

TRIUMPH

OWNER'S HANDBOOK

Trident

UNIT CONSTRUCTION

750 c.c.

THREE CYLINDER



OWNER'S HANDBOOK

FOR

UNIT CONSTRUCTION

750 c.c.

THREE CYLINDER

TRIUMPH ENGINEERING CO. LTD.

MERIDEN WORKS · ALLESLEY · COVENTRY · ENGLAND

TELEPHONE: MERIDEN 331

TELEGRAMS "TRUSTY, COVENTRY"

REF. OH3

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INTRODUCTION

The Owner's Handbook includes all the information that the majority of owners will require. If you require more information for major repairs there is available a Workshop Manual but this is intended for those having basic mechanical knowledge and workshop facilities. To obtain the Workshop Manual order from your local Triumph dealer or distributor as we do not supply parts or service literature direct from the factory to individual customers.

Where specialised advice is required beyond the ability of the dealer, then you should write to your distributor who will act on our behalf. Unless the full engine number is quoted it is often difficult to identify the type of motorcycle and give a helpful reply. Any information which may have a bearing on the subject should be included, particularly details of any additions or alterations to the standard equipment.

Where a guarantee claim is involved, consult your dealer or distributor who may be able to provide a replacement to enable your motorcycle to be used whilst the defective part is returned to his distributor. Guarantee claims in respect of proprietary components should be forwarded by your dealer to his distributor.

U.S.A.

Eastern Distributors

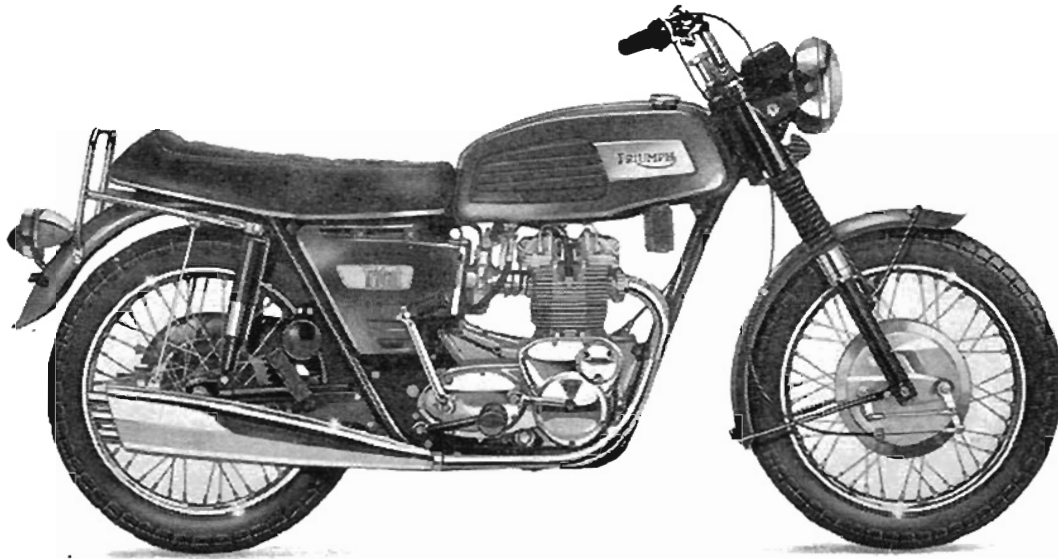
Triumph Corporation,
Towson,
Baltimore, 4,
MD. 21204.

CABLES:
Triumph, Baltimore.
Telephone 301-252-1700.

Western Distributors

Johnson Motors, Inc.,
P.O. Box 275
Duarte,
California,
91010

CABLES:
"JOMO". Duarte Calif.
Telephone 213—359—3221
213—681—0255



750 c.c. Trident

USEFUL DATA

ENGINE

Bore and Stroke—mm.	...	...	...	67 x 70
Bore and Stroke—in.	...	...	...	2.67 x 2.751
Capacity—c.c.	...	...	...	753 c.c.
Capacity—cub. in.	...	...	...	45
Compression Ratio	...	...	...	9.5:1
Power Output B.H.P. @ r.p.m.	...	...	...	60 @ 8000
Tappet Clearance, Inlet and Exhaust				
—in. (Cold)	...	...	...	0.006, 0.008
Tappet Clearance—mm.	...	...	...	0.20,
Valve Timing ...				
@ 0.020 in. (0.50 mm.)				
Clearance for checking				
	I.O.			35°
	I.C.			56°
	E.O.			56°
	E.C.			35°

IGNITION—Fully Advanced (Before top centre)

Crankshaft position	38°
Contact Breaker Gap—in.	0.014—0.016
Contact Breaker Gap—mm.	0.35—0.40

SPARK PLUGS

Type	Champion N4
Point Gap—in.	0.025

CAPACITIES

Fuel Tank	4½ Imperial galls. (5-12 U.S. galls.)
Oil Tank	6 pints (Nominal)
Gearbox	1¼ Imperial pints (700 c.c.) 1½ U.S. pints
Primary Chaincase	⅝ Imperial pint (350 c.c.) ¾ U.S. pint
Front Forks (each leg)	⅓ pint (200 c.c.)

CARBURETOR

Amal Type	626
Main Jet	150
Needle Jet	106
Needle Type	Std.
Needle Position	2nd groove
Throttle Valve	3

SPROCKETS

Gearbox	19
Rear Wheel	50

CHAINS

Primary ⅜ in. pitch Triplex links	82
Secondary ⅝ in. pitch x ⅜ in. wide, links	104

GEAR RATIOS

4th Top	...	...	...	...	...	4.7
3rd Third	...	...	...	...	...	5.6
2nd Second	...	...	...	...	...	7.95
1st Bottom	...	...	...	...	...	11.45
Engine R.P.M. @ 10 m.p.h. Top Gear	...	...	...	...	...	684

TYRE SIZE

Front	...	...	...	...	...	4.10 x 19
Rear	...	...	...	...	...	4.10 x 19

TYRE PRESSURE

Front lb./sq. in. (kg/sq. cm.)	...	...	...	...	25 (1.757)
Rear lb./sq. in. (kg/sq. cm.)	...	...	...	...	28 (1.97)

BULBS

Headlight 12V.50/40W Pre-focus	...	...	...	...	Lucas 414
Parking Light 12V. 4W M.C.C.	...	...	...	...	Lucas 222
Stop/Tail Lamp 12V. 6/21 W. (Offset Pin)	...	...	...	...	Lucas 380
Speedometer 12V. 3W. M.E.S.	...	...	...	...	Lucas 987
Oil Warning 12V. 2W. (BA7S)	...	...	...	...	Lucas 281
Main Beam Warning Lamp (BA7S)	...	...	...	...	Lucas 289
Fuse Rating (Amps)	...	...	...	...	35

OVERALL DIMENSIONS

Length—in. (cms.)	...	...	...	...	86 $\frac{3}{4}$ (220.34 cms.)
Width—in. (cms.)	...	...	...	...	28 $\frac{1}{2}$ (72.39 cms.)
Overall Height—in. (cms.)	42 $\frac{1}{2}$ (107.95 cms.)
Weight—lbs. (kg.)	470 lbs. (213.4 kg.)

COLOUR	<i>Aquamarine</i>
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GENERAL DESCRIPTION

This handbook refers to the TRIUMPH TRIDENT combined motor/gearbox unit of 750 c.c. (45 cu. ins.) capacity. The vertical three cylinder, air cooled motor has overhead valves operated by push rods and has a bore of 67 mm. (2.67 in.) and a stroke of 70 mm. (2.751 in.). Lubricant is fed from the oil tank to the oil pump which has an anti-drain valve. It then passes through a cartridge filter through drillings to the centre main bearings and big-ends lubricating the bores, roller and ball journal main bearings and so forth by splash. A bleed from the centre main bearing caps feeds the exhaust and inlet cam followers under pressure. Oil drains back to the crankcase where it passes through a strainer and is drawn back through the scavenge side of the oil pump, returning to the oil tank via a cooler. The rocker feed is taken from the oil line between the scavenge pump and oil cooler. The lubricant drains back to the crankcase bottom filter and is then drawn by the scavenge side of the pump back to the tank.

The primary drive is by triple row chain and a diaphragm clutch. The clutch runs dry in a separate compartment, the primary chain being in an oil bath chaincase. The four-speed foot-controlled gearbox is contained in the same housing as the motor but the lubrication systems are entirely separate. The gearbox is lubricated by oil contained in the housing. The final drive is by single chain.

The telescopic front forks are mounted in the frame by cup-and-cone ball bearings. The load is carried by two coil springs in compression and the movement is controlled by integral hydraulic damping which uses normal grade engine oil in each leg.

The rear suspension is a forked member pivoting on bronze bushes which are lubricated by periodical high-pressure greasing. The load is carried by Girling combined coil spring and hydraulic damper units. The spring is adjustable for load but the hydraulic system is completely sealed and needs no attention.

The front wheel size is 19 in. (48.3 cm.) rim diameter with a 3.25 in. (8.25 cm.) section front tyre and an 8 in. (20.3 cm.) diameter front brake. The rear wheel has a 4.10 x 19 (10.25 x 45.2 cm.) section tyre with a 7 in. (17.8 cm.) diameter brake.

The electrical system is supplied from an alternating current generator contained in the timing cover and driven from the crankshaft. The output is fed through a rectifier via a Zener Diode to a 12 volt battery. Ignition is by three coils controlled by a triple contact breaker driven off the exhaust camshaft.

IMPORTANT NOTE

The positive side of the system is grounded to the frame.

LAYOUT OF CONTROLS

ON THE HANDLEBAR

Clutch lever. On left handlebar. The clutch couples the motor drive to the gearbox and rear wheel. Pull the lever towards the handlebar to disengage the clutch.

Horn-push and dipper switch. On left handlebar. Use the lever to change the headlight beam between the main and dipped positions. Press the domed top to sound the horn.

Front brake lever. On right handlebar. Pull the lever towards the handlebar to apply the front brake.

Throttle control. Twist the right handlebar grip towards you to increase the engine speed. Twist it away from you to reduce speed.

Steering damper. Large knob placed centrally on the steering head. Turn it clockwise to increase the friction on the steering for rough roads.

Kill button. On right handlebar, press to stop motor. When parking, switch off ignition and remove key.

Parking lock. Turn handlebar to full left lock before turning key clockwise to lock.

Air control. On right handlebar. Close lever to the stop to enrich the mixture only when starting a cold motor.

ON LEFT HEADLAMP BRACKET

Lighting switch. Operated by a toggle lever. Top position is "OFF". Move down to first position for pilot lights and down to the bottom position for full lights. Lights are not operative unless the ignition is switched "on".

ON BINNACLE

Ammeter. Indicates the rate of electrical current flow into or out of the battery.

Hi-beam warning lamp. (Red).

Oil pressure warning lamp. (Blue). On when the motor is stopped but ignition turned on. When the engine is started the light remains on at slow tickover. As the motor speed rises, the light is extinguished. Should the light show with the motor running beyond tickover kill the motor instantly and investigate the cause.

Speedometer. Indicates the speed and registers total and trip mileage. To set the trip indicator to zero, twist the knob clockwise. Do not pull the knob.

Tachometer. Indicates the engine speed in increments of one hundred.

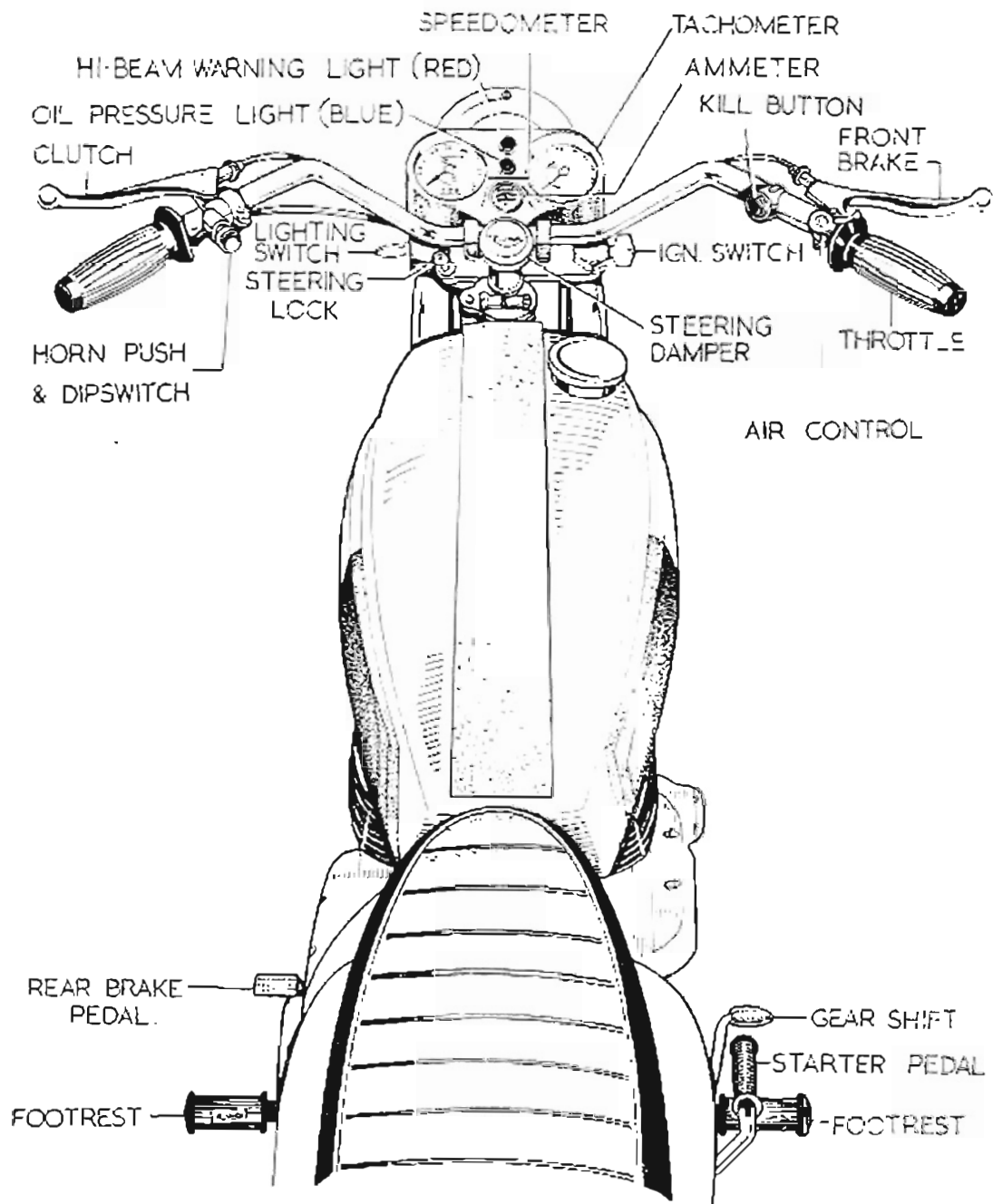


Fig. 1. Control Layout.

ON RIGHT HEADLAMP BRACKET

Ignition switch. Operated by a key. Turn the key clockwise to switch on ignition.

N.B. Note ignition and parking lock key serial numbers in case of loss.

ON GAS TANK

Gas taps. At the rear underneath the tank. Turn down the lever on the right tap for normal running. When the reserve is required turn down the lever on the left tap. Always turn off both taps when parking.

FOOT CONTROLS

Brake pedal. In front of left footrest. Press down to apply the rear wheel brake.

Gearshift lever. In front of right footrest. Press down to shift to a lower gear or pull up to change to a higher gear. The lever is spring loaded and always returns to the central position.

Starter pedal. The folding pedal behind the right footrest.

Toolkit. Located behind the left hand side panel. To detach the panel, lift the twinseat and unscrew the knob at the forward end of the panel. Slide the panel forward clear of the two rear support pegs.

TAKING THE MOTORCYCLE ON THE ROAD FOR THE FIRST TIME

In most cases the dealer will have checked the oil levels in the gear-box, primary chaincase and oil tank, checked the tire pressures and filled the dry-charged battery; if in doubt check them again. Replenish the gas tank with a suitable grade of fuel and the motorcycle is ready for starting.

TO START THE ENGINE

1. Select the neutral position between first and second gear.
2. Pull in the clutch lever and operate the starter pedal several times to free the clutch.
3. Turn on the gas tap and hold down for approx. 5 seconds each of the spring loaded tickler buttons which flood the carburetors and enrichen the mixture. In cold weather close the air control).

4. Place the key in the ignition switch and turn clockwise.
5. Press down the starter pedal gently until you feel some resistance; then press harder with the throttle slightly open when the motor should start.
6. Open the air control as soon as the motor will allow it without stalling.

RUNNING IN YOUR NEW MOTORCYCLE

Although the new parts are machined as accurately as possible the moving parts need to mate with each other or become what is known as "broken-in". At a low constant speed this would take a considerable mileage, therefore the ideal method of running-in is to increase progressively the load and length of time the load is maintained. These machines will travel at 50 m.p.h. (80 Km/h) with only a small throttle opening on a level road without harm when new but any use of a large throttle opening, even in a lower gear, other than for a very short time may cause damage.

Shift gear frequently so that the motor is always working easily; neither pulling hard in a high gear nor revolving fast in a low gear. The extra use of the gearbox helps to run-in all the transmission parts. It is difficult to quote a set mileage but provided that the running-in is done intelligently it should be possible to use maximum performance after 1,500 miles (2,500 Km). Whenever the maximum performance is used it is a good plan to snap shut the throttle for a moment occasionally as this sucks a certain amount of oil up the cylinders.

Be sure to take your motorcycle back to the dealer from whom you purchased it at 1,500 miles and have it serviced by him. Failure to have your dealer carry out the 500 mile and 1,500 mile free service checks can result in the loss of benefit of the U.S. Triumph 90 day guarantee.

TO ADJUST THE VALVE OPERATING MECHANISM

There are six adjusters on the rockers which are accessible after removing the two long inspection covers from the rocker boxes. The clearance must always be checked when the motor is cold and the

correct figures for your model are listed in the Useful Data, page 5. It will be easiest to find the correct point of the stroke to adjust the valve clearance if you put the machine on the centre stand, engage top gear, and then remove the sparking plugs. By turning the rear wheel you can then turn the crankshaft and position the valves.

It should be noted that the valve adjustment procedure is the same for both inlet and exhaust valves. It is essential for two tappets to be "on the rock" i.e. just opening whilst the third one on the same camshaft is reset, being on its seating. It is suggested for convenience that the three clearances on the inlet side of the unit are dealt with before the exhaust clearances.

Starting with the inlet centre and right hand tappets "on the rock" check that the left clearance 0.006 in. using a feeler gauge between the valve stem and adjuster. If necessary slacken the locknut and turn the adjuster until the correct feeler gauge will just pass between the valve and adjuster. Hold the adjuster securely whilst the lock nut is retightened. Recheck the clearance to ensure that it has not been disturbed during locking up. The engine should then be turned to reset the centre inlet clearance at which stage the left and right inlets should be "on the rock". Repeat the adjustment sequence then and proceed in turn with each of the remaining tappets. Note that the exhaust tappet clearances should be 0.008 in. Replace the rocker covers, using new joint washers if necessary and refit the sparking plugs.

TO ADJUST THE BRAKES

Front brake

The adjustment of the front brake operating mechanism is by means of a knurled finger-operated nut incorporated in the handlebar abutment. Turn the nut anti-clockwise to take up the clearance in the operating cable. The exact setting will depend on the size of the rider's hand but the lever must not contact the handlebar when the brake is fully applied or the braking effect will be severely restricted.

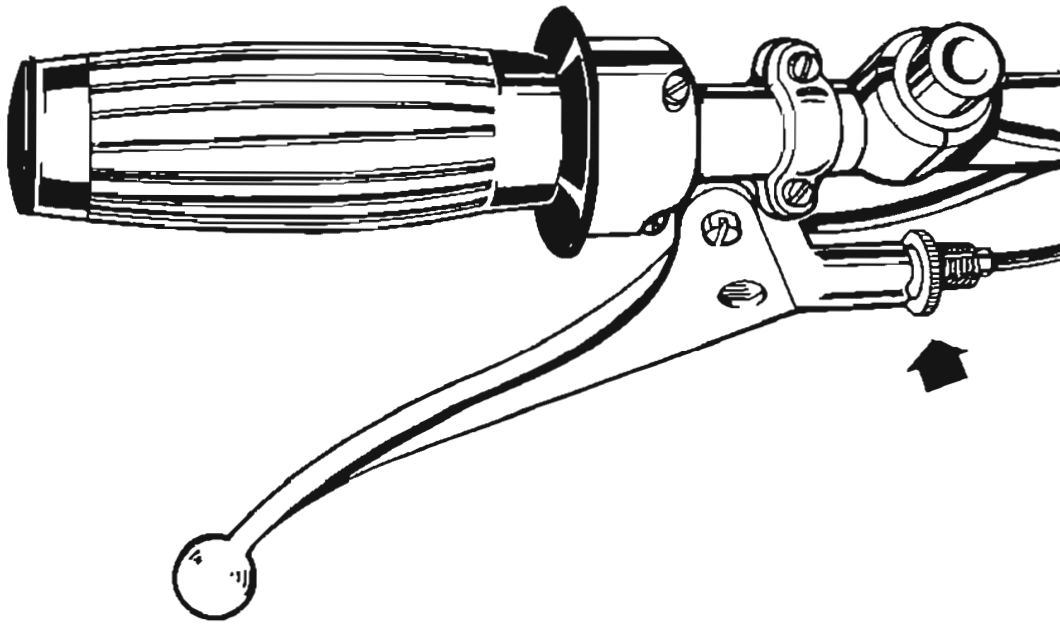


Fig. 2. To adjust the front brake.

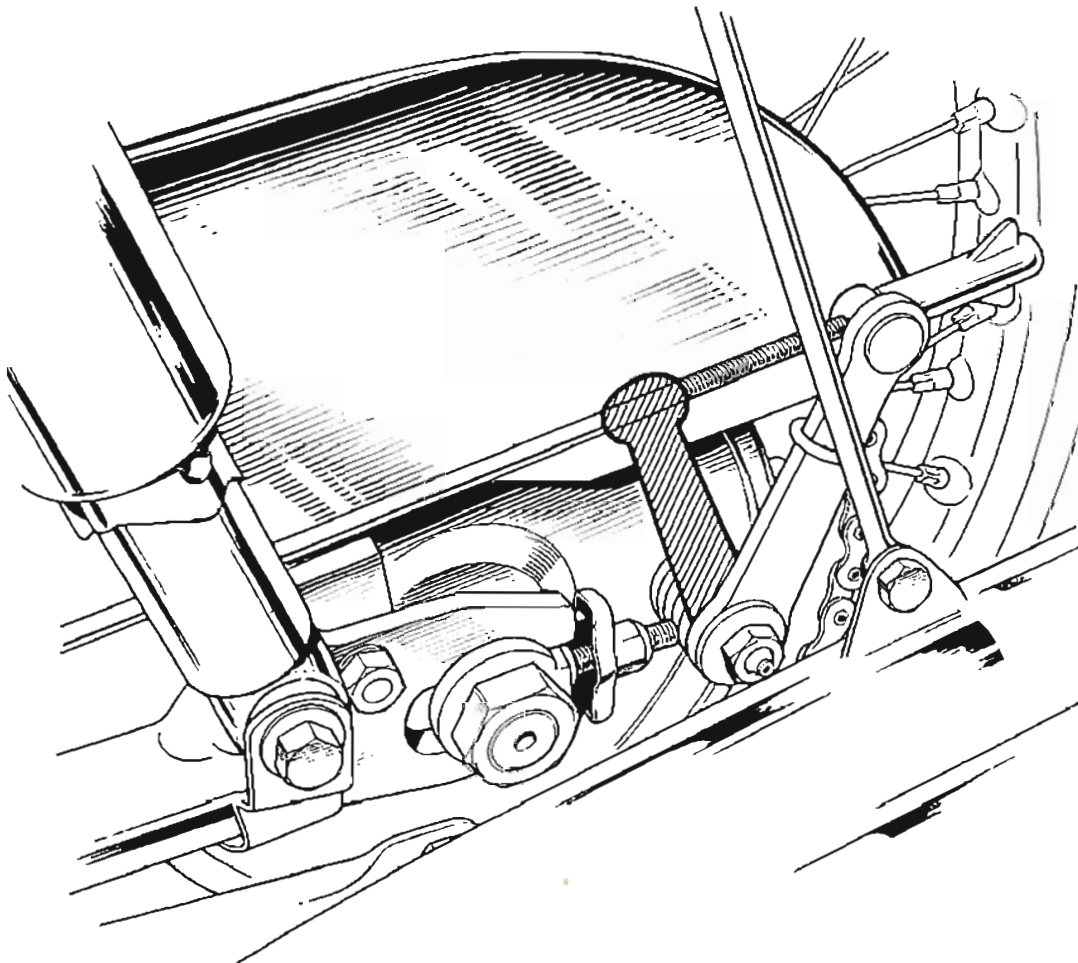


Fig. 3. To adjust the rear brake.

Rear brake

The rear brake pedal is adjustable for position and any adjustment for the pedal position should be made before adjusting the free movement. From the static position before the brake is applied there should be about $\frac{1}{2}$ in. (1.2 cm.) of free movement before the brake starts to operate. The actual adjustment is by means of a finger operated nut on the rear end of the brake operating rod (see Fig. 3). Turn the nut clockwise to reduce the clearance.

TO ADJUST THE CHAINS

Primary chain

The primary chain is of the Triple row type and is not adjustable as the centres of the engine shaft and gearbox are fixed. Provision for the take-up of wear in the primary chain is made by means of a rubber-faced slipper blade below the bottom run of the chain. The free movement in the chain can be felt with a finger after removing the top inspection plug. Do not move the chain by using the starter pedal while your finger is inside the case. The correct chain adjustment is $\frac{1}{2}$ in. (1.2 cm.) free movement. To reduce the amount of slack remove the plug with the extended head from the front bottom of the case and tighten the slotted adjuster nut at the front end of the tensioner with a screwdriver. After replacing the plug in the chaincase always remember to replenish the oil with $\frac{5}{8}$ pint (350 cc.) of SAE 20 grade.

Rear chain

The adjustment of the rear chain is controlled by draw bolts fitted to each end of the rear wheel spindle. The correct adjustment for the rear chain is $\frac{3}{4}$ in. (1.8 cm.) free movement with the machine on its wheels and the chain at its tightest point or $1\frac{3}{4}$ in. (4.3 cm.) with the machine on the stand and the chain at its slackest point. If the adjustment of the chain is outside these limits it should be corrected by loosening the wheel nuts and nut securing the torque stay to the brake anchor plate. Tighten the wheel spindle nuts and check the chain adjustment again. If the wheel alignment was correct originally the adjustment of the nuts by an equal number of turns should

preserve that alignment but if you are doubtful whether the rear wheel is in line then you should use a straight edge or piece of string alongside the rear wheel, making allowance for the difference in section between the rear tire and the front tire and then tighten or loosen the draw bolt adjuster on the right side so that the rear wheel lines up with the front wheel. If the rear wheel is not in line the road holding of the machine will be adversely affected and the effect on the rear chain and rear wheel sprocket will cause rapid wear. When the adjustment is satisfactory check the tightness of the wheel spindle nuts, adjuster draw bolts and brake torque stay nut. Finally check the adjustment of the brake operating rod.

A positive oil feed to the rear chain is taken from the return side of the oil tank. Provision for adjusting the rate of flow is made by removing the oil tank cap and operating a screw which will be observed in the oil tank neck. Turn the screw clockwise to reduce the flow and anti-clockwise to increase it.

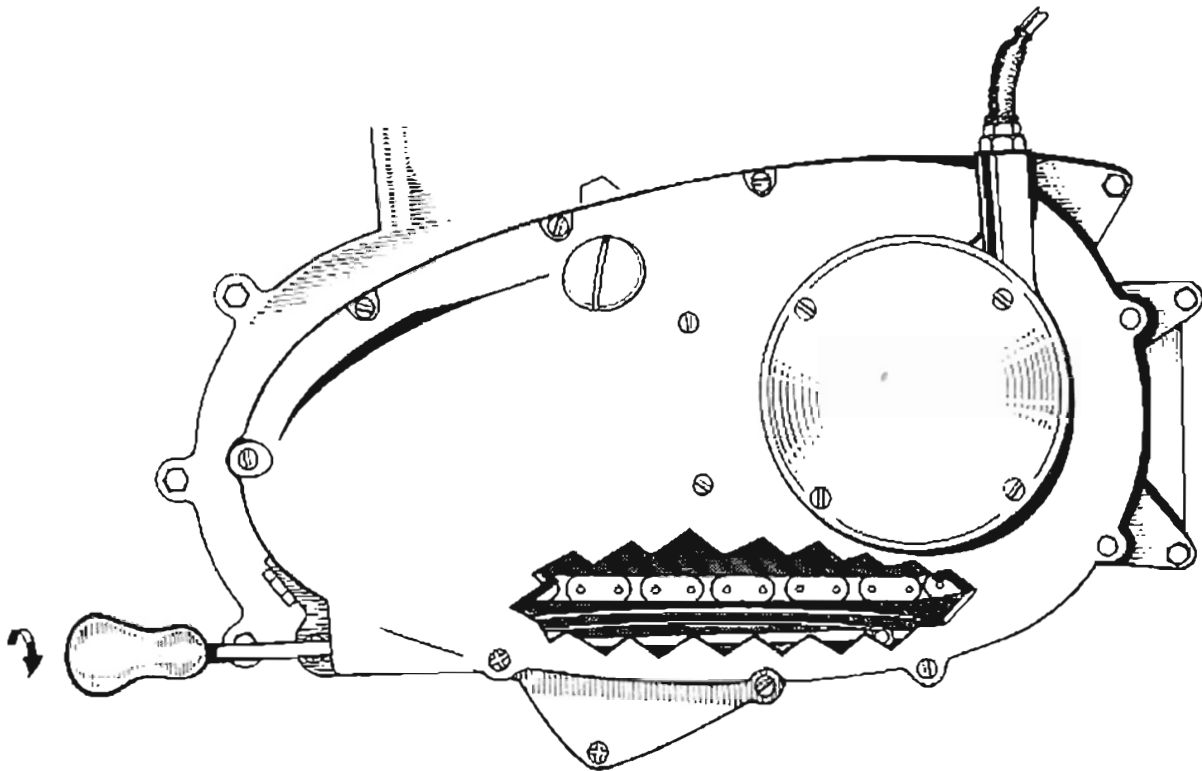


Fig. 4. To adjust the primary chain.

To adjust the clutch operating mechanism

Removal of the screws, inspection plate and gasket to the rear of the outer primary chaincase allows access to the clutch operating mechanism. Slacken off adjustment completely with the knurled nut at the handlebar abutment. Slacken the large nut in the centre of the thrust mechanism and screw anti-clockwise the slotted adjuster until this tightens, indicating that the pressure plate is lifting. Screw the adjuster back $\frac{1}{8}$ th turn until the thrust mechanism is approximately $\frac{1}{16}$ in. clear of the stop. Holding the slotted adjuster with a screwdriver, retighten the locknut securely. Finally adjust the knurled nut at the handlebar abutment until there is approximately $\frac{1}{8}$ in. (3 mm.) free movement in the cable.

To change the clutch cable

To remove the clutch cable slacken the adjustment at the handlebar abutment and then detach the nipple from the handlebar lever and detach the cable completely from the abutment and adjuster. At the primary case end of the cable slide the rubber cover upwards to give sufficient clearance and then lift the outer cover of the cable until the slotted ferrule can be removed. Unscrew the abutment from the primary chaincase outer cover and then lift it upwards until the cable can be detached from the clutch operating arm, revealed by removal of the four screws and inspection cover.

To replace the clutch cable, first pass it through the rubber cover and bottom abutment complete with fibre washer. Engage the cable nipple with the operating arm and tighten the abutment. Replace the slotted ferrule and slide the rubber cover into position. Pass the cable through the adjuster and abutment at the handlebar end and fit the cable nipple. Adjust the mechanism as described above, finally refitting the inspection cover and screws.

TELESCOPIC FRONT FORKS

The only routine attention needed to the front forks is checking the adjustment of the steering head races and changing the oil. Use SAE 20 oil and change the oil as specified on page 33.

To adjust the steering head races

The steering head races may require adjustment once or twice in the early stages of a machine's life but will rarely require attention after that. To check the adjustment, stand on the right side of the machine with the fingers of the left hand resting on the frame and the dust cover of the top bearing. With the right hand apply the front brake and rock the machine forward. Any play will be felt by the fingers of the left hand. To make the adjustment place the machine on the stand and unscrew the steering damper knob. Slacken the pinch bolt at the back of the fork top lug and tighten down the large adjusting nut on the fork stem until the play is just taken-up. The forks and wheel should turn freely from lock to lock without any dragging or hesitation. If the adjustment seems correct but the movement is rough or jerky then the steering head races are probably damaged and it will be necessary to replace them. When the adjustment is correct tighten the pinch bolt and replace the steering damper knob.

To change the oil in the telescopic forks

Remove the small sloping bolt immediately above the wheel spindle on the outside of each fork leg. Allow the oil to drain into a suitable container and then remove the last drops by pressing on the handlebars and pumping the forks up and down. Replace the drain bolts, making sure that the small fibre washers are in good condition. To replenish the fork legs remove the large chromium plated nuts at the top of the fork; this should be done on each side separately with the machine on the centre stand. The correct quantity for each leg is shown on page 6.

REAR SUSPENSION

The swinging fork pivots on bronze bushes which should be lubricated with a high pressure grease gun at least every 1,000 miles (1,600 Km) until grease is seen to be coming from each end plate seal. There is one nipple only, beneath the centre of the fork bridge. If the mileage intervals are not convenient, for instance you may be away on holiday at the next time when greasing is due, then it is better to grease more frequently rather than to extend the interval.

The movement is controlled by Girling combined coil spring and hydraulic damper units. The hydraulic damping mechanism is completely sealed but the static loading of the spring is adjustable. There is a three position cam ring below the chromium plated dust cover and a "C" spanner is provided in the toolkit. To increase the static loading of the spring place the machine on the stand so that there is least load on the spring and use the "C" spanner to turn the cam; both units must be on the same notch whichever may be chosen.

The standard lowest position is for solo riding, the second position is for heavier solo riders or when luggage is carried on the rear of the machine and the third or highest position is for use when a pillion passenger is being carried.

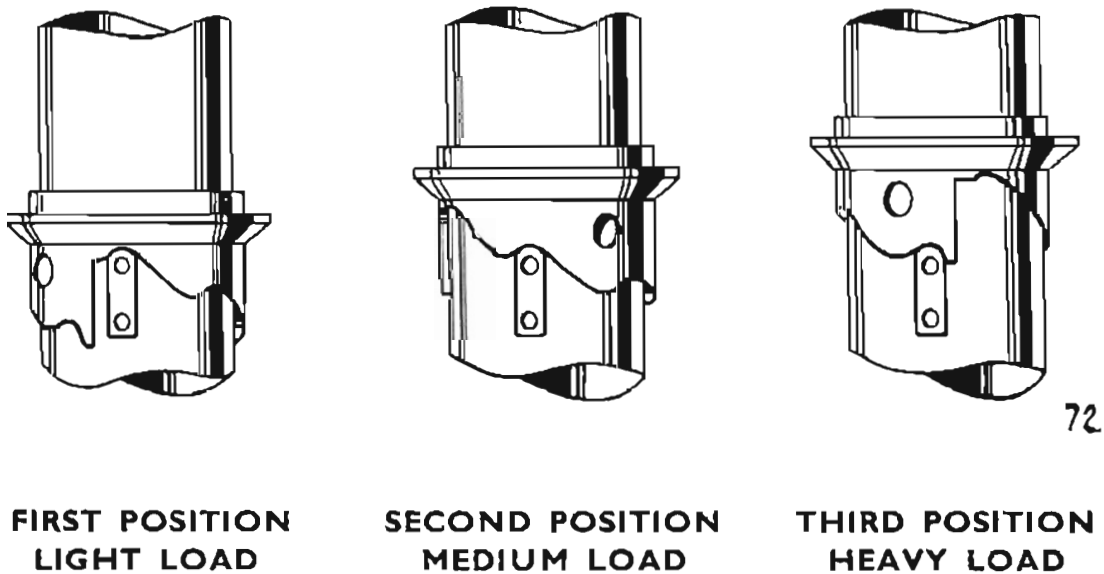


Fig. 5. To adjust the rear suspension springs.

WHEELS

The wheel bearings are filled with grease on assembly and this should be sufficient to last for approximately 12,000 miles (19,000 Km). In particularly dirty conditions it may be necessary to remove the bearings for cleaning and inspection at a lower mileage but this will usually be under cross-country conditions where the rider will be competent to take the decision to carry out this work. Always use the recommended grades of high melting point grease as hub temperatures rise during heavy braking and may cause a softer grease to melt and run into the brakes.

To remove the front wheel

Disconnect the brake operating cable by removing the split pin and clevis pin at the bottom end. Unscrew the four bolts securing the two spindle caps to the fork legs, unscrewing each a little at a time until the four bolts are completely removed. By pressing down on the rear of the machine it will be possible to take out the wheel. To replace the front wheel engage the slot on the brake plate with the peg on the inside of the fork leg and place the spindle under the fork ends. Hold the caps in position and tighten the four bolts a little at a time until they are fully home. Connect the brake cable and replace the clevis pin and split pin.

Slacken the nut on the brake plate near the anchor peg and keep the brake applied hard to centralise the shoes whilst tightening the nut.

Rear wheel

Slacken the bolt at the rear of the chainguard so that the chainguard can be swung upwards. Make sure that the machine is in gear so that the chain does not fall off the gearbox sprocket and then remove the connecting link. Unscrew the nut from the end of the brake operating rod and if necessary disconnect the snap connector in the lead to the brake stop light to ensure that the light does not remain on. Unscrew the nut which secures the brake torque stay to the anchor plate and finally unscrew the wheel spindle nuts and remove the wheel.

Replacement is the exact reverse of the removal procedure but always check the chain adjustment and wheel alignment, see Page 15.

TIRES

The tire size is 4.10 x 19 front and 4.10 x 19 in. rear. The pressure should be checked regularly, preferably every two weeks. After checking the pressure the metal cap should always be replaced as it forms a seal against dirt and also prevents accidental deflation of the tire at high speeds.

The tire pressures recommended below are suitable for a 12 stone (76 Kg.) rider and if a pillion passenger is carried the pressure in the rear tire should be increased by 6 lbs./sq.in. and in the front tire by 6 lbs./sq.in.

		<i>Inflation pressure</i>	
		<i>lb./sq.in.</i>	<i>Kg./sq.cm.</i>
Front	4.10	25	1.757
Rear	4.10	28	1.97

For sustained speeds over 100 m.p.h. use 32 lb./sq.in. (2.25 Kg./sq.cm.)
For further details consult the Dunlop booklet.

All front wheels are balanced complete with tire and tube before leaving the factory and if the tire is removed it should be replaced in the same position with the balancing spot level with the valve. If a new tire is fitted the weights should be removed and the wheel re-balanced, adding weights as necessary until it will remain at rest in any position. Make sure that the brake is not binding while the balancing operation is being carried out.

IGNITION TIMING

The ignition contact breaker is in the timing cover on the right of the motor, and is driven by the exhaust camshaft. There is a round chromium-plated cover over it held by three screws. To remove the timing cover, for instance to examine the alternator, the contact breaker (cam and auto-advance assembly) must be released from the camshaft. To release the contact breaker remove the central bolt and use an extractor tool by screwing it into the end of the hollow spindle.

When replacing the contact breaker it must be positioned correctly relative to the exhaust camshaft. A pin is provided in the exhaust camshaft and a slot in the taper end of the auto advance spindle serves as a location. The average owner will find the following method the easiest when setting the ignition timing.

It should be noted that the firing order is 1, 3, 2. The three leads as shown in Fig. 6 are coloured white and black for No. 1 cylinder (timing side), yellow and black for No. 3 cylinder (drive side) and red and black for No. 2 cylinder (centre).

Firstly set the contact breaker points to 0.014–0.016 in. (See page 30.) On the right front of the crankcase just inboard of the timing cover is the blanking plug for the timing plunger—this should be removed. Remove both rocker covers, remove the spark plugs and engage 2nd gear so that the motor can be turned over gradually with the rear wheel.

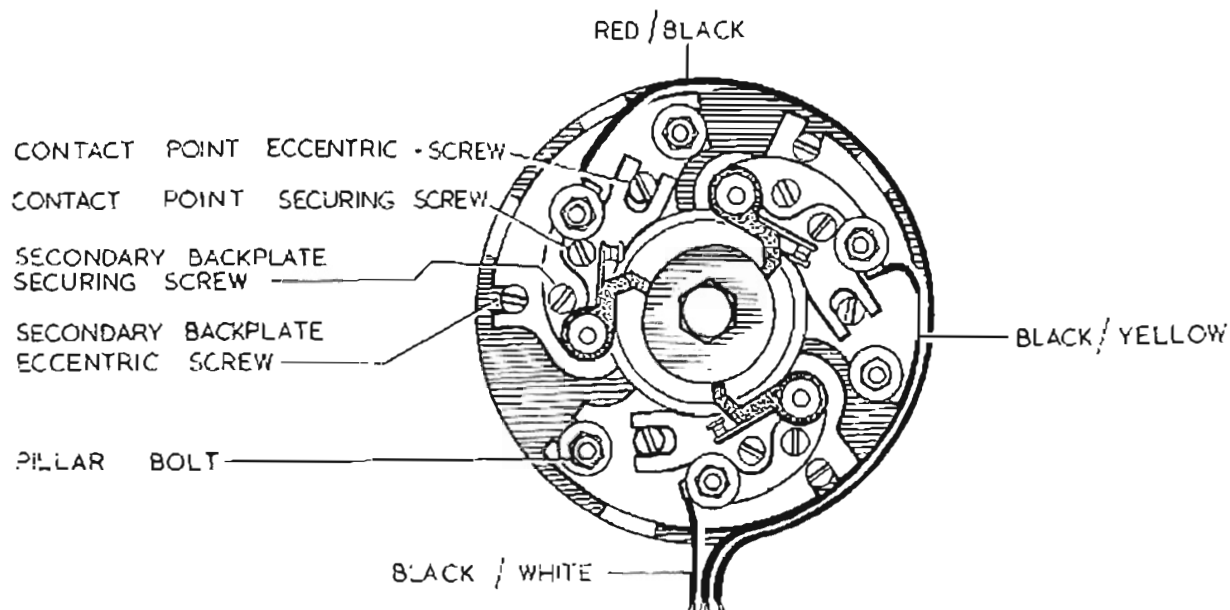


Fig. 6. Contact breaker, type 7CA.

Turn the motor forwards until top dead centre (T.D.C.) is found on No. 1 cylinder with both valves closed (i.e. just perceptible clearance on both tappets). Insert the timing plunger and body and applying light finger pressure to the plunger turn the rear wheel gently backwards whereupon the plunger will locate in the hole drilled into the crank web. This is the 38° position. Turn the auto advance cam clockwise to the fully advanced position. Now check the contact points with the white and black lead are JUST OPENING. If not, slacken the secondary backplate securing screw and turn the eccentric screw to achieve this position. Lock up the securing screw, recheck the points gap and if correct, move to No. 3 cylinder, after withdrawing the timing plunger. Again establish T.D.C. on the compression stroke (both valves closed), turn the motor backwards gently to locate the plunger and then check the points (yellow and black lead) are JUST BREAKING. If not, adjust the secondary backplate as above, lastly locking up and withdrawing the timing plunger. Repeat the procedure for No. 2 cylinder (red and black lead).

The timing will then be correct. Remove the timing plunger and body and replace the blanking plug and washer. Refit the spark plugs and rocker covers and engage neutral.

SPARK PLUG

The sparking plugs are 14 mm. thread x $\frac{3}{4}$ in. reach. The standard grade is Champion N4.

It may be advisable to consult your dealer before varying the grade of plugs, as he will know local conditions and your type of use.

To remove a spark plug use the box spanner and short tommy bar provided in the toolkit. If the plug is difficult to unscrew, pour some penetrating oil round the threads and allow it to soak before continuing.

Every 3,000 miles remove the spark plugs and have them cleaned and tested on a plug cleaning machine. If there is no plug cleaning machine available use a penknife or wire brush to remove carbon deposit. Measure the gap with feeler gauges; the correct setting is 0.020 in. (0.50 mm.). To adjust the gap bend the side electrode but never the centre electrode. Every 10,000 miles fit new spark plugs.

When replacing the plug smear a little graphite grease or engine oil round the threads and make sure the joint washer is in good condition. Tighten with the box spanner and short tommy bar provided in the toolkit.

TO CLEAN YOUR MOTORCYCLE

Do not attempt to remove dried road dirt from your motorcycle, but use a copious supply of water from a hose or bucket containing some proprietary cleaner. Do not direct the water into the electrical system, air cleaner or brakes. Do not use abrasive cleaners on chromium plating but treat it in the same way as the painted surfaces. When the motorcycle is clean and dry, apply a wax polish.

TO CHANGE THE OIL

Whilst the machine is new it is necessary to change the oil in the motor oil tank, gearbox and primary chain case. The reason for this is that the breaking-in process previously mentioned is a type of controlled wearing and minute particles of metal are produced in this process particularly during the very early stages.

The Dealer will drain the motor oil tank, and clean out the gauze strainer in the tank during the 500 mile free service.

It is advisable to have this operation carried out again at 1,000 miles and at the same time have the gearbox and primary chaincase drained and flushed. Whenever the oil is changed it is advisable to do it when the oil is hot and when the majority of the foreign matter is in suspension. Note on refilling the oil tank after draining, the level will require re-checking after the motor has run for several minutes. This is because over a pint is contained by the oil cooler, filter compartment and oil lines.

MOTOR AND OIL TANK

Remove the right hand side panel which is secured by three chrome screws. The oil pipe unions and drain plug are then removable. Remove the drain plug and disconnect the feed pipe at the threaded union and unscrew the upper part of the union which has attached to it the oil tank gauze strainer. Rinse the filters in clean paraffin or kerosene. Remove all foreign matter from the inside of the tank and finally rinse it in the same way. Replace the filters, with new fibre washers when necessary, and replenish the oil tank. The recommended amount of 6 pints (3.35 litres) should bring the level to $1\frac{1}{2}$ in. (4 cm.) below the filler. Finally refit the right side panel and screws. Start the engine and immediately check that the oil is returning to the tank.

A cartridge type oil filter is fitted in the feed side of the lubrication system. Its position will be noted in Fig. 12. Page 34. Generally

speaking the cartridge should be replaced at every second oil change (each 3000 miles). Access to the cartridge is gained by unscrewing the large end plug, removing the spring and withdrawing the element such as with long nosed pliers.

GEARBOX

The drain and level plugs are situated underneath the gearbox. To drain the gearbox remove the assembly. When you are ready to replenish the gearbox replace only the drain plug with the level tube and then add oil to the gearbox through the top filler hole until oil just begins to flow down the level tube, then replace the level plug.

When checking the level remember that normally there will be some oil trapped in the level tube and the gearbox should always be topped up until oil just begins to flow down the level plug whilst the drain plug is removed.

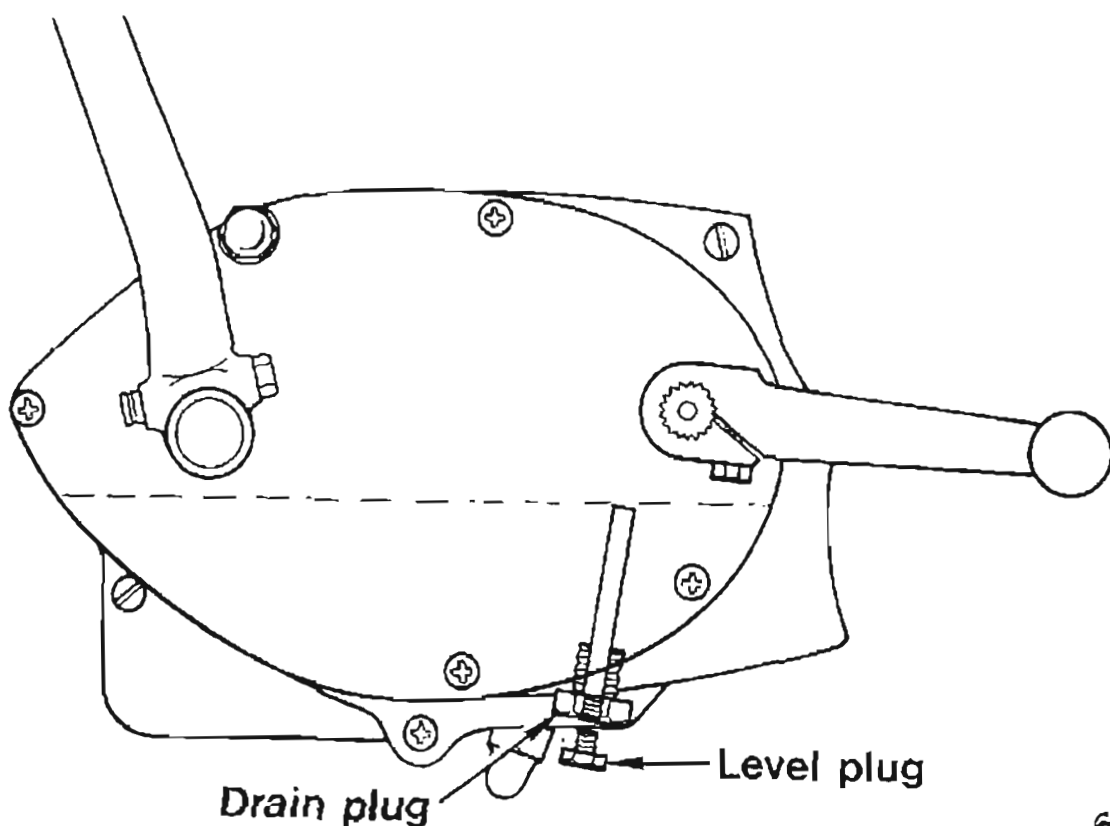


Fig. 7. Gearbox drain and level plugs.

PRIMARY CHAINCASE

The drain plug is in the bottom of the inner portion of the chaincase in a line approximately below the chaincase slotted inspection plug. The level plug is at the front of the inner primary chaincase just above the tensioner blanking plug. It should be noted that after the initial filling of the chaincase, the level will be maintained automatically since the engine breathes via the primary chaincase.

THE AMAL CONCENTRIC CARBURETOR

How it operates

When the motor is idling, mixture is supplied from the pilot jet system, then as the throttle slide is raised, via the pilot by-pass. The mixture is then controlled by the tapered needle working in the needle jet and finally by the size of the main jet. The pilot system is supplied by a pressed-in pilot jet which is non-detachable. The main jet does not spray directly into the mixing chamber but discharges through the needle jet into the primary air chamber and the fuel goes from there as a rich petrol-air mixture through the primary air choke into the main air choke.

This primary air choke has a compensating action in conjunction with bleed holes in the needle jet, which serve the double purpose of air-compensating the mixture from the needle jet and allowing the fuel to provide a well, outside and around the needle jet, which is available for snap acceleration.

Adjustment of the three carburetors

It should be noted that the three carburetors are set up for throttle slide adjustment on the mounting block, prior to assembly. This ensures that all three slides lift together.

The slide operating rod adjusters on top of the carburetors should not therefore need to be disturbed by the private owner. Apart from checking that each pilot air screw is set at $1\frac{1}{2}$ turns out from full in, the only other adjustment in service will be for tickover speed. On the left hand side of the carburetor mounting block will be found the throttle linkage adjustment screw with tensioning spring-screw upwards to increase the tickover speed and vice versa.

The throttle stop screws, needles and needle jets, throttle stops and main jets must not be disturbed or changed without expert advice.

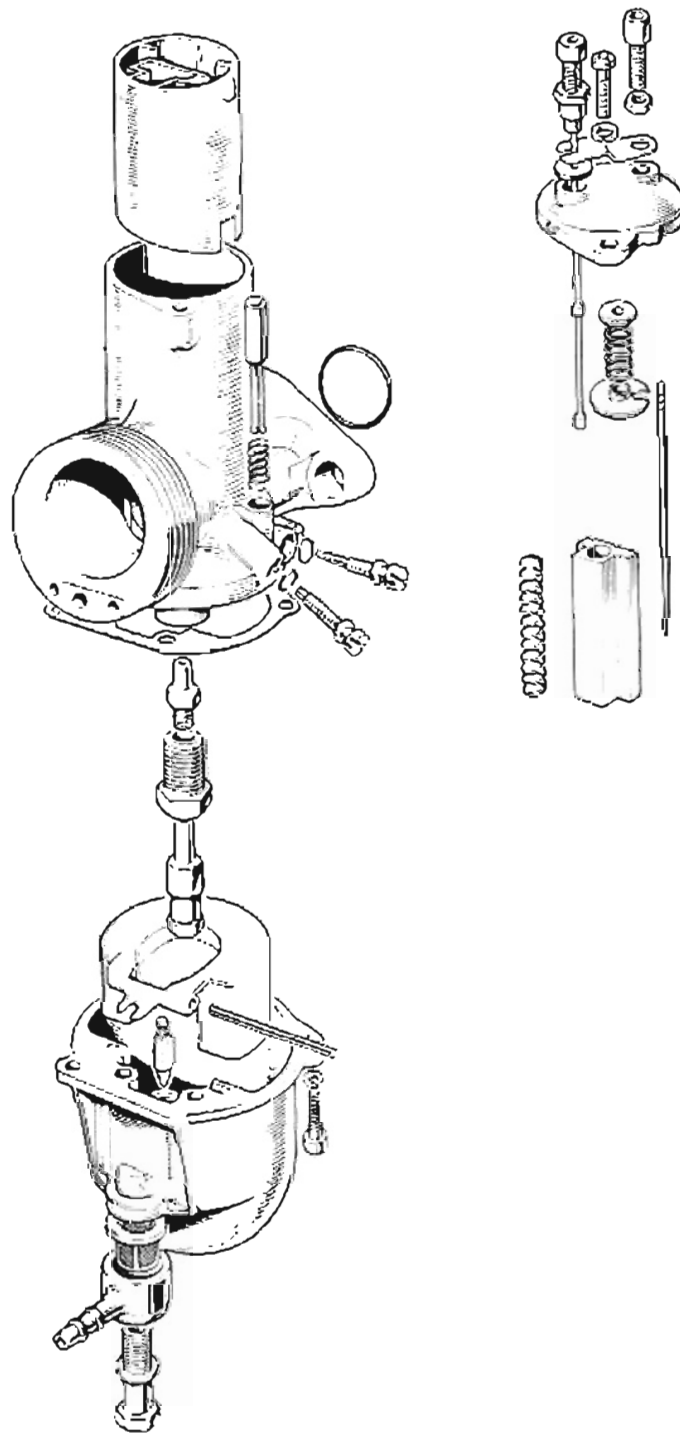


Fig. 8. Amal concentric carburetter.

Air filter

The air filter has a double layer cloth and gauze element which cannot be cleaned. Therefore when the element is badly clogged (between 6,000 and 20,000 miles depending on conditions of usage) the element must be replaced.

ELECTRICAL EQUIPMENT

The electrical system is supplied from an alternating current generator contained in the timing cover and driven from the crankshaft. The generator output is then converted into direct current by a silicon diode rectifier. Direct current is supplied to the battery with a Zener diode in circuit to regulate the current that the battery receives, this depending entirely on the state of charge of the battery. The current is then supplied to the ignition system which is controlled by a triple contact breaker driven direct from the exhaust camshaft. The contact breaker feeds three ignition coils, one for each cylinder. In the case of a flat battery the machine can still be started without difficulty by switching on the ignition as with the normal starting procedure.

The routine maintenance needed by the various components is set out in the following paragraphs. All electrical components and connections including the earth points to the frame of the machine must be CLEAN and TIGHT.

Contact breaker unit, Type 7CA

The contact breaker is contained behind the circular chromium plated cover held by three screws on the right side of the engine. See Fig. 6, Page 22. The nylon heels of the three moving contacts may settle down initially and it is necessary to check the contact breaker gaps after 500 miles. It is essential during this check to apply a little grease at three points on the cam adjacent to each nylon heel for otherwise excessive wear would result. It will be noted that the cam has a scribe mark. To set each set of points, the scribe should be aligned in turn with each nylon heel. Measure the gap with feeler gauges. If it is outside the limits (0.014 in.—0.016 in.) slacken the contact adjusting screws and move the contact with the eccentric screw until the gap is correct and retighten the adjusting screw. Turn the engine forwards until the scribe aligns with the next nylon heel and proceed as above. Finally set the last set of contact points.

Every 3,000 miles subsequently, inspect the contact breaker points and if they are burnt or pitted remove them from the base plate and clean them with fine emery cloth. Wipe with a clean cloth moistened with petrol. Replace the contacts on the base plate making sure that any insulating washers are in their correct positions. Adjust the gap and then clean the second pair of contacts. Place a few drops of clean engine oil on the centrifugal automatic advance mechanism and a little grease on the cam adjacent to each nylon heel. Two drops of oil should also be applied to the spindle which supports the cam to prevent subsequent corrosion. Do not allow any oil on the contacts.

Ignition coils, Type 32,000

The three ignition coils are mounted on a plate beneath the twin seat. Keep the top of the coils clean particularly beneath the electrical terminals. Inspect the cables for frayed wires or damaged insulation. Any damaged cable must be replaced. The leads should be positioned so they cannot short circuit against the oil tank or twinseat pan. The condensers are contained in a rubber covered pack adjacent to the coils.

Battery, Type PUZ5A (single 12 volt)

The lead/acid battery is carried behind the left side panel. Keep the top and the terminals clean. During charging the battery produces gas and this may carry some acid. Wipe up any liquid as it will cause corrosion if it is allowed to remain on metal parts. Check the acid level every week. This should be just above the plates. The positive (+ve) terminal of the battery should be earthed to the frame of the machine, through a 35 ampere line fuse.

Lighting switch, Type 57SA

The lighting switch is fitted into the left hand headlamp bracket. It is a 3 position toggle switch. The five spade terminals should be held firmly in contact with the body of the switch and they should be checked periodically. The switch is sealed and if a fault is suspected, test by substituting another switch.

Ignition switch, Type S45

The switch is fitted to the right headlamp bracket. It is of the barrel type using non-identical "Yale" type keys. The owner should make a note of the key number to ensure correct replacement in case of subsequent loss. No emergency start position is incorporated in the switch, as the machine will start with the switch in the normal ignition position, even with a "flat" battery.

Kill button, Type SA5

A kill button is fitted to the right handlebar. If this is used as an alternative to the ignition key for stopping the engine, ensure that the ignition is turned off for otherwise the battery would be discharged.

Horns. Twin windtone horns are fitted to the rear frame and the relay for these is located on the coil mounting plate beneath the twinseat. The horns and relay are non-adjustable and require no maintenance beyond an occasional check on the cleanliness and security of electrical connections.

Alternator, Type RM20

The alternator is contained in the timing cover and has no wearing parts. Check that the three snap connectors are clean and tight in the output cable on top of the gearbox.

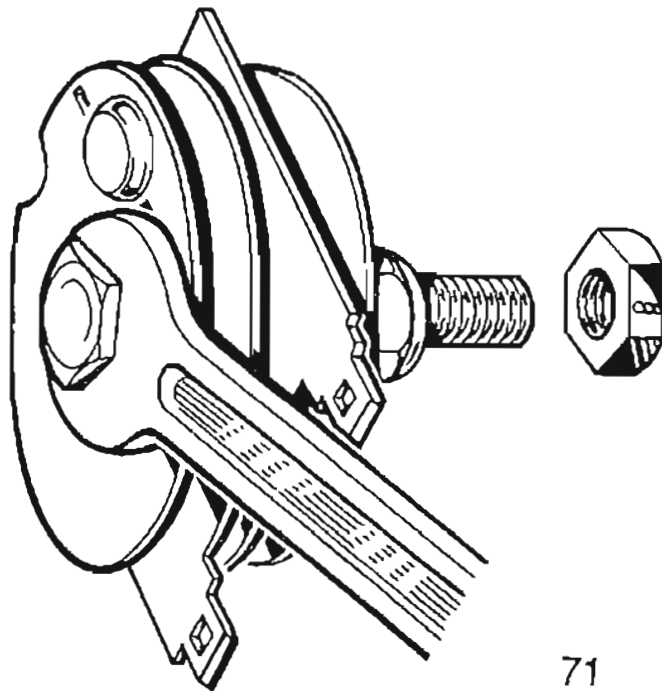


Fig. 9. To secure the rectifier.

Rectifier, Type 2DS506

The central fixing bolt of the rectifier must make electrical contact with the frame of the motorcycle. When tightening a rectifier hold the spanners as shown in the illustration above. Never disturb the self-locking nut which clamps the plates together. If the plates are twisted the internal electrical connections will be broken.

ZENER DIODE

The Zener diode is a small electronic device that acts as a by-pass valve to divert surplus charging current away from the battery. It acts as a voltage regulator and controls the current into the battery, and is mounted on a finned "heat sink" to ensure efficient cooling. Care must be taken therefore not to impair the flow of air around the heat sink. Do not fit the tag on the red ground lead between the diode and the heat sink.

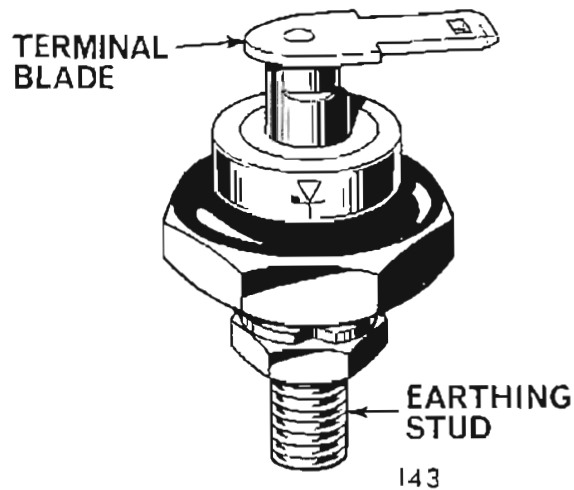


Fig. 10. Zener diode, Model ZD715.

Providing the diode and its heat sink are kept clean, to ensure maximum efficiency, no maintenance will be necessary.

Caution. The body of the Zener diode is made of copper to ensure maximum heat conductivity. This means that the fixing stud has a relatively low tensile strength, and should not be subjected to a tightening torque greater than 2 lbs. ft. (27.6 kg.cm.).

Fuse

A line fuse is included in the electrical circuit and is located in the battery to switch lead. It consists of a plastic tubular holder with a standard 35 ampere rating fuse spring loaded and held in position by a bayonet type fixing cap on the end of the holder. It may be necessary to increase the fuse rating if additional electrical equipment is subsequently fitted to the machine.

If the motorcycle engine at any time appears to run erratically first check that the fuse has not blown, and then ascertain the cause before making a replacement.

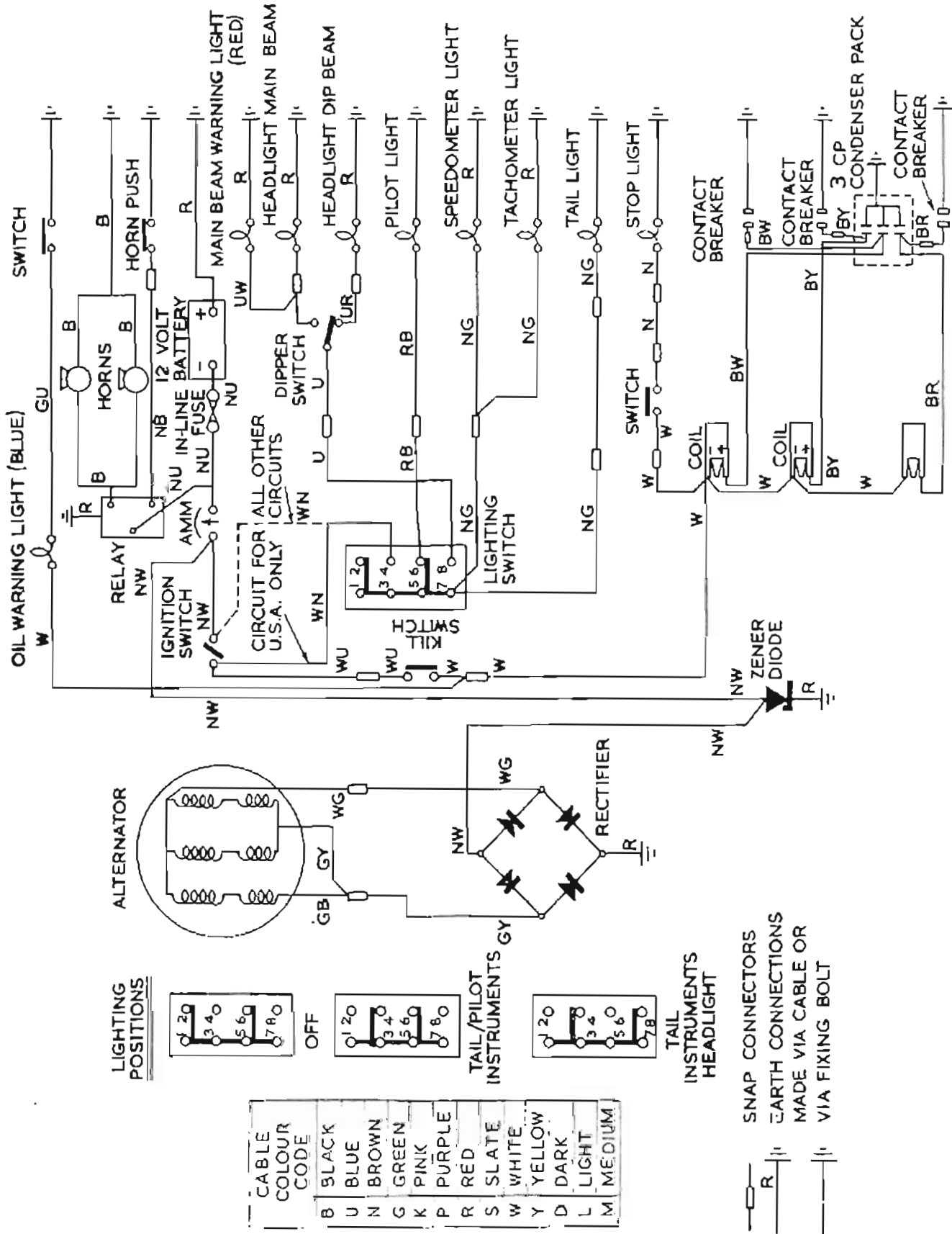


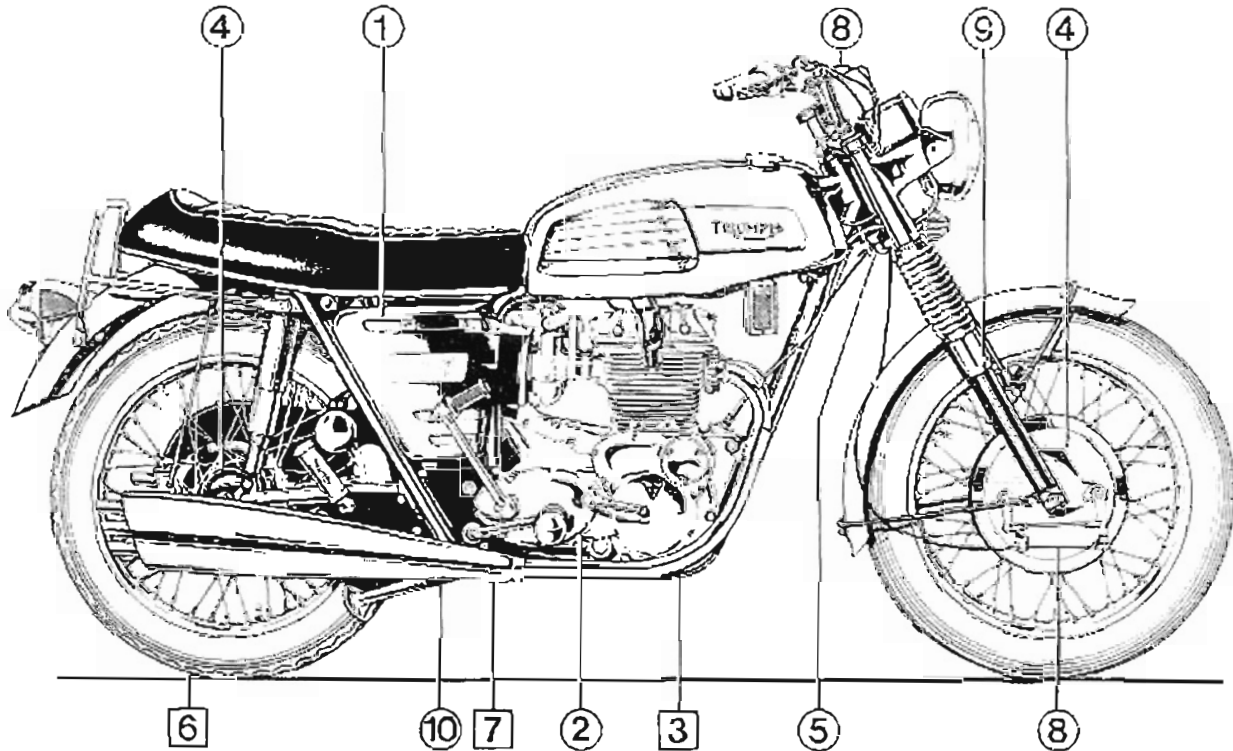
Fig. 11. Wiring Diagram.

ROUTINE MAINTENANCE

	<i>Page</i>
Every week. Check battery acid level	29
Every two weeks. Check tire pressure	21
Every 250 miles (400 Kms.)	
Check level in oil tank	24
Check level in primary chaincase	25
Every 1,000 miles (1,600 Kms.)	
Change oil in primary chaincase	25
Lubricate and adjust control cables including brakes	General
Grease swinging fork pivot	18
Check front chain adjustment	15
Check rear chain adjustment	15
Check nuts, bolts and screws for tightness	General
Every 3,000 miles (4,800 Kms.)	
Check gearbox oil level	25
Check front forks for external oil leakage	19
Check adjustment of valve operating mechanism	12
Clean and adjust sparking plugs	23
Clean and adjust contact breaker	28
Clean air filter	27
Clean carburetor	27
Every 4,000 miles (6,400 Kms.)	
Change engine oil	24
Every 6,000 miles (9,600 Kms.)	
Change oil in gearbox	25
Change oil in front forks	19
Every 8,000 miles (12,800 Kms.)	
Change engine oil and filter cartridge	24
Every 12,000 miles (19,200 Kms.)	
Grease wheel bearings	Workshop Manual
Grease steering head bearings... ..	Workshop Manual

GUIDE TO LUBRICATION POINTS

<i>Illustration No.</i>	<i>Description</i>	<i>SAE Oil grade</i>
1	Motor oil tank	20 or 30
2	Gearbox	50
3	Primary chaincase	20
4	Wheel hubs	Grease
5	Steering head	Grease
6	Brake cam spindle	Grease
7	Brake pedal spindle	Grease
8	Exposed cables	20
9	Telescopic fork	20
10	Swinging fork pivot	Grease
—	All brake rod joints and pins ...	20



Numbers in circles refer to right side of machine.
 Numbers in squares refer to left side of machine.

Fig. 12. Lubrication points.

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