

1966



INSTRUCTION MANUAL

250 OHV Star model C15
250 OHV Sport Star model C15SS80
250 OHV Star Trials model C15T
250 OHV Star Scrambles model C15S
350 OHV Star model B40
350 OHV Star model B40SS90

INSTRUCTION MANUAL

for

RECEIVED
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Models

**CI5, CI5T, CI5S, CI5 SS80,
B40, B40SS90.**

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This Instruction Manual is intended to acquaint the B.S.A. owner with details of the controls, general maintenance and technical data which may be required for normal operation of the machine.

It does not contain the information necessary to carry out complete stripping for major overhauls, but if any owner feels competent to carry out this type of work Service Charts numbered MC1 to MC7 inclusive and an illustrated Spares Catalogue for this machine can be obtained from a B.S.A. Spares Stockist or local distributor.

Owners in the British Isles can obtain these publications direct from B.S.A. Motor Cycles Ltd., Service Department, Armoury Road, Birmingham 11. The Service Charts are priced at two shillings each, and the Spares Catalogue is six shillings, plus sixpence postage. Always quote full engine and frame numbers when ordering these publications.

CONTENTS

	<i>Pages</i>
BRAKES	40
CARBURATION	31
CLEANING	13
CLUTCH	37,38
CONTACT BREAKER	19
CONTROLS	7
DECARBONISING	21
DRIVING	9
ELECTRICAL EQUIPMENT	50
GEARBOX	39
GENERAL HINTS	60
IGNITION TIMING	18
LUBRICATION CHART	34
LUBRICATION SYSTEM	15
PREPARING THE MACHINE	7
ROUTINE MAINTENANCE	12
RUNNING-IN	11
SPARES STOCKISTS	61
SPARKING PLUG	27
SUSPENSION AND STEERING	47
TAPPET ADJUSTMENT	17
TECHNICAL DATA	4,5
TRANSMISSION	33
WHEELS	40
WIRING DIAGRAMS	56,59

TECHNICAL DATA

	C15	C15 SS80	C15T	C15S	B40	B40 SS90
Engine Number ...						
Frame Number ...						
ENGINE:						
Capacity (c.c.) ...	249	249	249	249	343	343
Cylinder bore (mm.) ...	67	67	67	67	79	79
Stroke (mm.) ...	70	70	70	70	70	70
Compression ratio ...	8.0	8.75	8.0	10.0	7.0	8.75
Valve timing:						
inlet opens b.t.d.c.	26°	51°	26°	51°	26°	51°
onlet closes a.b.d.c.	70°	68°	70°	68°	70°	68°
exhst. opens b.b.d.c.	61½°	78°	78°	61½°	61½°	78°
exhst. closes a.t.d.c.	34½°	37°	34½°	37°	34½°	37°
Piston rings:						
compression (in. wide) ...	.0625	.0625	.0625	.0625	.0625	.0625
scraper (in. wide) ...	.125	.125	.125	.125	.125	.125
Piston ring gaps:						
minimum (in.) ...	.009	.009	.009	.009	.009	.009
maximum (in.) ...	.013	.013	.013	.013	.014	.014
Spark plug:						
Champion ...	N5	N4	N5	N3	N5	N4
Plug points gap:						
minimum (in.) ...	.020	.020	.020	.020	.020	.020
maximum (in.) ...	.025	.025	.025	.025	.025	.025
TRANSMISSION:						
Gear ratios—top ...	5.98	6.36	9.0	9.0	5.48	5.77
third ...	7.66	7.64	14.67	10.8	7.0	6.92
second ...	10.53	10.54	22.00	14.94	9.63	9.58
first ...	15.98	13.44	28.53	19.0	14.6	12.17
Clutch friction plates	4	4	4	4	4	4
Chain sizes—front (in.)	⅜ dplx. (70 ptch)	⅜ dplx. (70 ptch)	⅜ dplx. (70 ptch)	⅜ dplx. (70 ptch)	⅜ dplx. (70 ptch)	⅜ dplx. (70 ptch)
rear (in.)	½ × .335 (112 ptch)	½ × .335 (112 ptch)	½ × .335 (122 ptch)	½ × .335 (122 ptch)	½ × .335 (116 ptch)	½ × .335 (115 ptch)
Teeth on:						
engine sprocket ...	23T	23T	23T	23T	23T	23T
gearbox sprocket ...	17T	16T	15T	15T	19T	18T
clutch sprocket ...	52T	52T	52T	52T	52T	52T
rear chainwheel ...	45T	45T	60T	60T	46T	46T
CAPACITIES:						
Fuel tank (gal.) ...	3 (13.6 l.)	3 (13.6 l.)	2 (9.4 l.)	2 (9.4 l.)	3 (13.6 l.)	3 (13.6 l.)
Oil tank (pints) ...	4 (2¼ l.)	4 (2¼ l.)	5 (2¾ l.)	5 (2¾ l.)	4 (2¼ l.)	4 (2¼ l.)
Gearbox ...			(approx. ½ pint all models)			
Front forks (pints—each leg) ...	1/6 (100 c.c.)	1/6 (100 c.c.)	1/3 (190 c.c.)	1/3 (190 c.c.)	1/3 (190 c.c.)	1/3 (190 c.c.)
Primary ch/case (pts.) ...	¼ (140 c.c.)	¼ (140 c.c.)	¼ (140 c.c.)	¼ (140 c.c.)	¼ (140 c.c.)	¼ (140 c.c.)

TECHNICAL DATA—continued

	C15	C15 SS80	C15T	C15S	B40	B40 SS90
WHEELS:						
Rim size—front ...	WM2-17	WM2-17	WM1-20	WM1-20	WM2-18	WM2-18
rear ...	WM2-17	WM2-17	WM3-18	WM3-18	WM2-18	WM2-18
Tyre size—front ...	3.25-17	3.25-17	3.00-20	3.00-20	3.25-18	3.25-18
rear ...	3.25-17	3.25-17	4.00-18	4.00-18	3.50-18	3.50-18
Tyre pressures:						
front (lbs.) ...	16	17	19	19	17	17
rear (lbs.) ...	22	21	16	16	21	21
Brakes, dia. × width:						
front (in.) ...	6 × ⅞	6 × ⅞	7 × 1½	7 × 1½	7 × 1½	7 × 1½
rear (in.) ...	6 × ⅞	6 × ⅞	6 × ⅞	6 × ⅞	6 × ⅞	6 × ⅞
CARBURATION						
(AMAL):						
Bore (in.) ...	⅞	1	⅞	1½	1½	1½
Main jet ...	140	200	140	190	190	200
Pilot jet ...	25	25	25	25	20	20
Throttle valve ...	375/4	376/4	375/4	376/3½	376/3	389/3½
Needle position ...	3	2	3	2	3	3
Needle jet ...	.1055	.106	.1055	.106	.105	.106
GENERAL DETAILS:						
Front suspension						
movement (in.) ...	5	5	5	5	5	5
Rear suspension						
movement (in.) ...	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜
Contact breaker gap (in.) ...	.015	.015	.015	.015	.015	.015
Battery capacity ...	13 amp/hr. at 20 hr. rate.	13 amp/hr. at 20 hr. rate.			13 amp/hr. at 20 hr. rate.	13 amp/hr. at 20 hr. rate.
Overall length (in.) ...	78	78	80½	80½	80	80
Wheelbase (in.) ...	51¼	51¼	51¾	51¾	52	52
Ground clearance (in.) ...	5	5	7¼	7	7	7
Seat height (in.) ...	30	30	33	32	32	32
Overall height (in.) ...	37	36	42	41½	39½	38
Handlebar width (in.) ...	26	27	31½	31½	26	27
Steering head angle ...	65°	65°	63°	63°	65°	65°
Steering lock angle ...	50°	50°	60°	60°	40°	40°
Weight (lbs.) ...	275	275	265	265	295	295

The recommended inflation pressures are based on a rider's weight of 140 lb. If the rider's weight exceeds 140 lb. increase the tyre pressures as follows:—

Front tyre: Add one lb. per square inch for every 28 lb. increase above 140 lb.

Rear tyre: Add one lb. per square inch for every 14 lb. increase above 140 lb.

If a pillion passenger or luggage is carried, the actual load bearing upon each tyre should be determined and the pressures increased in accordance with the Dunlop Load and Pressure Schedule.

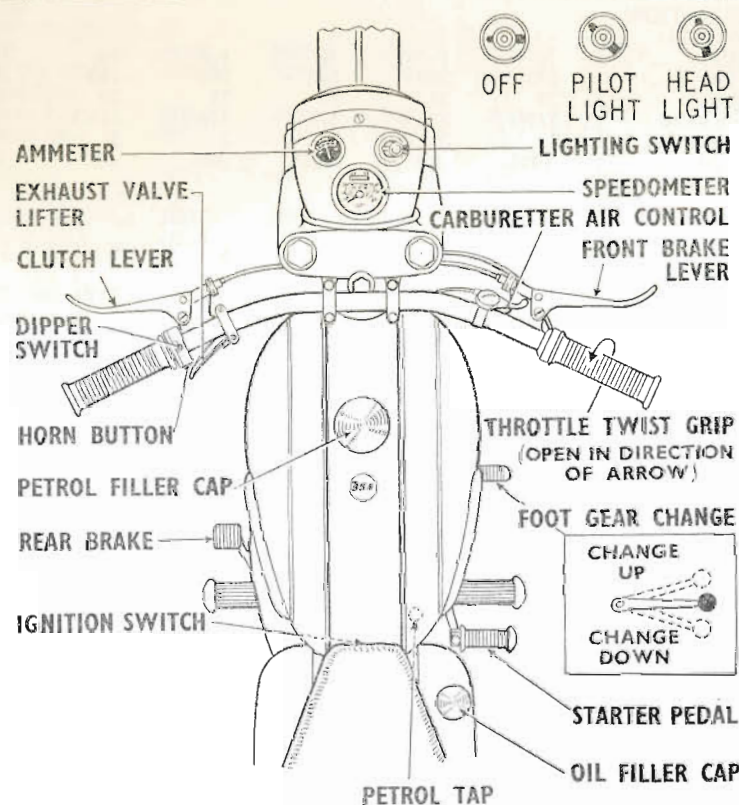
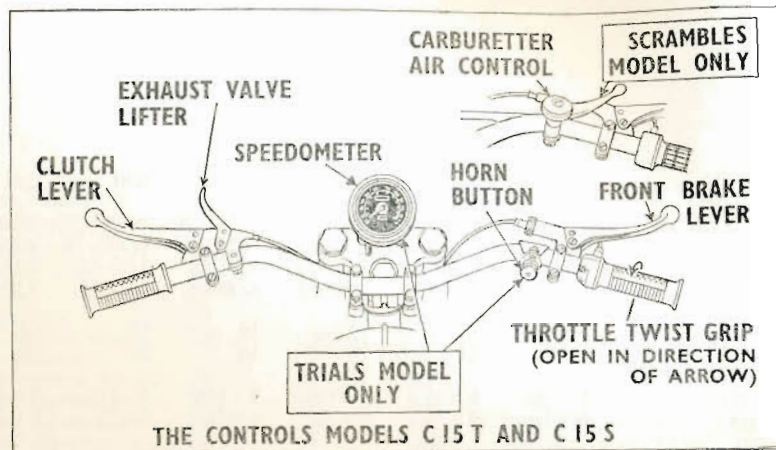


Fig. 1. The controls.

NOTE:—The carburettor air control is not fitted to model C15 or to the Trials model. The exhaust valve lifter is not fitted to models C15 and C15 S.S.80.

TAKING OVER THE MACHINE

Before running the machine make sure that the oil tank, gearbox, primary chaincase and front forks are properly topped up with oil and that the battery is filled and charged (see appropriate chapters for filling instructions). Normally these preparations will be carried out by the dealer who is selling the machine and the new owner has only to arrange the controls to his liking and the machine is ready for the road.

The Controls.

The new rider should make sure that he is quite familiar with all the controls before attempting to ride the machine. The foot controls are adjustable, and should be positioned so that they can be reached without moving the feet from the footrests. Handlebars and footrests should be adjusted so that a comfortable and natural riding position is achieved. Both footrest retaining nuts have a left-hand thread, except on the Trials and Scambles machines where these nuts have a right hand thread. Make sure that the bolts retaining the handlebar clamps are tight after completing any adjustment and after adjusting the footrests, reset the brake pedal stop pin, so that the pedal is situated comfortably below the foot.

Handlebar Controls.

Twist Grip.—Mounted on the right handlebar it controls the throttle opening. To open the throttle (i.e. to increase engine speed) turn the grip so that the top moves towards the rider. Full movement is about a quarter of a turn.

Front Brake.—Hand lever mounted on the right handlebar in front of the twist grip. Squeeze the lever towards the bar to operate the brake. Finger adjustment for the cable is provided at the cable adaptor on the lever.

Clutch.—Hand lever mounted on the left handlebar in front of the grip. Squeeze the lever towards the bar to free the clutch, i.e. disengage the drive between the engine and the rear wheel. Finger adjustment for the clutch cable is provided at the cable adaptor on the lever.

Exhaust Valve Lifter (except models C15 and C15 S.S.80).—Small lever mounted on left handlebar. Squeeze to lift exhaust valve and therefore relieve engine compression.

Air Lever (except models C15 and C15T).—Mounted on right handlebar, this provides a rich mixture for cold starting when the lever is pushed forward.

Horn.—The horn button is mounted on the left handlebar and is incorporated in the dipper switch. On the Trials model only, the button is separately mounted on the right handlebar.

Headlamp Dipper Switch (except Trials and Scrambles models).—Controls the switching from main to dipped headlamp bulb filaments, and is mounted on the left handlebar.

Foot Controls.

Rear Brake Pedal.—On the left-hand side of the machine and controls the rear brake only.

Gear-change Pedal.—On the right-hand side of the machine and affects the change from one gear to another. The lever is of the positive stop type and returns to the central position after each change. Upward movement of the lever selects the next higher gear, downward a lower gear. Neutral is between first and second gear.

Starter Pedal.—The starter pedal is on the right-hand side of the machine behind the footrest. Depression of the pedal rotates the engine.

Other Controls.

Petrol Tap.—Under the right-hand rear end of the petrol tank. To turn on the petrol pull out the serrated button and turn anti-clockwise to lock. To turn off the petrol, reverse this procedure.

Lighting Switch (except Trials and Scrambles models).—Situated on the top of the headlamp and has three positions:—

1. all lights off but battery being charged when engine is running;
2. pilot bulb, rear lamp and speedometer bulbs illuminated;
3. headlamp bulb, rear lamp and speedometer bulbs illuminated and the switching from main to dipped beam controlled by the dip switch.

Ignition Switch (except Trials and Scrambles models).—Mounted on the fairing immediately behind the engine, the switch carries a detachable key at its centre. The ignition is switched off when the key is in a horizontal position, and to switch on, turn the key in a clockwise direction. The emergency starting position is obtained by

depressing the key, and turning anti-clockwise from the central position. (**Important**:—see ELECTRICAL EQUIPMENT, page 50).

Speedometer.—This is mounted in the headlamp nacelle, except on Trials model when it is mounted on the top fork yoke.

Carburettor Tickler.—This is a small plunger in the top of the carburettor float chamber. Pressing it down pushes down the float and frees the needle valve thus permitting the carburettor to receive excess petrol.

DRIVING

To Start the Engine.

Stand astride the machine. Make sure that the gear is in neutral, i.e. between first and second gear. If the machine is in gear it will move forward as the starter pedal is pushed down. Turn on the ignition by means of the ignition switch, and close the air lever.

If the engine is cold depress the carburettor tickler for a moment. Do not jab it up and down as this may damage the top of the float. Open the throttle very slightly as excessive throttle opening will prevent easy starting. Push the starter pedal down slowly until resistance is felt, then, without releasing the pressure on the pedal, give a firm downward swing which should set the engine in motion. If the engine fails to start at the first attempt repeat this procedure, being careful to avoid rapid kicking at the pedal which will serve no purpose and may damage the operating mechanism. When the engine starts, open the air lever about half-way, increasing the opening as the engine warms up.

When starting with the engine warm there is no need to flood the carburettor.

To Stop Engine.

Close the throttle and turn the ignition switch to the "OFF" position. An exhaust valve lifter is provided on Trials and Scrambles models which can be used for stopping the engine.

To Engage First Gear.

With the engine idling slowly, disengage the clutch by pulling in the handlebar lever and, after a moment, depress the gear lever as far

as it will go so that first gear is selected. If the lever will not move through its full travel and the gear does not engage, move the machine backwards and forwards slightly maintaining a light pressure on the lever until the gear is felt to engage.

Open the throttle slightly and gently release the clutch lever until the clutch can be felt to take up the drive. Open the throttle a little more and very slowly release the clutch as the machine moves away. Do not rev the engine excessively or allow the clutch to slip for longer than is necessary to get the machine away in first gear.

To Change Gear (Up).

Close the throttle, disengage the clutch and raise the gear-change pedal as far as it will go. All these operations should be performed simultaneously. Immediately after changing gear, re-open the throttle and re-engage the clutch.

To Change Gear (Down).

Open the throttle slightly, disengage the clutch and press the gear-change lever downwards to its limit, all these operations being performed simultaneously. Leave the throttle in its new position and re-engage the clutch as soon as the gear-change has been completed.

To Select Neutral.

Neutral is situated between first and second gear. To select neutral from first gear, with the clutch withdrawn raise the gear-change pedal gently until it is felt to click into position. If the lever is raised too far it will travel through to second gear. To select neutral from second gear, press the lever down until it is felt to click into position.

Riding Hints.

Avoid violent acceleration and braking, particularly on wet roads. Always use both brakes together and apply them smoothly and progressively. Try to anticipate the need to change gear or brake, so that your riding is not jerky or untidy. Maintain a natural riding position as this provides maximum control and prevents discomfort on long journeys.

Violent pressure on the gear lever is not desirable and a smooth firm movement of the pedal is most effective. After a little practice, smooth and quiet gear-changes will be possible at all times.

USING THE GEARBOX

Correct use of the gearbox must be made in order to obtain best results in all-round performance, especially with regard to the acceleration and hill-climbing capabilities of touring machines (particularly those fitted with a sidecar), and to the attainment of maximum speeds by sports models.

It is not always appreciated that the power delivered by a petrol engine depends upon engine speed. Hence, on a touring machine travelling uphill, the engine speed will fall as a result of the increased load, and with it the power output. In order to maintain sufficient power, a lower gear must be selected in order to increase the engine speed and so obtain more power.

Similarly, for good acceleration from moderate speeds in top gear more power is required and, here again, the solution is to change down to a lower gear. **It is better to allow the engine to rev in a lower gear than to labour in a higher one.**

On a sports model, the engine speed must be kept high in order to develop maximum power, and this means that for maximum acceleration and maximum speed the engine must be driven up to peak r.p.m. in the gears. **In particular, to attain maximum speed, it is essential to obtain peak r.p.m. in third gear before changing into top gear.**

Remember, your gearbox translates engine power into power at the rear wheel—use it.

RUNNING-IN

The rider who has just purchased a new machine will do well to remember that all the internal parts are just as new as the enamel and plating which can be seen, and they must be well “run-in” before the engine can be given any really hard work.

The “running-in” process is the most important period in the life of the engine, and the handling it receives during the first 1,000 to 1,500 miles will determine the service it will provide in return.

It is advisable not to exceed one-third throttle in any gear during the early stages. If excessive speeds are used there is risk of piston seizure and other troubles, and in any event until the machine has been “run-in” it cannot be expected to give its best performance.

In particular, avoid rapid acceleration, and do not allow the engine to labour on hills in a high gear when a change to a lower gear would ease the load.

As the mileage builds up the permitted throttle opening may be increased until, when the "running-in" process has been completed, full throttle can be employed.

Do not let the oil level in the tank get too low, as economy in oil may prove very expensive at a later date. Running consistently with the oil level too low may cause the oil to become unduly hot. It must be remembered that the oil cools as well as lubricates, and a new engine tends to run a little hotter than one that is well "run-in". After the first 500 miles, drain and refill the oil tank with fresh oil and clean the filters (page 16). Repeat this process after 1,500 miles, and thereafter every 2,000 miles. The correct grades of oil are given in the lubrication chart (page 35). The oil in the gearbox should also be changed at 2,000 miles and further changes made every 6,000 miles.

During the "running-in" period it is advisable to check the various adjustments such as tappets clearances, contact breaker gap, clutch adjustment, etc., rather more frequently than usual, and to check the tightness of all nuts and bolts to make sure that the initial bedding down does not loosen any components.

It is a good idea to add a small quantity of upper cylinder lubricant to the petrol each time the tank is replenished. If this is difficult to obtain, add about an eggcupful of engine oil to every two gallons of petrol.

ROUTINE MAINTENANCE

To keep the machine in good condition and provide trouble-free running, maintenance must be regularly carried out. The following list of items requiring regular attention will serve as a guide to the periods between servicing and the method of carrying out the various adjustments will be found under the appropriate headings in the later chapters.

Weekly.

Check tyre pressures and remove any embedded stones or pieces of metal	...	...	...	...	...
Check brake adjustment	...	...	...	...	Page 46

Examine battery acid level and top-up if necessary (more frequent examination is advisable in a hot climate)	...	...	...	...	...	Page 51
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Every 1,000 Miles.

Clean air filter	...	...	...	...	...	Page 32
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Every 2,000 Miles.

Check tightness of all nut and bolts	...	...	...	...	—
Check valve clearances	...	...	...	...	Page 17
Clean and adjust sparking plug	...	...	...	...	Page 27
Check contact breaker points gap	...	...	...	...	Page 18
Check clutch operation	...	...	...	...	Page 37
Check primary chain adjustment	...	...	...	...	Page 33
Check rear chain adjustment	...	...	...	...	Page 44
Check wheel alignment	...	...	...	...	Page 45
Check steering head adjustment	...	...	...	...	Page 47
Check lights	...	...	...	...	Page 53

Every 5,000 Miles.

Clean and adjust contact breaker points	...	...	...	...	Page 18
Examine auto-advance unit	...	...	...	...	Page 20

Every 10,000 Miles.

Examine brake linings, clean brake drums	...	...	...	...	Page 45
Examine front fork for correct action	...	...	...	...	—
Check headlamp beam setting	...	...	...	...	Page 53
Examine rear suspension for correct action	...	...	...	...	Page 47

Cleaning.

Take care when cleaning the machine that dirt is not introduced into the carburettor, hubs, etc. Do not attempt to rub off dry dirt or mud as this will damage the enamel. Wash off any dry dirt with a copious supply of clean water, preferably from a hose. Any oily areas should be treated with a detergent before being hosed down. Dry the machine with a piece of clean rag, and if possible, clean it on a warm dry day so that all moisture is removed, before polishing with a good polish such as "Autobrite". Exposed threads and controls

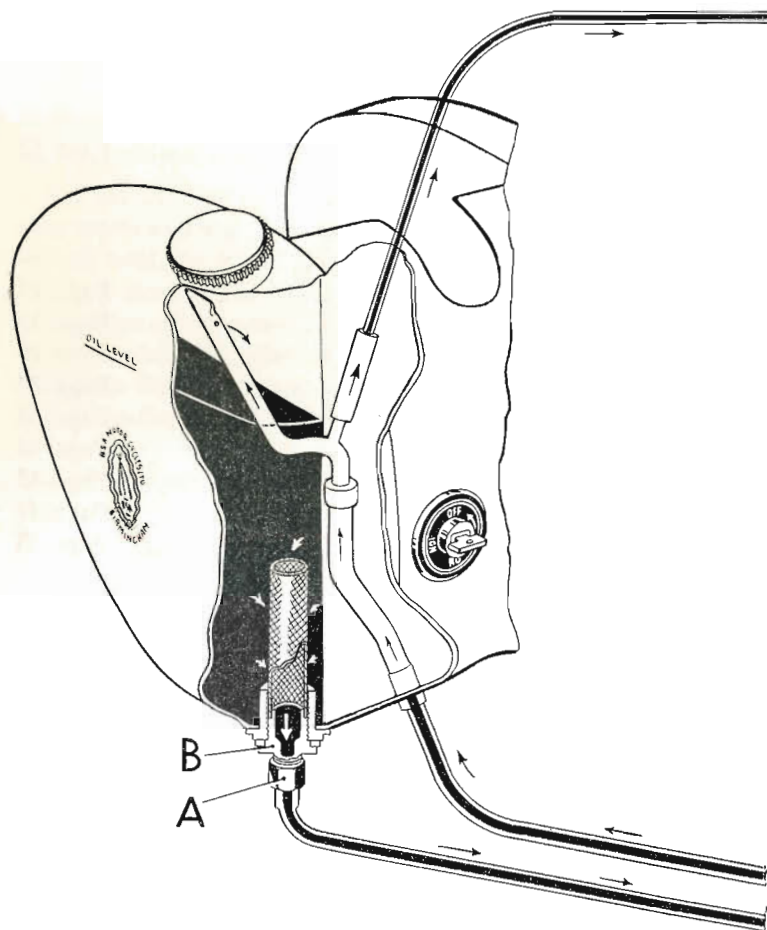


Fig. 2. The oil tank (except Trials and Scrambles models).

which might suffer from rusting should receive a smear of oil to protect them. Do not use caustic soda solution for cleaning aluminium components.

Maintenance of C15T and C15S.

Routine maintenance on the Competition models should be carried out more frequently depending largely upon the conditions in which the machine is used.

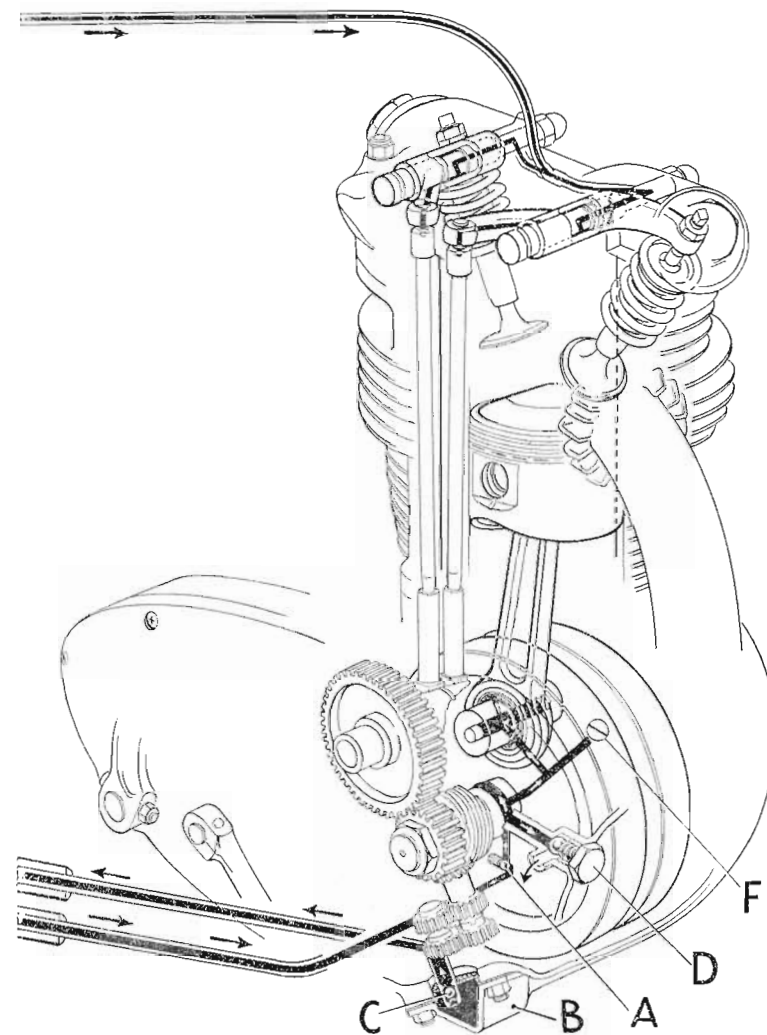


Fig. 3. Lubrication system.

Lubrication System.

The lubrication system is of the dry sump type and is operated by a double gear pump situated in the bottom of the crankcase on the right-hand side (see Fig. 3). The oil tank capacity is four pints (five pints on Trials and Scrambles machines) and oil is drawn from the oil tank to the supply pumpet (tops of gears). It is then pumped

past the non-return valve(A), and along the hollow mainshaft to the big-end.

After lubricating the engine the oil flows down through a filter to the bottom of the crankcase from which it is drawn by the return pump (lower set of gears) past the non-return oil valve (C), and delivered up the return pipe to the tank. At the junction of the return pipe to the tank a by-pass pipe leads a supply of oil to the rockers, push-rod ends, etc.

The valve (A) prevents oil transfer from the tank to the crankcase while the machine is standing, and together with the sludge trap (F), does not require attention until such time as the engine is completely dismantled.

A by-pass valve (D) ensures a constant pressure in the system. Surplus quantities of oil are discharged into the crankcase. In no circumstances should the cap of this valve be removed by the private owner.

If the ball valve (C) should be stuck in its seating there will be no return of oil to the tank. In this event remove the cover plate (B) below the pump, insert a piece of wire into the valve orifice and lift the ball off its seating to free it.

Changing the Oil.

This should preferably be done immediately after running, so that the oil is warm and will, therefore, flow more freely. Disconnect the oil pipe union nut (A) Fig. 2, at the base of the tank and collect the old oil in a suitable receptacle.

Filters.

Remove the oil tank and crankcase filters for cleaning at regular intervals (see ROUTINE LUBRICATION, page 35) and this can be carried out in conjunction with the change of oil. After releasing the oil pipe at (A), see Fig. 2, unscrew the hexagon plug (B), which carries the filter in the tank, and wash thoroughly in petrol. Make sure that all petrol has evaporated before replacing. Refill with the correct grade of oil.

The pump filter can be withdrawn after removing the crankcase cover plate (B), see Fig. 3, and should be thoroughly washed with petrol, dried and replaced. The oil pump is extremely reliable and it is most unlikely that it will give trouble and therefore it should not be disturbed unnecessarily. The pump is held in position by three bolts. The two other bolts hold the sections of the pump together.

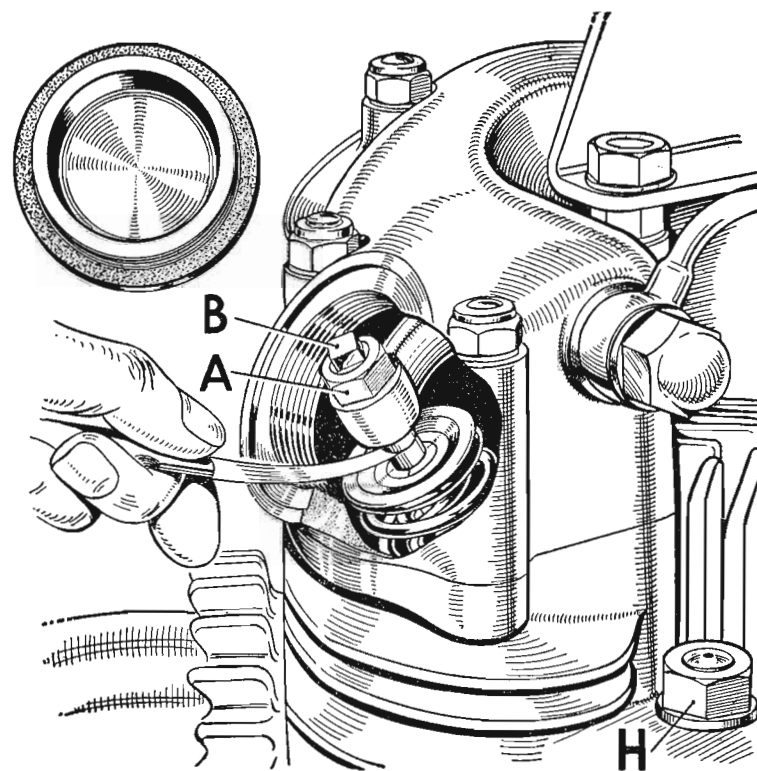


Fig. 4. Tappet adjustment.

Tappet Adjustment.

It is essential that the following procedure is adhered to when checking or adjusting tappet clearances and the engine must be quite cold whenever these clearances are checked.

Remove the tappet inspection covers and take out the sparking plug, so that the engine can be rotated easily by means of the starter pedal.

Rotate the engine forward until the inlet valve has just closed, i.e. the push rod is just free to rotate. This is the correct position for checking or adjusting the exhaust valve clearance. Slide a feeler gauge between the end of the valve and the adjusting pin as shown in Fig. 4. If the clearance requires adjusting slacken the locknut (A) and adjust the pin (B), until the correct feeler gauge will just slide between the valve and the pin.

Hold the pin (B) in its correct position and tighten the locknut (A). Check the clearance to ensure that tightening the locknut has not affected the setting.

When the exhaust valve clearance has been adjusted rotate the engine forward again until the exhaust valve clearance is just taken up but before the valve actually starts to open. This is the correct position for checking and adjusting the inlet valve clearance.

The valve clearance should be adjusted in a similar manner to that described for the exhaust valve.

The correct clearances for all models are .008 in. (inlet) and .010 in. (exhaust). When the adjustment is complete, replace the sparking plug and the inspection covers, taking care not to damage the washers.

Contact Breaker. (fig. 5)

After the first 500 miles and thereafter every 2,000 miles, the contact points gap should be examined and reset if necessary.

The contact breaker is housed in the right side of the crankcase and is exposed by removal of the circular cover. The gap between the points should be .015 in. when they are fully open. To check, rotate the engine slowly until the pivoted contact arm is on the peak of the cam and then check the gap with feeler gauges. If the gap is incorrect, slacken the screw securing the fixed contact plate and adjust this until the gap is correct. Retighten the screw and re-check the adjustment.

Do not allow oil or grease to find its way on to the contact breaker points, which should always be clean and dry.

It is advisable to check over the timing after carrying out any adjustment to the contact breaker points as a variation of the points gap tends to alter the timing. (Opening the points advances the timing, closing them retards the timing.)

Ignition Timing.

Before carrying out any check on the ignition timing, the contact breaker gap should first be verified and, if necessary re-adjusted as above.

Remove the sparking plug from the cylinder head and insert a slim rod through the hole so that the piston position can be determined. Rotate the engine until the piston is at the top of the com-

pression stroke. At this point both valves will be closed and if either of them is open, the piston is on the wrong stroke and the engine must be rotated through one more revolution.

The rod should be kept as vertical as possible and be of such a length that it will not fall inside the cylinder when the piston is at the bottom of its stroke.

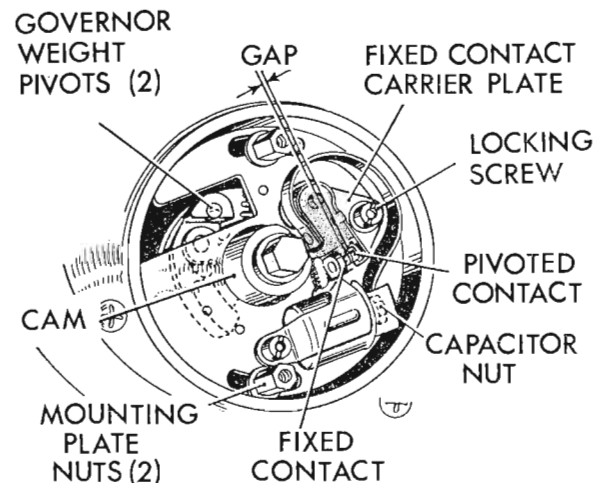


Fig. 5. The contact breaker.
(Part of the auto-advance mechanism is shown behind the mounting plate).

In order to ensure that the backlash in the timing gears is taken up, first rotate the engine backwards so that the piston descends about $\frac{1}{2}$ in. then rotate the engine in a forward direction until the piston is .280 in. before the top of its stroke with the auto-advance mechanism set in the fully advanced position. This can be obtained if the central bolt is removed from the contact breaker and fitted with a washer having a hole a little larger than the cam bearing. Replace the bolt, but before tightening against the special washer, rotate the cam to its limit, hold in position and tighten the bolt. The washer will press firmly against the face of the cam, so preventing it from returning to the retarded position. The contact breaker points should be just about to open. This is best determined by inserting a piece of cigarette paper between the points, which are about to open when the paper can be withdrawn by a gentle pull.

If the ignition setting is incorrect with the piston set as above, slacken the two extended nuts which secure the contact breaker back plate and rotate it slightly until the points are just about to open. Re-tighten the nuts and check the adjustment. Replace the standard washer behind the head of the central bolt and tighten securely. If a degree plate is used for timing purposes the corresponding crankshaft degree setting should be $33\frac{1}{2}^{\circ}$.

Models C15S and C15T.

The C15T and C15S are timed similarly, but they are equipped with the "energy transfer" ignition. This system is sensitive in operation and to obtain accurate timing, it is important that the contact breaker gap is set to .015 in. before commencing to time the engine, and that the piston position is accurately determined.

Advance and Retard Mechanism.

The timing is automatically advanced and retarded by means of a governor mechanism behind the contact breaker. When the engine is stationary the timing is fully retarded and this is the normal condition for checking the ignition timing. As the engine speed increases the ignition timing is steadily advanced until it is fully advanced at normal road speed.

Inspect the mechanism when checking the contact breaker adjustment, and make sure that the two governor weights, Fig. 5, move freely. Oil each bearing with a drop of light oil. Do not over lubricate or the excess oil may find its way on to the contact breaker points.

Valve Timing.

The timing gears are situated within the inner cover on the right side of the engine. Under normal conditions the valve timing cannot become disturbed and it is inadvisable to dismantle the gears unless it is absolutely essential.

Access to these gears involves removal of the outer cover, withdrawal of the auto-advance mechanism, dismantling the kickstarter gears, removal of the inner timing cover, etc., these operations being fully described in Service Chart No. MC5.

For the convenience of owners who find it necessary to dismantle the gears, the valve timing will be correctly set if the marks on the gears are positioned in accordance with the illustration (Fig. 6) when the piston should be at the top of its compression stroke.

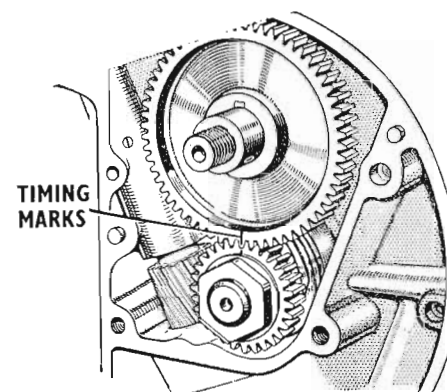


Fig. 6. Valve timing marks.

Decarbonisation.

Decarbonisation should only be carried out when there are definite symptoms that excessive carbon build up inside the engine is interfering with performance. The usual symptoms are an increased tendency to "pink" (a metallic knocking when under heavy load) and a general falling off in performance with a tendency for the engine to run hotter than usual.

It is customary to attend to the valves during decarbonisation as this provides a reasonable interval between valve overhaul and avoids the necessity for dismantling the engine specially for this purpose at a later date.

To facilitate removal of the petrol tank in order to carry out decarbonising, first take off the dual seat which is attached to the frame by the top bolts of the rear suspension units and located on a cross tube at the front. Turn off the petrol tap and detach the petrol pipe by unscrewing the hexagon on top of the float chamber union.

The petrol tank is mounted on rubber pads and is secured by a single bolt, which passes through a rubber sleeve in the centre of the tank, to its anchorage on the frame. Remove the rubber cap on the tank top, unscrew the nut, and withdraw the tank complete with rubber sleeve and other components, leaving the bolt attached to the frame. With the tank removed, the engine steady bracket can be

detached from the frame top tube. Note the order of assembly of the nuts and washers.

The exhaust pipe is a push-fit in the cylinder head, and can be withdrawn after releasing the nuts holding the exhaust system to the frame. Disconnect the rubber adaptor between the air cleaner and carburettor, so that the latter can be withdrawn from its studs and tied back out of the way. On B40 and B40 S.S.90 machines it will be necessary to remove the air cleaner cover to expose the cleaner which is retained in position by a spring clip. Move this aside and unscrew the adaptor sleeve from the carburettor, leaving the latter free for removal. The oil feed pipe to the rocker spindles should now be removed, and the sparking plug unscrewed.

Set the piston at top dead centre on the compression stroke (i.e. both valves closed) and take off the four nuts (H) Fig. 4, holding the cylinder head to the barrel. Leave the rocker box assembly in position on the cylinder head, and raise the latter until it clears its fixing studs. Rotate the whole assembly about the push rods so as to clear the frame top tube, and lift off. Take the push rods out of their housing and on the 250 c.c. models the housing itself can be removed. Note that there are sealing rings at the top and bottom joint faces of the housing on these models, and if there is any sign of oil leakage at the joints, the seals should be replaced. The rocker box can now be removed from the cylinder head, thus exposing the valves and springs. If it is necessary to dismantle the rockers and spindles take care not to damage the rubber sealing rings, when inserting the spindles into the rocker box.

Compress each valve spring with a valve spring compressor (B.S.A. Service Tool 61-3340) until the split collets can be removed. This will enable the springs to be released and the valves can then be withdrawn from the cylinder head. Examine the valve springs, and if they have shortened appreciably, then they should be replaced. These springs are not expensive items, and it is false economy to continue to use them when their useful life is exhausted. The correct free length of these springs when new is: inner spring $1\frac{5}{8}$ in.; outer spring $2\frac{1}{2}$ in. For models C15S, C15 S.S.80 and B40 S.S.90 the corresponding lengths are $1\frac{1}{2}$ in. (inner) and 1.67 in. (outer).

Scrape off all the carbon on the top of the piston, taking great care that the soft aluminium surface of the piston is not scored.

The best tool for this job is an old screwdriver, the edges of which have been rounded by wear and provided that a little patience is employed, all traces of carbon can be removed to leave the surface smooth and unmarked.

Also scrape the carbon from the ports and combustion chamber taking care not to damage the valve seat faces with the decarbonising tool. It is not advisable to decarbonise the cylinder head by immersing it in caustic soda solution, because of the harmful effect this solution has on aluminium.

Examine the cylinder head gasket carefully. Both sides should be clean and bright and if any dark patches are found on either surface, a new gasket should be fitted.

If the valves and their seats are only discoloured or lightly pitted, then it will be sufficient merely to grind them in with a little grinding paste, but if there is considerable evidence of pitting, then the faces must be recut with proper equipment. If the valve is pitted it should be returned to a dealer for a regrinding as attempts to grind the valve in with grinding paste will only cause premature wear of the valve seat. Probably the valve seat in the cylinder head will still be in good condition, but if it is pitted the head should be taken to your dealer for refacing with a proper valve seat cutting tool. The valve seat angle is 45 degrees.

With the valves and seats in good condition or if they have been refaced then they will require lightly grinding-in to ensure that a good gas-seal is created. Smear a small quantity of fine grinding paste on to the face of the valve head and return the valve to its seat. A light spring inserted under the valve head greatly facilitates the grinding operation as it assists in raising the valve so that it can be rotated to a new position. Rotate the valve backwards and forwards by means of a special rubber suction tool obtained from your dealer, at the same time maintaining a slight pressure. Raise the valve and turn it to a new position after every few movements. Grinding should be continued until the mating surface of the valve and seat show uniform metallic surfaces all round.

If the valve guides are worn, the old ones can be driven out by means of a simple punch applied from inside the cylinder head. New guides should be driven in from the top as far as their circlips will allow. Note that the circlip fits into a recess in the head, and that the exhaust guide is counterbored at one end which should protude

into the port. The B40 and B40S.S.90 guides are not fitted with circlips. Whenever new guides have been fitted the valve seats must be refaced with a proper valve seat cutter to ensure that the seat is concentric with the guide bore.

Before reassembling the valves and springs all traces of grinding paste must be removed from both the valve and seat and the valve stem smeared with clean engine oil. Replace the valve, then compress the valve springs with the service tool until the collets can be inserted. A little grease on the valve stem will assist in keeping the collets in position as the valve spring is released. Make sure that the split collet retaining the valve spring collar is correctly seated in the recess on the valve stem.

When replacing the valve springs on models C15S, C15 S.S.80 and B40 S.S.90, the close coils should be at the bottom.

Removing the Cylinder Barrel.

It should not be necessary to remove the cylinder barrel unless it is felt that the piston rings require attention. This may be shown by such symptoms as excessive blue smoke in the exhaust and by lack of compression, although if the valves are not in good condition this is more likely to be the cause of the latter symptom.

Rotate the engine until the piston is at the bottom of its travel, then lift the barrel upwards until the piston emerges from the bottom of the bore. Steady the piston as it comes free from the cylinder so that it is not damaged by violent contact with the crankcase mouth. As soon as the cylinder has been withdrawn cover the crankcase with a clean piece of rag to prevent the entry of foreign matter.

Examine the cylinder carefully for wear and if a deep ridge has formed at the top of the bore then a rebore may be necessary and you should consult your dealer for confirmation. Pistons $\frac{1}{2}$ mm. and 1 mm. oversize are available for rebore purposes but owners in Great Britain can take advantage of the Exchange Replacement system to obtain a rebored barrel with matched piston through their local B.S.A. spares stockist. The barrel will also require a rebore if there are any deep scores as this will cause loss of compression and excessive oil consumption.

The outside face of the piston rings should possess a smooth metallic surface and any signs of discolouration mean that the ring must be replaced. The rings must also possess a certain amount of

springiness so that the ends lie at least $\frac{3}{16}$ in. apart when released from the barrel.

The rings should be free in their grooves but with a minimum side clearance. If the rings are stuck in the grooves remove them and clean out all the carbon from the groove and the inside face of the ring. Care is necessary when removing the rings as they are brittle

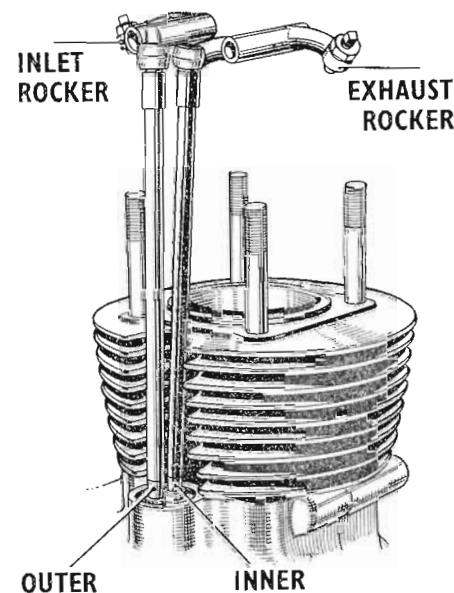


Fig. 7. Fitting the push rods.

and only permit a minimum amount of movement. A suitable tool for removing the carbon from the ring grooves is a piece of old piston ring ground as a chisel.

To check the piston ring gaps place each ring in the least worn part of the cylinder bore and make sure that it is square in the bore by locating it with the top of the piston. Measure the gap between the ends of the ring with a feeler gauge. The correct gap when new is .009—.013 in. and although an increase of a few thousandths of an inch is not important, any large increase to say, .025 in. means that the ring should be replaced. The middle ring (i.e. the lower plain ring) is of the tapered variety. One of its side faces is marked "TOP" and the ring should be fitted with this face uppermost.

It is not necessary to remove the piston unless it requires replacement or further dismantling of the engine is to be carried out. If removal is necessary first prise out one of the gudgeon pin circlips by inserting a suitable pointed instrument in one of the two notches provided. Before the gudgeon pin can be withdrawn the piston must be warmed by wrapping it in rag that has been soaked in boiling water and wrung out. Alternatively, an electric iron can be applied to the crown of the piston until it is thoroughly warmed. When the piston is warm withdraw the gudgeon pin with a suitable extractor. If an extractor is not available the gudgeon pin can be driven out with a good fitting drift but the piston must be carefully supported to avoid any side strain on the connecting rod. As soon as the piston is removed mark the inside of the skirt so that it can be replaced the correct way round.

While the cylinder barrel is off the crankcase it is a good opportunity to try the connecting rod for signs of wear. The rod should revolve freely without any signs of up and down movement at the big-end. Rotate the flywheel until the crankpin is uppermost with the connecting rod vertical. Grasp the rod firmly and try to move it up and down. If any play can be detected the big-end and connecting rod assembly will require replacement. Do not confuse sideways movement at the little-end with up and down play. The big-end should have approximately .020 in. side-float and this permits some sideways movement at the other end of the connecting rod.

Scrupulous cleanliness must be observed when reassembling, and the components should be smeared with fresh oil before replacing. Warm the piston before inserting the gudgeon pin and make sure that the new circlip is correctly located in its groove. Slide each piston ring carefully over the piston, until it reaches its groove. The barrel should be slid over the piston, at the same time compressing the rings so that they pass smoothly into the lower end of the bore. Take care that the rings are not trapped or damaged and if the job is being done single-handed a band for compressing the piston rings will facilitate the operation.

Replace the push rod housing in position alongside the cylinder barrel on the 250 c.c. models, and fit the two push rods on their respective tappets, the outer one operating the inlet push rod, Fig. 7.

Refit the cylinder head with the rocker box already assembled to

it, but with the push rod inspection cover removed. This is necessary so that the upper ends of the rods can be fitted to their appropriate rocker arms, and in order to avoid any undue strain on the head or rocker box from valve spring pressure, the piston should be set at top dead centre on the compression stroke.

Now tighten the four cylinder head fixing nuts firmly and evenly. Check that the push rods are in their proper positions and replace the inspection cover and sealing washer.

Fit the carburettor and its air cleaner connection, followed by the exhaust system and engine steady bracket. Next, replace the petrol tank, reconnect the petrol pipe line, and refit the dual seat.

Finally, adjust the tappet clearances as described on page 17 and replace the sparking plug.

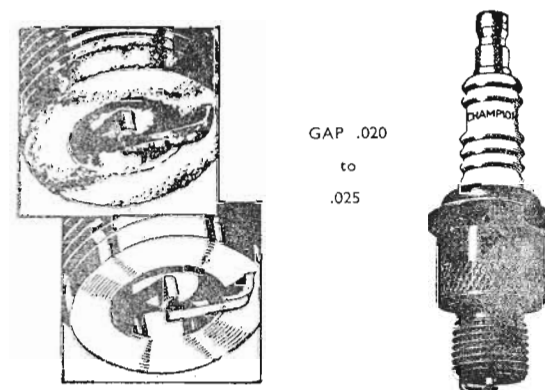


Fig. 8. The sparking plug.

Sparking Plug.

Plug recommendations are given under "TECHNICAL DATA", page 4.

For normal purposes type N4 sparking plug is recommended for models S.S.80 and S.S.90, but for running-in purposes only, it may be found preferable to fit type N5.

Remove the plug every 2,000 miles (3,000 km.) or so for inspection. Providing that the carburation is correct, the sparking plug points should remain clean almost indefinitely and should appear as shown in the lower view, Fig. 8. The bottom of the plug body should remain

a smooth black appearance and the central insulation should remain natural colour. If the mixture is too rich, a sooty deposit will form on the body of the plug as in the upper view of Fig. 8, but a weak mixture will cause the end of the plug to become white. A heavily leaded fuel may cause a greyish deposit to form on the plug and excess oil will show its presence by a shiny black deposit and gum.

A light deposit due to any of these causes can easily be removed by cleaning the plug on a proper air-blast unit such as is to be found at most garages, but if it is found necessary to clean the plug frequently the cause should be investigated. If the deposit is allowed to accumulate, particularly inside the plug body, the plug may spark internally with an adverse affect on performance and it may even stop the engine altogether. If eventually the cleaning process fails to restore the plug to its original efficiency, then a new one should be fitted.

It is most important that the plug gap is kept correct. Whenever the plug is removed for inspection, the gap should be tested and if necessary, reset. The correct gap is .020—.025 in. (.50—.60 mm.), and it should be measured by means of feeler gauges inserted between the earth electrode and the central electrode. If the gap is not correct it should be adjusted by bending the earth electrode, but in **no circumstances must any attempt be made to bend the central electrode** as this will damage the insulation and make the plug ineffective.

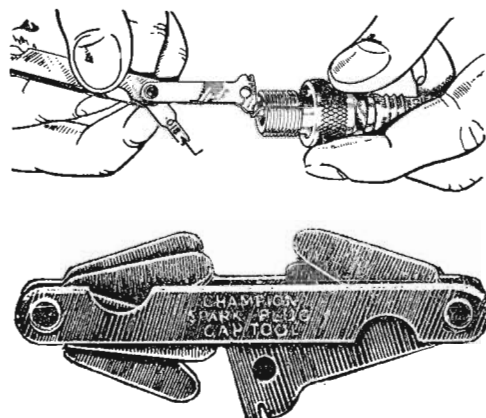
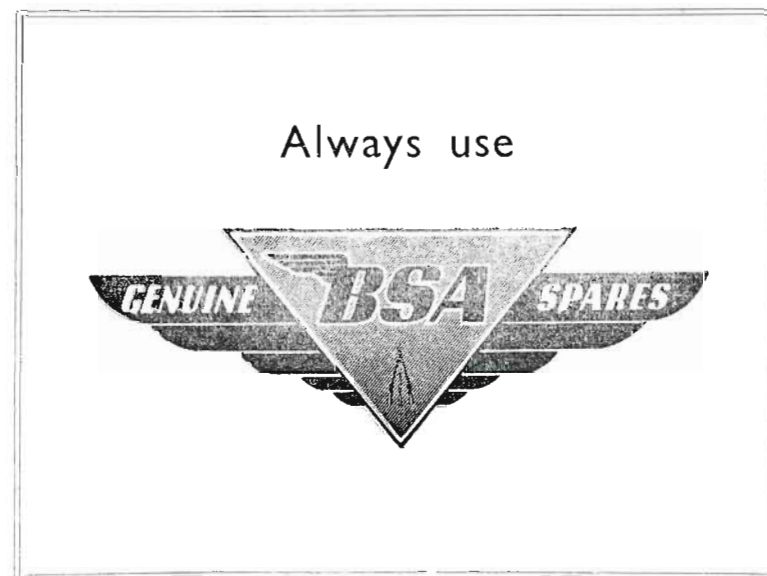


Fig. 9. *Setting the plug points.*

The gap is most easily adjusted with the aid of the special tool illustrated in Fig. 9. which also has feeler gauges attached to assist in measuring the plug gap. This tool is obtainable from any Champion plug stockist or from the Champion Spark Plug Co. Ltd., Feltham, Middlesex.

Before replacing the plug make sure that the threads are clean and that the washer is in good condition. If it has become worn or badly flattened a new one must be fitted to ensure a gas-tight seal. Screw the plug in as far as possible by hand, then use a tubular box spanner for final tightening, to avoid the possibility of damage to the insulator. An adjustable spanner should not be used.

The insulation on the top of the plug should be wiped quite clean before replacing the cap, and then finally, the cap itself should be wiped to remove dirt and grease.



CARBURATION

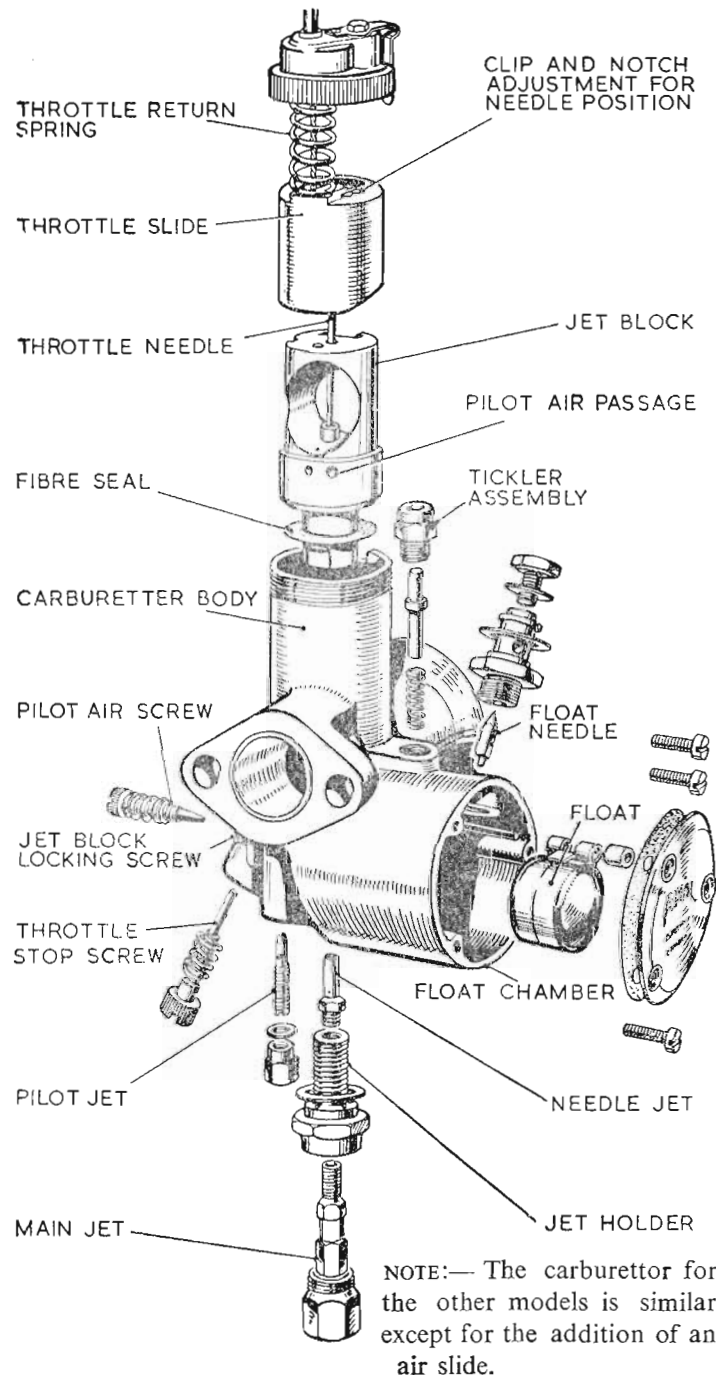


Fig. 10. The carburettor, (models C15 and C15T).

The carburettor is of simple and robust construction and the only attention that may be required is adjustment of the pilot jet and throttle stop.

An exploded view of the carburettor is shown in Fig. 10. Opening the twist-grip throttle control raises the throttle slide thus controlling the supply of air to the engine. The tapered needle controlling the supply of fuel is attached to the throttle slide so that a balanced mixture is always provided. The needle has five notches at its upper end and it is secured in the throttle slide by a spring-clip which locates in one of these as measured from the top (see page 5). The throttle valve size and the needle position are carefully set before despatch from the factory and no alteration to these settings is necessary or desirable.

Mixture control at tick-over and low speeds is controlled by the pilot jet which has an adjustable air supply. An adjustable throttle stop is also provided to regulate the slow-running speed.

To achieve good petrol economy accurate adjustment of the pilot jet and throttle stop is important. These are adjusted before the machine leaves the works, but the best setting may vary slightly to suit riders requirements or particular localities. The adjustment should be made with the engine warm.

Screwing in the pilot air screw restricts the air supply thus giving a richer mixture, and unscrewing it weakens the mixture. The best way to adjust is to screw in the pilot air screw until the mixture is obviously too rich and the engine starts to run irregularly then unscrew the adjuster until the engine runs evenly. If it is unscrewed too far the engine may cut-out or may spit back through the carburettor when the throttle is opened. When the proper adjustment has been determined, the engine may be running too fast and in this case the throttle stop should be unscrewed until a steady and even tick-over is achieved. If considerable alteration to the throttle stop has been made, the pilot air screw should be re-adjusted. Do not attempt to obtain an excessively slow tick-over as it will probably become unreliable under different atmospheric conditions. In the case of blockage, the jets are easily exposed for cleaning by simply removing the covering caps. The main jet can then be unscrewed with a suitable

spanner and the pilot jet with a screwdriver. No advantage will be gained by altering the jet sizes from those recommended.

Air Cleaner.

The air cleaner is contained within the housing below the seat. At 1,000 mile intervals remove the two screws retaining the cover, which should then be taken off (Fig. 11). Prise out wire circlip (Q) thus releasing the perforated cover and filter element. Wash the element in petrol, and dry thoroughly before replacing.

Trials and Scrambles models:—Remove the two screws retaining the cover to expose the air filter. Dismantle and wash the element thoroughly in petrol. When dry dip in a light oil and allow the surplus to drain off before replacing. As this filter is used under exceptional conditions it should be cleaned at a maximum interval of one week, and preferably before every event.

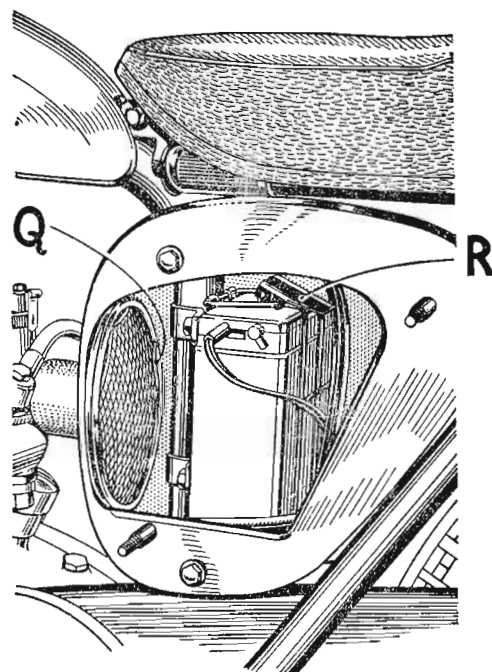


Fig. 11. Air cleaner and battery box.

TRANSMISSION

The unit construction of the engine and gearbox allows the use of fixed centres between clutch and engine sprockets, so that a pre-stretched endless chain of the duplex type is fitted. A spring link connection is not provided.

Excessive slackness in the primary chain is undesirable and an adjustable slipper type tensioner is provided on the lower run of the chain. The chain is in correct adjustment when there is approximately $\frac{1}{8}$ in. of free play at the midway position between the sprockets. It is most important that the chain should never be taut.

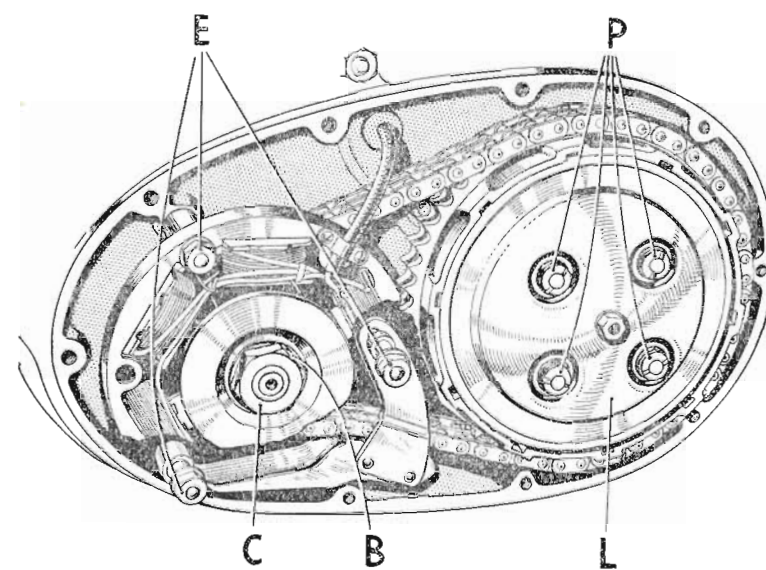
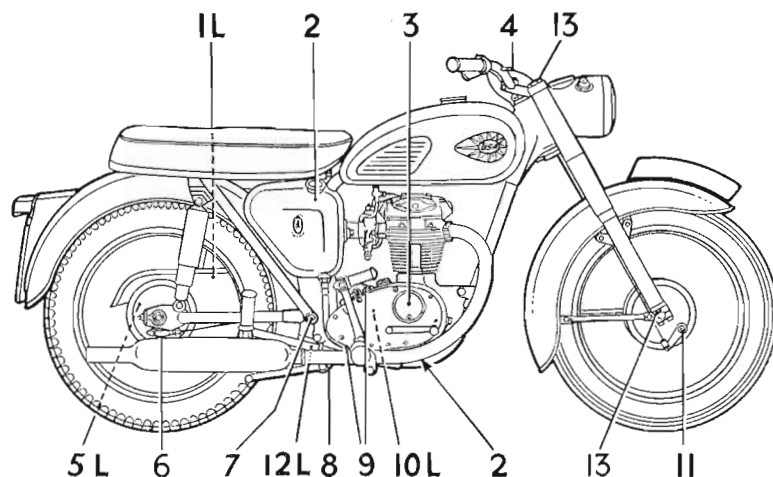


Fig. 12. Primary chain tensioner.

For adjustment of the chain, the cover must first be removed (see page 38). When the two lower generator retaining nuts (Fig. 12) are slackened, the position of the slipper can be altered to give the correct tension.

The only other maintenance required is to ensure a satisfactory oil level in the chaincase (see page 38).



KEY LUBRICATION POINTS

(L indicates left-hand side, remainder right hand or both sides)

RECOMMENDED LUBRICANTS				
OILS Engine and Gearbox			OIL Front Forks and Primary Chain	GREASE
Brand	Summer	Winter		
MOBIL	BB	A	Arctic	Mobilgrease MP
SHELL	X100-40	X100-30	X100-20W	Retinax A
CASTROL	XXL	XL	Castrolite	Castrolase LM
ESSO	Esso Motor Oil 40/50	Esso Motor Oil 20W/30	Esso Motor 20W/30 Oil	Esso Multi- purpose Grease H
B.P. ENERGOL	S.A.E. 40	S.A.E. 30	S.A.E. 20W	Energol L2
REGENT	Havoline S.A.E. 40	Havoline S.A.E. 30	Havoline S.A.E. 20W	Marfak Multi- purpose 2

For Overseas.—Recommendations as above if obtainable. If not, the following rule should be observed: The higher the temperature the higher is the S.A.E. number required.

Engine and Gearbox: Summer S.A.E. 40-50
Winter S.A.E. 20-40
Front Forks and Clutch: S.A.E. 20

ROUTINE LUBRICATION

REF. No.

Weekly.

- 2 Check oil level in tank
- Oil brake pedal pivot.
- 4 Oil exposed cables and control rod joints ... —

Every 500 Miles.

- 7 Grease swing fork pivot Page 47
- 10 (L) Check oil level in primary chaincase ... Page 38

Every 2,000 Miles.

- 2 Drain and refill the oil tank Page 16
- 9 Check oil level in gearbox Page 39
- 2 Clean oil tank and crankcase filters ... Page 16
- 8 Lubricate central stand (oil) —
- 11 Oil front brake cam spindle (Trials and
Scrambles only) Page 42
- 11, 5 (L) Grease brake cam spindles Page 42
- 1 (L) Oil rear chain Page 36

Every 5,000 Miles.

- Grease front hub (Trials and Scrambles only) Page 43
- 6 Grease speedometer drive Page 40
- 3 Lubricate contact breaker cam Page 52
- 3 Lubricate auto-advance mechanism ... Page 52
- 9 Drain and refill gearbox Page 39
- 10 (L) Drain and refill primary chaincase ... Page 38

Every 10,000 Miles.

- 13 Drain and refill front forks Page 47

Care of the Rear Chain.

Lubrication is provided by a chain oiler from the rear of the primary chaincase, which provides a metered supply of lubricant, and should keep the chain in good condition. **This supply is dependent on correct maintenance of the oil level in the primary chaincase (see page 38).** If maximum life is to be achieved, however, periodically remove the chain and wash it thoroughly in petrol to remove all dirt and grease. Allow the chain to dry completely then immerse it in a tray containing warm graphited grease. When replacing the chain make sure that the spring clip of the connecting link has its closed end pointing in the direction of travels of the chain (i.e. forwards on the top run).

Rear chain adjustment involves moving the rear wheel and is described on page 44.

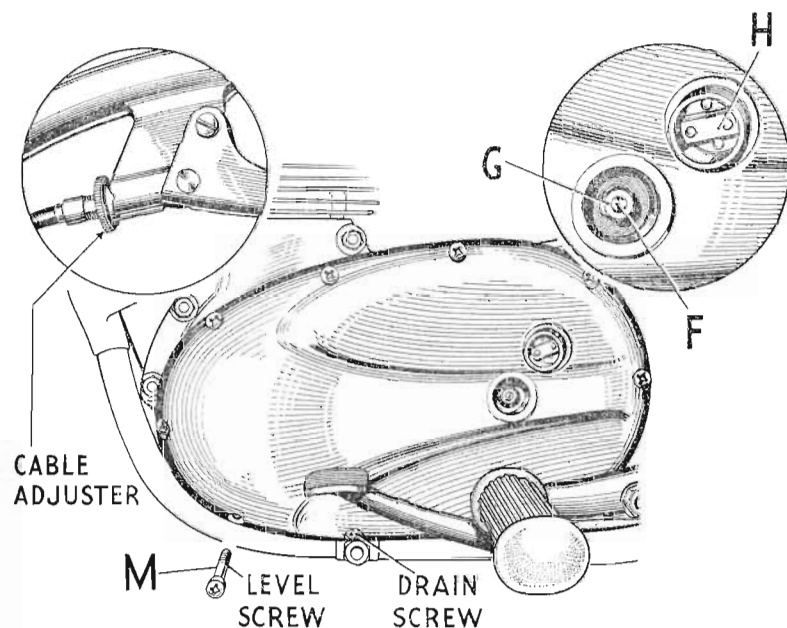


Fig. 13. Clutch adjustment and chaincase oil level.

Clutch Control Adjustment (Fig. 14).

The main adjustment consists of a screw pin (F) and locknut (G) mounted on the clutch pressure plate. These are accessible after removal of the inspection cover (H) Fig. 13.

The control is in correct adjustment when, with the handlebar lever released, the control arm above the timing cover on the right side of the engine is inclined outwards by a small amount. **In this position there must be a small amount of free play at the lever.** When the handlebar lever is gripped, the control lever should take up a position approximately parallel with the timing cover joint face.

If adjustment is necessary, slacken locknut (G) and turn the pin (F) until the above condition is obtained, re-tightening the locknut afterwards. Provision is made for cable adjustment at the handlebar (Fig. 13) and is intended for fine adjustment of the cable only.

The clutch cable can readily be detached or replaced if the handlebar adjustment is first slackened off to its fullest extent and the control arm rotated inwards, when the cable ends can be removed from their sockets.

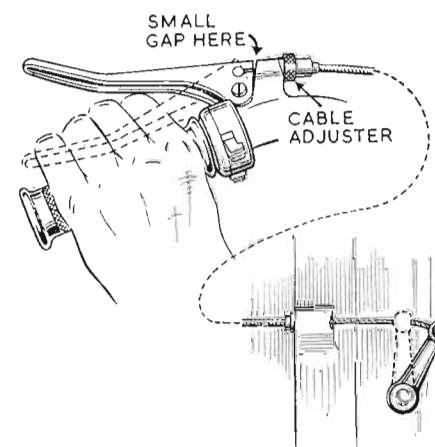


Fig. 14. Setting the clutch operating lever.

Primary Chaincase.

The outer cover is retained by screws of three different lengths, and one of these (M) Fig. 13, which is painted red determines the oil level. To replenish with oil, first remove this screw and then the clutch inspection cover (H) Fig. 13, the latter acting as a filling orifice. Add oil of the correct grade (see RECOMMENDED LUBRICANTS, page 34) and allow to stand until any surplus oil has drained away. Replace the level screw and inspection cap. The machine should be on horizontal ground when this operation is carried out. Too little oil will not lubricate the primary chain properly, excessive quantities may cause clutch slip. Note that the screw on the right of (M) is also painted red and is used for drainage purposes.

Removal of Primary Chain Cover.

If for any reason, the generator, clutch or primary chain require attention, the outer half of the primary chaincase must be removed. First take off the footrest, which is fitted to a taper shaft and will require a sharp blow to free it after its fixing nut has been removed. This nut has a left-hand thread (right-hand on competition models) and unscrews by turning in a clockwise direction. Take out all the screws round the edge of the case, and place a receptacle below it to catch the oil which will be released following the slackening of the screws. If the brake pedal is depressed, the cover can then be withdrawn.

Clutch Dismantling.

Remove the four spring retaining nuts (P) Fig. 12, and withdraw the springs and their cups. The pressure plate (L) and the remaining clutch plates can then be withdrawn, and if these are the only items requiring attention, the clutch need not be dismantled further. The steel plates should be smooth, and if badly scored, they should be replaced. The segments on the driving plates are bonded in position, and will not normally require replacing for a considerable mileage,

Clutch Spring Pressure.

Whenever the clutch has been dismantled, the spring pressure must be reset carefully. The four retaining nuts (P) Fig. 12, should be screwed in until the underside of the head of each nut is approximately $\frac{1}{8}$ in. from the face of a spring cup. This figure is an arbitrary one and it is a simple matter to vary it according to circumstances.

If the springs are compressed excessively, the handlebar lever will be stiff to operate and tiring to the hand; alternatively, if the spring pressure is insufficient, the clutch will tend to slip.

Adjust for true running of the plates by declutching and then operating the starter pedal, when it will be seen whether the spring pressure plate rotates truly or not. If necessary, adjust the nuts individually until true running is obtained.

Gearbox.

Apart from topping-up at regular intervals, very little maintenance should normally be required. The gearbox drain plug (S) incorporates a level plug (K) and, to top-up, remove the filler plug (T) Fig. 15, take out the level plug and replenish with the correct grade of oil until it starts to flow out through the level plug hole.

To drain the oil, which should preferably be undertaken while the oil is warm after a run, unscrew the drain plug (S), carrying the level plug with it. The capacity of the gearbox is approximately $\frac{3}{4}$ pint and suitable oils are detailed on page 34.

Note. The filler plug T, of hexagon form, should not be confused with the circular plug adjacent to it. The latter must not be removed.

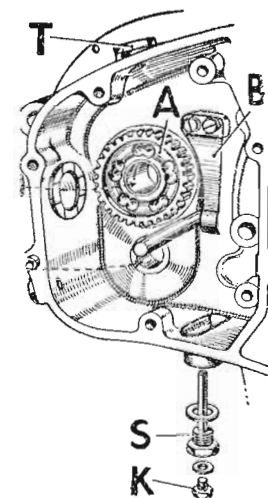


Fig. 15.
The gearbox drain
plug.

Starter Pedal Spring.

The starter pedal spring is exposed by removal of the outer timing cover. Before this is taken off, remove the contact breaker lead at its snap connector, then the circular plate and rotate the engine into such a position that the contact points are closed, which will ensure clearance between the cam and the heel of the moving contact, thus facilitating removal and replacement. Next remove the gear-change and starter pedals, followed by the cover itself. The recessed-head screws retaining the cover require a screwdriver of a special type and a standard screwdriver must not be used.

It is important to note that the starter spindle housing carries an oil seal and the timing cover and spindle must be reassembled with great care to avoid damage to the seal.

WHEELS

Both wheels are fitted with ball journal bearings which do not require adjustment. The bearings are packed with grease during assembly and this should last until the machine is in need of a complete overhaul. Special instructions for the front wheel on the Trials and Scrambles models are given on page 43.

Speedometer Gearbox.

The unit requires no attention apart from lubrication at intervals (see page 35). Grease with two applications from a **hand grease gun** only.

Brake Adjustment.

For obvious reasons the brakes should always be kept at maximum efficiency and for this to be maintained, the shoes should be just clear of the drum when the brake is off, and close enough for immediate contact when the brake is applied. The brakes must not be adjusted so closely however, that they are continually in contact with the drum, otherwise excessive heat may be generated, resulting in deterioration of braking efficiency.

The front brake adjuster is situated at the handlebar end of the cable (see page 7) and rotation of the self-locking sleeve shortens or lengthens the cable, so adjusting the shoes in the drum.

The rear brake is adjusted by turning the self-locking sleeve (A), Fig. 17, in a clockwise direction (viewed from the rear of the machine), to shorten the effective length of the brake rod, and open the shoes in the drum.

Note that for maximum efficiency the angle between the operating lever and cable or rod should not exceed 90 degrees when the brake is fully applied.

Front Wheel Removal and Replacement (Fig. 16).

Place a box or similar article underneath the crankcase so that the front wheel is clear of the ground. Disconnect the brake cable by removal of fulcrum pin and locknut (B) at the cable end, and with-

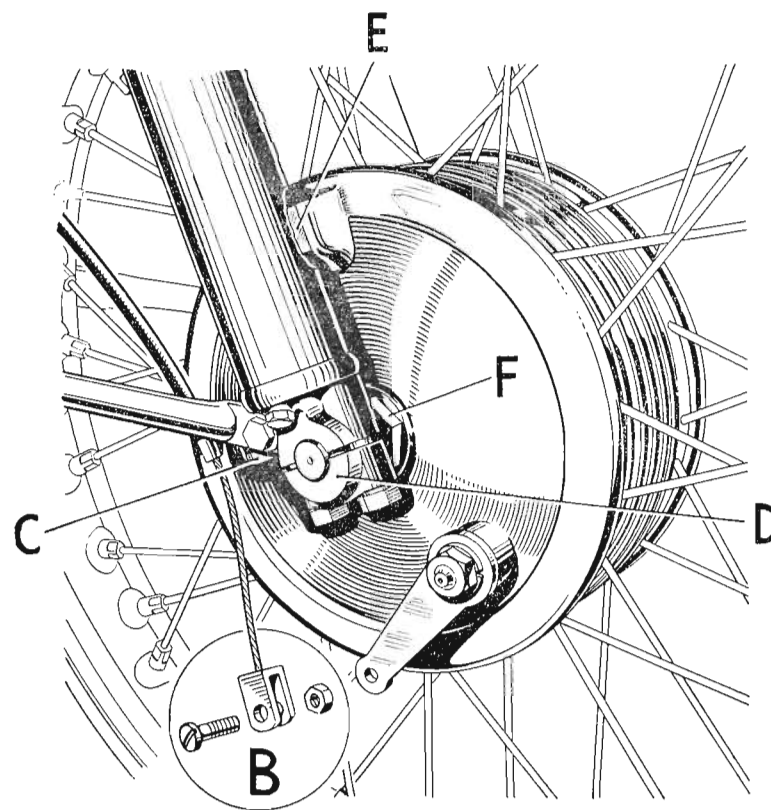


Fig. 16. Removing the front wheel.

draw the cable from its abutment (c) on the lower end of the fork leg, in which it is a push-fit. Now remove the end caps (d), and as the last bolts are removed, support the wheel so as to avoid damage either to bolts or their sockets.

When replacing the wheel it is most important that the tongue (e) on the inside of the right leg of the fork is located in its corresponding slot on the brake shoe plate. Also, before the end caps are finally tightened the wheel should be positioned so that there is no clearance between the spindle nut (f) and the end cap (d). Do not forget to replace the fulcrum pin and locknut on the cable fork end.

Front Wheel Removal & Replacement (Trials & Scrambles).

To remove the front wheel, first disconnect the brake cable at the quick release slot in the cable fork end and then slacken the pinch bolt at the bottom of the nearside fork leg. Insert a stout tommybar through the hole at the head of the wheel spindle and unscrew it from the hub. Note that it has a left-hand thread and unscrews by turning in a clockwise direction. Support the wheel as the spindle is withdrawn, and when it is clear, the wheel can be pulled away from the offside fork leg and removed from the machine.

After removal do not allow the wheel to fall on to the bush which projects from the brake drum side of the hub. Although the bush is pressed in, it may, if subjected to a sharp blow, be forced back into the hub. If this should happen, the bush can be retrieved and repositioned with the aid of the wheel spindle.

When replacing the wheel note especially that the brake plate stop must be located in its recess at the rear of the offside fork leg. It is most important that after the spindle has been tightened and before the pinch bolt is locked up, the forks are depressed once or twice to enable the nearside fork end to position itself on the spindle. If this precaution is not observed, the fork leg may be clipped out of position and will not function correctly.

Brake Cam Spindles.

One stroke of the grease gun is all that is required at intervals of 2,000 miles.

Front Brake Cam Spindle Lubrication (Trials and Scrambles).

Move aside the spring clip on the spindle boss and apply two or

three spots of engine oil every 2,000 miles. Excessive oiling may allow the lubricant to reach the brake linings.

Front Wheel Bearings (Trials and Scrambles).

A grease nipple is provided at the centre of the hub but constant lubrication is unnecessary. The bearings are packed with grease during assembly and all that is required is two or three applications of the grease gun at intervals of 5,000 miles.

Rear Wheel Removal and Replacement.

Place the machine on its stand and disconnect the rear chain at its spring link. When removing the chain from the rear brake drum, make sure that it remains on the gearbox sprocket. Remove the brake rod adjusting nut (A) Fig. 17, followed by the anchor arm (D), and disconnect the speedometer cable at its union on the worm-drive housing. Now unscrew the wheel spindle nuts (B), so that the wheel can be withdrawn rearwards from the swinging arm fork ends. It will be necessary to cant the machine to the left side, so that the wheel can be taken out from under the right side of the mudguard.

Take care not to disturb the setting of the chain adjusters while the wheel is out of the frame, and when replacing the wheel make certain that the adjusters are pressed firmly against the end of the forks. It is important that the hairpin spring on the connecting link in the chain is refitted so that its closed end points in the direction of travel of the chain.



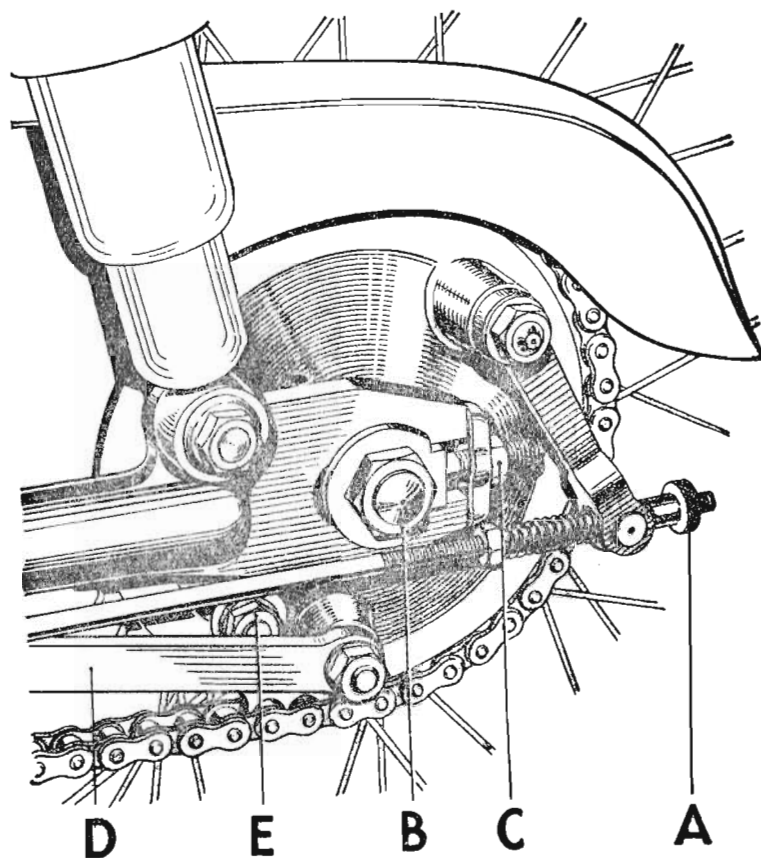


Fig. 17. *Rear chain adjustment.*

Rear Chain Adjustment (Fig. 17).

The rear chain must be adjusted when the machine is on its stand so that the wheel is at the lowest point in the suspension. Rotate the wheel slowly until the tightest point on the chain is found, then check its up and down movement in the centre of the chain run. The total movement should be $1\frac{1}{8}$ in. and if it varies from this setting then the chain must be adjusted by moving the rear wheel usually in a rearward direction. Chains stretch with increasing mileage, so that the chain slackness invariably increases. Slacken the

spindle nuts (B), the nuts retaining the anchor strap (D), and the brake rod adjusting nut (A). Tighten the nuts (C) equally each side until the chain tension is correct. When the amount of slack in the chain is correct retighten the wheel spindle and anchor strap nuts and check the adjustment of both chain and brake.

Wheel Alignment.

It is advisable to check the wheel alignment whenever the rear chain is adjusted, although if it is known that the previous adjustment was satisfactory and the adjuster nuts (C) are moved by an equal amounts then the alignment should remain correct. The wheel alignment can be checked by means of a long straight edge placed along the side, of the wheels. The straight edge should touch the front and rear of both tyres.

Brake Shoe Removal and Replacement.

IMPORTANT:— On models B40 and B40S.S.90 the front brake shoes are of the floating type (i.e. they are not pivoted on a fulcrum). As the only difference between the two shoes is in the position of the linings, careful note must be made of these positions for reassembly purposes. It cannot be emphasised too strongly that the greatest care must be exercised in ensuring that the leading and trailing shoes are assembled in their correct order.

After the brake plate has been removed from the wheel, the brake cam lever should be detached and the cam spindle pushed in slightly to allow the shoes to clear the brake plate. The lever on the front brake has a square hole of tapering dimensions and must be refitted the correct way round. The rear cam lever, and the front lever fitted to the trials and Scrambles models, has a serrated hole and can be replaced in a new position if required. Insert a screwdriver between the brake shoes at the fulcrum pin and twist the screwdriver so as to open the shoes at this point.

Place a small lever between one of the shoes and the cover plate and lever the shoe away from the plate until the spring pressure is released. Both shoes can then be lifted away from the cover plate.

The shoes can be replaced by the reverse procedure. Hook the springs on to the shoes and place the ends of the shoes in position on the fulcrum pin and cam lever. Then push the shoes outwards until the springs pull them into their correct position.

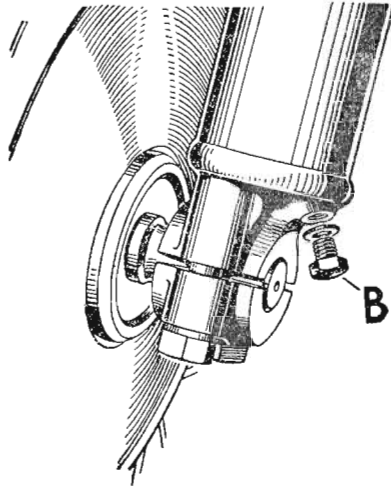


Fig. 18. Front fork drain plug.

NOTE:—The brake shoe springs are quite strong and care should be taken that the fingers are not trapped by the brake shoes during these operations.

Complete relined brake shoes are available through the Exchange Replacement Service which operates in the British Isles only.

When new shoes have been fitted, the brakes must be centralized. To do this, replace the brake cover plate, complete with shoes, fulcrum pin and cam, in the brake drum. Slacken the fulcrum pin nut (E) Fig. 17, and turn the cam so as to open the brake shoes in the normal manner. The fulcrum pin will then move in its housing until both shoes are pressing equally on to the drum. Tighten the fulcrum pin nut firmly and release the brake.

Similar instructions apply to the front brake.

Front Forks.

Under normal conditions the only servicing which the front fork requires is occasional renewal of the oil. The need for this may be indicated by excessive movement of the fork, but it should only be necessary after considerable mileage.

Remove the plug (A) Fig. 19, and the drain plug in the lower end of the fork sliding member as shown at (B) in Fig. 18. Allow all the oil to drain out, then apply the front brake and depress the forks a few times to drive out any oil remaining in the system.

Replace the drain plugs and pour the correct amount of oil into each leg (see page 4). Replace the top plug and tighten it firmly.

The following oils are recommended for use in the front forks: Mobiloil Arctic; Shell X100-20; Castrolite; Esso Motor Oil 20W/30; B.P. Energol S.A.E. 20; Regent Havoline S.A.E. 20W.

Steering Head Adjustment.

The steering head should be tested occasionally for play and to ensure that the forks rotate freely. Support the crankcase on a box so that the front wheel is clear of the ground, then grasp the front fork legs and attempt to push them backwards and forwards. If any play is detected the steering head must be adjusted.

Slacken the clamping nuts (C) and (E) Fig. 19, then tighten down the cap nut (D) until the adjustment is correct. Hold the handlebars lightly and move them round slowly. The steering must be free, and the forks must rotate smoothly. If the movement is "lumpy" it is a sign that the adjustment is too tight, or that the ballraces are damaged. When the adjustment is correct, tighten the clamping nuts (C) and (E). The latter clamps the fork shafts and must be quite tight.

Rear Suspension.

The swinging fork pivot should be greased with Mobilgrease Special at 500 mile intervals. In the case of Competition models this should be carried out before every event. Grease should be applied until it can be seen to exude from the bushes. Excess grease should then be wiped away.

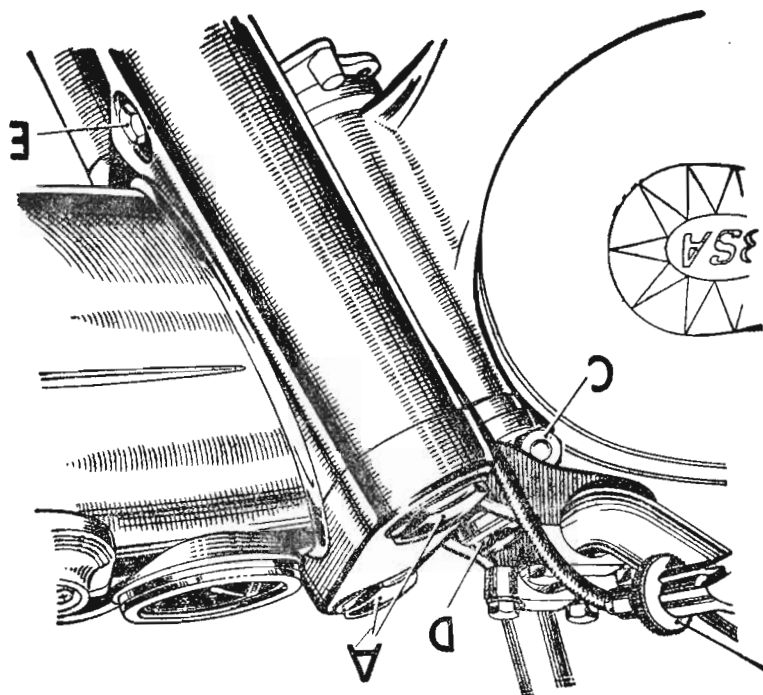


Fig. 19. *Front fork and steering head.*

The two suspension units comprise a telescopic damper unit and a totally enclosed coil spring. The hydraulic dampers require no attention whatever. They are sealed during manufacture and if they suffer damage or become ineffective they must be replaced.

The complete suspension units can be removed from the frame after detaching the pivot bolts at the top and the remaining nuts at the bottom.

TRIALS AND SCRAMBLES MODELS:—The pressure on the springs can be varied by means of a three-position cam adjuster at the lower end of the unit and the springs can therefore be adjusted to suit the load conditions or nature of the ground. A suitable spanner for this adjustment is provided in the toolkit.

Frame.

The frame will not require any attention unless the machine has been involved in an accident. It should then be inspected very carefully and the wheel alignment checked. If the frame is damaged or distorted, it should be returned to your B.S.A. dealer for repairs.

Provided that they have received proper lubrication, the swinging arm bearings should not require replacement until after an appreciable mileage has been covered. However, if it becomes necessary to replace the bearings, the swinging arm must be removed, so that the pivot spindle can be extracted from the frame lug. These two items are pressed together and consequently will be difficult to separate without suitable equipment. It is advisable, therefore, to have the work of fitting new bearings carried out by a B.S.A. dealer.

For those who wish to carry out this work themselves, it will be necessary first to dismantle the rear part of the machine. The frame members which are attached to the ends of the pivot spindle, can then be swung away after unscrewing the bolts, so that the spindle can be taken out of the frame lug, the two components being an interference fit together.

After fitting new bearings, note that only one spacing washer is used, and this is fitted between the right-hand bearing and the frame lug. Correct placing of this washer is important because of chain and wheel alignment.



THE ELECTRICAL EQUIPMENT

Electrical energy in the form of rectified alternating current passes through the battery from the Lucas A.C. lighting/ignition unit, the rate of charge depending on the position of the lighting switch. The A.C. lighting/ignition unit comprises a 6-pole alternator and rectifier. The rectifier converts the alternating current output of the alternator to uni-directional current which is essential for battery charging.

Under normal running conditions (i.e. ignition switch in IGN position) when lights are not in use, the alternator output is sufficient only to supply the ignition coil and to charge the battery. When the lighting switch is turned, the output is automatically increased to meet the additional load. Full alternator output is obtained only when the lighting switch is in the HEAD position.

Emergency Starting—Discharged Battery (see page 8).

An EMERGENCY starting position is provided on the ignition switch, for use if the battery has become discharged and a normal start cannot therefore be made. Under these conditions, the alternator is connected direct to the ignition coil, allowing the engine to be started independently of the battery. It should be noted that with the ignition switch in this position and the engine running, the battery receives a charging current, so that its terminal voltage begins to rise. This rising voltage opposes the alternator voltage and due to the reducing amount of energy thus available for transfer to the coil, misfiring occurs. This, incidentally serves as a reminder to switch back to the normal position, when the coil will be operating under battery ignition, and full power will be available.

Running without a Battery.

If it is required in an emergency to run the machine without the battery in position, unscrew the terminals and remove the battery. The NEGATIVE lead which previously went to the battery must be **earthed to the frame, and the stop light must be disconnected**. If this is not done the rectifier may be seriously damaged.

Alternator.

Except for an occasional inspection of the snap-connectors in the three output cables—these connectors must be clean and tight—the alternator requires no maintenance.

Rectifier.

The rectifier requires no maintenance beyond checking that the connections are clean and tight. **The nut clamping the rectifier plates together must not under any circumstances be slackened, as it has been carefully set during manufacture to give correct rectifier performance.** A separate nut is used to secure the rectifier to the frame of the motor-cycle and it is important to check periodically that the rectifier securing nut is firmly tightened.

Battery—Topping-up.

During charging, water is lost by gassing and evaporation. Therefore, at weekly intervals, and more often in warm climates, the electrolyte level in the battery cells must be checked.

The battery is mounted in a special compartment beneath the dual seat, Fig. 11. Lift the clasp (R) which releases the battery from its carrier and withdraw the battery. Remove the battery lid, unscrew the filler plugs, and, if necessary, add distilled water to maintain the level indicated by the blue line. Do not use tap water, as it may contain impurities detrimental to the battery, nor use a naked light when examining the condition of the cells. The ordinary battery filler is unsuitable for this purpose.

Cleaning.

Wipe away all dirt and moisture from the top of the battery.

Filling and Soaking of MLZ9E Batteries—when new.

Discard the vent hole sealing tapes.

Pour into each cell pure dilute sulphuric acid of appropriate specific gravity to the **coloured line denoting the maximum filling level** and allow the battery to stand at least three hours. Thereafter keep the acid just level with the blue line by topping-up with distilled water.

Specific gravity of electrolyte (corrected to 60°F., 15.5°C.) for filling both uncharged and dry-charged batteries:—

- (a) In climates ordinarily below 90°F. (32.2°C.) use acid of 1.270 s.g.
- (b) In climates ordinarily above 90°F. use acid of 1.210 s.g.

Battery—Maintaining Condition.

Never leave the battery in a discharged condition. If the motor-cycle

is to be out of use for any length of time, have the battery fully charged and every fortnight give it a short refreshing charge at about 1.5 amperes to prevent any tendency for the plates to become permanently sulphated.

Battery Earth.

The A.C. lighting/ignition unit has been designed for positive (+) earth systems. If the battery connections are reversed the equipment will be damaged.

Contact Breaker Unit.

Setting—after first 500 miles and, thereafter, every 2,000 miles. The contact breaker points must always be kept free from grease or oil, and the gap checked at regular intervals, as above (see also page 18).

Cleaning—every 5,000 Miles.

The contacts must be free from grease or oil. If they are burned or blackened, clean with fine carborundum stone or very fine emery cloth, afterwards wiping away any traces of dirt or metal dust with a clean petrol-moistened cloth. Cleaning of the contacts is made easier if the contact breaker lever carrying the moving contact is removed.

To take out the moving contact, first remove the terminal nut on the capacitor (Fig. 5) when the contact breaker spring and heel can be lifted off the spindle. It is essential that the insulating washer beneath the heel is replaced when reassembling. After cleaning the contact points, check the gap for accuracy, adjusting as necessary (see page 18).

Lubrication—every 5,000 Miles.

No grease or oil must be allowed to get on or near the contacts when carrying out the following procedure. Smear the surface of the cam very lightly with grease or, if this is not available, clean engine oil (S.A.E. 30-40) may be used. Lubricate the centrifugal timing control behind the unit with clean engine oil, paying particular attention to the pivots (page 20).

Ignition Coil.

The coil requires no attention beyond keeping its exterior clean, particularly the terminals, and occasionally checking that the connections are tight. When the high-tension cable shows signs of perishing or cracking it must be renewed, using 7 mm. PVC-covered or neoprene-covered rubber ignition cable.

Lighting Equipment—Headlamp Beam Setting.

When the motor-cycle carries its normal load the headlamp driving beam should be projected straight ahead and parallel with the road surface.

Many garages possess a Lucas Beam Setter. This is a scientific instrument enabling accurate beam setting to be effected, and owners are strongly advised to make use of this service whenever possible. When such facilities are not available, the headlamp can be set by marking off a smooth blank wall and shining the lamp on it from a distance of 25 feet. Details are shown in Fig. 20.

When checking setting:—

- (a) Front of motor-cycle to be square with screen.
- (b) Motor-cycle to be carrying normal load and standing on level ground.
- (c) Recommended distance for setting is at least 25 feet.

To make an adjustment slacken the three screws securing the headlamp fixing rim and move the lamp until the correct setting is obtained. Finally, retighten the securing screws. Where a separate headlamp is fitted, the lamp body can be adjusted after releasing the fixing bolts.

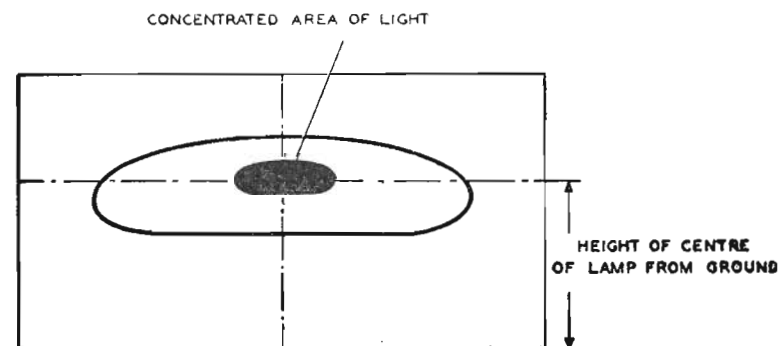


Fig. 20. Headlamp beam setting pattern.

With the Lucas pre-focus bulbs fitted in these lamps, the filament is correctly positioned during manufacture in relation to the focal point of the reflector. No further focusing is necessary.

Bulb Replacement—Headlamp.

Lucas bulb No. 312 6-volt 30/24-watt Pre-focus. To gain access to the headlamp bulb, slacken the front rim retaining screw, situated at the top of the fixing rim. Disengage and withdraw the front rim and light unit assembly, removing the upper edge first. Press the adaptor inwards and turn it to the left. Lift off the adaptor and withdraw the defective bulb. After fitting the replacement bulb, reverse the above procedure to reassemble the lamp.

Parking Light.

Lucas bulb No. 988 6-volt 3-watt. Disengage and withdraw the front rim and light unit assembly. The parking light bulbholder and bulb can then be withdrawn from the reflector in which it is a push-fit.

Stop Tail Lamp.

Lucas bulb No. 384 6-volt 6/18-watt ("C" models 6-volt 3/18-watt). Access to the bulb is gained by slackening the two lens retaining screws. When fitting the replacement bulb note that the securing pins are offset to ensure correct insertion into the bulbholder.

Horn.

The horn is pre-set to give its best performance and, in general, no further adjustment is necessary.

If the horn becomes uncertain in its action, giving only a choking sound, or does not vibrate, it does not follow that the horn has broken down—the trouble may be due to a discharged battery, a loose connection, or short-circuit in the wiring on the horn. In particular, ascertain that the horn push button is in good electrical contact with the handlebars.

It is also possible that the performance of a horn may be upset by its mounting becoming loose.

Wiring Diagram.

A diagram of the electrical circuit appears on pages 56 and 59. The insulation of the wires is individually coloured and these colours are indicated on the diagram.

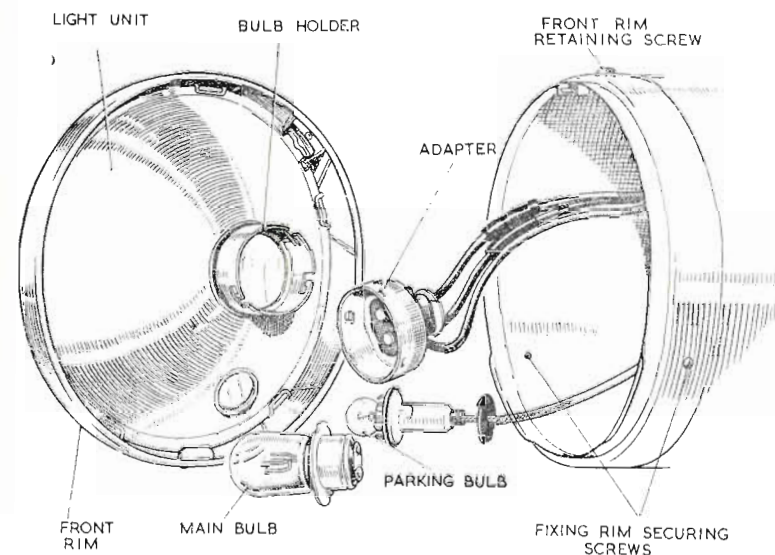


Fig. 21. Headlamp dismantled for bulb renewal.

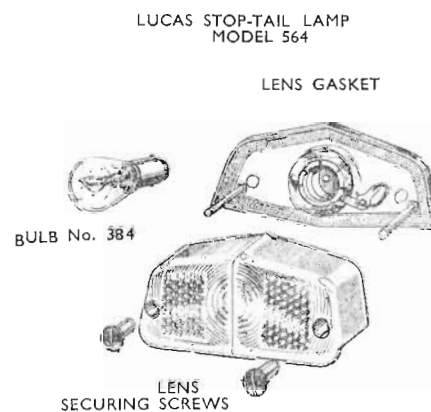


Fig. 22. Stop tail lamp dismantled for bulb renewal.

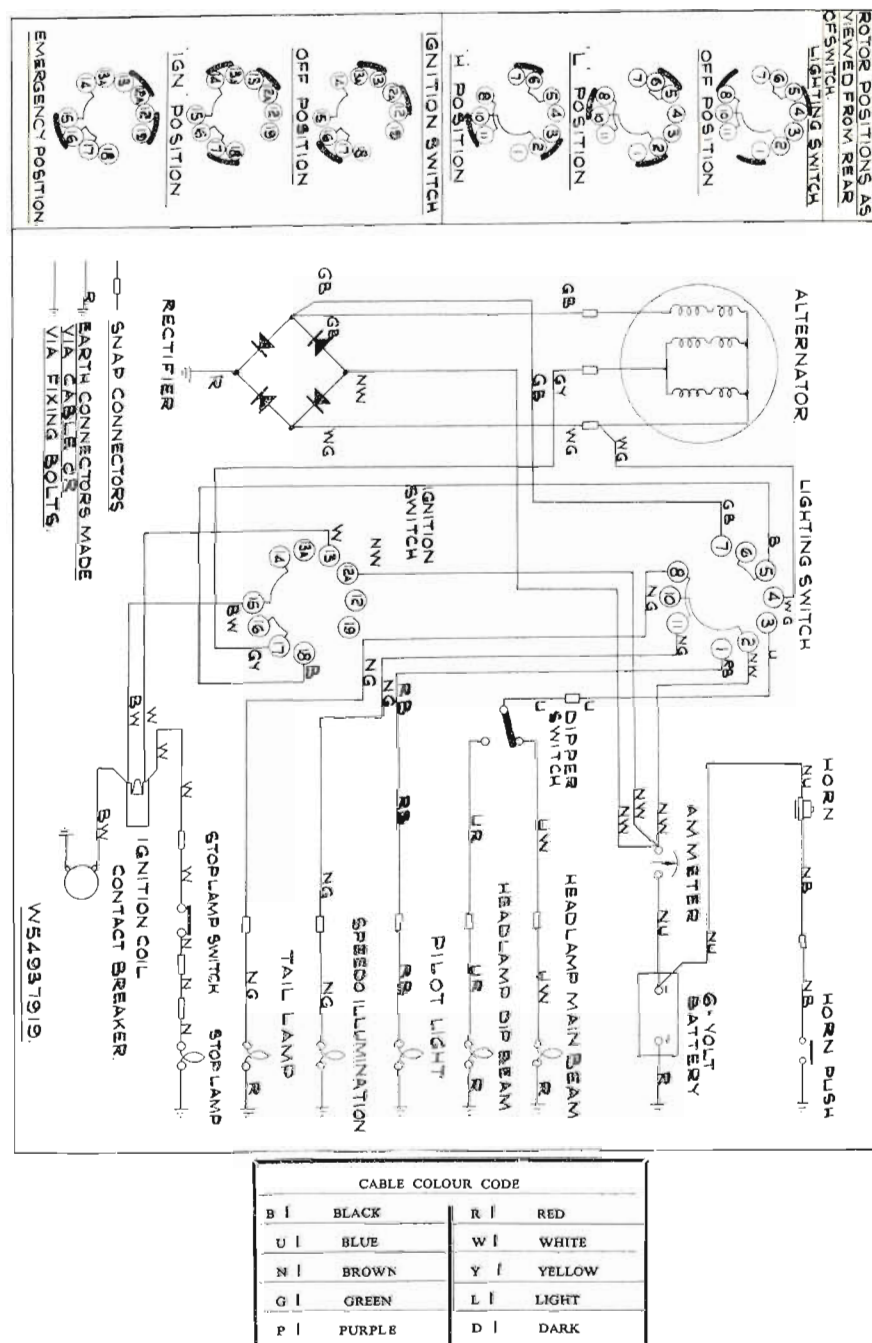


Fig. 23. Wiring diagram (except Trials and Scrambles)

LUCAS ENERGY TRANSFER IGNITION USED ON B.S.A. C15 TRIALS AND SCRAMBLE MOTOR-CYCLES

These machines are equipped with an ignition system known as "energy transfer ignition". This system incorporates certain characteristics of both magneto and coil ignition.

Electrical energy for ignition (and lighting when fitted) is provided by the alternator. This alternator has six stator windings of which four are used for ignition purposes the remaining two coils being available to serve the needs of any lighting circuits—exclusive of the stop lamp which, when fitted, is fed from a tapping off one of the ignition coils. The alternator has an engine-driven rotor containing six high-energy permanent magnets.

Energy Transfer Ignition.

The four ignition windings of the stator are connected in series with each other and with the primary winding of a separately mounted ignition coil—an ignition coil designed specially to operate on the energy transfer principle. The contact breaker mechanism has its contacts connected in parallel with the ignition coil primary winding. Since one side of the stator windings, and of the ignition coil primary winding, and of the contact breaker is earthed, these three parts of the circuit are, in effect connected mutually in parallel. Closure of the contact breaker contacts thus short-circuits the ignition coil primary winding and, at the same time, creates a closed circuit of the four series-connected stator ignition windings. As the magnet rotor turns, voltages are induced in the stator windings giving rise to alternating currents during the period that the contacts are closed. At the instant of contact opening, however, a pulse of electro-magnetic energy, developed by the alternator during the contacts closed period, is discharged through the ignition coil primary winding. The effect of this energy pulse in the primary winding is to induce a high voltage in the ignition coil secondary winding, and this high-tension voltage is applied by way of the distributor to the appropriate spark plug.

Timing (see page 18).

Accurate ignition timing is an important requirement in the operation of an energy transfer system. The contact breaker is arranged to open only at peak instants in the alternating current cycle in order that maximum electro-magnetic energy is transferred from the alternator to the ignition coil and a good spark obtained at the plug.

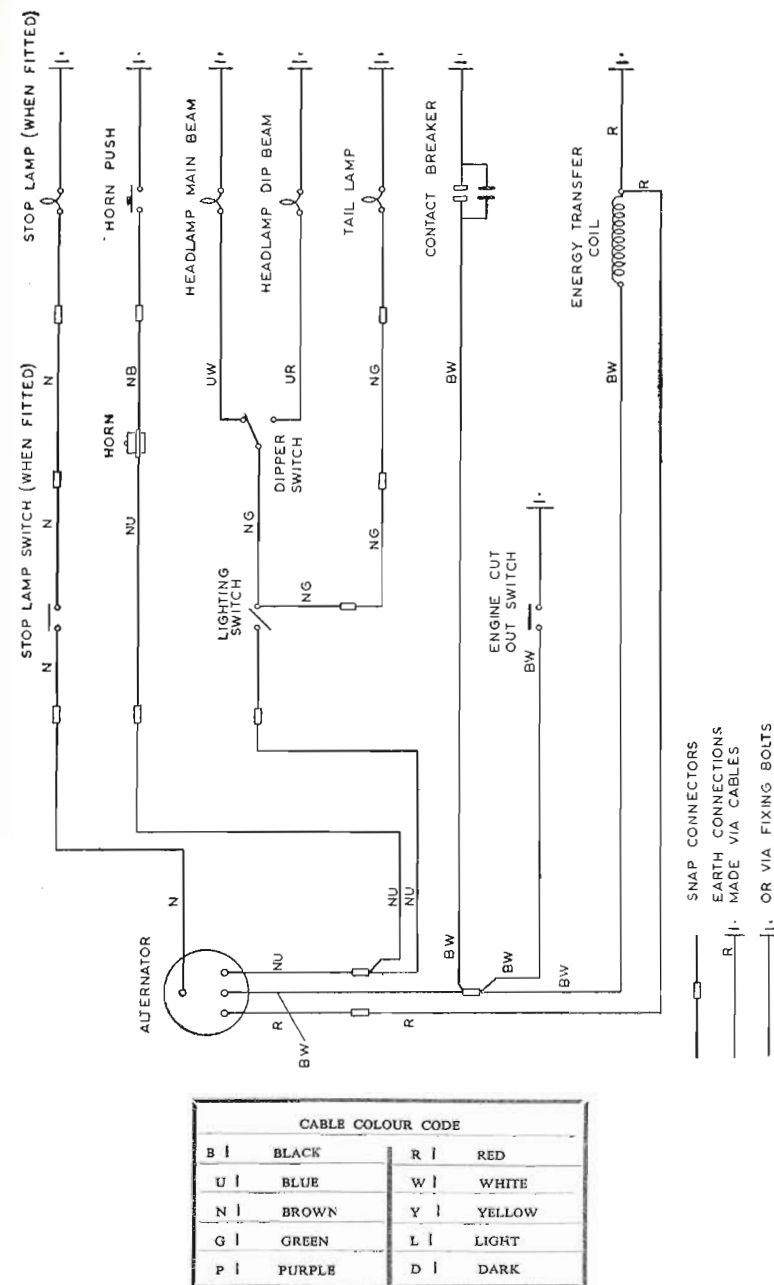


Fig. 24. Wiring diagram (models C15T and C15S).

GENERAL HINTS

Periodically check all nuts and bolts with a spanner to see that they are tight.

Occasionally clean the air holes in the petrol tank filler cap, as if these get choked, petrol starvation may cause engine stoppage.

After a very large mileage, it is advisable to remove the petrol tap, clean the filter above the tap, and wash the tank out with petrol to remove any collection of dirt or water which may have accumulated. Blow through the tap before replacing.

Difficult starting or engine stoppage is usually due to faults in either the carburation of the ignition system, and in the event of these troubles arising, the following checks will enable the cause to be located.

Make sure that there is petrol in the tank, and that it is reaching the carburettor, by depressing the tickler and flooding the float chamber.

Examine the main jet, which can be reached by unscrewing the hexagon at the base of the carburettor body. Removing the jet and blowing through it will clear any obstruction.

See that the high-tension lead to the sparking plug is connected. Remove the plug, and if oily or sooted, clean it. Check that the plug is sparking correctly by connecting high-tension lead and laying the plug on its side on top of the cylinder, then turn the engine over several times by means of the starter, when the plug should spark regularly.

Poor compression may indicate either that tappets are badly out of adjustment, that valves need grinding-in, or in the case of a machine which has covered a very big mileage, that piston rings are badly worn and need replacement.

The wiring is connected by means of snap-connectors at various convenient places on the machine and it is desirable occasionally to check it over and make certain that these connections are all tight.

LIST OF B.S.A. STOCKISTS



Save time and postage by contacting your nearest B.S.A. Stockist for B.S.A. Spare Parts, Spare Part Catalogues, Instruction Books, Transfers, etc.

All B.S.A. Dealers carry stocks of B.S.A. Spare Parts but the following appointed Stockists maintain a comprehensive range.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
Aberdeen ...	J. Dawson ...	24-26 Thistle Street ...	25556	Motorbike, Aberdeen.
" ...	George Cheyne (Cycles) Ltd.	147-149 Holburn Street	50341/2	
Accrington ...	Bill Snape Ltd. ...	379, 392 and 396 Blackburn Road	4724	
Aldershot ...	Phillips Bros. (Aldershot) Ltd.	Birchett Road ...	1111/2	Phillips, Cycles, Aldershot.
Alloa ...	J. G. Robertson (Cycles) Ltd.	55-57 High Street ...	193	
Andover ...	Corbett & Ellis (Andover) Ltd.	Weyhill Road ...	2991	
Ashington ...	Mains of Ashington ...	Laburnam Terrace ...	3204	Ebony's, Aylesbury.
Aylesbury ...	Claude Rye ...	44 Walton St., Aylesbury	3150	
Banbury ...	Trinder Bros. ...	2A Broad Street ...	2456	
" ...	Taylor Dow Ltd. ...	Southam Rd., Oxon. ...	4287/8	
Barnsley ...	T. Garner & Son ...	Pontefract Road ...	2866	
Barnstaple ...	Bob Ray Ltd. ...	43 High Street ...	4266	
Bath ...	R. U. Holoway & Son	32, 33 and 34 St. Johns Road.	Bathwick 5084	
Bedford ...	Glanfield Lawrence (Bedford) Ltd.	11 Mill Street, Bedford ...	66044	
Belfast ...	W. J. Chambers & Co.	106 and 108 Donegall Pass.	27253/4	Fastmote, Belfast
Biggleswade ...	Bryants (The Rider Agents).	Shortmead Street ...	3108	
Birkenhead ...	Bob Simister Ltd. ...	540-544 New Chester Rd., Rock Ferry.	Rock Ferry 1452	

B.S.A. Motor-cycle Spares Stockists—contd.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
Birmingham	County Cycle & Motor Co. Ltd.	265-266 Broad Street	Midlan 2671	
"	"	104 Bath Row (Repairs) (closed Sat. 1 p.m.).	Midland 2817	
"	C. E. Cope & Sons Ltd.	481-487 Hagley Road, Edgbaston 17.	Bearwood 2246/7	
"	Shovelbottom's Ltd.	376 Ladypool Rd., Sparkbrook 12.	South 2212-3247	
"	Aston Auto Motors	177 Aston Road, Birmingham 6.	Aston Cross 3201/2	
Blackburn	S. & G. Motor Cycles (Blackburn) Ltd.	15-17 Great Bolton St.	6678	
Blackpool	J. Hall & Son (Blackpool) Ltd.	102-6 Devonshire Rd.	22130	
Bolton	Charlie Robinson (Motor Cycles) Ltd.	119 & 121 Higher Bridge Street.	3931	
Boscombe	Craze Bros. Ltd.	473 & 475 Christchurch Road.	Boscombe 33231/2	
Bradford	Sidneys Motor Cycles	219 Manchester Road	29889	
"	J. K. Hirst Ltd.	41 Wakefield Road	22543	
Bridgwater	Anderson & Wall Ltd.	18 St. Mary Street	2416	Anderson & Wall, Bridgwater.
Brighton	Redhill Motors (Brighton) Ltd.	104 North Road	25281	
Bristol	S. J. Fair Motors Ltd.	201-3 Cheltenham Road	4-6238 & 4-1015	
Bromsgrove	Ralphs	110 Birmingham Road	3228	
Burnley	C. & S. Garages	2 Gannow Lane	5107	
Bury St. Edmunds	Barclay Motors Ltd.	Kings Road Corner	2345/9	
Cambridge	King & Harper Ltd.	Milton Road Corner	3201	Motors, Cambridge.
"	Hallens	Union Lane	56225	
Canterbury	Hallets of Canterbury	St. Dunstan's Street	2275/6	
Cardiff	Car Distributors (Cardiff) Ltd.	134-140 City Road	30022	
"	Robert Bevan & Son	29-35 Castle Street	27477/8	
Carlisle	W. T. Tiffen & Son	Irishgate, Carlisle	25024	Tiffen, Irishgate, Carlisle.
Carmarthen	Eddie Stephens Motors	22-23 Water Street	Carmarthen 6233	
Chatham	Grays of Chatham Ltd.	11-19 High Street	4005	
Chelmsford	Hadlers Garage Ltd.	New Street	4844/5	Hadler, Chelmsford.
Cheltenham	H. & L. Motors Ltd.	Bath Street	2887	
Chester	Davies Bros. (Chester)	34 Bridge Street	25510	
Chesterfield	Walter Wragg Ltd.	95 Lordsmill St., Derbyshire.	3266	
Chichester	W. Goodridge & Co. Ltd.	East Street	2033	
Clydebank	John A. Weddell	72 Dumbarton Road	Clydebank 1429	
Colchester	G.B.R. Motors Ltd.	1-2 East Hill	6131/2	
Colne	C. H. Schofield (Motors) Ltd.	Market Place	859	

B.S.A. Motor-cycle Spares Stockists—contd.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
Coventry	Coventry Motor Mart Ltd.	86 London Road	22146/7	Coventry Motor Mart.
Crawley	Lewis Thirkell Ltd.	60-62 The Boulevard, Crawley.	25507	
Crewe	Cooke's Garages	10-20 Nantwich Road	2011	Cooke's Motors, Crewe.
Croydon (West)	Godfreys Ltd.	228-234 London Road	Croydon 3641/2	Gofiabike, Croydon.
Dagenham	Reginald Smith (Motor Cycles) Ltd.	Imperial House, New Rd.	Rainham 3284, 2786	
Dalton-in-Furness	H. Holme	24-26 Ulveston Road	25	
Darlington	The Duplex Motor & Cycle Co. Ltd.	10-16 Grange Road	Darlington 2071	Duplex, Darlington.
"	White Bros. (Darlington) Ltd.	201, 205-9 Northgate	67757	
Dartford	Schweiso Bros. Ltd.	177 Lowfield Street	Dartford 4279	
Derby	Ingles Provincial Garages Ltd.	Walbrook Road	45289	
"	D. Tye	Water Lane, Cromford	Wicksforth 2149	
Doncaster	W. Cusworth (Doncaster) Ltd.	7 Hall Gate	4594	
Douglas (I.O.M.)	Gilbert Harding Ltd.	Peveral Square	Douglas 170	
Dudley	Chas. E. Cope & Sons Ltd.	98 & 193 High Street	Dudley 53464	
Dundee	George McLean Ltd.	Ward Road	5087	Vehicles, Dundee.
Dunstable	B. G. England (Dunstable) Ltd.	Half Moon Hill, London	843/4	
Eastbourne	Jempsons Ltd.	118-120 Seaside	756	Jempsons, Eastbourne.
Edgware (Middlesex)	Rex Judd Ltd.	High Street	Edgware 6911	
Edinburgh	J. R. Alexander & Co. Ltd.	10-14 Lothian Road	4455	Motorcycles, Edinburgh.
Elgin	Farquharsons	55-57 High Street	7188	Elgin 7188.
Enfield	D. J. Shepherd & Co. (Enfield) Ltd.	434-6 Hertford Road, Enfield Highway.	Howard 1631	
Exeter	P. Pike & Co. Ltd.	Alphington Street	58241	Piko, Exeter.
Frome	J. Difazio Motor Cycles	25 Catherine Street	2913	
Gateshead, 8	O. Carmichael & Son Ltd.	75 High West Street	71815	
Glasgow, C3	Bell Bros. (H.P.) Ltd.	223 St. Georges Road	Douglas 6414	Douglas 6414, Glasgow.
" C4	J. R. Alexander & Co. Ltd.	272 Great Western St.	Douglas 7516	Alex Moto, Glasgow.
Gloucester	Harpers of Gloucester	23A Worcester Street	23187	Gloucester 23187.
Grimsby	H. J. Gresswell & Son Ltd.	13, 15 & 19 Osborne St.	2202	
Guernsey	Millard & Co. Ltd.	Victoria Road	777	Millard Motors, Guernsey.
Guildford	E. Pascall (Guildford) Ltd.	11-12 Woodbridge Rd.	Guildford 2274/5/6	

B.S.A. Motor-cycle Spares Stockists—contd.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
Harrogate	H. Aclam (Prop. H. Baynes).	11 Bower Road	5125	
Harrow	Pinks of Harrow	Station Road	0044/5 (Spares 3328)	Pink, Harrow.
Hatfield	W. Waters & Sons Ltd.	32 Great North Road	2255	
Hereford	A. Kear & Co.	52b Commercial Street	2239	Kear, Hereford
Holbeach	Gordan Woodman Ltd.	34 Fleet Street	3221	
Hornchurch	T. W. Kirby Ltd.	10 Roneo Corner	8785	
Hounslow	Stanley's Motors	46-8 Lampton Road	Hounslow 1949	Stanley's, Hounslow.
Huddersfield	Earnshaw	Manchester Road	1232	
Hull	Browns (Witham) Ltd.	47-49 Witham	Witham 29802	
"	Jordans of Hull	Storey Street	24131	Gumpton, Hull.
Huntingdon	Hallens (Hunts) Ltd.	10-20 St. Germain St.	1051/2	
Ilford	J. J. Double (Motor Cycles) Ltd.	1 Mildmay Parade, Cranbrook Road.	Valentine 0191/2, 7723	
Ilkeston	Ray Gamble	Pelham St., (off Bath St.)	4873	
Ipswich	Revetts Ltd.	53 Norwich Road	53726/7	
Jersey	Colebrooks (Jersey) Ltd.	22½ New St. Johns St.	Central 642	Colebrooks, Jersey.
Kendal	Tom O'Loughlin Ltd.	66 Stricklandgate	315	
Kidderminster	Lewis-Baggott & Co. Ltd.	58 New Road	2684	
Kings Lynn	Peter Guest Ltd.	Wooton Road	4129	
Kirkcaldy	County Motors (Kirkcaldy) Ltd.	Junction Road	Dysart 5631	
Lancaster	Pye Motors Ltd.	Parliament Street	3553	
Launceston	J. Wooldridge & Son	Western Road	21	Wooldridge, Launceston.
Leeds, 1	Watson-Cairns & Co. Ltd.	157-8 Lower Briggate	33024/5	Watson-Cairns, Briggate, Leeds.
Lincoln	West's (Lincoln) Ltd.	116 High Street	21262	
Liverpool, 3	Cundles (Liverpool) Ltd.	41 Byrom Street	Central 4148	Cundles, Central 4148.
Llawbaden	James Bowen & Sons (Llawbaden).	Llawbaden, near Narberth, Pem.	Llawbaden 6	
London, E.7	Godfreys Ltd.	418 Romford Rd., Forest Gate.	Grangewood 1234/5	Gofrabike, Forgeate.
" E.8	Eleanor Motors	139 Mare St., Hackney	AOherst 5274/5/6	
" E.18	E. S. Longstaff Ltd.	108 High Rd., Woodford	Buckhurst 6369/6757	
" N.5	Glanfield Lawrence (Highbury) Ltd.	25 Highbury Corner	North 2791	
" N.12	George Grose	834 High Rd., Finchley	Gladstone Hillside 2149	
" N.12	George Grose	824 High Rd., Finchley	Gladstone Hillside 2149	
" N.W.10	Slocumbes Ltd.	251-253 Neasden Lane, Neasden.	Gladstone 3355	
" S.E.11	Writers Ltd.	161-5 Kennington Lane	Reliance 1362	
" S.E.13	F. Parks & Sons Ltd.	404 High St., Lewisham	Lea Green 0535	

B.S.A. Motor-cycle Spares Stockists—contd.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
" S.E.15	West End Motors Ltd.	171 High St., Peckham	Newcross 2589	
" S.E.18	Cleare & Co. Ltd.	1 High St., Woolwich	Woolwich 0174	
" S.W.6	Claude Rye Ltd.	897-921 Fulham Road, Fulham.	Renown 6174	Ryebikes, Walgreen, London.
" S.W.9	Pride & Clarke Ltd.	158 Stockwell Road	Brixton 6251 (Ext. 3)	Priclarke, London.
" S.W.11	Owen Bros.	19 Battersea Rise, Clapham Junction.	Battersea 7816	
" S.W.17	Elite Motors (Tooting) Ltd.	951-961 Garrat Lane, Tooting Broadway.	BalhaO 1200	Elitemota, Toot, London.
" W.3	Whitbys of Acton Ltd.	273 The Valve, Acton	Shepherd's Bush 5355/6	
" W.5	Kays of Ealing Ltd.	8-10 Bond Street	Ealing 2387	Sparesokay, Ealux, London.
" W.12	Turners Stores	81-83 Goldhawk Road, Shepherd's Bush.	Shepherd's Bush 2436	
Lowestoft	Wrights Motors Ltd.	67-69 London Road South	4645	
Macclesfield	A. Watling	49 Buxton Road	3592	
Maidstone	Redhill Motors (Maidstone) Ltd.	The Broadway, Maidstone.	3096	
Manchester, 3	Tom Davies (Motors) Ltd.	233 Deansgate	Blackfriars 0681	
" 22	Alex Parker	31-33 Palatine Road, Northenden.	Wythenshaw 2062	
Mansfield	Henstocks	128 Chesterfield Road	329	Henstock 329, Mansfield.
Middlesbrough	J. T. Dickinson (Middlesbrough) Ltd.	370 Lindthorpe Road	3861	Payacob, Middlesbrough
Neath	Fred Rist	16 & 17 Windsor Rd.	Neath 780	
Newcastle-on-Tyne	Dene (Newcastle) Motor Co. Ltd.	Haymarket	2-9165/6	Ened, Newcastle-on-Tyne.
Newton Abbot	J. E. Green & Co.	87 Queen Street	653	
Newport (Mon.)	R. J. Ware & Sons	69 Commercial Street	66206	
Northampton	Glanfield Lawrence (Northampton) Ltd.	40-44 Wellingborough Rd.	1272	
Norwich	Chapmans (Norwich) Ltd.	38-42 Duke Street	24727	
Nottingham	E. W. Campion & Son Ltd.	Arkwright St., and Queens Road.	83444	
Oldbury	Bromford Garage	Bromford Rd., Worcs.	BRO 2225	
Oldham	Alan Taylor (Northern)	192 Manchester Street	Main 4456	
Oswestry	Roy Evans (Motor Cycles)	Beatrice Street	2301/2	
Oxford	Temples	69 St. Thomas Street	47496/7	
"	Faulkner & Son	12 Cardigan Street	57279	
"	John Avery	228-230 & 240 Banbury Road.	57362/3	
Parkstone	Bob Foster	472-6 Ashley Road	3500/1	
Pertb	M. Shaw & Sons	143 High Street	483	

B.S.A. Motor-cycle Spares Stockists—contd.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
Peterborough	Burrows Bros.	55-57 Westgate	2154	Piko, Plymouth.
Plymouth	P. Pike & Co. Ltd.	Millbay Road	Plymouth 63018	
Pontardulais	T. Griffiths	Forest Garage	Pontardulais 323	
Portsmouth	Jenkins & Purser Ltd.	277-281 Copnor Road	2339	
"	Glanfield Lawrence	147-157 Fratton Road	74331	
"	Percy Kilo Ltd.	65-67 Elm Grove	23734	
Pulborough	Gray & Rowsell (Bury) Ltd.	Bury Gate, Pulborough	Bury 4	
Radcliffe	Will Lord (Motor Cycles) Ltd.	115 Blackburn Street	2002	
Reading	Phillips & Bloomfield Motors Ltd.	10-14 South Street	2635	
"	Stocker & Shepherd Ltd.	129-133 Oxford Road	53983, 52212	
"	Fortesque Bros. Ltd.	West Street	54143	
Redhill	The Redhill Motor & Cycle Works Ltd.	50-54 Brighton Road	327	
Ripon (Yorks.)	T. Ellis	2 High Skellgate	Ripon 1079	
Romford (Essex)	Brooklands Motor Cycles Spares Ltd.	92-98 North Street	61880, 43347	
Rotherham	Ernest Cross	55-59 Drummond St.	Rotherham 3987	
Salisbury	Pankhurst (Weymouth) Ltd.	78-79 Exeter Street	Salisbury 5222/3	
Scarborough	E. Andrew of Scarborough Ltd.	149 Victoria Road	Scarborough 1857	
Sheffield, 1	Walter Wragg Ltd.	Stanley Works, Gibraltar Street.	26089	26098 Sheffield.
" 6	Leather & Simpson Ltd.	9-11 Lansett Road	343173	
Shrewsbury	S. R. Meredith	Coleham Head	6529	
Sittingbourne	Scoones Garage	9 West Street	2866	Scoones, Sittingbourne.
Slough	Sid Moram	Wexham Corner, High Street.	Slough 23767	
Southampton	Alec Bennett Ltd.	152 Portwood Road	54081/2/3	
Southport	H. F. Brockbank	62 King Street	5054	
St. Albans	Clarks Ltd.	164 London Road	53153	
St. Austell	St. Austell Savoy Motors Ltd.	27 Truro Road	3773	
St. Helens	Victor Horsman Ltd.	Greenfield Road Garage	3918	
Stockport	H. D. Cartwright (Motor Cycles) Ltd.	74 Buxton Rd., Heaviley	5780	
Stockton-on-Tees	T. Cowie Ltd.	Norton Road	65361	
Stoke-on-Trent	J. & N. Bassett	Howards Place, Shelton	22890	
Stourbridge	Pearsons Cycle Depot	31 Market Street	5677	
Sunderland	Dunns Garage (Sunderland) Ltd.	Wheatsheaf Corner, North Bridge Street.	57666/7	
"	Cowie of Sunderland	1 Matamba Terrace, St. Marks.	70491	

B.S.A. Motor-cycle Spares Stockists—contd.

TOWN	NAME OF STOCKIST	ADDRESS	TELEPHONE NUMBER	TELEGRAPHIC ADDRESS
Swansea	Glanfield Lawrence (Swansea) Ltd.	9-15 Princess Way	50311	
Swindon	Easters of Swindon	75 Cricklade Road	4196	
Taunton	W. P. Edwards (Motors) Ltd.	Station Road	2943	Edwards, Motor Cycles, Taunton
Thames Ditton	Comerfords Ltd.	Portsmouth Rd., Thames Ditton.	Emberbrook 5331	
Torquay	P. H. Sharam Ltd.	244-6 Union Street	4148 & 7255	
Troon	Cooper Bros.	117-129 Templehill	925	
Truro	W. H. Collins & Son	Kenwyn Mews	Truro 2168	
Tunbridge Wells	G. E. Tunbridge	21 London Road	416	Motors, Tunbridge Wells.
Twickenham	Blays of Twickenham Ltd.	192-9 Heath Road	Popesgrove 2103 & 1435	
Uxbridge	Miles Motors	60 High Street	Uxbridge 6000	
Wakefield	Parkinsons (Wakefield)	38 Ings Road	2087	
Walsall	The Motor Cycle Mart (Walsall) Ltd.	12 Ablewell Street	3363	
Warrington	Jack Frodsham Ltd.	60 Winwick Street	34713	
Watford	Lloyd Cooper & Co.	61 Queen's Road	2125	Lloyd Cooper, Watford.
Wellington (Salop)	Bill Doran & Matt Wright.	Park Street Garage	Wellington 138	
Westcliff-on-Sea	J. Costin & Sons	237 London Road	Southend 42215	
Weston-super-Mare	Wyverns of Weston Ltd.	3 Locking Road	524	Wyverns, Weston-super-Mare.
Weybridge	Lewis & Sons (Weybridge) Ltd.	51 Church Street	2210	
Weymouth	Tilleys (Dorset) Ltd.	9 Frederick Place, St. Thomas Street.	72	
Whitehaven	Mark Taylor	21 King's Street	252	
Wolverhampton	C. E. Cope & Sons Ltd.	169 Stafford Street	24605/6	
Worcester	W. J. Bladder & Son	52 Sidbury	2438	Bladder, Sidbury, Worcester.
Worksop	Ezra Sugden Ltd.	109 Gateford Road	3053	
Yeovil	The Yeovil Motor Mart	Hendford	267	Motor Mart, Yeovil.
York	C. S. Russell (York) Ltd.	Lawrence Street	23793	Russell, Lawrence Street, York.

PROPRIETARY INSTRUMENTS, FITTINGS AND ACCESSORIES

No expense is spared to secure as standard equipment the most suitable and highest quality instruments and accessories. Nevertheless, the Company's guarantee does not cover such parts, and in the event of trouble being experienced the parts in question should be returned to and claims made direct on the actual manufacturers, who will deal with them on the terms of their respective guarantees, as follows:—

Carburettors:

Messrs. Amal Ltd., Holdford Road, Witton, Birmingham 6.

Dual Seats:

Motoplas Co. Ltd., Armoury Road, Birmingham 11.

Electrical Equipment:

Messrs. Joseph Lucas Ltd., Birmingham 19.

Speedometers:

Smiths Motor Accessories Ltd., Cricklewood, London N.W.2.

Tyres:

Dunlop Rubber Co. Ltd., Fort Dunlop, Birmingham.

Rear Suspension Units:

Girling Ltd., William Henry Street, Birmingham 11.

Chains:

Renold Chain Co. Ltd., Wythenshaw, Manchester.

SPECIAL NOTE

Claims under guarantee, to B.S.A. Motor-Cycles Ltd., should be submitted through the B.S.A. dealer from whom the machine was purchased.