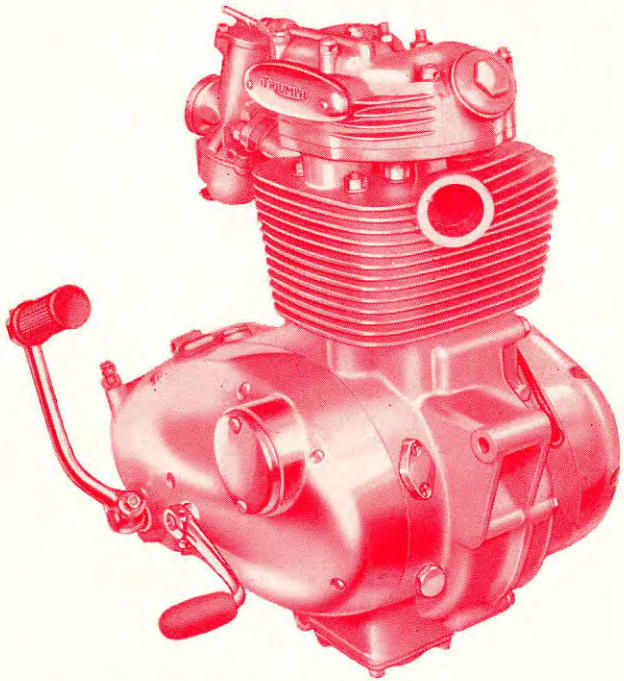
TRIUMPH

OWNER'S HANDBOOK



UNIT CONSTRUCTION
250 c.c. (15 cu. ins.)
TROPHY 250
TR25W

1969 MODEL

U.S.A. EDITION

TRIUMPH

OWNER'S HANDBOOK

FOR

MODEL TR25W

249 c.c. OHV

1969

MODELS

TRIUMPH ENGINEERING CO. LTD.

MERIDEN WORKS · ALLESLEY · COVENTRY · ENGLAND

TELEPHONE: MERIDEN 331 TELEGRAMS: "TRUSTY, COVENTRY"

REF. OH6 THIRD EDITION

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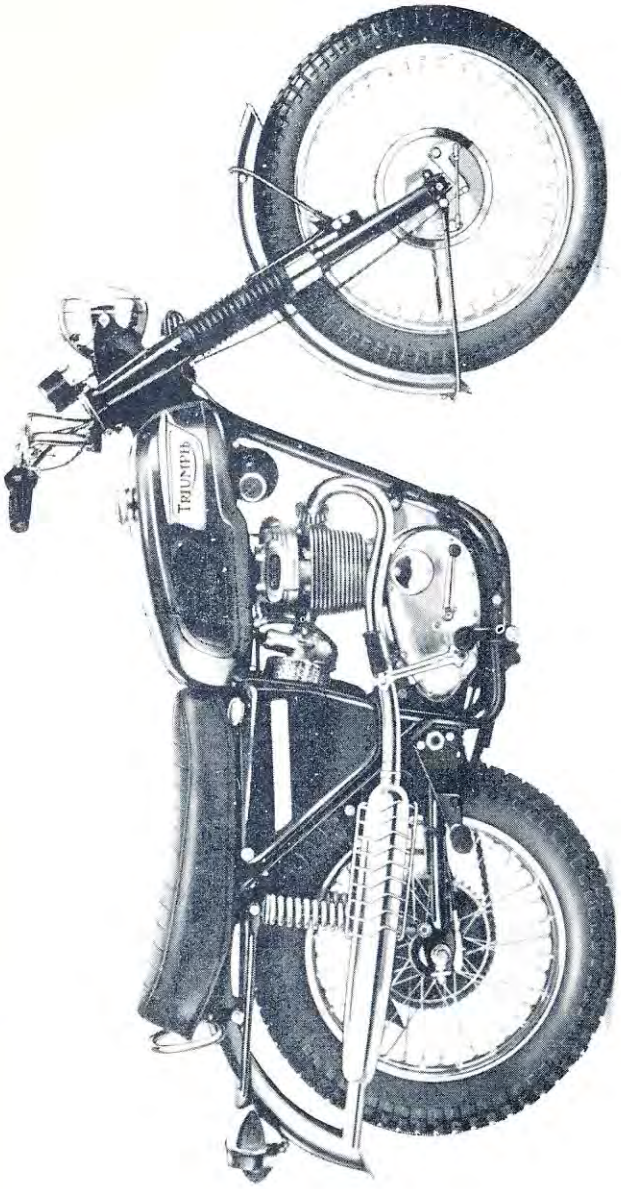


TRIUMPH 250 TROPHY (TR25W)

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 as we do not supply parts or service literature direct from the distributor to individual customers.

When specialised advice is required beyond the ability of the dealer he should write to his distributor. 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 who may be able to provide a replacement to enable your motorcycle to be used while the defective part is returned to his distributor. Guarantee claims in respect of proprietary components should be forwarded by your dealer to his distributor.

As soon as you take delivery of your new motorcycle make certain that the colored registration card supplied with the hand book is mailed to the Triumph distributor for your area. This is extremely important and if your card is not on file with the distributor, you will not receive a copy of the Triumph U.S.A. guarantee and your free service certificate.

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

USEFUL DATA

ENGINE

Capacity (c.c.)	249
Cylinder bore (mm.)	67
Stroke (mm.)	70
Compression ratio	9.6 : 1
Valve timing (.015 clearance)—inlet opens b.t.d.c.	51°
—inlet closes a.b.d.c.	68°
—exhaust opens b.b.d.c.	78°
—exhaust closes a.t.d.c.	37°

SPARKING PLUGS

Sparking plug	Champion N3
Plug points gap	.020 in.
Ignition setting	37° Fully advanced

CAPACITIES

Fuel tank (U.S. gallons)	3.9
Oil tank (U.S. pints)	4
Gearbox (pints)	½
Front forks (pints—each leg)	⅓
Primary chaincase (pints)	¼

CARBURATION (AMAL

Concentric 928/4

Bore (mm.)	28
Main jet	160
Throttle valve	3
Needle position	1
Needle jet	.106

SPROCKETS

Engine sprocket	23T
Gearbox sprocket	15T
Clutch sprocket	52T
Rear chainwheel *	52T

CHAINS

Chain sizes—front	⅜" pitch (Duplex)
—rear	⅝" pitch x ¼"

GEAR RATIOS

Top	7.838*
Third	9.752
Second	12.9
First	20.79

GENERAL DETAILS

Front suspension movement (in.)	5¾
Rear suspension movement (in.)	2¾
Overall length (in.)	83
Wheelbase (in.)	53
Ground clearance (in.)	6
Seat height (in.)	32
Overall height (in.)	42
Handlebar width (in.)	27
Weight (lbs.) dry	285

WHEELS

Tyre size—front	3.25–18
—rear	4.00–18
Tyre pressures:	
Front (p.s.i.)	16
Rear (p.s.i.)	16
Brakes, dia. x width:	
Front (in.)	7 x 1⅛
Rear (in.)	7 x 1⅛

* Models with 49 tooth rear sprocket have ratios: 7.386, 9.189, 12.16, 19.59.

GENERAL DESCRIPTION

This handbook refers to the "250 Trophy" model having an engine/gearbox unit of 249 c.c. (15 cub. in.) capacity. The single air cooled cylinder is of aluminium alloy with an austenitic iron liner. Push rod operated overhead valves are used. The bore is 67 mm. (2.63 in.) and the stroke 70 mm. (2.75 in.).

The engine is lubricated under pressure by a double gear pump with a non-return valve from a 4 pint (2.27 litres) oil tank, the oil draining to the bottom of the crankcase where it is scavenged through a strainer by the second part of the pump to the tank. The rocker gear is lubricated by a bleed off the oil return pipe at the crankcase.

The primary drive is by Duplex chain and four-plate clutch contained in an oil bath chaincase. The four-speed foot-controlled gearbox is contained in the same housing as the engine 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 using oil in each leg.

The rear suspension is a forked member pivoting on a metalastic bush which requires no lubrication. The load is carried by Girling combined coil spring and hydraulic damper units. The hydraulic system is completely sealed and needs no attention.

The wheels are 18 in. (45.72 cm.) diameter front with a 3.25 in. (8 250 cm.) tyre and 18 in. rear with a 4.00 in. (10.16 cm.) tyre. The brake diameter front and rear is 7 in. (17.780 cm.), the front brake being of the twin leading shoe variety.

The electrical system is supplied from an alternating current generator contained in the primary chaincase and driven from the crankshaft. Ignition is by coil controlled by a contact breaker driven off the camshaft. The positive side of the system is grounded.

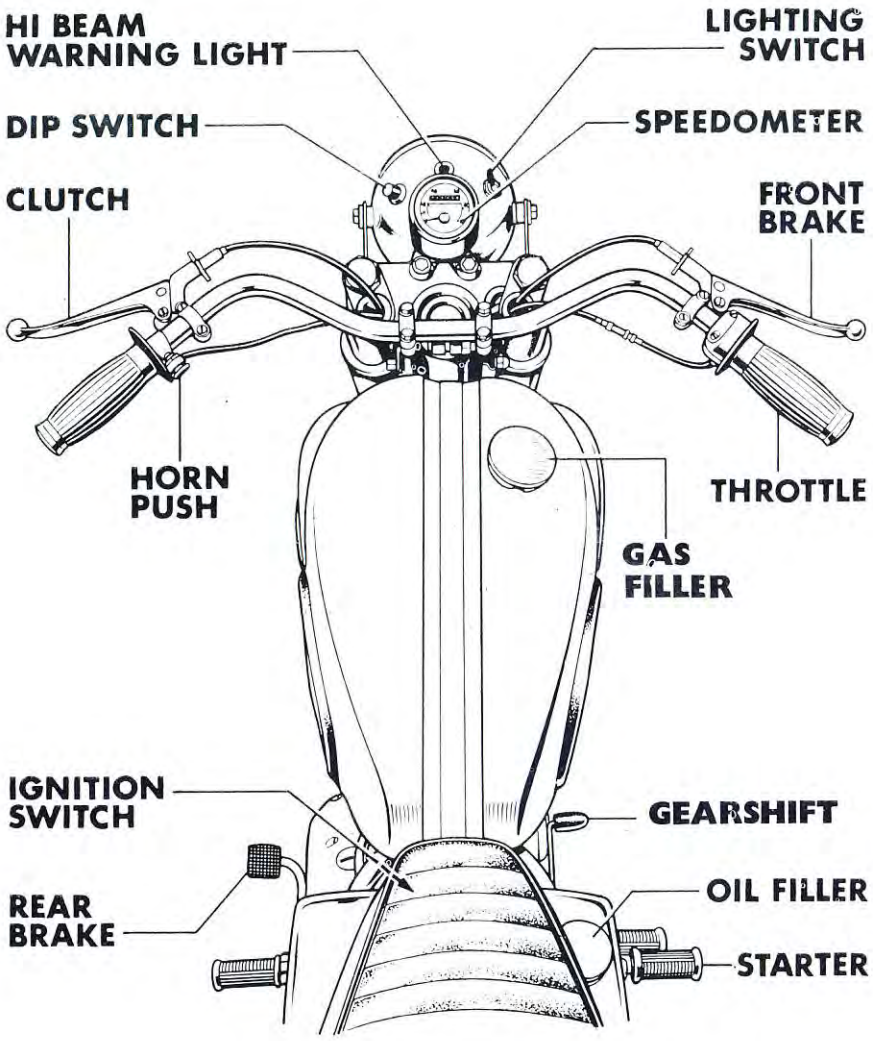


Fig. 1. Control layout.

LAYOUT OF CONTROLS

ON HANDLEBARS

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

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.

IN HEADLAMP

Light switch. A three position toggle switch is used. From the "off" position on left, move the switch right to the first notch for parking lights and to the second notch to full headlamp.

Dipper switch. On the left side of the headlamp. Push to change beams.

Hi-beam warning light. Indicates main headlamp beam position.

ON MACHINE

Ignition switch. On left side forward of the side panel top.

Gas cocks. At the rear underneath the tank. Turn down the lever on the right tap for normal running. When the reserve is required turn the lever down on the left tap. 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 change to a lower gear or pull up to shift 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.

TAKING THE MOTORCYCLE ON THE ROAD FOR THE FIRST TIME

In most cases the dealer will have checked the oil levels in the gearbox, 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 cock and hold down for approx. 5 seconds the spring loaded tickler button which floods the carburetor and enrichens the mixture.

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 downwards with a swinging kick with the throttle slightly open when the engine should start.

BREAKING 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 breaking-in is to increase progressively the load and length of time the load is maintained. These machines will travel at 50 m.p.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 breaking-in is done intelligently it should be possible to use maximum performance after 1,500 miles. 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 cylinder.

Be sure to take you 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

The clearances between the top of each valve stem and the rocker arm, must be set when the motor is quite cold, the clearance being 0.008 in. (inlet) and 0.010 in. (exhaust).

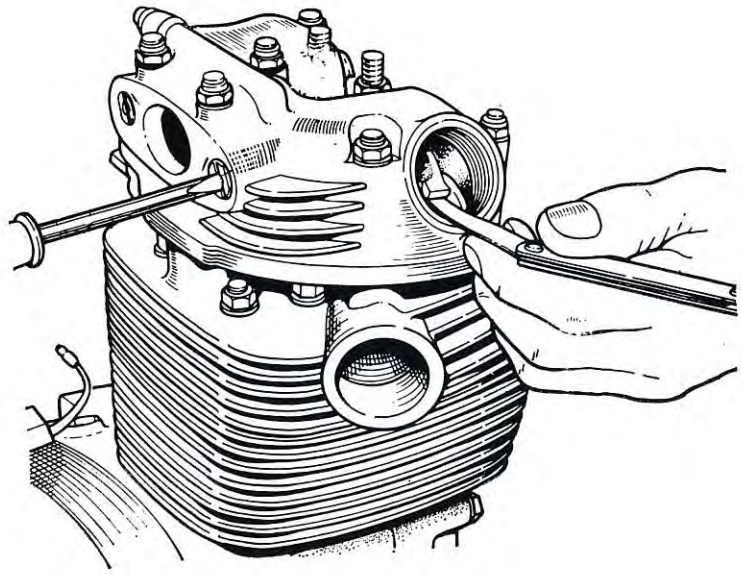


Fig. 2. Checking valve clearances.

Remove the rocker caps and take out the spark plug, to enable the engine to be rotated easily by hand.

Rotate the engine forward until the inlet valve has just closed i.e. the pushrod is just free to rotate. This is the correct position for checking or adjusting the exhaust valve clearance using a feeler gauge.

When the exhaust valve clearance has been set, rotate the engine forward again until the clearance is taken up i.e. just before the valve starts to open. This is the correct position for checking or adjusting the inlet valve clearance.

These motors have an eccentric cam on each rocker spindle, the valve clearances being adjusted in the following manner:—

Remove the cover plate to expose the slotted ends of the rocker spindles and slacken the locknuts on the opposite ends of the spindles (see Fig. 3). To ensure correct positioning of the rocker arms in relation to the valve stems, rotate the exhaust rocker spindle "A" in an anti-clockwise direction until the arm just touches the valve stem and then turn it back sufficiently to gain the correct clearance with the feeder gauge. The procedure for setting the inlet valve clearance is similar except that the inlet spindle "B" must be rotated clockwise.

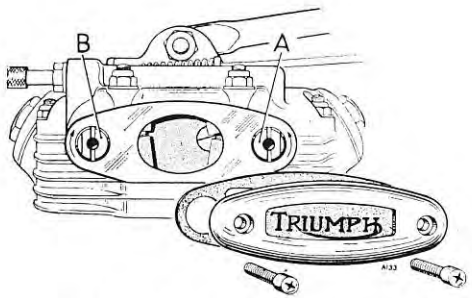


Fig. 3. Valve rocker adjustment.

When the necessary adjustments have been made, secure the spindles with their nuts and re-check the clearances.

Finally, replace the cover plate and gasket and refit the spark plug.

TO ADJUST THE BRAKES

Front brake. 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.
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.

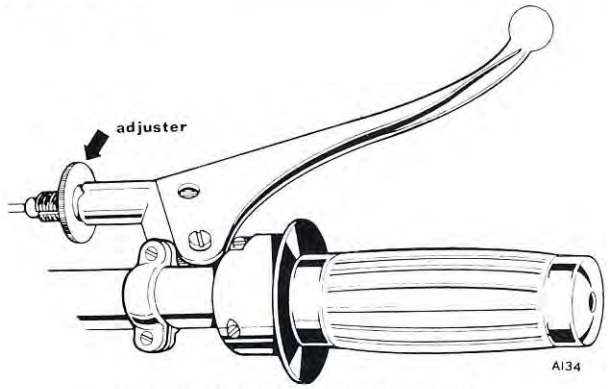


Fig. 4A. To adjust the front brake.

Rear brake. 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. Turn the nut clockwise to reduce the clearance.

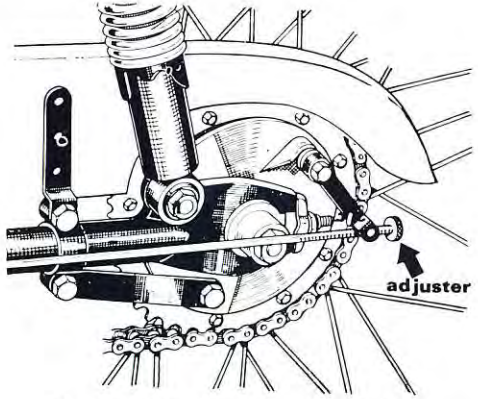


Fig. 4B. To adjust the rear brake.

TO ADJUST THE CHAINS

Primary chain

The unit construction of the motor 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.

On these models an adjustable slipper type tensioner is provided. The chain slackness can be tested with the finger through the aperture, after removal of the top inspection cap. The chain is in correct adjustment when there is a minimum of $\frac{1}{8}$ in. and a maximum of $\frac{1}{4}$ in. of free play at the midway position between the sprockets.

Note.—The motor must be stationary when making this check.

For adjustment of the chain, the cover must first be removed. When the two lower generator retaining nuts (E) Fig. 5 are slackened, the position of the slipper can be altered to give the correct tension.

The only maintenance required is to ensure a satisfactory oil level in the chaincase (see USEFUL DATA). See also Fig. 7.

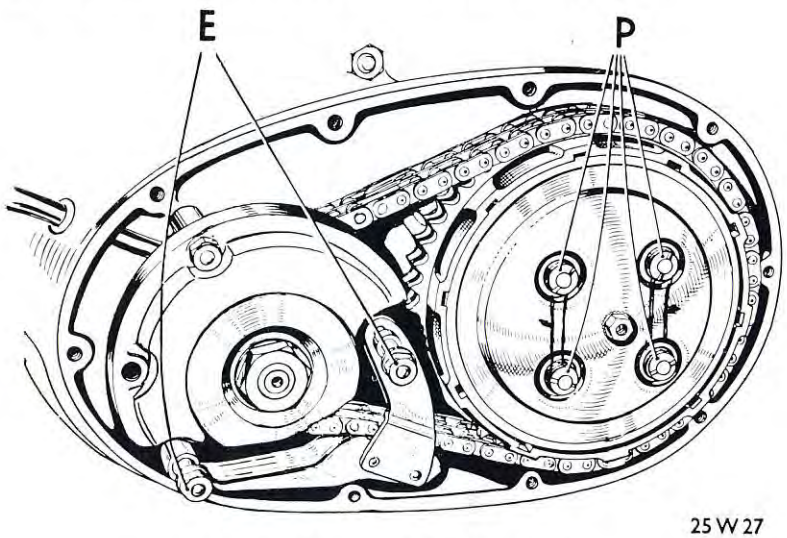


Fig. 5. Primary chain adjustment.

Rear chain adjustment

The rear chain must be adjusted when the wheel is at the lowest point in the suspension. Set the machine on its stand and 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.

First slacken the nuts at both ends of the stay (between the brake plate and the swinging fork tube) and then the brake rod adjuster. Loosen the spindle head on the right side of the machine by one or two turns, followed by a similar action to the spindle nut on the left side.

Draw bolt chain adjusters are used at both ends of the spindle and their nuts (Fig. 4B) must be tightened by the same amount on each side until the chain slackness conforms to the figure given above. Retighten the left spindle nut first and then the main spindle head on the right-hand side. Tighten the stay nuts and then adjust the brake in accordance with the instructions on page 13.

CLUTCH ADJUSTMENT

Clutch control adjustment

The main adjustment consists of a screw pin and locknut mounted on the clutch pressure plate. These are accessible after removal of the inspection plug. (See Figs. 6 and 7).

If adjustment is necessary, slacken off the handlebar cable adjuster and release the cable from the control lever above the timing cover on the right-hand side of the motor. Release locknut and adjust the pin until the control lever is inclined outwards by a small amount. Add a short length of tubing to the lever to provide additional leverage and disengage the clutch, when the lever should take up a position approximately parallel with the timing cover joint face. If necessary the adjustment must be modified until this condition is obtained.

Finally reconnect the cable to the control lever and re-adjust the cable length at the handlebar lever until there is about $\frac{1}{8}$ in. of free movement at the handlebar (see Fig. 6).

There must always be a small amount of movement at the lever, otherwise the clutch will slip, with consequent rapid wear of the plates.

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.

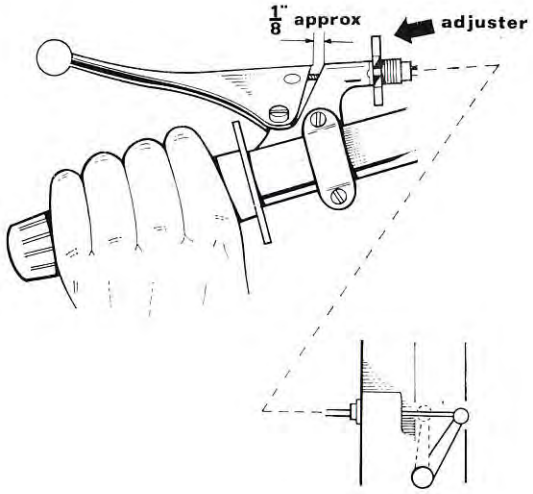


Fig. 6. Clutch cable adjustment.

Clutch spring pressure

Whenever the clutch has been dismantled, the spring pressure must be reset carefully. The four retaining nuts (P) Fig. 5, should be screwed in until the underside of the head of each nut is approximately $\frac{1}{16}$ in. from the face of a spring cup. The 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.

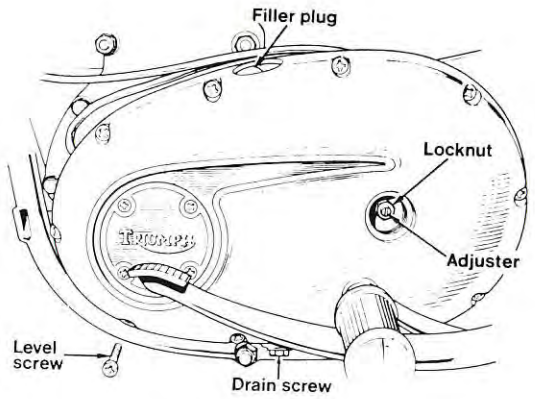


Fig. 7. Clutch adjustment and chaincase oil level

FRONT FORKS

The only routine attention needed to the telescopic front forks is the checking of the steering head race adjustment, and the changing of the oil. One grade of oil is satisfactory for all the year round, and this is given on page 38. The oil should only need renewing after considerable mileage, this need usually being indicated by excessive movement of the fork.

To change the oil in the telescopic fork

Unscrew the fork cap nuts A in Fig. 8 and the drain plugs in the fork legs above the wheel spindle shown at B. Allow the oil to drain into a suitable container and then remove the last drops by pressing down on the handlebars and pumping the forks up and down. Replace the drain plugs making sure that the fibre washers are in good condition, raise the cap nuts a few inches and pour the correct amount of oil into each fork leg. Replace the cap nuts and tighten firmly.

Steering head adjustment

The steering head races may require adjustment once or twice in the early stages of a machines life, but will rarely require attention after that. Support the crankcase on a box to make sure that the

front wheel is clear of the ground, then grasp the front fork legs and attempt to move them backwards and forwards. If any play is detected, the steering head must be adjusted. To adjust the steering head races, slacken the pinch bolts C and E in Fig. 8 then tighten down the cap nut D below the handlebar until the adjustment is correct. The forks and wheel should then turn freely from lock to lock, without any dragging or hesitation. When adjustment is correct, tighten clamping nuts C and E.

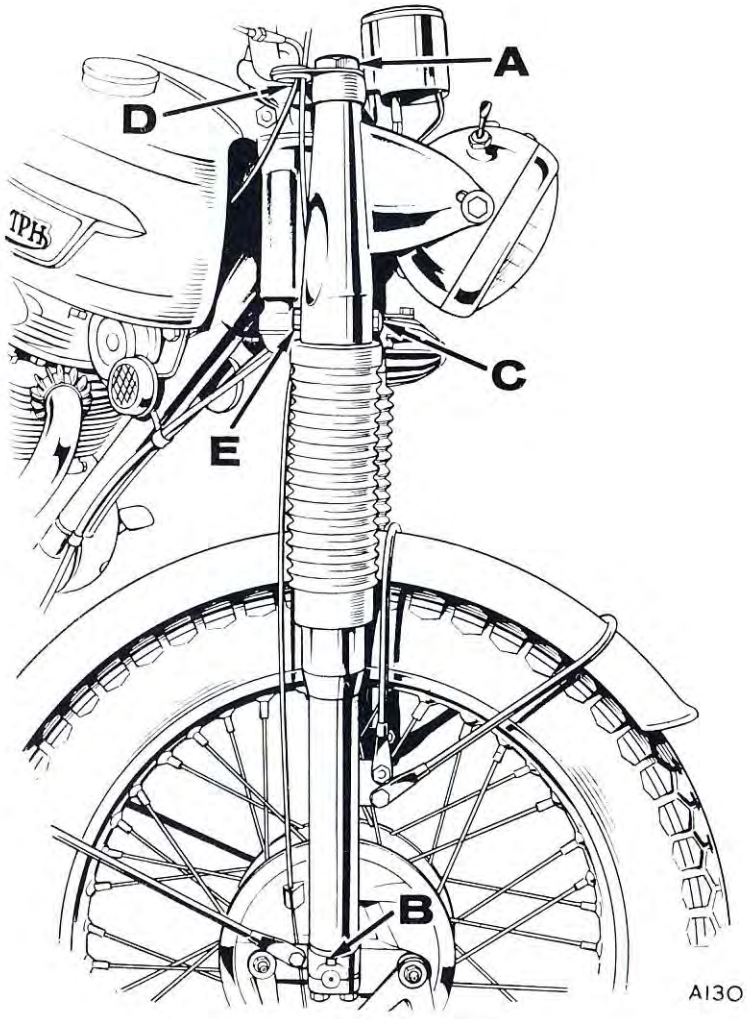


Fig. 8. Telescopic fork.

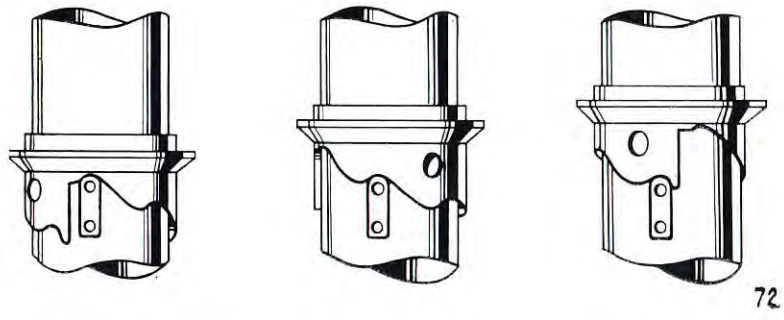
REAR SUSPENSION

Rear suspension

The swinging fork is pivoted on a bonded-rubber type bush and no adjustment or lubrication is required.

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 open spring 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 passenger is being carried.



FIRST POSITION LIGHT LOAD | **SECOND POSITION MEDIUM LOAD** | **THIRD POSITION HEAVY LOAD**

Fig. 9. 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 (20,000 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 spring 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. Refit the cable and spring pin and adjust.

Rear wheel removal and replacement

Removal of the rear wheel does not affect the chain or brake adjustment. Disconnect the speedometer driving cable at the hub and unscrew the spindle (D) Fig. 10, from the right-hand side. It has a normal right-hand thread and therefore unscrews in an anti-clockwise direction. It is also drilled to accept a tommy-bar to facilitate withdrawal. The spacing sleeve (E) between the speedometer drive and the fork end can then be removed and the wheel pulled away from the brake drum and withdrawn from the machine. When detaching the rear wheel it is unnecessary to touch the hexagon nut (A) on the left-hand side, as this retains the brake drum assembly in position.

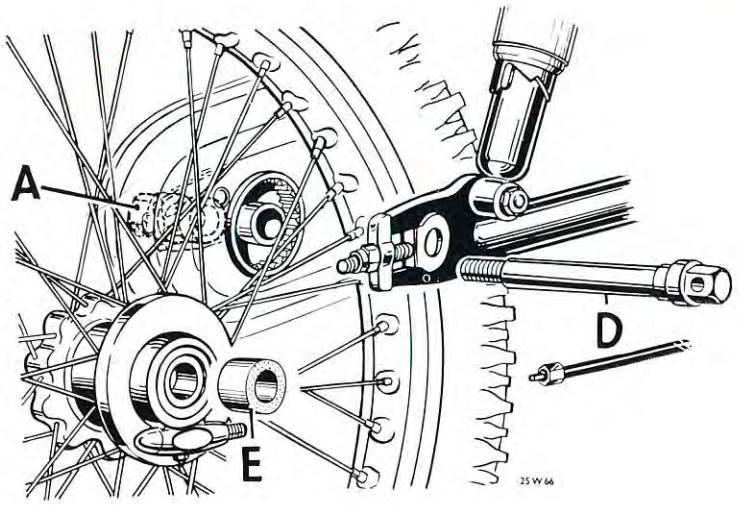


Fig. 10. Removal of the rear wheel.

Brake shoe removal and replacement

First remove the wheel and after the brake plate assembly has been withdrawn, the operating lever should be detached and the cam spindle pushed in slightly to allow the shoes to clear the brake plate. The levers have serrated holes 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. Insert a small lever between one of the shoes and the brake plate and lever the shoe away from the plate until the spring pressure is released. Both shoes can then be lifted away from the plate.

To replace the shoes, first hook the springs on to the shoes and then place the ends of the shoes in position on the fulcrum pin and cam lever. Push the shoes downwards until the springs pull them into their correct position.

TIRES

The tire size is 3.25 x 18 front and 4.00 x 18 in. rear. The pressure should be checked regularly, preferably every two weeks. After checking the pressure the dust 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 4 lbs./sq. in.

	Tire size	*Inflation pressure*	
		lb./sq. in.	Kg./sq. cm.
Front	3.25	16	1·1248
Rear	3.50	16	1·1248

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

Before undertaking an ignition timing check, ensure the contact breaker gap is correct for otherwise a false setting could be gained. Support the machine on the centre stand with the rear wheel clear of the ground. Remove the spark plug and then the motor can be turned over easily, a little at a time, by movement of the rear wheel. Remove both rocker caps and turn the rear wheel until the piston is at the top of its stroke with both valves seen to be closed. The standard position for the contact breaker is with the points at 3 o'clock. The contact breaker cam must be released from the cam-shaft by removing the centre bolt and using extractor tool 61-3816 by screwing it into the end of the hollow spindle.

Set the piston accurately to the figure given in "USEFUL DATA". Turn the cam anti-clockwise (viewed from the R.H. side) and when the points are just about to open, lock up the centre bolt. Recheck the contact points gap.

Alternative method: Set the contact breaker points (see page 30). Remove the large hexagonal plug from the top front of the left hand crankcase. The timing plunger and body 61-6040 and 61-6041 can then be fitted. Find T.D.C. (piston at top of stroke and both valves closed). Turn the engine backwards gently with slight hand pressure on the plunger when the plunger should locate in the hole provided in the left flywheel. Slacken the two pillar bolts and rotate the main backplate until the contact points are just starting to open: turn the backplate clockwise if the points open too early and vice versa. Finally lock up the pillar bolts and the timing will be correct.

The final adjustment for ignition timing is by slackening the two pillar bolts which hold the contact breaker base plate, and turning the plate as necessary. The fixing holes are slotted to allow this. Remember to check the centre bolt and base plate pillar bolts for tightness before replacing the cover. Finally refit both rocker caps and the spark plug and reconnect the plug lead.

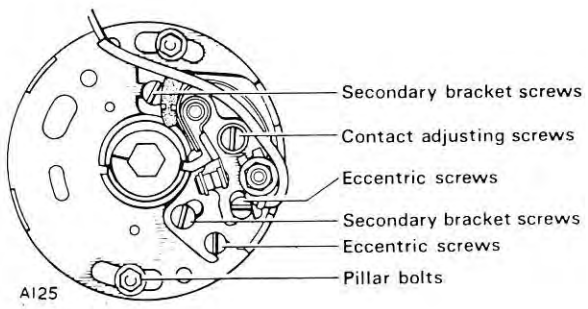


Fig. 11. Contact breaker 6CA.

LUBRICATION SYSTEM

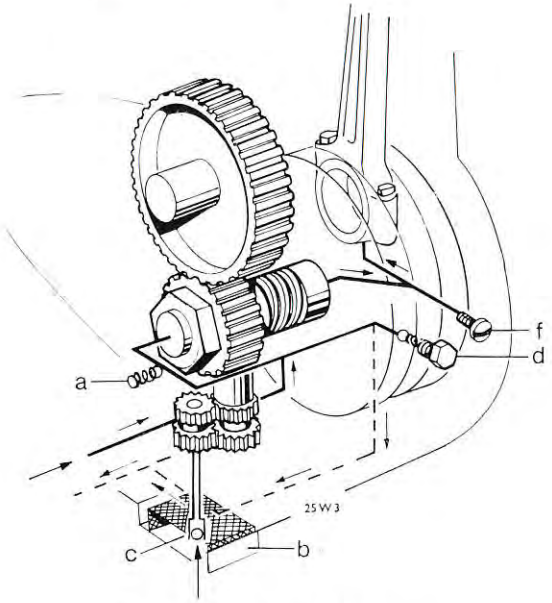


Fig. 12. Lubrication system.

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. 12). The oil tank capacity is four pints and oil is drawn from the tank to the supply pump (top set of gears). It is then pumped past the non-return valve (A), and along the hollow mainshaft to the big-end.

After lubricating the motor 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. From the return pipe a by-pass pipe leads a upply 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 oilway between the pump and the tank. This valve should not be removed until the motor is dismantled for servicing.

Checking oil tank level

A calibrated dipstick is fitted to the oil tank filler cap and the level is indicated as in Fig. 13.

Checking gearbox level

A notched nylon filler plug and dipstick is fitted into the top of the gearbox casing and the correct level is indicated by the notch. See Fig. 13.

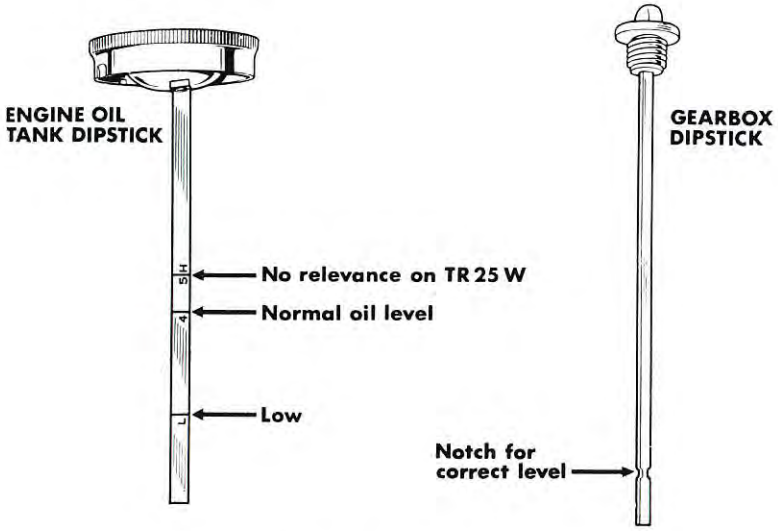


Fig. 13. Oil tank and gearbox dipsticks

Changing the gearbox oil

A large hexagon headed drain plug is fitted into the bottom of the gear casing in line with the oil pipe union. To drain, remove both this plug and the dipstick, afterwards refitting these and adding the correct grade and quantity of oil.

Changing the oil

This should preferably be done immediately after running, so that the oil is warm and will flow more freely. Slacken the rear suspension unit top bolts, raise the rear of the twinseat and disconnect the twinseat at the front hooks. Remove the oil tank filler cap, release the right side panel by half a turn of the slotted fasteners and lift the panel clear. Access is now gained to the tank filter which should be unscrewed to allow the old oil to drain into a suitable receptacle. After cleaning the filter, refill the tank with engine oil in accordance with the recommendations in the lubrication chart. The tank capacity is 4 pints. Finally refit the side panel and secure with the two fasteners. Refit the twinseat and refit the oil filler cap.

Filters

Remove the oil tank and crankcase filters for cleaning at regular intervals (see "Routine Lubrication", page 36) and this can be carried out in conjunction with the change of oil. Wash thoroughly in gasoline and make sure that all the gasoline has evaporated before replacing. Refill the tank with the correct grade of oil. Access to the crankcase filter is gained after removal of the undershield. This is secured by 2 bolts with captive nuts at the front and a single bolt and nut to a 'P' clip at the rear. The crankcase filter is built-in with the sump (b Fig. 12) which is released following removal of four self locking nuts. They must always be used at this point and replaced when worn. The oil pump should not be disturbed unnecessarily as it is most reliable and unlikely to give trouble.

Pump ball valve

When the crankcase filter is removed for cleaning, it is a good opportunity to check the ball valve (C) Fig. 12, carried in the pump suction pipe. The ball must be free on its seating and this can be verified by inserting a piece of wire into the valve orifice. If the ball adheres to its seating, there will not be a return flow of oil to the tank. Alternatively, if the crankcase contains an excessive quantity of oil after, say an overnight stop, this may be due to the ball not seating properly caused by a particle of foreign matter, so allowing oil to pass through the pump to the crankcase.

Crankcase breather

The breather pipe from the timing case (near the clutch cable) must be examined regularly and maintained clear of any obstruction.

Oil pipes

If at any time the oil pipes are disconnected, it is essential for the delivery pipe from the oil tank filter to be attached to the inner crankcase union pipe when they are re-connected, i.e. the pipes cross over.

AMAL TYPE 900 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 non detachable pilot jet in the carburetor body. 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 fuel 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 carburetor parts

Throttle stop screw. This screw should be set to open the throttle sufficiently to keep the motor running at a slow tick-over, when the twistgrip is closed.

Pilot air screw

To set the idling mixture, this screw should be set in to enrich or out to weaken, normal number of turns out from full in is about $2\frac{1}{2}$. The screw controls the suction on the pilot system by metering the amount of air which mixes with the gasoline.

Needle and needle jet

Machines are delivered from the factory with the needle in the correct position, which should not be altered.

Throttle valve cut-away

The amount of cut-away is recorded by a number marked on the throttle viz. $900/3\frac{1}{2}$ means throttle valve type 900 with No. $3\frac{1}{2}$ cutaway, a larger cut-away such as 4 gives a weaker mixture or a smaller such as 3 gives a richer mixture.

For settings see Useful Data on Page 6.

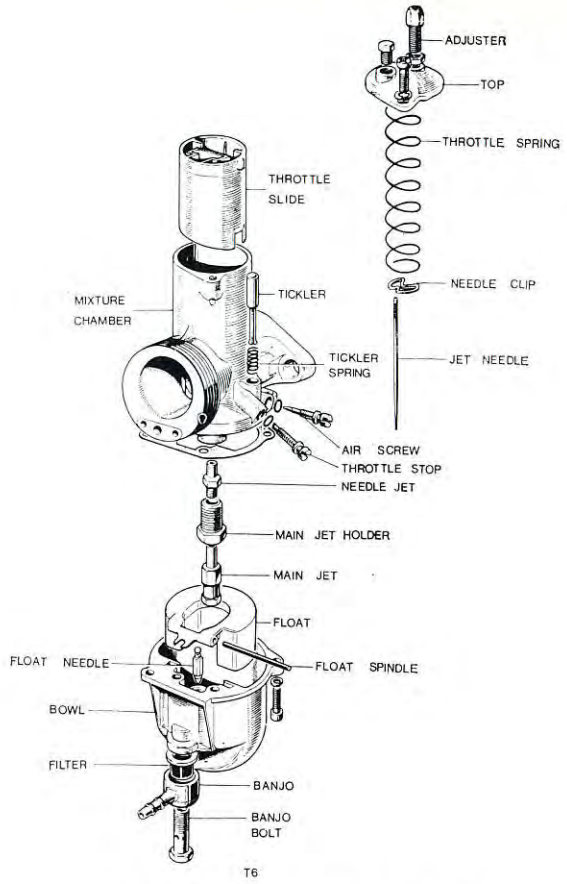


Fig. 14. Amal concentric carburetor.

Air filter

The air filter is unscrewed complete from the carburetor. Access to the element is gained by releasing the clip on the perforated rim. The element should be washed very thoroughly in gasoline and should be allowed to dry before being refitted.

The period between cleaning the element depends entirely upon operating conditions. In normal conditions several thousand miles will be covered before attention becomes necessary. Under very severe conditions, however, the element may require cleaning weekly.

ELECTRICAL EQUIPMENT

The electrical system is supplied from an alternating current generator contained in the primary chaincase 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 provided on the machine 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 contact breaker driven direct from the exhaust camshaft. The contact breaker feeds the ignition coil situated beneath the twinseat.

In the case of a flat battery the machine can still be started without difficulty after 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 ground points to the frame of the machine must be CLEAN and TIGHT.

Contact breaker unit, Type 6CA

The contact breaker is contained behind the round chromium plated cover held by two screws on the right side of the motor. The nylon heel of the moving contact may settle down initially and it is necessary to check the contact breaker gap after 500 miles. After checking, apply 3 drops of clean engine oil to the lubricating wick.

To adjust the contact breaker gap, turn the motor with the starter pedal until the scribe mark on the cam aligns with the nylon heel of the points. Measure the gap (0.015 in.) with feeler gauges. If they are outside the limits, slacken the slotted screw which secures the stationary contact and move the contact until the gap is correct, then tighten the slotted screw.

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 gasoline. Replace the contacts on the base plate making sure that any insulating washers are in their correct positions. Adjust

the gap. Place a few drops of clean motor oil on the centrifugal automatic advance mechanism. Two drops of oil should also be applied to the spindle which supports the cam to prevent corrosion and possible seizure. Do not allow any oil on the contacts. Initially the lubricating felt is treated with Shell Retinax A grease and thereafter 3 drops of engine oil should be added to the wicks at 2,000 mile intervals.

Battery, Type PUZ5A

A 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.

Do not overfill a battery. The electrolyte level should be just above the plates of the battery. Add distilled water until the liquid reaches this point. With this type of battery the acid can be reached by a hydrometer, which will indicate the state of charge. If you suspect a faulty battery have it checked by any Triumph dealer. *When replacing the battery on the machine always connect the red (+) positive terminal to the frame of the machine (ground).*

Alternator

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

Ignition coil

The coil requires no attention beyond keeping its exterior clean, particularly the terminals, and occasionally checking that the connections are tight.

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 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 place the tag of the red earthing wire between the diode and the heat sink.

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.

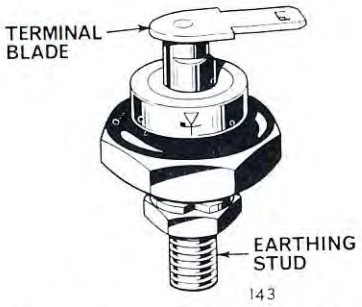


Fig. 15. Zener diode, Model ZD715.

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. Note that the fixing bolt and nut are $\frac{1}{4}$ x 28 U.N.F. thread and are both marked by circles to indicate this thread form.

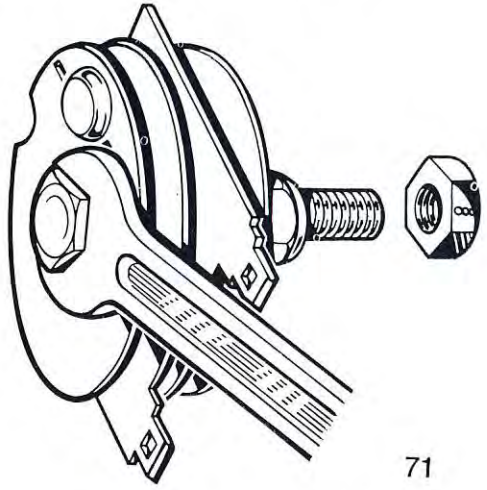


Fig. 16. To secure the rectifier.

Condenser

The condenser is seperate from the contact breaker and is fitted to the base of the battery carrier, access being gained after removal of the left side panel.

Bulb replacement—Headlight

To gain access to the headlight bulb, slacken the front rim retaining screw, situated at the top of the body. Disengage and withdraw the front rim and light unit assembly removing the upper edge first. Press the adapter 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.

The bulbs are of the pre-focus type and use 12 volt 40/27 watt bulbs.

Headlight main beam warning light

The bulb holder is accessible from within the headlamp shell. Withdraw the holder and to remove the bulb depress and turn. Use a 12 volt 2 watt bulb.

Parking light

Disengage and withdraw the front rim and light unit assembly. The parking light bulb holder and bulb can then be withdrawn from the reflector in which it is a push-fit. Use a 12 volt 6 watt bulb.

Stop/Tail light

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 bulb holder.

Use a 12 volt 6/21 watt bulb. The stoplamp switch is operated seperately by front and rear switches. The front switch is fitted into the brake cable.

Cable harness

As the lighting switch connections are of the plug-and-socket type, the cables are supported within the headlight by a carrier clip to prevent accidental disengagement of the connections. Occasionally inspect the clip to make sure that the cables are properly retained.

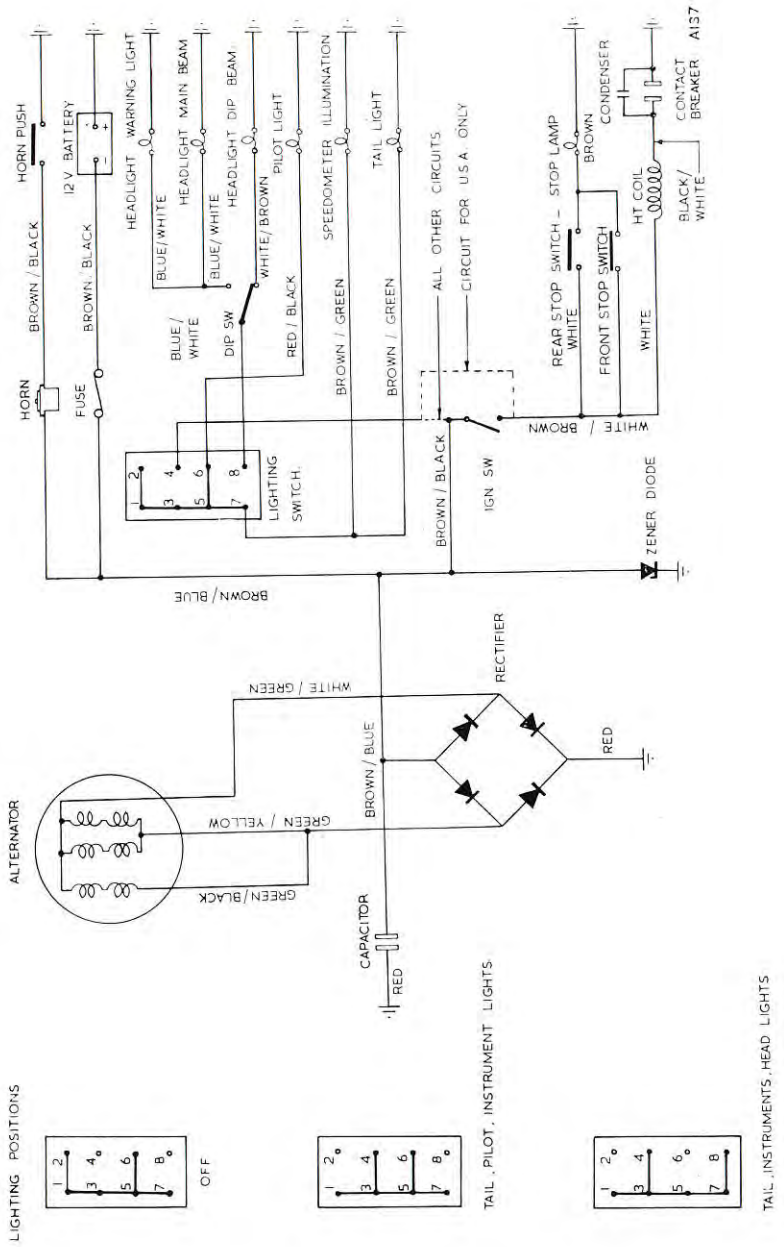


Fig. 17. Wiring diagram.

SPARK PLUG

The spark plugs are 14 mm. thread x $\frac{3}{4}$ in. reach. The standard grade is Champion N3. Do not vary the grade unless you are advised to do so by some qualified person such as your local Triumph dealer who 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 (5,000 Km.) remove the sparking 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 (15,000 Km.) fit new spark plugs.

When replacing the plug smear a little graphite grease 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.

ROUTINE MAINTENANCE

	Page
Every week. Check battery acid level	31
Every two weeks. Check tire pressure	22
Every 250 miles	
Check level in oil tank	25
Check level in primary chaincase	14
Every 1,000 miles	
Change oil in primary chaincase	14
Lubricate and adjust control cables including brakes	General
Check front chain adjustment	14
Check rear chain adjustment	15
Check nuts, bolts and screws for tightness	General
Every 1,500 miles	
Change motor oil	26
Every 2,000 miles	
Lubricate contact breaker	17
Every 3,000 miles	
Check gearbox oil level	25
Check front forks for external oil leakage	17
Check adjustment of valve operating mechanism ...	11
Clean and adjust spark plugs	35
Clean and adjust contact breaker	30
Clean air filter	29
Every 6,000 miles	
Change oil in gearbox	25
Change oil in front forks	17
Check adjustment of head bearings	17
Every 12,000 miles	
Clean and grease wheel bearings ...	Workshop Manual
Clean and grease steering head bearings	Workshop Manual

GUIDE TO LUBRICATION POINTS

Illustration No.	*Description*	*SAE Oil grade*
1	Motor oil tank	20, 30 or 40
2	Gearbox	90EP or 80EP
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
—	All brake rod joints and pins ...	20

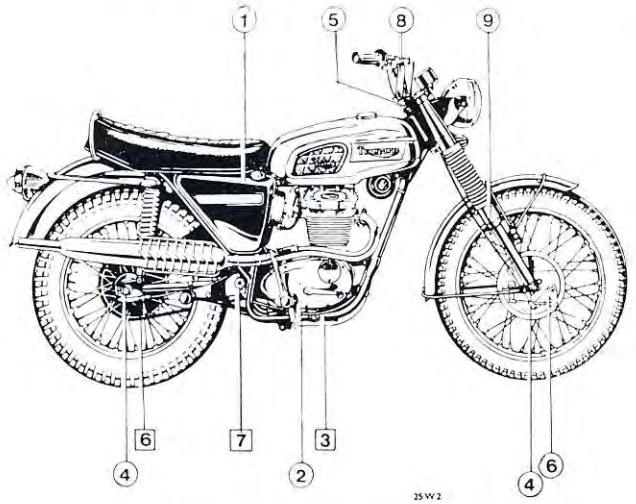


Fig. 18. Lubrication points.

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 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.

RECOMMENDED LUBRICANTS

	MOTOR OILS		GEARBOX OILS		OIL Front Forks and Primary Chain	GREASE
Brand	Summer	Winter	Summer	Winter		
Mobiloil	A	A	Mobilube GX90	Mobilube GX80	Arctic	Mobilgrease MP
Shell	X100–40	X100–30	Spirax 90 EP	Spirax 80 EP	X100–20W	Retinax A
Castrol	XL	XL	Hypoy 90 EP	Hypoy 80 EP	Castro-lite	Castrolease LM
Esso	Esso Motor Oil 40/50	Esso Motor Oil 20W/30	Gear Oil EP 90	Gear Oil EP 80	Esso Motor Oil 20/30 W	Esso Multi-Purpose Grease H
B.P.	S.A.E. 40	S.A.E. 30	B.P. Gear Oil EP 90	B.P. Gear Oil EP 80	S.A.E. 20W	Energrease L2
Texaco	Havoline 40	Havoline 30	Multi-gear EP 90	Havoline 80 EP	Havoline 30	Marfak all Purpose
Valvoline	Valvoline S.A.E. 40	Valvoline S.A.E. 30	Valvoline EP 90	Valvoline EP 80	Valvoline S.A.E. 20	Valvoline Hi-melt grease

The above heavy duty (H.D.) oils meeting A.P.I. classifications ML, MM and MS are recommended.

The grade of lubricant used depends to a certain extent on the use to which the machine is being put and the ambient temperature. The chart gives recommendations for conditions in temperate countries. In countries where the climatic conditions are extreme some alteration may be necessary, bearing in mind the higher the temperature the higher is the S.A.E. number required.

IMPORTANT NOTE

The fitting of components which are not approved by the manufacturer invalidates the guarantee.