

# OWNERS HANDBOOK

FOR

1978 MODEL BONNEVILLE 750 T140E

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# **Special thanks to**

# Walter

# for contributing this manual





# **OWNER'S HANDBOOK**

FOR

# BONNEVILLE 750 UNIT CONSTRUCTION TWIN

1978 MODEL

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Meriden Motorcycles Ltd., Meriden Works, Allesley, Coventry, England.

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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 mechnical 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.

The terms of the U.S. Triumph guarantee can be obtained from your dealer.

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Bonneville 750 T140-E
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#### **USEFUL DATA**

USEFUL DATA	
MOTOR  Bore and Stroke – mm	
IGNITION - Timing (Before top centre) Crankshaft position (Fully advanced)	
SPARK PLUGS Type Point Gap – mm Point Gap – in	Champion N3 0.635 0.025
CAPACITIES  Gas Tank Oil Reservoir Gearbox – c.c. Primary chaincase (Initial fill) – c.c. Front forks (each leg) – c.c. Front brake hydraulic system – c.c.	2½ U.S. galls 4.8 U.S. pints 500 150 190 Approx 189 (½ imperial pint)
CARBURETORS Amal Type Main Jet	R2930/1, L2930/2

Amal Type	R2930/1, L2930/2
Main Jet	200
Needle Jet	
Needle Type	
Needle Position	
Throttle Valve Cutaway	
Pilot Jet	25
Starter Jet	
Primary Air Jet	3.5

FUEL Octane Rating (minimum)	Premium grade
SPROCKETS GearboxRear Wheel	20T 47T
CHAINS  Primary - %in pitch × ¼in wide, Triplex, links  Secondary - %in pitch × %in wide, links	84 106
GEAR RATIOS  5th Top	4.70 5.59 6.58 8.63 12.25 627
TIRE SIZE FrontRear	4.10 × 19 4.10 ×18
TIRE PRESSURES Front lb/sq. in	28 32
BULBS  Headlight 12v 45/40W Prefocus  Parking light 12v 6W M.C.C.  Stop/Tail light 12v 5/21W (offset pin)  Speedometer 12v 3W M.E.S.  Ignition warning light 12v 2W  Hi-beam warning light 12v 2W  Indicator warning light 12v 2W  Direction indicators 12v 21W	Lucas 410 Lucas 989 Lucas 380 Lucas 987 Lucas 281 Lucas 281 Lucas 382

Fuse rating (Amperes).....

35

### **OVERALL DIMENSIONS**

Length – in	87.5
Width - in	33.0
Seat height - in	31.0
Weight - Ib. (unladen)	395

#### GENERAL DESCRIPTION

This handbook refers to the Triumph motorcycle, Bonneville '750'. The vertical, parallel twin-cylinder, air cooled engine has overhead valves operated by push rods and has a bore of 76mm (2.993in) and a stroke of 82mm (3.228in). Lubricant is pressure fed to the big ends, valve gear and exhaust tappets through a plunger pump from the oil reservoir in the main frame. The oil drains through a gauze filter in the bottom of the crankcase where it is scavenged by the second part of the plunger pump and returned to the reservoir.

The primary drive is by Triplex chain and six-plate clutch contained in an oil bath chaincase. The five-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 taper roller bearings. The load is carried by two coil springs in compression and the movement is controlled by integral hydraulic damping.

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 19in rim diameter with a 4.10in section front tire and a hydraulic disc brake. The rear wheel has a 4.10×18in section tire with a similar disc brake.

The electrical system is supplied from an alternating current generator contained in the primary chaincase and driven from the crankshaft. The output is fed through a silicon diode bridge connected rectifier to a 12 volt lead-acid battery. The voltage is controlled by a Zener diode, mounted on a heat sink.

**IMPORTANT NOTE** – The positive side of the battery is to earth.

#### LAYOUT OF CONTROLS

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

Kill button – On right handlebar. Depress to stop engine. Always switch off the ignition and remove the key when parking.

**Direction indicator switch** — On left handlebar. Use the switch to operate the flashing indicators. Move right for right indication and left for left indication.

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.

Horn push - On left handlebar. Press to sound the horn.

**Dipper switch** – On left handlebar. Use the lever to change the headlight between "high" and "low" beam.

**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 as it is a snap fit in the speedometer.

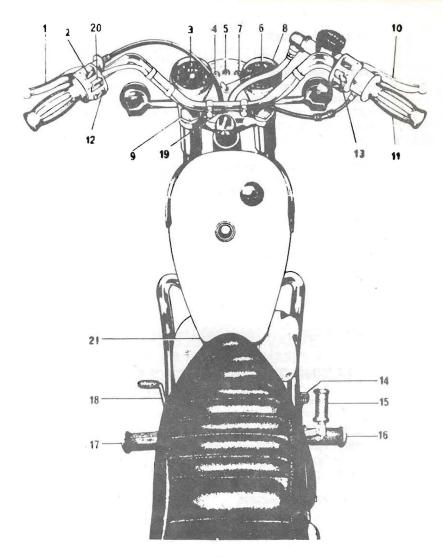
Tachometer - Indicates the engine speed in revolutions per minute.

**Lighting switch** – Operated by a three position switch. From "off" position on left, move switch right to first notch for parking lights and to second notch for full headlamp.

Oil pressure warning light – (Red). Fitted into headlamp shell, it illuminates as the ignition is switched on and should extinguish with the engine running as oil pressure builds up. If it fails to extinguish with the engine beyond tickover, stop the engine and investigate the cause.

Hi-beam warning light - (Green). Shows as the headlight hi-beam is selected.

Direction indicator warning light - (Amber). Illuminates when the direction indicators are operating.



- 1. CLUTCH LEVER
- 2. HIGH-LOW HEADLAMPS SWITCH
- 3. TACHOMETER
- 4. OIL PRESSURE WARNING LIGHT (RED)
- DIRECTION INDICATOR WARNING LIGHT (AMBER)
- 6. LIGHT SWITCH
- 7. HI-BEAM WARNING LIGHT (GREEN)
- 8. SPEEDOMETER
- 9. IGNITION SWITCH
- 10. FRONT BRAKE LEVER
- 11. THROTTLE

- 12. HORN PUSH
- 13. ENGINE STOP 'KILL' SWITCH
- 14. REAR BRAKE PEDAL
- 15. KICKSTARTER
- 16. RIGHT FOOTREST
- 17. LEFT FOOTREST
- 18. GEARCHANGE LEVER
- 19. STEERING LOCK
- 20. DIRECTION INDICATOR SWITCH
- 21. COLD START

Fig. 1. Control Layout

#### ON THE MACHINE

**Ignition switch** - On left hand headlamp bracket operated by a key. Turn the key closkwise to switch on ignition.

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 up the lever on the left tap. Always turn off both taps when parking, otherwise the motor will become flooded.

**Note:** When the machine is used for continual high speeds or maximum acceleration, i.e. maximum throttle opening, both taps must be used simultaneously to ensure that a sufficient quantity of fuel is available.

#### FOOT CONTROLS

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

Gearchange lever – In front of left footrest. Press down to change 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.

# 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 reservoir, checked the tire pressures and filled the dry-charged battery; if in doubt check again. Replenish the gas tank with a suitable grade of fuel and the motorcycle is ready for starting.

#### TO START THE ENGINE

- Select the neutral position between first and second gear.
- Pull in the clutch lever and operate the starter pedal several times to free the clutch.
- Turn on the gas tap marked main R/H side and depress cold start lever at top of carburettor L/H side.
- Place the key in the ignition switch and turn clockwise to the 'ON' position.
- Press down the starter pedal gently until you feel some resistance; then press harder with the throttle slightly open when the engine should start.
- 6. Open the cold start as soon as the engine 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 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. (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.

Change gear frequently so that the engine 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.

# TO ADJUST THE VALVE OPERATING MECHANISM

There are four adjusters on the rockers which are accessible after removing the two inspection caps from the rocker boxes. A feeler gauge of the correct thickness can be inserted under each rocker, see Fig. 2. The clearance must always be checked when the engine is cold. 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.

# Inlet valves (towards the rear of the engine)

Turn the rear wheel until one of the inlet rockers moves downwards, thus opening the valve. When this valve is fully open the operating mechanism of the other inlet valve will be seated on the base of the cam and the clearance can now be checked and adjusted if necessary. The clearance is 0.008 in and is correct when a feeler gauge of this thickness is a tight sliding fit between the valve tip and the adjuster. Tighten the locknut and recheck the clearance. Having adjusted one inlet valve turn the rear wheel until the valve which you have adjusted is now fully open and repeat the procedure for the other inlet valve.

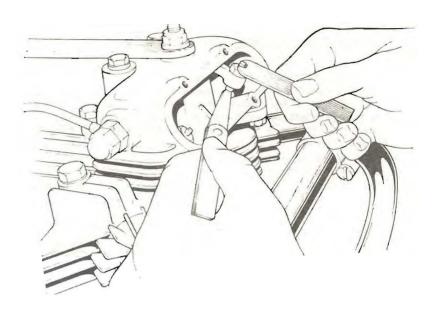


Fig. 2. To adjust the valve operating mechanism

#### **Exhaust valves**

Having adjusted the inlet valves proceed to the exhaust valves which are situated at the front of the engine. Proceed in the same way as for the inlet valves and position one valve fully open whilst you check the clearance on the other. In this case the clearance is 0.006in.

Check that the inspection cover gaskets are in good condition and replace the covers making sure that the bolts are tightened evenly.

#### TO ADJUST THE BRAKES

#### Front disc brake

The front brake is of the hydraulic type with individual brake pads operating on each side of a hard chrome disc. The entire system is self-adjusting and will not require any form of mechanical adjustment.

**Note:** During the life of the brake pads it will not be necessary to maintain the maximum fluid level in the master cylinder. The level will drop slightly as the brake pads wear and when new pads are fitted the fluid will return to its original level provided no leakage has occurred.

If at any time it has been found necessary to repair the system due to leaks at the unions or feed pip etc., it will be necessary to replenish the master cylinder and to "bleed" the system to remove any trapped air. This is done by connecting a suitably sized rubber pipe "C" (Fig. 3) to the bleed nipple "A" (Fig. 3) and suspend it in a glass jar with the open end of the tube immersed in about ½in of hydraulic fluid. At this point unscrew the bleed nipple (with the pipe still attached) one complete turn. Remove the screwed cap from the master cylinder and take out the rubber diaphragm "E" (Fig. 4).

Ensure that the master cylinder is full of the correct fluid before commencing the "bleeding" operation. Now pull the brake lever fully onto the handlebar and hold it in that position for a few seconds. Air in the system will now be expelled through the rubber tube and will be observed in the form of bubbles rising in the jar. Release the brake lever and repeat the operation until air bubbles are no longer seen to escape. To prevent any air being drawn back into the system when the lever is released, loop the "bleed" pipe as shown in Fig. 3. This ensures that a "head" of fluid is maintained between the top of the loop and the "bleed" nipple.

When this stage is reached hold the brake lever in the fully "on" position and retighten the bleed nipple (with the pipe still connected). Remember to maintain the level of hydraulic fluid in the master cylinder during the entire operation. The correct level for the fluid "F" is shown in Fig. 4. This will be the correct level when the brake pads are "NEW". When replacing the rubber diaphragm it will be found easier to replace the cap with the diaphragm in a folded condition. Hold the diaphragm upside down on a flat surface and push the middle section down until it touches the surface it is resting on. It will now remain in that position and the diaphragm can now be replaced into the cylinder and the cap refitted. When refitting the cap make sure that it is retightened firmly.

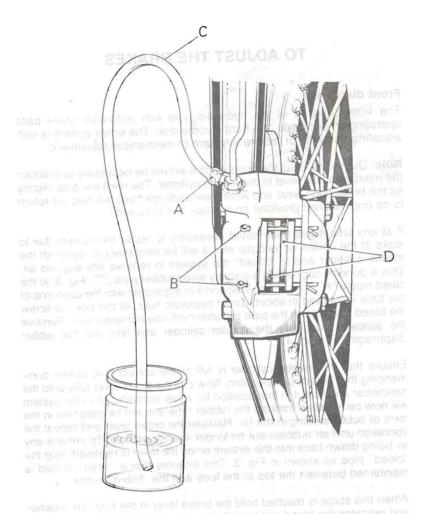


Fig. 3. Showing arrangement for bleeding the front brake

If at any time it is found necessary to replenish the system with hydraulic fluid during the life of one set of brake pads remember that when eventually new pads are fitted the fluid level will rise appreciably in the cylinder and may spill onto the gas tank. Therefore the level will have to be corrected to that shown in Fig. 4. (Hydraulic fluid instantaneously corrodes cellulose paintwork and great care should be exercised when handling this fluid).

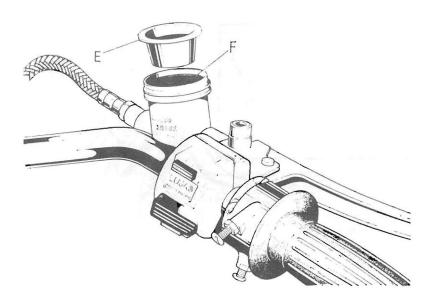
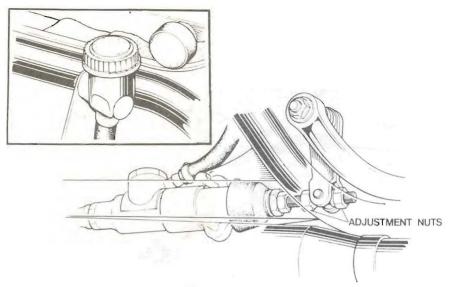


Fig. 4. Showing the brake reservoir fluid level and cap

The brake pads will require replcement when the lining thickness reaches a minimum of 1/16 in. This can be easily determined by removing the pad from the caliper. First detach the aluminium cover from the caliper by removing the two retaining screws. Then remove both the split pins "B" (See Fig. 3) and pull out both the pads "D".

If any part of the lining material is below the minimum thickness the pad will require replacement. When fitting new pads push the actuating plungers in the caliper back slightly to allow sufficient clearance for the new pads to be inserted. Remember as mentioned earlier if at any time during the life of the old pads the fluid was replenished at the master cylinder the level will rise in the cylinder and will spill out when new pads are assembled. When new pads are fitted it is advisable to use new split pins.



Figs. 5 and 5A

#### Rear disc brake

The mechanical and hydraulic parts of the rear disc brake are almost identical with that of the front disc brake.

They consist of a reservoir situated under the saddle (see Fig. 5A) and a master cylinder located on a plate behind the right-hand side pillion footrest support (see Fig. 5). The caliper which contains the disc pads is identical with that of the front disc brake.

The procedure for bleeding the system and replacing the disc pads is also the same as for the front disc brake. It must be noted that there is no metal cover for the rear caliper. Where the front disc brake instructions state front brake lever, rear brake pedal should be substituted. The adjustment controlling the brake pedal position is on the rod which actuates the master cylinder.

## TO ADJUST THE CHAINS

#### Primary chain

The primary chain is of the Triplex type. 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 ½in (1.2cm) free movement. To reduce the amount of slack remove the left side silencer and the plug with the extended head from the bottom of the case and tighten the slotted adjuster nut at the rear end of the tensioner by using the short screw-driver No. D3961. After replacing the plug, replenish the chaincase with approximately ¼ pint (150c.c.) of oil as used in the main oil reservoir.

#### 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 ¾ in (1.8cm) free movement with the machine on its wheels and the chain at its tightest point of 1¾ in (4.3cm) 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 spindle nut and then adjusting the draw bolts an equal number of turns.

Recheck the chain adjustment. 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 nut and adjuster draw bolts.

There is no automatic oil feed to the rear chain, therefore the chain must be lubricated manually with an oil gun, weekly.

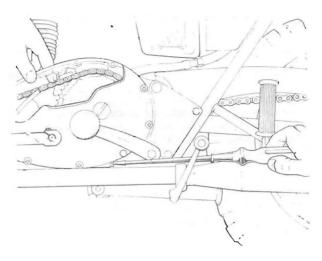


Fig. 6. To adjust the primary chain

# TO ADJUST THE CLUTCH AND THE CLUTCH OPERATING MECHANISM

The clutch is situated on the left side of the machine inside the primary chaincase. If the clutch is dragging and normal adjustment of the operating mechanism produces no improvement it will be necessary to remove the primary chaincase to adjust the three springs which provide the loading on the pressure plate. To remove the primary chaincase first take off the left exhaust pipe and swing the footrest and brake pedal out of the way. Place a tray underneath, and release the cover by unscrewing two domed nuts and eight screws. The three slotted nuts on the clutch should be tightened initially until the heads are flush with the end of the pins. The handlebar clutch lever should be pulled and the starter pedal operated whilst you watch the outermost of the clutch. This should lift evenly and turn without wobbling. If one side of the plate is high the slotted nut nearest to it should be tightened as necessary until the pressure plate lifts and turns evenly. After replacing the cover replenish the chaincase with approximately 1/4 pint (150c.c.) of oil as used in the main oil rservoir. The correct level of oil is maintained by the engine breathing system.

#### To adjust the clutch operating mechanism

When the clutch pressure plate lifts evenly it is then possible to adjust the clutch operating mechanism. Slacken off the adjustment at the handlebar end of the clutch cable and then screw in the adjuster situated in the centre of the pressure plate until the pressure plate just starts to lift. Screw back the adjuster one full turn and secure it with the locking nut. This adjustment can be carried out through the inspection hole in the primary chaincase if the chaincase has not been removed. Finally adjust the knurled nut at the handlebar abutment until there is approximately ½ in (3mm) free movement in the cable. If it is required to take up excessive cable slack, there is an adjuster fitted externally at the gearbox end of the cable.

#### To change the clutch cable

To remove the clutch cable slacken the adjustment at the handlebar and then at the gearbox end of the cable. Pull the upper end of the cable clear through the slotted adjuter and abutment of the handlebar lever and detach the nipple from the lever. At the gearbox end of the cable slide the rubber cover upwards clear of the adjuster and remove the large filler plug from the gearbox outer cover. With a finger through this orifice the clutch cable nipple can be pushed clear of the internal clutch lever.

To replace the clutch cable, first pass the lower end through the rubber cover. Screw the adjuster at the gearbox as far down as possible and engage the cable nipple with the internal clutch lever. Pass the upper end of the cable through the slotted adjuster and abutment of the handlebar lever and fit the cable nipple to the lever. Adjust the cable and finally slide the rubber cover over the adjuster at the gearbox end. Refit the filler plug.

#### 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 the grade of oil as recommended on page 42, and change the oil at the mileage interval given on page 40.

#### 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. Slacken the pinch bolt at the back of the fork top lug and tighten down the large sleeve 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.

#### To change the oil in the telescopic forks

Remove the small sloping screw 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 handlebar and the large chromium plated nuts at the top of the fork; then remove the alloy inner plugs with an allen key (coat the threads with jointing compound on reassembly). This should be done with the machine on the centre stand. The corect 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 exude from the ends of the pivots.

There are two nipples, one beneath each bearing housing. If the mileage intervals are not convenient, it is better to grease more frequently rather than to extend the interval. The movement is controlled by Girling gas pressurised mono tube damper units. The hydraulic damping mechanism is completely sealed but the static loading of the spring is adjustable. There is a three position castellated cam ring covered by a shroud below the chromium plated 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.

A quick visual check can be made on this point from the rear of the machine as in Fig. 7. Comparing the exposed lengths of the units will establish that the loading is equal. To increase the static loading, turn the castellated cam ring in the direction shown.

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.

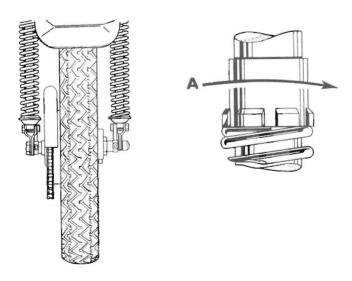


Fig. 7. To adjust the rear suspension springs

#### WHEELS

The wheel bearings are sealed and require no maintenance.

#### To remove the front wheel

Unscrew the eight fork cap nuts and remove both caps and withdraw the front wheel. Do not apply the front brake while the wheel is out of the forks. To replace the wheel engage the disc between the brake pads in the caliper and replace the fork caps tightening the four nuts of the left hand fork leg before finally tightening the right hand leg. This will enable the spindle to align correctly with the left fork leg. The front wheel hub bearings are of the non-adjustable ball journal type.

#### Rear wheel

The rear wheel hub bearings are of the non-adjustable ball journal type. A detachable steel sprocket is bolted to the hub by four bolts.

With hub bearings in good condition, there should not be any detectable side movements at the wheel rim.

#### To remove the rear wheel

Raise the machine on to the centre stand. (Removal is easier if a 3" block is placed underneath). Ensure that the machine is in gear and remove the rear chain connecting link. Remove the left muffler. Remove the wheel spindle nut, and withdraw the spindle from the left side. Collect an adjuster and end cap from each side of the swinging fork. Detach the speedometer cable from the drive box. The brake caliper can now be swung down out of the way, and the wheel removed.

Replacement is the reversal of the removal procedure but always remember to swing the brake caliper back into position and relocate the support plate on the wheel spindle. The disc is fed between the brake pads as the wheel is placed back in position to receive the spindle. Finally check the rear chain adjustment and wheel alignment.

#### TIRES

The tire size is 4.10×19in. front and 4.10×18in rear. The pressure should be checked regularly, preferably every two weeks. After checking the pressure the cap should always be repaced 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 (76Kg) rider and if a pillion passenger is carried the pressure in the rear tire should be increased by 6lbs/sq. in. and in the front tire by 4lbs/sq.in.

Tire size		Inflation pressure		
	,	lb/sq.in.	Kg/sq.cm	
Front	4.10	28	1.97	
Rear	4.10	32	2.25	

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.

The following Information is in accordance with the requirements of the U.S. National Highway Traffic Safety Administration. Department of Transportation.

#### BRAKE BURNISHING PROCEDURE

Brakes should be bedded in progressively during the first 300 miles. This is done gradually by increasing brake lever pressure during the period, and braking from progressively increasing speeds.

For guidance refer to the table below. The deceleration in ft/sec<sup>2</sup> is converted to the equivalent braking time/distance.

Stage		2	3
Speed of commencement of stage			
(m.p.h.)	30	50	70
Speed at end of stage (m.p.h.)	0	30	30
Deceleration (ft/sec2)	12.5	12.5	12.5
Distance travelled (ft.)	77	135	344
Time taken (sec)	3.5	2.3	4.7

#### Stage 1

A minimum of 20 stops using the front and rear brakes together. Decelerate from 30m.p.h. to rest using the distance travelled or time taken to obtain the required deceleration.

## Stage 2

A minimum of 50 declerations from 50 to 30 m.p.h. using front and rear brakes together.

## Stage 3

A minimum of 30 decelerations from 70 to 30 m.p.h. using front and rear brakes together.

The distance between brake applications should not be less than ¼ mile in each case. Disengage the clutch when carrying out the procedure to ensure that the brakes receive the full braking load.

The use of the above procedure, subject to traffic conditions will ensure that any high spots on the brake linings are not hardened, resulting in reduced brake efficiency. Correct burnishing will give an approximate minimum lining contact area of 50% which qualifies the published brake performance figures.

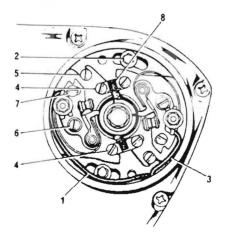
## **IGNITION TIMING**

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 two screws. To remove the timing cover, for instance to examine the oil pump, 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 extractor tool D782 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.

For timing purposes two alternative methods have been used for setting the engine in the 38° fully advanced position. The first utilises service tool D2195 and D572. By turning the engine over gently with the service tool fitted in place of the blanking plug at the top rear of the right hand crankcase, slight hand pressure on the plunger will enable this to locate with a slot cut into the flywheel for this purpose.

There are two slots in the flywheel, one at 38° and one at top dead centre (T.D.C.). When timing as above check with a sparking plug removed that the pistons are not at T.D.C. which would indicate the wrong slot being located. The T.D.C. plug is for degree plate use only.



- 1. BLACK/YELLOW WIRE
- 2. PILLAR BOLT
- 3. SECONDARY BACK PLATE LOCKING SCREW
- 5. SECONDARY BACK PLATE ECCENTRIC SCREW
- 6. CONTACT LOCKING SCREW
- 7. CONTACT LOCKING SCREW
- 8. LUBRICATING WICK

Fig. 8. Contact breaker unit

The second method necessituates removal of the circular plate at the forward end of the primary chaincase. Through the aperture will be seen the timing marking on the rotor casting and this aligns with a pointer on the primary chaincase at the edge of the aperture. Placing the rotor marking in line with the pointer again gives the 38° timing position.

Remove both sparking plugs to facilitate turning over the engine. Set both sets of contact breaker gaps. (See page 35). Set the engine at 38° B.T.D.C. with the contact breaker cam turned clockwise to the fully advanced position. Check the left hand points (Black and Yellow lead) which should just be starting to open. If they are not, slacken both the pillar bolts and turn the contact breaker main backplate. Turn clockwise if the points open too early and vice versa. When correct lock up the backplate, remove the flywheel locating plunger if used and turn the engine over slowly through 360° i.e. one revolution. Set the engine again at 38° B.T.D.C. Check the cam is still at the fully advanced position and check that the second set of contacts (Black and White lead) are just starting to open. If there is any discrepancy, slacken the secondary backplate top and bottom screws (Fig. 8) and using the eccentric adjuster screw move the backplate to achieve the correct opening point.

The timing is now correct. Re-lubricate the felts with 3 drops of clean engine oil and refit the cap.

# SPARK PLUG

The spark plugs are 14mm thread  $\times$  34in reach. The standard grade is Champion N3.

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 sparking 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 0.025in (0.635mm). 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 round the threads and make sure the joint washer is in good condition.

## 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 engine, primary chaincase, oil reservoir and gearbox. 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.

Drain the motor and reservoir, and clean out the gauze strainers after first 500 miles.

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. Whenerver 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.

#### ENGINE AND OIL RESERVOIR

There is a gauze strainer in the crankcase which is removable for cleaning by unscrewing the hexagon-headed plug which slopes from left to right under the engine. Remove the reservoir drain plug from the base of the main frame tube and collect oil in a suitable container. Detach the reservoir filter by unscrewing the four nuts securing the retaining plate. Rinse the filters in clean paraffin. Replace the filters, with new fibre washers where necessary, and replenish the oil reservoir. The oil reservoir filler cap has a dipstick indicating the 'MAX' and 'MIN' positions of the oil level for refilling. Start the engine and immediately check that the oil is returning to the reservoir.

#### 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 (D) with the level tube and then add oil to the gearbox through the side filler hole (B) until oil just begins to flow down the level tube, then replace the level plug (C).

When checking the level remember that normally there will be some oil trapped in the level tube which should be allowed to drain before topping up commences.

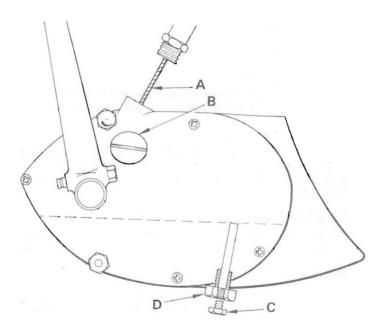


Fig. 9. Gearbox drain and level plugs

#### PRIMARY CHAINCASE

The primary chaincase oil level is automatically maintained by the engine crankcase breathing system. Only after the lubricant has been drained off or lost during adjustment of the primary chain is it necessary to replenish with ¼ pint (150c.c.) of engine oil. The drain plug is in the bottom of the outer portion of the chaincase.

#### THE AMAL MKII CARBURETOR

#### How it operates

When the engine 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 pilot jet, which is 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 pertol-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 engine 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 2½. The screw controls the suction on the pilot jet by metering the amount of air which mixes with the petrol.

## Needle and needle jet

Machines are delivered from the factory with the needle in the correct location. Do not attempt to readjust the setting without expert advice.

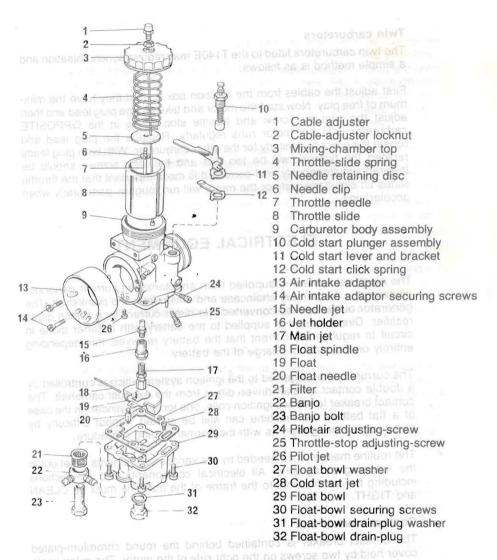
## Throttle valve cut-away

The amount of cut-away is recorded by a number marked on the throttle, viz 2928/2½ means throttle type 2928 with No. 2½ cut-away; a larger cut-away such as 4 gives a weaker mixture or a smaller such as 2 gives a richer mixture.

For settings see Useful Data on Page 6.

#### Air filter

The air filter has two elements consisting of surgical gauze bound with metal gauze. To remove the elements detach the outer covers by means of the centre fixing bolts and withdraw the elements. The elements may be washed in clean petrol and then finally cleaned with a jet of compressed air.



of the moving croterudra) II MM IsmA. .10. Fig. 10. Fig. 10. Check both contact breaker dans after 500 miles.

# Drain plug

The carburetor(s) has a drain plug situated in the base of the float bowl. This plug is hollow and collects any foreign matter present. It is advisable to drain the float bowl and clean the plug at each 3,000 mile interval.

#### Twin carburetors

The twin carburetors fitted to the T140E may require synchronisation and a simple method is as follows:

First adjust the cables from the junction box so that they have the minimum of free play. Now start the motor and take off one plug lead and then adjust the pilot air screw and throttle stop screw in the OPPOSITE carburetor until the motor runs regularly. Replace the plug lead and repeat the process similarly for the other carburetor. With both plug leads replaced the tickover will be too fast and the stop screws should be lowered simultaneously until correct. It is most important that the throttle slides lift simultaneously or the motor will run roughly, particularly when accelerating.

# **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 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 double contact breaker driven direct from the exhaust camshaft. The contact breaker feeds two 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

The contact breaker is contained behind the round chromium-plated cover held by two screws on the right side of the motor. The nylon heels of the moving contacts may settle down initially and it necessary to check both contact breaker gaps after 500 miles.

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 one set of points. Measure the gap (0.015in) with feeler gauges. If they are outside the limits, slacken the two locking screws (see Fig. 8, page 28) which secure the stationary contact and move the contact until the gap is correct, then tighten the nuts. Turn the motor forward until the second pair of contacts just open and adjust them in the same way.

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 three drops on the felt pads which lubricate the cam.

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. Initially the lubricating wicks are treated with Shell Retinax A grease and thereafter, 3 drops of engine oil should be added to the wicks at 1,500 mile intervals.

# Ignition coils, Lucas type 17M12

The twin ignition coils are mounted to a plate beneath the twinseat. Keep the tops of the coils clean particularly beneath the electrical terminals. Inspect the cables for frayed wires or damaged insulation. Any damaged cable must be repliced. The coils should be positioned so they cannot short circuit against the petrol tank. Resistive H.T. leads are fitted. There is no wire core, and therefore the terminal ends must be carefully fitted.

# Battery

The lead/acid battery is carried beneath the hinged twin seat. 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. The level is indicated on the outside of the case. Add distilled water until the liquid reaches this point. 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).

## Lighting switch, Type PS6

The lighting switch is of the toggle type mounted in the headlamp shell. It is of the sealed variety and if a fault is suspected, test by substituting another switch.

# Ignition switch, Type S45

It is of the barrel type using non-identical 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.

# Stoplamp switches

Switches are fitted front and rear. The front switch is fitted into the switch console and the rear bolted to the frame, operated by the rear brake pedal. The switches can be adjusted.

# Alternator, Type RM21

The alternator is contained in the primary chaincase and has no wearing parts. Check that the snap connectors are clean and tight in the output cable to the rear of the engine unit.

## **Direction indicators**

The flasher unit is situated behind the left side panel. The unit is sealed and any fault can only be corrected by substituting another unit.

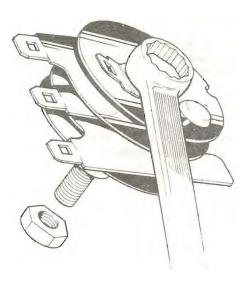


Fig. 11. To secure the rectifier

## 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 spanner 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 ½×28 U.N.F. thread and are both marked by circles to indicate this thread form.

#### CONDENSERS

The two condensers are mounted on the electrical platform beneath the twinseat.

#### 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 the air filter housing 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 earthing wire between the diode and the heat sink.

Providing the diode is kept clean, to ensure maximum efficiency, no maintenance will be necessary.



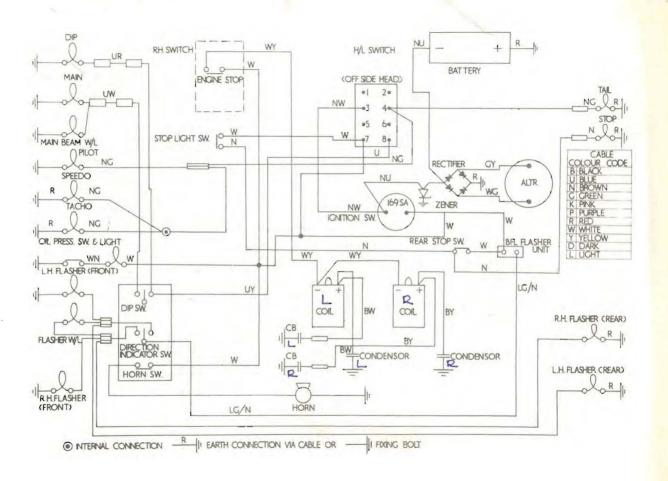
Fig. 12. Zener diode, Model ZD715

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 2lbs.ft. (27.6kg. cm.).

#### Fuse

A line fuse is included in the electrical circuit and is located in the battery live 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.

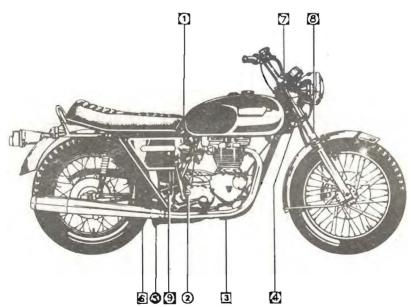


# ROUTINE MAINTENANCE CHART

COMPONENT/OPERATION	DAILY	First 500 ml Service	1500 ml	3000 ml	4500 ml	E000 ml	7500 mi	Im 0006	10500 ml	12000 ml	13500 ml	15000 ml
ENGINE		33										
Check oil level & return	x	х -	x	x								
Change oil/clean filter		X =	X	x	х	x	X	x	X	X	х	х
Retorque cylinder head		χ .							-			
Check cylinder head		X	Н	Н								Н
Check cylinder base nuts		X *										
Check point gap 014".016"	$\vdash$											
Lubbricate felt wick		Х		X		X		Х		X		X
Adjust tappets		X -		X		X		X		X		Х
Check ignition timing		Χ .		X		X		Х		X		X
Clean & adjust spark plugs		X		X		X		X		X		X
GEARBOX							П					
Check oil level		i		x				x				x
Change oil	_	X	Н	ı^	Н	X		Ĥ	$\vdash$	х	_	Ĥ
Charge on		_^_				^			_	^		
CLUTCH		1										
Check push rod adjustment	3	X		x		X		x		x		
			$\vdash$				Н		-		-	
PRIMARY CASE		8-		0,1								
Drain & refill	La E	X		X		Х		X		X		X
FRONT FORKS												П
Drain & refill						x				x		
Check & adjust head race		X	-	H	-	X	Н	Н	-	X	Н	Н
Repack races with grease		<u> </u>	-		-	^	Н	Н	H	<u>^</u>	Н	X
		-	_	L	H			H		H	Н	-
REAR FORK S/A BEARINGS										-		
Grease	Te de	×	X	X	X	X	X	X	X	Х	X	X
WHEELS								Г				П
Check spoke tension		х			15							
Check spoke tension Check wheel bearings				X		Х		Х		Х		Х
Check tyre pressure	X	X	X	X	Х	X	Х	X	Х	Х	X	X
Check tyres for wear				X		X		X	П	Х		X
TRANSMISISON					_	Г	П		Г		П	Г
	J		U	U	u	v		v.	v	l,	J	U
Check rear chain	X	-	X	X	X	X	X	X	X	X	X	X
Adjut rear chain	_	X	X	L.	-	76		-	-			
Check and adjust primary chain	-	Х	X	X	X	X	X	X	X	X	X	X
Lubricate rear chain			X	X	X	X	X	X	X	X	X	X
BRAKES												
Check pads for wear	L			X		X		Х		X		х
Check fluid level	$\Gamma$	X	X	х	X	X	X	X	X	X	X	Х
CONTROL CARLES						$\vdash$						
CONTROL CABLES									Ų.			.,
Adjust & lubricate		X	X	Х	Х	X	X	X	X	х	X	Х
TACHO/SPEEDO/HORN												
/LIGHTS						ı						
Check working	X	×	X	Х	Х	X	X	X	X	X	X	X
BATTERY									M			
Check level of acid		l x	x	x	x	х	х	x	x	x	x	x
		_^_	^	Ĥ	Ŷ	^	^	^	^	^	^	^
AIR FILTERS				l					7			
Clean elements				х		x		х		X		X
FUEL FILTERS			Г	Г	Г	Г	П			Г	П	Г
Clean filters				x		x		x		x		x
			Н		$\vdash$	Н	Н		$\vdash$	$\vdash$		
NUTS & BOLTS												
Check all fasteners for		x	x	×	x	x	x	x	x	x	x	x
tightness	-	<u> </u>	^	Ĥ	_	Ĥ	^	<u> ^</u>	1	<u> ^</u>	Ĥ	Ĥ
BRAKES		ľ										
Check operation	X	×	X	X	X	Х	х	x	X	X	X	X
	_			_		_	_	_	_	_	_	

# **GUIDE TO LUBRICATION POINTS**

Illustration No.	Description	SAE Oil grade
1	Engine oil reservoir	20W/50
2	Gearbox	EP90
3	Primary chaincase	20W/50
4	Steering head	Grease
5	Brake pedal link pivot	10W/30
6	Brake pedal spindle	10W/30
7	Exposed cables	10W/30
8	Telescopic fork	Auto, trans, fluid
9	Swining fork pivots	Grease



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

Fig. 14. Lubrication points

# RECOMMENDED LUBRICANTS (All Markets)

UNIT	MOBIL	CASTROL	B.P.	ESSO	SHELL	TEXACO	
Engine and Primary Chaincase	Mobiloil Super	Castrol GTX or Castrol XL20/50	B.P. Super Visco-Static	· Uniflo	Shell Super Motor Oil	Havoline Motor Oil 20W/50	
Gearbox	Mobilube GX90	Castrol Hypoy	B.P. Gear Oil SAE 90 EP	Esso Gear Oil GX90/140	Shell Spirax 90 EP	2	
Telescopic Fork	Mobil ATF 210	Castrol T.Q.F.	B.P. 'B' Autron	Esso Glide	Shell Donax Texomatic		
Wheel Bearings, Swinging Fork and Steering Races	Mobilgrease MP or Mobilgrease Super	Castrol LM Grease	B.P. Energrease L2	Esso Multipurpose Grease H	Shell Retinax A	Marfak All Purpose	
Easing Rusted Parts	Mobil Handy Oil	Castrol Penetrating Oil	F1 12	esso Penetrating Oll	Shell Easing Oil	Graphited Penetrating Oil	

The above lubricants are recommended for all operating temperatures above  $-18^{\circ}\text{C}$  (0°F). Approval is given to lubricants marketed by companies other than those listed above provided that they have similar multigrade characteristics and meet the A.P.S. Service M.S. performance level.

# Also approved are:

	Engine and Primary Chaincase	Gearbox	Telescopic Fork	Swinging Fork and Steering Races	Easing Rusted Parts  Duckham's Adpendent Penetrating Oil	
DUCKHAM'S	Duckham's Q20/50	Duckham's Hypoid 90	Duckham's Q-Matic	Duckham's LB10 Grea <b>s</b> e		
FILTRATE	Filtrate Super 20W/50	Filtrate EP.90	Filtrate A.T. Fluid 'F'	Filtrate Super Lithium Grease		

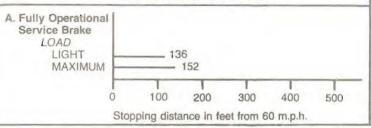
The following information is in accordance with the requirements of the National Highway Traffic Safety Administration

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading.

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

Description of vehicles to which this table applies:





This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed below.

The low-speed pass assumes an initial speed of 20 m.p.h. and a limiting speed of 35 m.p.h. The high-speed pass assumes an Initial speed of 50 m.p.h. and a limiting speed of 80 m.p.h.

Notice: The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

Description of vehicles to which this table applies:

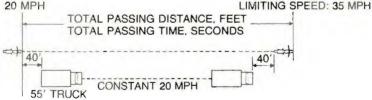
#### AS ABOVE

#### Summary Table

LOW-SPEED PASS 373 feet; 7.9 seconds HIGH-SPEED PASS 932 feet: 9.3 seconds

LOW-SPEED

# INITIAL SPEED:



HIGH-SPEED INITIAL SPEED:



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## Pages 45 & 46 were the mail-in Warranty Registration Card

Meriden Motor Cycles Ltd. warrants to the ultimate purchaser and each subsequent purchaser that the Triumph Model T140E Motor Cycle is designed, built and equipped so as to conform at the time of sale with all U.S. Emission Standards applicable at the time of manufacture and that it is free from defects in materials and workmanship which would cause it not to meet these standards within the period of 5 years or 18,641 miles (30,000 kilometers) whichever occurs first. Failures, other than those resulting from defects in material or workmanship, which arise solely as a result of owner abuse and/or lack of proper maintenance are not covered by the warranty.

# **IMPORTANT NOTE**

Any modifications to any Triumph motorcycle made by you or to be made by you in the future shall be held by our company to have been modified at your own risk and responsibility and without either the explicit or implied consent of the Manufacturers. We will assume no liability, obligation or responsibility for any defective or modified parts or for the modified motorcycle itself, or for any claims, demands or legal action for property damage or personal injuries which may result from the modification of any Triumph motorcycle.

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Back Cover