be sent " Carriage Forward " (Goods Train).

All repairs accounts are strictly net cash before delivery

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

Only goods to the value of 5s. and over are sent upon request, per C.O.D.

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 unless customers have a current account, there is the inevitable delay while a pro forma invoice is sent, and we have to await receipt of the 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 when required showing amount of deposit in hand. 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.

REPAIRS.

In cases 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 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, and all badly worn parts 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 quotations new parts and repairs that we consider essential to make the machine suitable and satisfactory for the road.

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.

All repair accounts are strictly net cash before delivery.

RULES TO BE OBSERVED.

1. Parts sent to us for repair, replacement or as pattern must bear distinctly senders' 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 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 names of parts required it is advisable to send old part as pattern.
8. Only goods to the value of 5/- and over can be sent upon request per C.O.D.

DAMAGE IN TRANSIT.

Our responsibility ceases when goods leave our works, and claims must be made on carriers in the event of damage occurring in transit. Any such damage should be immediately reported to the carriers.

NOTE.—By the Railway Companies' special regulations, unless damage in transit is reported within three days of receipt of goods, no claim can be entertained.

Goods not unpacked at the time of receipt should always be signed for as " Unexamined."

ENGINE PARTS.

CRANKCASE, FLYWHEELS, MAIN BEARINGS, ETC.

			£	s.	d.
X2E	1108A	Crankcase with studs and bushes (supplied complete only	5	2	6
V2E	126	Cylinder stud only (each)			5
L3E	239	Crankcase drain plug			4
X2E	1027	Mainshaft bush (timing gear side)		4	0
V3E	1021	Mainshaft bush (hardened steel), transmission side		5	6
V3E	1022	Rollers and cage for mainshaft, transmission side		7	6
V3E	1083	Tappet guide (inlet)		3	9
X2E	1083	Tappet guide (exhaust)		4	6
AE	49	Release valve body		1	0
L3E	240	Release valve diaphragm			2
L3E	108	Release valve diaphragm seating			9
H2E	179	Release valve spring			2
X2E	1035	Cam lever axles (each), see also timing gear		1	6
X2E	1026	Flywheel axle, timing gear side		8	0
X2E	1020	Flywheel axle, transmission side		7	0
X2E	1017	Crankpin		8	0
AE	29	Plug for oil passage in crankpin or flywheel axle (timing side)			1
VE	120	Crankpin or flywheel axle nuts (each) ...			7
L3E	70	Flywheel axle nut (timing side)			6
STD	15	Axle nut locking screw			2
L4E	306	Crankpin rollers (per set)		14	0
X2E	1019	Flywheel only (transmission side)		16	0
X2E	1025	Flywheel only (timing side)		16	0
ME	3	Connecting rod, bare		15	3
M3E	307	Connecting rod with small end bush ...		18	9
M3E	310	Small end bush only		3	0
M3E	319	Bush for camwheel (crankcase side) ...		1	9
V2E	223/21	Sprocket for transmission (21 teeth), sidecar		7	6
V2E	223/24	Sprocket for transmission (24 teeth), solo		8	6
ME	120	Sprocket fixing nut			5
STD	15	Sprocket fixing nut lock screw			2
L3E	95	Sprocket or axle key			5
V2C	37	Front chain case support stud, short ...			2
V2C	35	Front chain case support stud, long ...			3
M3E	432	Crankpin hardened washer		1	0
X2E	1003	Cylinder base paper washer			2

TIMING GEAR, TAPPETS, VALVE LIFTER, ETC.

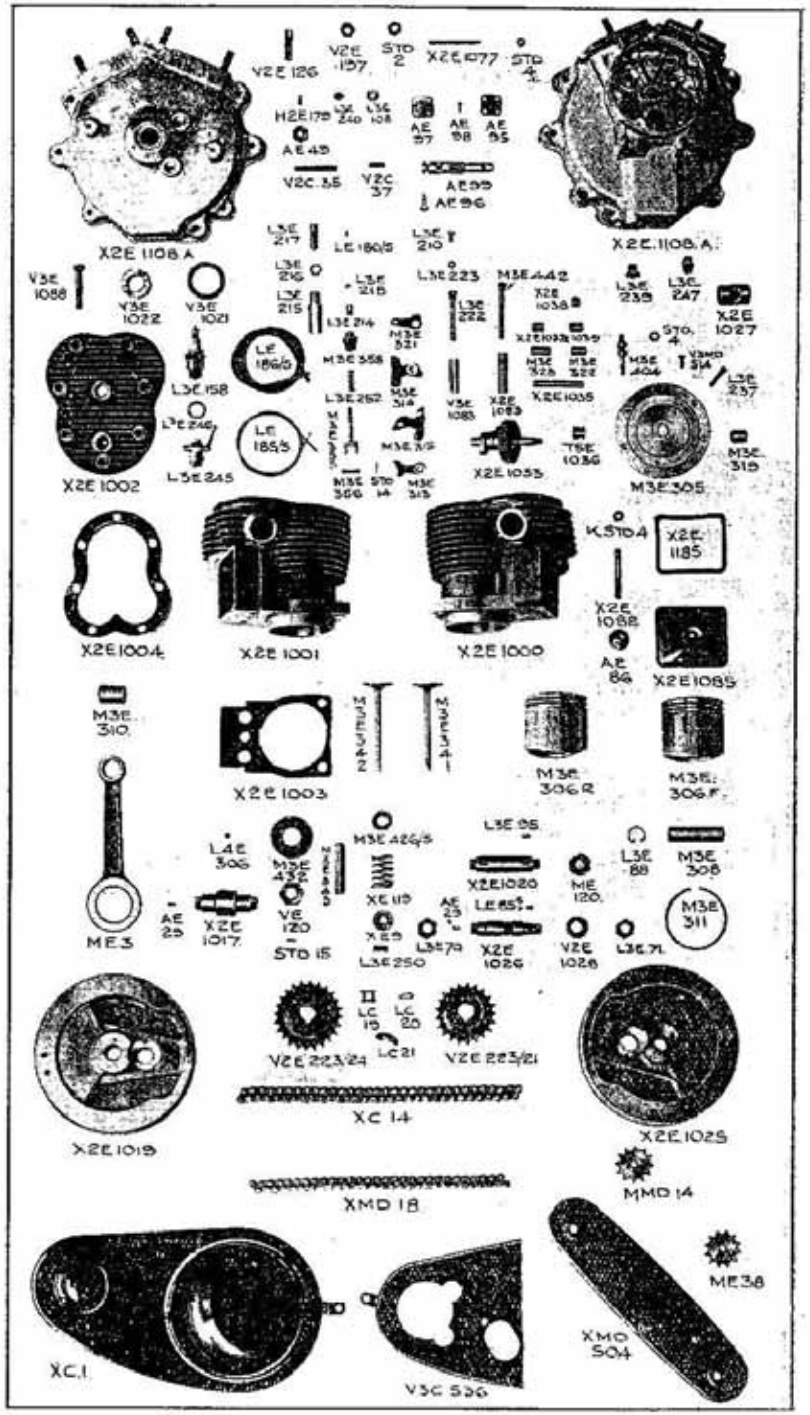
			£	s.	d.
X2E	1033	Cam wheel	1	4	0
T5E	1036	Cam wheel bush only (cover side)		1	6
M3E	305	Timing gear cover with bush		10	0
L3E	237	Timing gear cover fixing screws (each) ...			2
M3E	404	Special double headed screw for above (also supports magneto chain case) ...			6
M3E	399	Inlet tappet, complete		1	9
L3E	222	Inlet tappet, body only		1	4
M3E	400	Exhaust tappet, complete		2	0
M3E	442	Exhaust tappet, body only		1	2
L3E	210	Tappet head or screw only			6
L3E	223	Tappet head lock nut			4
V3E	1083	Tappet guide, inlet		3	9
X2E	1083	Tappet guide, exhaust		4	6
V2E	1028	Timing gear small pinion		4	6
L3E	71	Nut securing small pinion			5
LE	85S	Key for small pinion		4	0
M3E	313	Cam lever (inlet)		4	0
M3E	314	Cam lever (exhaust), front		4	3
M3E	315	Cam lever (exhaust), rear		4	3
M3E	322	Distance collar for front valve lifter lever, 25-32in. long			9
X2E	1039	Distance collar for front valve lifter lever, 45-64in. long			9
M3E	323	Distance collar for rear valve lifter lever, 11-32in. long			9
X2E	1038	Distance collar for rear valve lifter lever, 29-64in. long			9
X2E	1038	Distance collar for cam levers, 29-64in. long			9
X2E	1037	Distance collar for front cam levers ...			9
X2E	1035	Cam lever axle or pivot pin (each)		1	6
M3E	321	Valve lifter lever (front or rear)		2	0
M3E	355	Valve lifter shackle rod		1	0
M3E	356	Pin for shackle rod			4
STD	14	Split pin securing above			1
M3E	358	Valve lifter shackle rod screwed guide ...			8
L3E	252	Valve lifter shackle rod spring			2
L3E	215	Valve lifter screwed barrel		1	0
L3E	217	Valve lifter cable adjuster stop (screws in above)			7
L3E	216	Locking nut for adjuster			4
L3E	214	Shackle rod end for cable nipple		1	0
L3E	218	Valve lifter cable nipple (fits in above) ...			3
LE	180S	Valve lifter cable nipple (handlebar end) ...			3
ME	274	Valve lifter cable (inner and outer)		2	10
LE	185S	Valve lifter cable (inner only)			9

Timing Gear, Tappets, Valve Lifter, etc.—contd.

			£	s.	d.
LE	186S	Valve lifter cable (outer only)		2	1
MFF	48	Valve lifter lever (see handlebars) ...		8	6
ME	38	Magneto sprocket for camshaft (see magneto)		2	0
STD	4	Nut securing sprocket to camshaft			2
STD	11	Washer for nut			1

CYLINDERS, CYLINDER HEADS, PISTONS, VALVES, ETC.

			£	s.	d.
X2E	1000R	Cylinder only (front), Model X/R2 ...	3	2	6
X2E	1001R	Cylinder only (rear), Model X/R2 ...	3	2	6
X2E	1000	Cylinder only (front), Model X/2	2	17	6
X2E	1001	Cylinder only (rear), Model X/2	2	17	6
V2E	197	Cylinder holding down nut, long type ...			5
STD	2	Cylinder holding down nut, short type ...			4
X2E	1003	Cylinder base jointing washer (each) ...			2
X2E	1085	Cylinder cover for valve springs		3	0
AE	86	Knurled edge nut, securing inspection cover			9
X2E	1082	Stud supporting cover (screws in cylinder)			4
KSTD	4	Lock nut for stud			2
X2E	1185	Special jointing washer for cover			4
X2E	1002R	Cylinder head (front or rear), Model X/R2	1	3	6
X2E	1002	Cylinder head (front or rear), Model X/2	1	2	6
X2E	1004	Cylinder head gasket, front or rear ...		1	3
V3E	1088	Cylinder head fixing bolts (each)			6
L3E	245	Compression tap, with C. and A. washer		2	6
L3E	246	Compression tap C. and A. washer ...			2
M3E	342	Exhaust valve only		8	6
M3E	341	Inlet valve only		5	6
XE	119	Valve spring, each		1	0
XE	9	Valve spring bottom cap			5
M3E	426S	Valve spring top cap			5
L3E	250	Valve cotter			3
M3E	343	Valve guide (inlet or exhaust)		3	9
M3E	434F	Piston (front), complete with gudgeon pin and rings		19	2
M3E	306F	Front piston only		13	0
M3E	434R	Piston (rear), complete with gudgeon pin and rings		19	2
M3E	306R	Rear piston only		13	0
M3E	311	Piston rings (each)		1	0
M3E	308	Gudgeon pin only		4	0
L3E	88	Gudgeon pin securing spring rings (each)			1
M3E	310	Gudgeon pin bush (see crankcase)		3	0
L3E	158	Sparking plug with C. and A. Washer ...		5	0
L3E	246	C. and A. Washer only			2



Engine Parts.

OIL PUMP AND OIL PIPES, ETC.

			£	s.	d.
AE	99	Oil pump plunger		5	0
AE	96	Oil pump plunger guide screw			3
AE	97	Oil pump end caps (each)			6
AE	98	Oil pump end cap screws (each)			2
AE	95	Oil pump end cap jointing washer			1
L3E	247	Screwed union for oil pipe connection ...			4
X2E	1040	Oil pipe, supply side		5	6
X2E	1042	Oil pipe, return side		4	6
R6T	121	Rubber tube connector to oil tank			9
L3E	284	Oil pipe nipple only			3
L3E	290	Oil pipe union nut only			4

ENGINE PLATES, CRANKCASE BOLTS, SPACERS, ETC.

X2E	551	Rear engine plate (left side)		4	0
X2E	550	Rear engine plate (right side)		3	6
X2E	549	Front engine plate (left or right)		1	0
X2FR	501	Footrest engine plate (left or right) ...		1	2
HE	17	Front frame lug bolt, top 5-16ths diam. ...			5
VE	19	Rear frame lug bolt, top (headed) 5-16ths diam.			5
HE	17	Rear frame lug bolt, bottom 5-16ths diam.			5
ME	54	Crankcase bolt, ⅜ diam. by 3 11-16ths long			8
MB	52	Crankcase bolt, ⅜ diam. by 3⅞ long for brake pedal support stud			5
HE	18	Crankcase bolt, 5-16ths diam. by 3 3-16ths long			6
LE	15	Crankcase bolt, 5-16ths diam. by 3 9-16ths long for footrest plates			6
X2E	1077	Apex bolt			4

SILENCERS AND EXHAUST PIPES.

X2E	603	Front cylinder exhaust pipe	1	0	0
X2E	604	Rear cylinder exhaust pipe		11	6
X2E	661	Silencer for front cylinder exhaust pipe ...		15	0
X2E	662	Silencer for rear cylinder exhaust pipe ...		15	0
TE	475	Silencer fish tail only		8	6
TE	463	Silencer or fish tail clip		1	0
TF	41	Silencer clip pinch bolt			2
TE	465	Silencer clip bolt collar (plain hole) ...			2
TE	464	Silencer clip bolt collar (screwed hole) ...			3
TE	466	Silencer detachable perforated baffle tube ...		1	0
XE	63	Silencer support link plate			8

Silencers and Exhaust Pipes—contd.

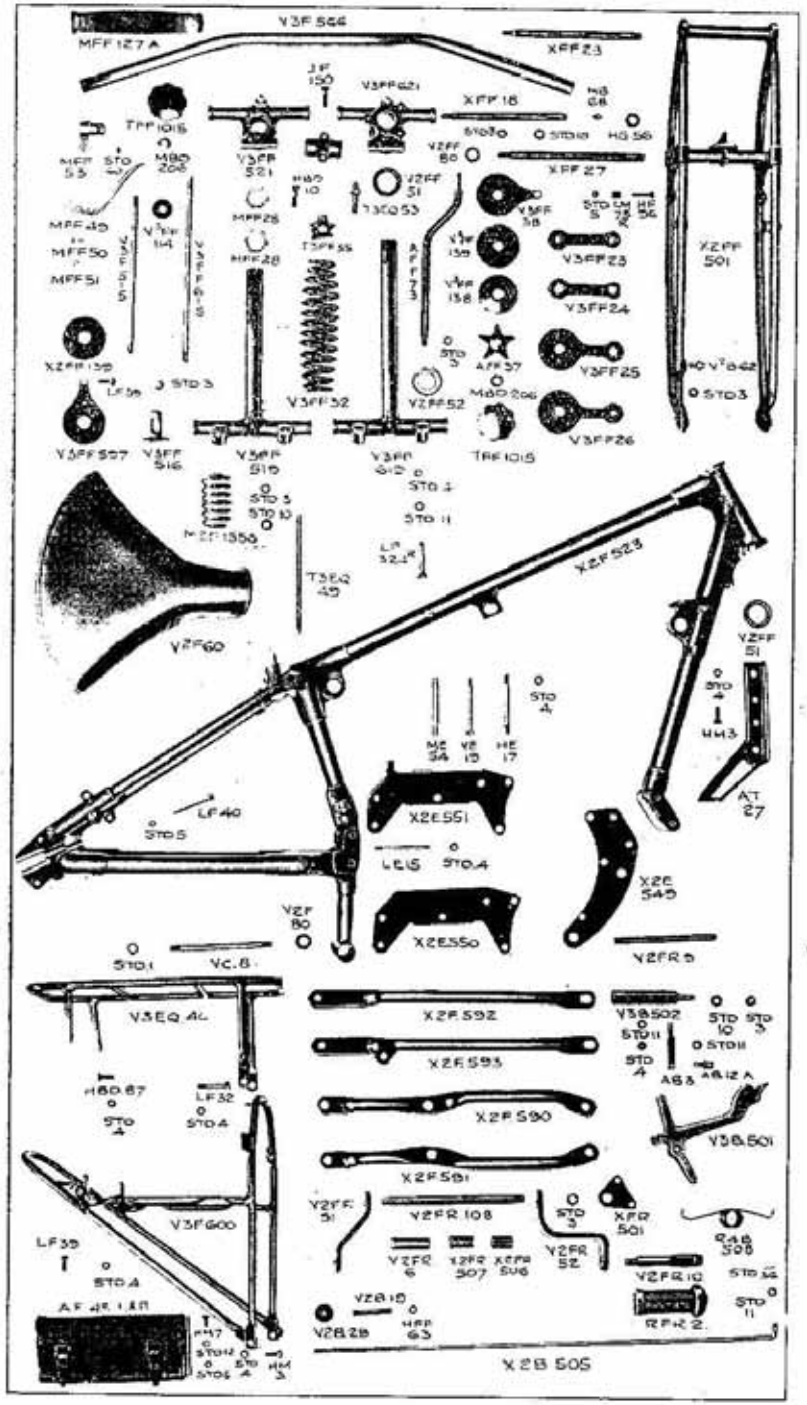
			£	s.	d.
HBD	87	Bolt securing support link plate to right side rear torque tube			5
LF	39	Bolt securing rear cylinder silencer			2
LF	39	Bolt securing front cylinder silencer ...			2
STD	4	Nuts for above bolts (each)			2

FRAME AND FORK PARTS.

X2F	523	Complete frame only, less torque tubes ...	5	10	0
AT	27	Front tank support plate (supports also gear quadrant)		3	0
HM	3	Fixing bolt for tank support plate			4
STD	4	Nut for tank support plate bolt			2
LF	40	Rear chain adjuster bolt			9
STD	5	Lock nut for adjuster bolt			2
X2F	592	Left side rear torque tube		2	0
X2F	590	Left side front torque tube		3	0
X2F	593	Right side rear torque tube		2	3
X2F	591	Right side front torque tube		3	0
V2FR	9	Front torque tube forward bolt			10
V2FR	108	Front torque tube centre bolt (supports footrests)		1	9
VC	8	Front torque rear end fixing bolt			10
STD	1	Nuts for above front and rear bolts			4
STD	3	Nuts for centre bolt			3
X2FR	506	Spacer (left outer) for front torque tube centre bolt			6
X2FR	507	Spacer (left inner) for front torque tube centre bolt			6
V2FR	6	Spacer (centre)			9
X2FR	507	Spacer (right)			6
V3E	1045	Spacer collar, for front torque tube forward bolt (left side)			8
X2E	1046	Spacer collar, for front torque tube forward bolt (right side)			8
V3E	1044	Spacer collar, for front torque tube forward bolt centre			10
V2F	80	Cap washer, for cross tube of frame post ...			3
X2FF	501A	Front forks, complete, less stand and mudguard, but including steering and fork dampers and steering head races ...	6	17	6
X2FF	501	Front fork girders only	3	5	0
V3FF	32	Front fork spring		3	0
V3FF	519	Steering head crown and stem (acetylene) ...		15	0
V3FF	619	Steering head crown and stem (electric) ...		15	6
V3FF	521	Handlebar clip lug, complete with bolts (acetylene)		10	6

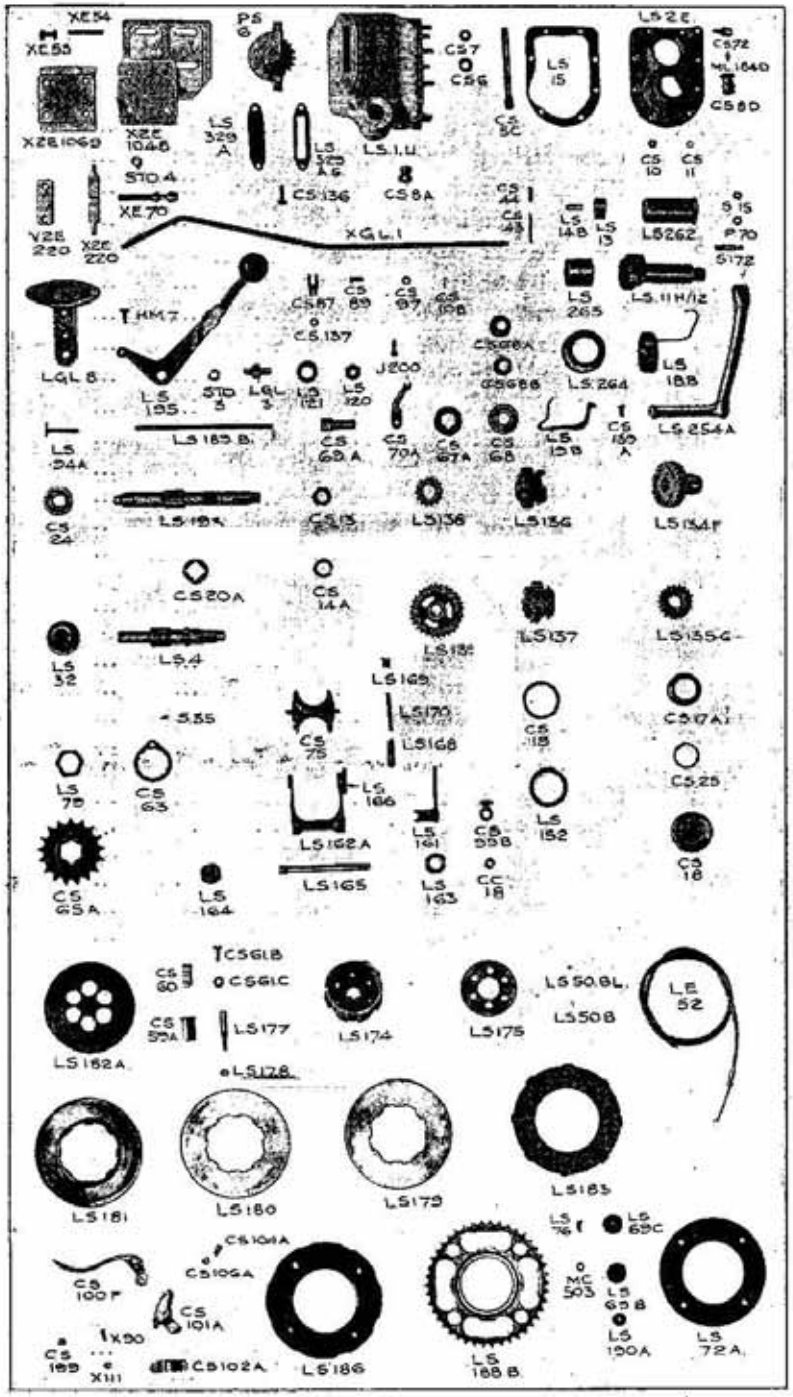
Frame and Fork Parts—contd.

			£	s.	d.
V3FF	621	Handlebar clip lug, complete with bolts (electric)		11	6
JF	150	Handlebar clip lug bolt only			3
T3FF	59	Steering head balls, per set (50x3-16in. diam.)			8
V2FF	52	Steering head crown race (one off) ...		3	2
V2FF	51	Steering head frame race (three off), each ...		2	5
XFF	28	Top fork spindle (front or rear)		1	9
XFF	18	Bottom fork spindle (rear)		1	9
XFF	27	Bottom fork spindle (front)		1	11
HG	56	Left side fork spindle lock nut			5
STD	3	Right side fork spindle lock nut			3
STD	10	Washer for fork spindle lock nut			1
MB	68	Grease nipple for fork spindle			2
V3FF	24	Left side top fork link		1	6
V3FF	23	Right side top fork link		1	5
V3FF	26	Left side bottom fork link		1	10
V3FF	25	Right side bottom fork link		1	9
V3FF	139	Fork damper friction disc			3
V3FF	138	Fork damper spherical disc			10
V3FF	38	Fork damper side plate			5
HF	96	Fork damper side plate fixing bolt			5
LM	75R	Collar for side plate fixing bolt			3
STD	5	Nut for side plate fixing bolt			2
TFF	101S	Fork damper hand adjusting nut		1	6
AFF	37	Fork damper star washer			6
MBD	206	Fork damper spring washer			3
V2FF	80	Fibre washer, for fork spindle ends (each)			2
X2FF	139	Steering damper friction washers (each) ...			3
V3FF	597	Steering damper stationary plates (each)			5
LF	39	Steering damper stationary plate fixing bolt			2
STD	11	Washer			1
V3FF	516	Steering damper sleeve		4	0
V3FF	515	Steering damper rod (acetylene)			9
V3FF	615	Steering damper rod (electric)			10
TFF	101S	Steering damper hand adjusting nut ...		1	6
MBD	206	Steering damper spring washer			3
V3FF	114	Steering damper cap washer (fits on head stem)			4
T3FF	35	Fork spring top anchor lug		1	3
HBD	10	Fork spring top anchor lug bolt (plain) ...			6
T3EQ	53	Fork spring top anchor lug bolt, with extension for electric horn attachment ...			10
STD	3	Nut for above			3
MFF	28	Steering head adjusting nut and lock nut ...			8
AFF	73	Lamp bracket, left or right		1	6
STD	3	Nut for above			3



GEAR BOX.

			£	s.	d.
LS	1U	Gear box shell	1	16	0
LS	2E	Gear box end plate		15	0
LS	193	Gear box main drive shaft		13	0
LS	4	Layshaft, or secondary shaft only		12	6
LS	134F	Main axle sleeve pinion, 23 teeth (Model X/R2)		16	0
LS	134	Main axle sleeve pinion, 25 teeth (Model X/2)		16	0
CS	18	Ball cup, for main axle pinion		5	0
CS	17A	Ball cones, left or right hand (each) ...		2	6
CS	25	Adjusting shim or washer for cones (each)			1
CS	19	Dust cap, for ball cup			3
LS	152	Oil retaining washer, for ball cup			2
LS	136	Middle gear sliding pinion for mainshaft, 20 teeth (Model X/R2)		8	6
LS	136A	Middle gear sliding pinion for mainshaft, 21 teeth (Model X/2)		8	6
LS	137	Middle gear sliding pinion for layshaft, 22 teeth (Model X/R2)		10	0
LS	137A	Middle gear sliding pinion for layshaft, 21 teeth (Model X/2)		10	0
LS	138	Main axle pinion, 14 teeth (Model X/2) ...		4	0
LS	138A	Main shaft pinion, 15 teeth (Model X/R2)		4	0
LS	135C	Layshaft pinion, 19 teeth (Model X/R2) ...		5	0
LS	135	Layshaft pinion, 17 teeth (Model X/2) ...		5	0
LS	139	Low gear and kickstart pinion, 28 teeth (Model X/2)		10	0
LS	139A	Low gear and kickstart pinion (27 teeth (Model X/R2)		10	0
LS	11H/12	Kickstarter shaft or axle, with bronze bush		12	6
LS	262	Kickstarter axle steel bush		2	0
LS	13	Kickstarter pawl		1	3
LS	14B	Kickstarter pawl pin or axle			3
CS	43	Kickstarter pawl spring			1
CS	44	Kickstarter pawl spring plunger			3
LS	254A	Kickstarter crank		11	0
S	172	Kickstarter crank cotter only			1
S	15	Cotter nut			1
P	70	Cotter washer			1
LS	18B	Kickstarter crank return spring		1	0
LS	264	Kickstarter crank return spring cover ...			9
LS	263	Tubular sleeve, for kickstarter axle ...			3
LS	19B	Kickstarter crank stop spring			7
CS	139A	Kickstarter stop spring screw			2
CS	65A	Sprocket for rear chain, 17 teeth		7	6
LS	79	Sprocket fixing nut			8
CS	63	Sprocket fixing nut locking plate			4
S	35	Lock screw for CS 63			1



Gear Box Parts.

Gear Box Parts, etc.—contd.

			£	s.	d.
LS	162A	Gear striker fork only		8	0
LS	166	Gear striker fork index plate		2	0
LS	167	Rivets for index plate (per doz.)			6
LS	168	Gear striker index plunger			8
LS	169	Gear striker index plunger spring screw ...			3
LS	170	Gear striker index plunger spring			2
LS	161	Gear striker lever		3	6
LS	165	Gear striker shaft or axle		1	3
CS	18	Gear striker lever fixing nut			1
CS	99B	Locking plate, for fixing nut			2
LS	163	Main bush, for gear striker shaft		1	6
LS	164	End bush, for gear striker shaft		1	3
CS	75	Sliding gear plate or shoe		2	6
CS	24	Ball bearing, for mainshaft or layshaft ...		4	7
LS	32	Pressed steel cup, for layshaft bearing ...			3
CS	67	Adjusting washers, for mainshaft (large hole)			1
CS	67A	Adjusting washer (small hole), fitted next to ball bearing			1
LS	195	Gear lever with ball		5	0
LS	195Z	Gear lever ball only			9
LGL	8	Gear lever gate with back plate		6	6
HM	7	Bolts securing above (each)			3
LGL	3	Gear lever fulcrum stud		1	0
STD	3	Nut securing fulcrum stud			3
LS	121	Gear lever fulcrum stud spring washer ...			4
LS	120	Gear lever fulcrum stud spigot nut			5
XGL	1	Gear rod		1	0
CS	87	Gear rod yoke end			10
CS	89	Gear rod yoke end pin			2
CS	97	Gear rod yoke end pin washer			1
CS	108	Gear rod yoke end pin split pin (per doz.)			6
CS	137	Gear rod yoke end lock nut			1
AT	27	Gear lever and tank support bracket ...		3	0
X2E	1069	Gear box top guide plate		4	0
CS	5C	Gear box fixing studs (each)			5
CS	7	Gear box fixing stud nut (each)			2
CS	6	Gear box fixing stud spring washer ...			2
X2E	1048	Magneto platform (fits on studs)		7	6
X2E	220	Gear box adjuster cross bar (fits between rear engine plates)			8
V2E	220	Gear box adjuster bar (fits on two studs)			6
XE	70	Special double-headed adjuster bolt (screws in above)			7
STD	4	Nuts for adjuster cross bar (each)			2
CS	9	Gear box end plate studs (each)			3

Gear Box Parts, etc.—contd.

			£	s.	d.
CS	10	Gear box end plate stud nuts (each) ...			2
CS	11	Gear box end plate stud spring washer ...			1
LS	15	Gear box end plate jointing washer ...			2
CS	8A	Gear box drain plug			8
CS	8D	Gear box filling plug			8
ML	184D	Grease nipple only, for filling plug ...			3
CS	20A	Bronzed thrust washer, for main shaft ...		1	6
LS	329A	Cover for speedometer drive aperture ... (used when speedometer is not fitted)			3
CS	136	Bolt securing cover			4
LS	329AS	Speedometer gear box adjusting shim ...			3

CLUTCH PARTS.

(Multi-spring 4 plate).

			£	s.	d.
LS	188B	Clutch sprocket (42 teeth)	1	0	0
LS	50B	Clutch sprocket rollers (each)			2
LS	50BL	Clutch sprocket balls (per set 16) ...			6
LS	174	Clutch centre hub		17	6
LS	12A	Clutch sprocket back plate		2	3
LS	186	Clutch driver (8 slots)		8	0
LS	76	Clutch driver screws (each)			1
MC	503	Clutch driver screw lock nut			1
LS	69B	Shock absorber rubber, solid ...			2
LS	69C	Shock absorber rubber, ¼ hole			2
LS	190A	Friction rubber damper washer			2
LS	175	Clutch sprocket locking plate		1	0
LS	177	Clutch spring studs (each)			6
LS	178	Clutch spring stud shouldered nut			2
CS	60	Clutch springs (each)			2
CS	59A	Clutch spring thimble			4
CS	61B	Clutch spring stud screw			2
CS	61C	Washer for clutch spring stud screw ...			1
LS	182A	Clutch spring box plate		2	3
LS	183	Clutch friction plate with inserts (each) ...		5	0
LS	116	Clutch inserts, ⅜ diam. (each)			1
LS	116A	Clutch inserts, ½ diam. (each)			1
LS	179	Clutch back plate		2	3
LS	180	Clutch centre plates (each)		2	3
LS	181	Clutch outer plate (dished)		2	3
CS	13	Clutch hub fixing nut, for main axle			5
CS	14A	Clutch hub nut lock washer			1
LS	189B	Clutch thrust rod (7⅛ long)			10
LS	94A	Clutch thrust pin			9
CS	69A	Clutch worm		1	9

Clutch Parts—contd.

			£	s.	d.
CS	70A	Clutch worm lever		2	6
J	200	Clutch worm lever pinch bolt			1
CS	68	Clutch worm nut		1	9
CS	68A	Clutch worm nut cap			3
CS	68B	Clutch worm nut, oil retaining washer ...			2
CS	72	Clutch cable T piece (screws in end plate)		1	0
LE	52	Clutch cable, assembled		5	6
LE	54	Clutch cable, inner only		1	6
LE	53	Clutch cable, outer only		3	6
CS	43	Clutch cable spring			1
CS	73	Clutch cable nipple			1
CS	106	Clutch cable adjuster and lock nut ...			6
CS	198	Clutch cable thimble (fits in handlebar lever)			1
CS	100	Clutch handlebar lever, complete		8	0
CS	100F	Lever portion only		4	0
CS	104A	Clutch lever fulcrum screw			1
CS	106A	Nut for fulcrum screw			1
CS	101A	Lower half of handlebar clip		2	6
CS	102A	Upper half of handlebar clip		1	6
X	90	Handlebar clip bolt			1
X	111	Handlebar clip bolt nut			2
CS	199	Roller adaptor for nipple (fits in lever) ...			4

REAR WHEEL AND BRAKE PARTS.

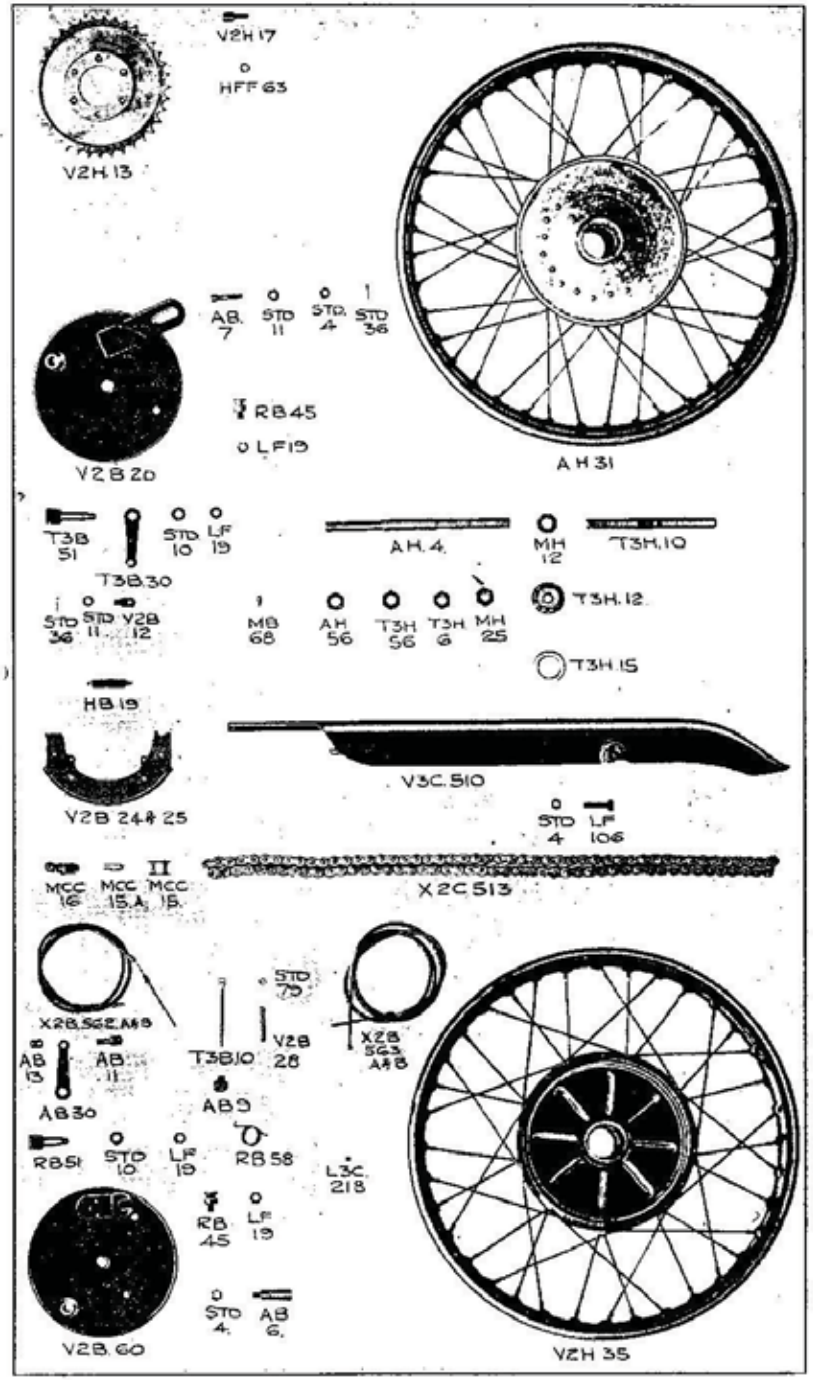
			£	s.	d.
AH	26	Rear wheel, complete, less tyre	4	12	6
AH	31	Rear wheel, less all hub and brake fittings	1	14	3
V2H	13	Rear wheel chain sprocket (49 teeth) ...		8	0
V2H	17	Sprocket fixing bolt (each)			3
HFF	63	Sprocket fixing bolt lock nut			2
V2B	20A	Rear brake cover plate with shoes, expander, etc.		15	0
V2B	20	Rear brake cover plate only		4	6
V2B	24/25	Rear brake shoes (per pair), with linings ...		7	0
V2B	50	Rear brake shoe linings, with rivets (each 1/-), per pair		2	0
HB	19	Rear brake shoe internal springs (each) ...			3
T3B	51	Rear brake shoe expander		2	6
T3B	30	Rear brake shoe expander lever			10
LF	19	Expander lever fixing nut			2
STD	10	Washer for nut			1
X2B	505	Rear brake rod		1	9
V2B	12	Rear brake rod cross head (fits on lever)			8
STD	36	Split pin (for crosshead)			6
STD	11	Washer (fits behind split pin)			1
HFF	63	Brake rod nuts (each)			2
V2B	18	Spring for brake rod			3

Rear Wheel and Brake Parts—contd.

			£	s.	d.
V2B	29	Knurled adjusting nut		1	0
V3B	501	Rear brake foot pedal		5	6
V3B	502	Rear brake pedal support stud		2	0
ME	54	Long bolt, for special support stud			8
STD	3	End nut for above and support stud end ...			3
STD	10	Washer for support stud end			1
AB	3	Vertical support for front brake cable ...			10
STD	4	Nut securing above to pedal support stud			2
		Cross head for front brake cable (see front brake)			
AB	7	Anchor bolt for rear brake cover plate ...			3
STD	4	Nut securing anchor bolt			2
STD	14	Split pin (per doz.)			6
STD	11	Washer for anchor bolt			1
AH	4	Rear wheel axle		2	9
T3H	12	Rear wheel taper bearing, complete ...		8	3
T3H	6	Taper cone lock nuts (inside hub), each ...			3
AH	56	Taper cone lock nuts (outside hub), chain side			4
T3H	56	Lock nut, for brake cover plate			4
MH	25	Axle end nuts (each)			4
MH	12	Axle end washers (each)			1
T3H	15	Metal dust cap, for hub end			3
MB	68	Hub grease nipple			2
AH	18A	Rear hub, complete with brake parts ...	2	1	6
AH	18	Rear hub, shell only		10	9
TH	43	Rear wheel spoke (left side), butted ...			2
TH	43	Rear wheel spoke (right side), butted ...			2
RH	34	Spoke nipples each			2
V2H	21	Rear wheel rim (drilled and enamelled) ...		10	0
T3H	29/30	Dunlop tyre (26 x 3.25), with tube ...	1	18	6
T3H	29	Dunlop cover only (26 x 3.25)	1	11	9
T3H	30	Inner tube only (26 x 3.25)		6	9
R4B	508	Brake pedal pull-off spring			4
RB	45	Brake shoe fulcrum stud			4
LF	19	Nut securing fulcrum stud to cover plate ...			2
STD	10	Washer for nut			1

FRONT WHEEL AND BRAKE PARTS.

			£	s.	d.
AH	25	Front wheel, complete, less tyre	2	15	0
V2H	35	Front wheel only, less all hub and brake fittings	1	7	6
V2B	60/A	Front wheel cover plate with shoes, expander, etc.		14	6
V2B	60	Front brake cover plate only		4	3
V2B	24/25	Front brake shoes (per pair) with linings		7	0



Wheels and Parts.

Front Wheel and Brake Parts—contd.

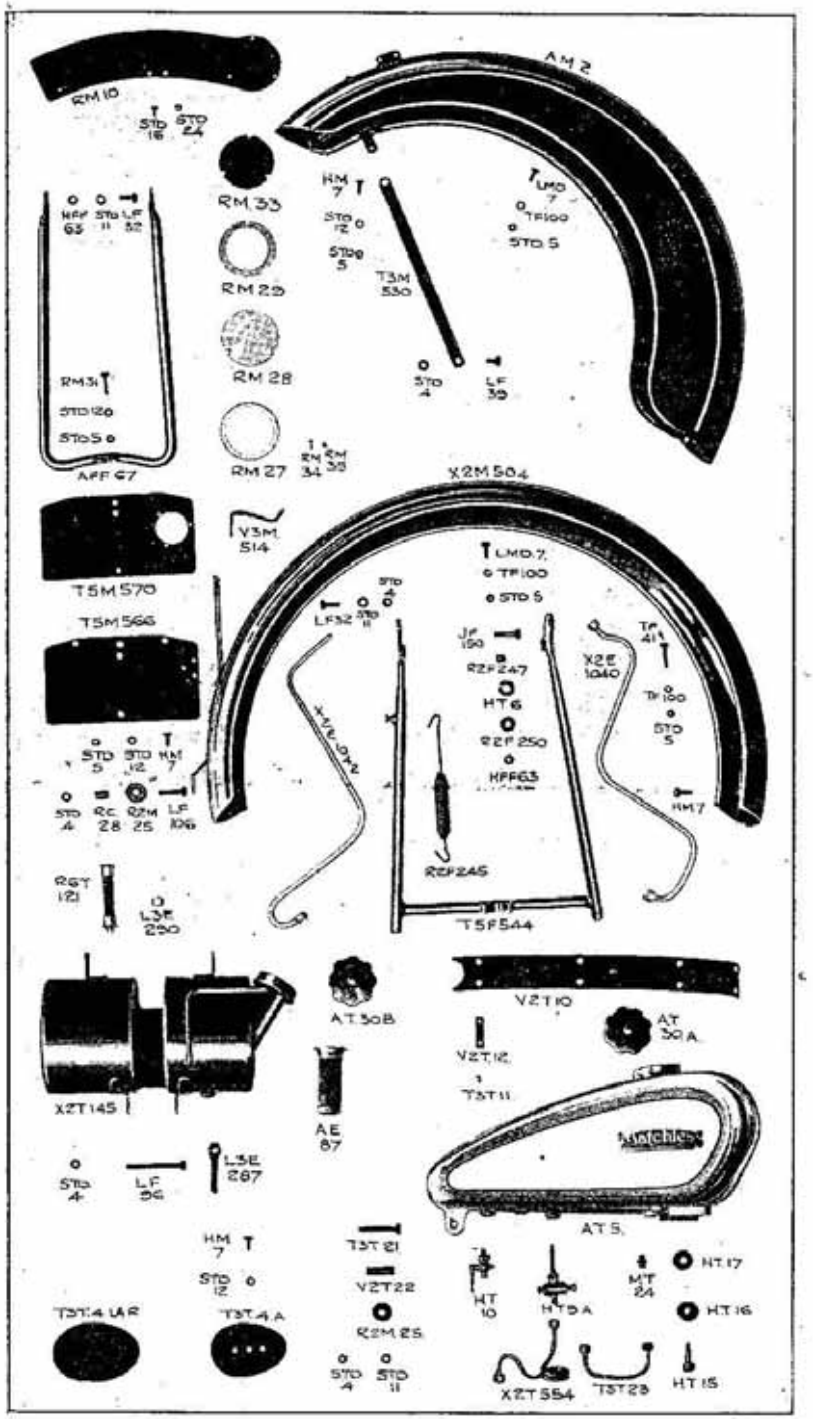
			£	s.	d.
V2B	50	Front brake shoe linings with rivets (each 1/-), per pair		2	0
HB	19	Front brake shoe internal springs (each) ...			3
RB	51	Front brake shoe expander		2	6
AB	30	Front brake shoe expander lever			10
LF	19	Nut securing brake shoe expander lever ...			2
STD	10	Washer for nut			1
RB	58	Front brake expander lever pull-off spring ...			4
X2B	563A/B	Front brake cable, complete (foot operation)		5	6
X2B	563A	Inner cable only (with nipple and rod extension)		1	6
X2B	563B	Outer casing only		3	0
AB	12a	Slotted stop for casing (pedal end) ...			9
STD	11	Slotted stop washer			1
STD	36	Slotted stop split pin (per dozen)			6
AB	6	Slotted stop (hub end)			10
STD	4	Nut securing above			2
X2B	562A/B	Front brake cable, hand operation		5	6
X2B	562A	Inner cable only		1	6
X2B	562B	Outer casing only		3	0
T/3B	10	Rod extension, for inner cable			9
V/2B	28	Spring for rod extension			2
STD	79	Nuts for rod extension			1
AB	9	Knurled edge hand adjusting nut		1	0
AB	11	Cross head for expander lever			8
AB	13	Cross head sleeve			6
MFF	48	Front brake hand inverted hand lever ...		8	6
MFF	49	Lever portion only		4	3
MFF	50	Lever fulcrum screw			4
MFF	51	Nut for fulcrum screw			2
V2B	62	Brake cover plate anchor stud			3
STD	3	Nut for above			3
MFF	53	Body portion (fits in handlebar)		3	9
STD	40	Screw, securing hand lever body			2
V2H	19A	Front hub, complete with all fittings ...	1	19	6
V2H	19	Front hub, shell only		10	3
V2H	20	Front wheel rim, drilled and enamelled ...		10	0
RH	54	Front wheel spoke (left side)			1
RH	52	Front wheel spoke (right side), butted ...			2
RH	34	Front wheel spoke nipple			2
T3H	10	Front wheel axle		2	6
T3H	15	Front hub dust cap			3
T3H	12	Front wheel taper bearing, complete (each)		8	3
T3H	6	Taper cone lock nuts inside hub (each) ...			3
T3H	6	Taper cone lock nut (left side), each ...			3
T3H	56	Brake cover plate fixing nut (each)			4
MH	25	Axle end nuts			4

Front Wheel and Brake Parts—contd.

			£	s.	d.
MH	12	Washer for axle end			1
MB	68	Front hub grease nipple			2
T3H	29/30	Front wheel tyre, Dunlop 26 x 3.25 ...	1	18	6
T3H	29	Outer cover only, Dunlop 26 x 3.25 ...	1	11	9
T3H	30	Inner tube only, Dunlop 26 x 3.25		6	9
RB	45	Front brake shoe fulcrum stud			4
LF	19	Nut fixing above to cover plate			2
STD	10	Washer for nut			1

MUDGUARDS, CARRIER, MUDSHIELDS, ETC.

AM	2	Front mudguard only		15	6
T3M	530	Front mudguard stay, left or right			6
LMD	7	Fixing bolt, for side of mudguard			4
STD	5	Fixing bolt nut, for side of mudguard ...			2
TF	100	Fixing bolt spring washer			2
HM	7	Front mudguard stay top bolt			3
STD	5	Front mudguard stay top bolt nut			2
LF	39	Front mudguard stay bottom bolt			2
STD	11	Front mudguard stay bottom bolt washer ...			1
STD	4	Front mudguard stay bottom bolt nut ...			2
RM	31	Front stand clip bolt			3
STD	5	Front stand clip bolt nuts			2
STD	12	Front stand clip bolt washer			1
X2M	504	Rear mudguard only		14	6
HM	7	Rear mudguard bottom fixing bolt			3
TF	41	Rear mudguard top fixing bolt			2
STD	5	Rear mudguard top fixing bolt nut			2
V3F	600	Rear mudguard triangular stay assembly ...		18	6
LMD	7	Bolt securing triangular stay to mudguard at top (each)			4
STD	5	Nut for above			2
LF	32	Bolt securing triangular stay to mudguard at rear			3
STD	4	Nut for above			2
HM	3	Bolt securing triangular assembly to fork end			4
STD	4	Nut for above			2
V3M	514	Rear number plate bracket			4
HM	7	Rear number plate fixing bolt (each) ...			3
STD	5	Rear number plate fixing bolt nut			2
T5M	566	Rear number plate only (for acetylene lamp)		1	1
T5M	570	Rear number plate only (for electric lamp)		1	3
RM	9	Front number plate (solo type with license holder)		3	0
STD	16	Front number plate fixing screw (each) ...			1
STD	24	Front number plate fixing screw nut (each)			1
TM	10	Front number plate, plain (sidecar type) ...		1	2



Tanks and Mudguards, etc.

Mudguards, Carrier, Mudshields, etc.—contd.

			£	s.	d.
RM	10	Front number plate, bare (solo type) ...		1	6
RM	29	Rubber ring, for license holder			3
RM	28	License holder transparent window ...			3
RM	27	License holder rim only			4
RM	33	License holder cardboard disc			2
RM	34/35	Screws and nuts, securing rim (per pair) ...			2
MEQ	60	Complete license holder (sidecar type) ...		1	9
V3EQ	40	Detachable luggage carrier (less bolts and nuts)		13	6
HBD	87	Carrier rear fixing bolt			5
LF	32	Carrier front fixing bolt			3
STD	4	Carrier fixing bolt nut			2
X2M	6078	Legshields, complete with all fittings (solo)		15	0
X2M	6001	Legshields, complete with all fittings (sidecar)		15	0
X2M	608	Left side legshield only (solo type) ...		6	0
X2M	601	Left side legshield only (sidecar type) ...		6	0
X2M	607	Right side legshield only (solo type) ...		6	0
X2M	600	Right side legshield only (sidecar type) ...		6	0
V5M	102	Top legshield rod (solo or sidecar) ...		1	0
XM	103	Bottom legshield rod (solo or sidecar) ...		1	2
RM	37	Top legshield rod distance tube, left or right			6
XM	104	Bottom legshield rod distance tube (right side)			4
XM	106	Bottom legshield rod distance tube (right side			4
STD	4	Legshield rod end nuts (each)			2
STD	11	Legshield rod end washers (each)			1

TANKS AND FITTINGS.

			£	s.	d.
AT	5	Petrol tank only (chromium plated) ...	3	12	6
AT	30A	Petrol tank filler cap only (chromium plated)		3	0
HT	9A	Petrol supply tap		2	6
HT	10	Petrol drain tap		1	9
T3T	23	U connecting pipe		2	4
MT	24	Union for U pipe (screws into tank) ...			3
X2T	554	Petrol pipe		5	0
RT	27	Union nut, for petrol pipe (tank end) and (U pipe)			4
TT	29	Union nut, for petrol pipe (carburettor end)			4
RT	28	Union nipple, for petrol pipe (tank end) and (U pipe)			3
TT	28	Union nipple, for petrol pipe (carburettor end)			3
HT	15	Petrol tank fixing bolt (front end), each ...			6
HT	17	Washer for fixing bolt (front end), each ...			2

Tanks and Fittings—contd.

			£	s.	d.
HT	16	Rubber buffer, for front end of tank ...			5
T3T	21	Tank fixing bolt, rear end			5
V2T	22	Tubular distance piece			3
R2M	25	Rubber washers, for rear end of tank ...			5
STD	4	Nut for tank fixing bolt			2
X2T	145	Oil tank only	1	2	6
AT	30B	Oil tank filler cap only		3	0
T3EQ	49	Oil tank bolt (top)			9
LF	96	Oil tank bolt (bottom)			4
STD	4	Nuts for above			2
L3E	287	Screwed union and filter, for oil supply pipe		2	3
X2E	1040	Oil pipe (supply side)		5	6
X2E	1042	Oil pipe (return side)		4	6
RE	53	Oil pipe union nut			4
RE	54	Oil pipe nipple			3
R6T	121	Return oil pipe rubber tube connector ...			9
AE	87	Filter for oil tank filler orifice			8
T3T	4L	Knee grip (left side)		2	6
T3T	4R	Knee grip (right side)		2	6
T3T	4A	Knee grip fixing plate			6
HM	7	Knee grip fixing bolt			3
V2T	10	Tank metal strip		2	9
V2T	12	Tank metal strip fixing plates			4
T3T	11	Tank metal strip fixing plates screws (each)			2

STANDS.

			£	s.	d.
T5F	544	Rear stand only		12	0
JF	150	Rear stand fixing bolts (each)			3
R2F	247	Rear stand fixing bolt sleeve			2
HT	6	Rear stand bolt spring washer			2
R2F	250	Rear stand bolt plain washer			1
HFF	63	Rear stand bolt nut			2
R2F	245	Rear stand pull-up spring			6
R2F	249	Special anchor bolt, for spring			3
STD	4	Nut for above			2
R2M	25	Rubber buffer, for rear stand			6
AFF	67	Front stand only		5	0
LF	32	Front stand fixing bolts (each)			3
HFF	63	Front stand fixing bolt lock nut			2
STD	11	Front stand bolt washer			1
STD	5	Front stand clip nut (see also mudguards)			2
LF	106	Fixing bolt, for rear stand rubber buffer ...			4
STD	4	Nut for above			2
STD	11	Washer for above			1
RC	28	Tubular sleeve, for buffer			3

CHAIN GUARDS AND CHAINS.

			£	s.	d.
V3C	510	Rear chain guard		7	6
LF	106	Rear chain guard fixing bolt, rear end ...			3
STD	4	Nut for above			2
STD	11	Washer for fixing bolt, rear end			1
VE	19	Rear chain guard fixing bolt, front end (see engine bolts)			5
V3C	536	Front chain guard (inside portion) ...		4	0
V2C	37	Stud securing front end to crankcase ...			2
V2C	35	Stud securing centre to crankcase			3
STD	4	Nuts for studs (each)			2
RE	91	Distance tube, for centre stud			4
XC	1	Front chain guard (outer portion) ...		15	0
XF	200	Stud securing rear end to frame			3
LM	15	Distance tube for rear stud			4
STD	4	Nuts for centre and rear end fixing ...			2
STD	11	Washer for nut (each)			1
XC	14	Front driving chain (solo)		8	4
XC	24	Front driving chain (sidecar)		8	2
LC	19	Connecting link, complete, for front chain			5
LC	20	Spring only, for connecting link for front chain			1
LC	21	Cranked or half link, for front chain ...			5
X2C	513	Rear driving chain, solo (XC23 S/C) ...		17	9
MCC	15	Connecting link, complete, for rear chain ...			5
MCC	15A	Spring only, for connecting link for rear chain			1
MCC	16	Cranked or half link for rear chain ...			8
XMD	18	Magneto chain (endless)		2	6
LC	25	Chain rivet extractor		5	0
XMD	512	Magneto chain case (supplied complete only), footrest model		12	0
XMD	504	Magneto chain case (supplied complete only), footboard model		12	0
M3E	404	Special timing gear cover bolt, securing rear half of magneto chain case ...			6
STD	4	Nut for above			2
STD	11	Washer for nut			1
V3MD	514	Screw securing magneto chain case to timing gear cover			3

FOOTRESTS.

			£	s.	d.
V2FR	108	Footrest rod		1	9
X2FR	501	Footrest rod engine plates (left or right) ...		1	2
LE	15	Bolts securing engine plates (each) ...			6
STD	4	Nuts securing engine plates (each) ...			2

Footrests—contd.

			£	s.	d.
V2FR	6	Footrest rod centre distance tube			9
X2FR	506	Footrest rod distance tube, left side ...			6
X2FR	507	Footrest rod distance tube, left side, inner			6
X2FR	507	Footrest rod distance tube, right side ...			6
V2FR	51	Footrest bracket, left side		1	6
V2FR	52	Footrest bracket, right side		1	6
STD	3	Nut securing bracket to centre rod (each)			3
STD	10	Washer for nut securing bracket to centre rod			1
RFR	2	Footrest rubber pad		1	6
V2FR	10	Footrest rubber pad spindle		1	0
STD	1	Nut, securing pad spindle			4
STD	8	Washer for securing pad spindle			1

HANDLEBARS.

			£	s.	d.
V3FF	566	Handlebar (bare)		17	6
MFF	127A	Handlebar grips, per pair (one closed end)		3	0
JF	150	Handlebar clip pinch bolt			6
MFF	48	Inverted handlebar lever, complete		8	6
MFF	49	Lever portion only		4	3
MFF	53	Body portion only		4	3
MFF	50	Fulcrum screw for lever			4
MFF	51	Nut for fulcrum screw			2
STD	40	Screw securing lever body to handlebars ...			2
V2FF	129	Cap for open end of handlebar (for use with twist grip control)			9

SADDLE AND PARTS.

			£	s.	d.
V2F	60	Saddle top only (special Lycett Aero) ...	1	0	10
M3F	155S	Saddle springs (each)			6
STD	3	Nut securing saddle spring to frame ...			3
STD	10	Washer for nut			2
LF	324R	Shouldered bolt, for saddle nose fixing ...			8
STD	4	Nut for above			2

MAGNETO AND PARTS.

			£	s.	d.
MMD	10	Complete magneto	5	0	0
	41B	Contact breaker, complete		13	0
4152/4122		Contact screws only, with bell crank levers		3	9
	7P	High tension pick-up, complete, number 1 or 2		2	6
1052		Carbon brush and spring only		1	0

Magneto and Parts—contd.

			£	s.	d.
MMD	14	Magneto chain sprocket (magneto)		2	3
MMD	10A	Nut, fixing above to magneto			2
MMD	10B	Washer for nut			1
ME	38	Magneto chain sprocket on camshaft ...		2	0
STD	4	Nut securing sprocket to camshaft			2
X2E	1048	Magneto aluminium platform		7	6
MMD	1	Bolt securing magneto to above (each) ...			4
XE	54	Magneto chain adjuster stud, screws in above			3
XE	53	Special double nut, for chain adjuster stud			4
MMD	21	Magneto advance and retard cable (outer)		2	0
MMD	20	Magneto advance and retard cable (inner)			9
MMD	11	Handlebar lever for above, complete ...		6	9
MMD	11A	Lever portion only		1	9
MMD	11B	Centre screw securing lever			4
MMD	11C	Large washer for centre screw			4
PM	1	Rubber cap for high tension pick-up ...			3
PM	2	Sparking plug cable with terminal (front cylinder)		1	0
PM	3	Sparking plug cable with terminal (rear cylinder)		1	0

TOOLS AND TOOLBOXES, ETC.

LF	39	Tool box end fixing bolt			4
STD	4	Nut for above			2
AF	45LR	Tool box, left or right		3	9
HM	7	Tool box bottom fixing bolt (each)			3
STD	5	Tool box fixing bolt nut			2
LTK	17	Tool roll only (each)		2	6
LTK	15	Combination pliers, 6in.		1	6
LTK	13	Screw driver, 6in.			9
LTK	10	Double-end forged spanner $\frac{1}{4}$ x 5-16ths ...		1	3
LTK	11	Double-end forged spanner, $\frac{3}{8}$ x $\frac{1}{2}$		1	6
LTK	9	Tappet adjusting spanner			9
V2TK	19	Thin cone adjusting spanner			6
LTK	14	Tyre lever			3
LTK	4	Carburettor lock nut spanner		1	3
L3TK	20	Grease gun		6	0
L3TK	21	Tyre pump		3	9
LTK	5	Magneto spanner			4
LTK	3	Spanner, three sizes, .920, 1.10, 1.01, hexagons		1	0
LTK	1	Cone lock nut spanner			6
LC	25	Chain rivet extractor (not provided in standard tool kit)		5	0

CARBURETTOR B. & B.

			£	s.	d.
LE	402S	Complete carburettor (special type B & B)	2	18	0
B & B	101	Float chamber body only		8	0
B & B	102	Float chamber cap and tickler		4	3
B & B	106	Float chamber needle valve		1	2
B & B	104	Float		2	6
B & B	118/134	Main jet, complete		1	9
B & B	158/1	Fibre washer for main jet			1
B & B	138	Pilot jet			10
B & B	139	Pilot jet air screw and spring			7
B & B	135	Jet taper needle			10
B & B	136/7	Needle holder and screw			6
B & B	120	Spraying chamber		8	6
B & B	128	Spraying chamber cap, with bushes ...		1	8
B & B	129	Spraying chamber cap lock ring		1	0
B & B	130	Clip and bolt, for inlet port		1	8
B & B	116	Bolt only			3
B & B	126A	Throttle valve		4	7
B & B	126B	Air valve		2	2
B & B	145	Valve springs (each)			7
ME	289	Control levers, complete		7	0
ME	286	Air lever only		2	6
ME	287	Throttle lever only		2	6
VE	64	Control cables, assembled		2	3

EQUIPMENT.

For Proprietory Equipment see Manufacturers' Latest Price Lists.

			£	s.	d.
P & H	130	Head lamp, acetylene (less brackets) ...	1	7	6
S	51	Head lamp, electric (less brackets)	1	17	6
AFF	73A	Head lamp brackets (per pair), with nuts		3	6
P & H	135	Tail lamp (acetylene)		2	9
MT	110	Tail lamp (electric)		8	6
P & H	137	Sidecar lamp (acetylene)		7	6
R3	35S	Sidecar lamp (electric)		12	6
LEQ	18	Acetylene generator with bracket		11	0
LEQ	19	Acetylene generator bracket only		2	6
PL	5	Electric head lamp bulb		5	3
LEQ	23	Electric side, tail, or instrument panel bulb		1	3
LJW	7E	Accumulator only	1	0	0
68L	52S	Accumulator carrier		5	0
PH	125A	Acetylene head lamp glass		1	0
SS	47A	Electric head lamp glass		2	6
PH	137A	Acetylene side lamp glass			8
R	335SA	Electric side lamp glass			3
LEQ	20A	Acetylene generator rubber tube (per yard)			8
HTK	11	Adjustable spanner		4	6

Equipment—contd.

			£	s.	d.
PH	202	Bulb horn, complete		11	6
PEH	1	Electric horn		11	6
PL	1	Electric head lamp dipping switch with cable		3	6
PL	2	Cable harness, complete		10	0
AEQ	1/2	Instrument panel (top and bottom)		7	6
HM	7	Instrument panel fixing bolts (each) ...			2
PS	1	Speedometer, complete with gear box drive, non trip	2	0	0
PS	2	Speedometer, complete with gear box drive, trip	2	5	0
PS	6	Gear box drive for speedometer (see gear box)			
PS	3	Speedometer cable, complete		14	3
PS	4	Speedometer head, complete, non trip ...	1	8	0
PS	5	Speedometer head, complete, trip	1	13	0
PL	2	Electric switch box, complete		10	6
PL	3	Dash lamp or magneto switch		3	6
PL	4	Ammeter, complete		7	6
AEQ	3	Electric horn bracket		1	0

SIDECAR AND PARTS (Single Seater).

			£	s.	d.
XF	221	Sidecar frame, with three clip lugs attached	3	10	0
LF	138	Pinch bolt, for clip lug (each)			7
STD	3	Nut for pinch bolt			3
T3F	226	Sidecar attachment bent arm, front (upper)		9	6
V5F	224	Sidecar attachment bent arm, front (lower)		9	6
XF	223	Sidecar attachment rear bent arm		9	6
LF	95	Nut securing arm to frame lug			3
LF	147	Washer for above			2
LF	88A	Clip lug, for lower front arm attachment to frame tube, complete		6	3
LF	101	Bolts, for clip lug only (each)			4
LF	138	Packing sleeve, for clip lug (two pieces) ...		1	2
LF	94	Large bolt, fixing sidecar frame to clip lug above			6
STD	1	Nut for bolt			4
LF	91	Sidecar body rear springs (each), three leaves		10	6
LF	96	Sidecar body rear spring fixing bolts (long)			4
LF	106	Sidecar body rear spring fixing bolts (short)			4
STD	4	Nuts for above			2
LF	145	Rear spring pad lug plate		1	1
LF	152	Sidecar body front coil spring		1	6
STD	3	Nut for fixing bottom end of spring ...			3
STD	10	Washer for nut			1

Sidecar and Parts (Single-Seater)—contd.

			£	s.	d.
LF	153	Bolt securing top end of spring			3
LF	154	Large washer for above			4
STD	3	Nut for above bolt			3
LBD	1	Sidecar body rear bearer bar		3	3
STD	3	End nuts for above (each)			3
HBD	14	Spring washer, for bearer bar ends			3
HBD	10	Plain washer, for bearer bar ends			1
STD	14	Split pin, for bearer bar ends			1
HBD	9	Coach bolts for fixing rear bearer bar ...			2
HBD	13	Large washer for coach bolt			4
HBD	24	Nut for above bolt			1
LM	24	Sidecar mudguard only		12	6
STD	4	Nuts, for fixing to body studs (each) ...			2
STD	11	Washer for nut (each)			1
L4BD	25	Windscreen, complete with all fittings (Matchless hinged)	1	7	6
MBD	317	Hood, to suit above screen, with all fittings	1	15	0
TBD	114	Sidecar body only (with apron), No. 1 touring type	10	0	0
L4BD	38	Sidecar body only (with apron), No. 2 aluminium sports type	7	10	0
BD	31/30A	Sidecar body only, No. 14 sunshine coupé (with screen and folding head) ...	15	0	0
LBD	4	Sidecar body apron only (sports type) ...		10	6
MBD	289	Sidecar body apron only (touring type) ...		10	6
HBD	58	Apron turn buttons (each)			5
LF	81A	Sidecar wheel with ball cups only	1	2	3
CH	1	Sidecar wheel fixing cone		1	6
CH	2	Sidecar wheel adjusting cone		1	1
CH	3	Locking washer, for adjusting cone ...			2
CH	4	Castellated lock nut, for adjusting cone ...			6
CH	5	Split pin for above			1
LF	6	Sidecar wheel hub end cap		1	6
LF	7	Sidecar hub balls (per set)		1	2
MB	68	Sidecar hub grease nipple			2
LBD	11	Sidecar door handle (touring body) ...		2	6
T3H	29/30	Sidecar tyre and tube (26x3.25), Dunlop ...	1	18	6
T3H	29	Cover only	1	11	9
T3H	30	Inner tube only		6	9
XF	232	Sidecar wheel rim, drilled and enamelled ...		10	0
RH	43	Wheel spokes (each)			1
RH	34	Spoke nipples (each)			2
CH	10	Sidecar wheel axle		3	6
CH	11	Fixing nut for above			9
CH	13	Inner hub cap			10
CH	14	Outer hub cup			10

SIDECAR AND PARTS (Two-Seater Type).

(Differing from Single-Seater Model).

			£	s.	d.
XF	126	Sidecar frame, with three clip lugs attached	5	0	0
XF	226	Sidecar attachment bent arm front (upper)		9	6
XF	224	Sidecar attachment bent arm front (lower)		9	6
V5F	222	Sidecar attachment bent arm rear		9	6
MF	119	Sidecar body rear springs (5-leaf type), each		11	6
MF	120	Sidecar body rear fixing bolt (each) ...			5
MF	66	Sidecar body front body spring		2	6
MF	154	Sidecar body front body spring top fixing bolt			3
STD	4	Sidecar body front body spring top fixing bolt nut			2
MF	137	Sidecar body bearer bar (front)		3	6
MBD	1	Sidecar body rear bearer bar		3	9
MBD	116	Coachbolts securing bearer bars (each) ...			2
MBD	118	Nut, for bearer bar fixing bolt (each) ...			1
MBD	321	Front and side windscreen, complete will all fittings	3	17	6
MBD	333	Hood to suit above, with all fittings ...	4	4	0
MBD	334	Sidecar body only, No. 4 two-seater touring type	13	17	6
MBD	335	Sidecar body only, as above, with screen and hood	21	19	0
BD	30/30A	Sidecar body only, No. 4a Sunshine Saloon two-seater, with screen and folding head	21	7	6
BD	36/30	Sidecar body only, No. 13 Occasional two-seater	14	0	0
BD	36/30A	Sidecar body only, No. 13, as above, with wind screen	15	7	6
XH	95	Sidecar wheel only, less hub fittings and tyre	2	0	6
XH	94	Sidecar wheel, less tyre, but with all fittings	3	2	6
MH	68	Sidecar wheel axle		6	6
MH	59	Sidecar wheel axle fixed taper bearing, complete		10	0
MH	72	Sidecar wheel axle adjusting taper bearing, complete		9	6
MH	21	Sidecar wheel adjusting taper cone lock nut			8
MH	20	Sidecar wheel adjusting taper cone lock nut washer			2
STD	6	Split pin for lock nut			1
MH	11	Sidecar wheel hub end cap		4	0
MH	63	Sidecar wheel axle dust cap			3

Sidecar and Parts (Two-Seater type)—contd.

			£	s.	d.
MH	21	Wheel axle nut			8
MH	12	Wheel axle nut washer			2
STD	6	Wheel axle nut split pin			1
MF	64	Sidecar wheel stand		1	0
MF	63	Sidecar wheel stand fixing bolt			6
MF	67	Sidecar wheel stand fixing bolt spring washer			2
V2H	20	Wheel rim, drilled and enamelled		10	0
RH	44	Wheel spokes (each)			1
RH	34	Nipple, for spoke			2