

Brough **Superior**

INSTRUCTION BOOKLET

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GEORGE BROUGH

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FOREWORD

The driving instructions and riding hints contained in this booklet are not intended as a complete treatise on the management of a motor cycle, but are intended to help the owner of a BROUGH SUPERIOR, who is presumably an expert motor cyclist, to obtain the utmost satisfaction and to get the best out of his machine.

Whilst the BROUGH SUPERIOR is a very powerful machine its ease of handling and general tractability is an admitted fact.

NOTE FROM THE MANUFACTURER.

There is nothing gives me more satisfaction than to see one of my productions properly cared for. After all, you have paid a high price for a high class article and it is only reasonable that I should request you, in your own interests, and that of the machine that bears my name, to give the essential details of the machine the requisite amount of attention periodically. I am a hard rider myself and I appreciate that half-an-hour a week spent in checking the adjustment and lubrication of wheels, chains, tappets, steering head and gear box will be amply repaid by the continued hard service with absence of trouble the machine will give. I am at all times very pleased to hear from Brough Superior riders on any point with which they may be in difficulty.

GEORGE BROUGH.

ENGINE AND ENGINE LUBRICATION. ALL MODELS.

The engine is fitted with a mechanical pump, which is fed from the tank by gravity. The pump consists of a worm and sector, which delivers oil through a sight feed lubricator, thence to the engine at a point at the rear of the front cylinder, this position having been found best to ensure correct lubrication of all the parts. The quantity of oil being actually delivered from the pump may be regulated by loosening the two small set screws and turning the regulator as indicated on the pump.

As sent out from the Works the pump is regulated as follows :—

For all round running conditions the approximate oil feed is 30 drops per minute for side-valve models, and 20 drops per minute for over-head valve models. It is recommended to keep this oil flow at such a position as is consistent with driving a combination over give and take roads at speeds of from 30 to 50 miles per hour.

When high speeds for prolonged periods are indulged in an occasional extra charge through the hand pump should be given. It will be noticed that on the SS80 the supply of oil, whether being delivered through the mechanical pump or the auxiliary hand pump, passes through the sight gauge on the tank top. On the SS100 the oil from the auxiliary hand pump passes direct to the rear of the front cylinder.

After the first 300 miles running the crankcase sump should be emptied, and after replacing the drain plug, and before starting up the engine, give four pumps full of oil through the hand lubricator. It is not advisable to do anything other than drain the engine when warm. Do not use petrol or paraffin to wash out the crankcase.

The oil recommended is Speedwell Sava Egal for average touring work, and Speedwell White Ideal for racing. In the event of these brands being unobtainable, any high grade oil in sealed tins will give satisfaction, such as Vacuum, Wakefield or Price's.

The SS100 Overhead Rockers are mounted on roller bearings. These bearings, and the adjustable ball ends on the tappet rods, are packed with Speedwell Greasegore, which has exceptional clinging and heat resisting properties. This lubricant should be renewed as needed.

TAPPET ADJUSTMENT. The method of adjusting the tappets, is obvious and spanners for the purpose are supplied in the toolkit. Clearances between tappet and valve stem, when engine is cold, and respective valves are seated, are :—SS80, thickness of brown paper ; SS100, tappet rod to revolve freely, without perceptible clearance.

VALVE TIMINGS. ALL MODELS.

A Handbook dealing with the engine fitted, is supplied with each machine.

DECARBONISING SS80.

If correct attention has been paid to the quality and quantity of lubricant used decarbonising should not be necessary more frequently than every 5,000 miles, and this mileage may be extended by the judicious admixture of first class benzol and petrol.

The cylinders may be easily removed with the engine in situ by turning the engine till the piston is at the bottom of the stroke and raising the cylinder till it is above the gudgeon pin. Then push the gudgeon pin out, and remove cylinder and piston together.

Great care should be taken when re-assembling that the faces of the cylinder and crankcase are clean, and that the cylinder holding down nuts are tightened down evenly all round. The induction pipe should be fitted very carefully to ensure absence of air leaks.

DECARBONISING SS100 MODEL.

Remove tank from frame, inlet and exhaust pipes from cylinder heads. The heads can then be removed by undoing the four securing bolts. It is not necessary to remove the engine from the frame, for this operation. If the copper gasket fitted between cylinder head and cylinder barrel shows signs of leaks having taken place, new washers should be fitted. It is particularly necessary to use great care to tighten the four holding down bolts evenly, and see that a perfect job is made of the refitting of the inlet pipe.

CARBURETTER. ALL MODELS.

As sent out, the machine leaves the factory with the carburetter setting as near perfect as possible. The throttle is so set that when throttle lever is completely closed off the engine will continue to tick over. Should it be desired that engine will stop when throttle lever is closed right off, the screw nut on top of carburetter must be screwed down till the desired result is achieved.

Jets of all sizes may always be obtained on application.

CARBURETTER. Binks' Mousetrap.

Before opening throttle for rapid acceleration, the air shutter should be partly closed to avoid spitting back.

AIR LOCK in PETROL SUPPLY.

In locating this, first remove petrol pipe from carburetter and prove free flow of petrol.

If flow is free, examine carburettor, and look for obstructed passage in float chamber tap. If flow is starved, remove petrol pipe and clear filter and prove flow through tap. Examine air vent in tank filler cap. Blow through petrol pipe.

See also Booklet dealing with the Carburettor supplied with machine.

A handbook dealing with the adjustment and control of the carburettor fitted is supplied with each machine.

GEAR BOX. ALL MODELS.

This component must be kept in adjustment. To check this place gear quadrant in neutral notch and revolve gear wheel. If a clicking noise is heard coming from the gear box, vary the length of the adjustable rod below the gear quadrant until gear is silent when rear wheel is revolved. Worn shackles and pins on control should be replaced.

Lubricate with Crimangum and engine oil in equal quantities, and maintain up to level of filler.

CLUTCH AND CONTROL. ALL MODELS.

When first sent out some gear boxes are fitted with one or two distance washers under the clutch spring nut. These are provided to enable clutch spring tension to be maintained. As the inserts in clutch plates wear down, remove one or both of these washers.

The Clutch Control Lever on the handlebar should always be provided with some free motion before pulling on clutch wire, in order that the clutch spring may exert its full force. Both ends of clutch wire should be kept lubricated.

Should any gear box or clutch trouble manifest itself, it is always advisable to return the box to the Works, when any necessary adjustments or repairs can be completed and the box returned within 48 hours.

STEERING HEAD. SS80 MODELS.

Slack off handle bar bolt and bolt securing top race. Lift crankcase on to box or block leaving wheel clear of ground. Screw down large nut on top of steering column until steering is free, but without perceptible shake. Tighten up bolts in top race and handlebar. Test steering again before removing box from under crankcase. If steering is jerky, it is generally due to worn races, in which case the latter should be renewed.

STEERING HEAD. SS100.

To adjust these bearings a box or block of wood should be placed under the crankcase so that the front wheel is quite clear of the ground. The top race should be screwed down until the fork binds, and the lock ring then screwed down against it. If the top race is then unscrewed fractionally against the lock ring the steering will generally be found to be free and in adjustment. No perceptible play may be allowed.

SHOCK ABSORBER ON FRONT FORK. SS100 MODEL.

This should be so adjusted that when the handlebar is pushed down slowly and let go gently, the handlebar should not rise unaided.

SPRING FORKS. SS80 MODEL.

Adjustment of links and spindle is made by loosening nuts on ends of spindle (right

hand threads). To close links towards one another, turn spindle by the squared end about half a turn to the left, and tighten up lock nuts. Test for side play or excessive tightness, and if necessary, adjust with the above as a basis. There should be no side play and spindles should be free in lock. Proceed with one spindle at a time until all are adjusted.

The Shock Absorbers should be so adjusted that whilst the springs may be compressed by applying weight on the handlebar, there should be no return upward movement unaided. Care should be exercised to equalise the adjustment on the friction discs by means of the nuts provided.

WHEEL HUBS. ALL MODELS.

Hub Bearings should be so adjusted that the wheel revolves freely and with just a perceptible shake in the bearing when the spindle nuts are tight up. The slight amount of shake is most important. Lubricate with Greasengere.

IGNITION AND LIGHTING. ALL MODELS.

All models are available fitted with either magneto or Magdyno according to order, with the exception of the SS100 Racer, which is supplied with magneto only. Handbooks dealing with the particular components are supplied with each machine.

DRIVING CHAINS.

These should be kept in adjustment so that the front chain has a maximum up and down movement of $\frac{1}{2}$ in. on the slack side, and of the rear chain $\frac{1}{16}$ in. The slack should be tested at several

points by revolving either engine sprocket or rear wheel, according to which chain is being tested. The spring clip on the connecting link should be fitted with the closed end to the direction of travel of the chain.

Lubricate with Greasenguns applied with a brush.

TOE OPERATED BRAKE.

As the leverage obtained by this lever is very considerable, pressure should be applied lightly at first until the necessary pressure to be applied is found.

GENERAL HINTS.

STARTING UP. ALL MODELS.

Advance ignition lever about three-quarters of range.

Close air lever right off.

Open throttle lever about one eighth of range, or less, as each individual machine varies.

Slightly flood the carburettor.

Kick engine round a few times whilst holding exhaust valves slightly off their seats.

Release exhaust lifter and turn engine until compression is felt.

Lift exhaust and turn engine slightly to pass compression stroke.

Return kick starter crank to topmost position and put full weight squarely on crank without touching any levers, when engine will invariably start.

On starting up when engine is warm some air may be required, otherwise the method is the same, with the exception that flooding the carburettor may not be required.

MAGNETO.

Keep collector ring clean by removing brush holders and inserting a piece of clean fluffless rag on a chisel shaped piece of wood, whilst magneto is revolved. After cleaning, lubricate collector ring with the slightest trace of clean vasoline on clean fluffless rag. Remove contact breaker and wipe oil and dirt from behind it. Do not oil magneto bearings. See also magneto handbook supplied with the machine.

High Tension Leads should be so fixed that they cannot flap about and chafe. Avoid contact with petrol, oil or heat.

MAGDYNO.

When Magdyno, as fitted to a solo machine, is required to light a sidecar lamp, additional to those on the machine, a large battery should be substituted, if much night riding is to be undertaken. Machines supplied from the Works for use with sidecar are fitted with the necessary large battery.

See Manufacturer's Handbook included with toolkit, etc.

DETACHABLE REAR MUDGUARD.

In removing the rear mudguard it will be noticed that it is divided on the seat stays immediately under the saddle. Take off the two nuts on the upper side of this division. Slack

off the two bolts where the carrier is mounted on the rear fork ends and spring the carrier legs outward about half an inch on each side when the mudguard and rear carrier may be removed. The carrier stays on the rear fork ends are forked so that it is not necessary to completely remove the bolts securing them.

SPARKING PLUGS.

Use those recommended, and from time to time dismantle, clean and adjust points. Easy starting and slow running are improved thereby. Maintain the gap at the points.

K.L.G. 230 (and Champion) R.I.X. are fitted as standard, and these plugs have proved themselves perfectly satisfactory, excepting for all out racing, when the K.L.G. 244 should be fitted. It is advisable to clean the plugs weekly, and keep the points adjusted to .020 thou.

TYRES AND TYRE PRESSURES.

For general solo riding, the front tyre should be pumped hard and the rear tyre medium, according to the load each tyre has to carry. For sidecar use all tyres should be pumped fairly hard, and the sidecar tyre quite hard. Correct inflation has a very important bearing on the life of a tyre and maintenance of full pressure lessens deterioration. Rim dents and rims running out of truth can only lead to tyre trouble, therefore remove these faults as soon as possible.

STEERING DAMPER.

The Brough Superior was the original machine to be fitted with a steering damper as standard in 1924, with the object of steadying the machine and preventing rolling. Since this

fitment was first used the frame has been so improved that the steering damper is not now so necessary.

SIDECAR ALIGNMENT.

All wheels should be in parallel from front to rear, but the motor cycle wheels may generally be made to lean slightly **outwards** with advantage.

PACKING TOOLS.

The tool roll should have a piece of rag laid on the tools before rolling up, and the strap done up as tight as possible. Loose tools, etc., should be wrapped tight and packed tight.

GAS GENERATORS.

These must be kept very clean, if trouble is to be avoided. Re-charge generator every time lamp is used. Whilst doing this blow through gas passage. Renew gas filter every 100 hours of lighting. Keep water container empty until some little time before it is required, and on filling prove free flow of water. Blow through gas tube, and turn on water only to usual position for full flame, and wait for gas to generate. A gas bag will avoid many troubles. If burner becomes choked, renew the burner.

LUBRICATION of CYCLE PARTS and ACCESSORIES.

Steering Head Bearings are packed with grease, which should be renewed whenever Head is dismantled. Grease Gun Nipples are provided on Hubs, Fork Spindle Links and other parts. Grease Gun is included in the Kit. The ends of Bowden Controls, Carburettor Levers and Speedometer Cables should occasionally be lubricated with Greasengere.