WIPAC TECHNICAL DATA

# B.S.A. SUNBEAM BI
AND
# TRIUMPH TIGRESS T.S.I. 175 c.c.
# SINGLE CYLINDER TWO-STROKE SCOOTERS

PRODUCED FROM OCT. 58.

## ELECTRICAL EQUIPMENT TRICKLE CHARGE SYSTEM

### General Description

The ignition and lighting equipment is fed from an ignition generator, the finned magnetic flywheel of which also provides a strong air blast for engine cooling. The generator stator assembly has mounted on its various core legs a high tension transformer coil for ignition, working in conjunction with the condenser and contact breaker points, and two twin coils for lighting and charging. The twin coils are wound with inner and outer elements using the same single core leg in each case.

The two outer coils are connected in series with one end earthed to provide A.C. current for the main headlamp bulb, *so there is no headlight unless the engine is running*. The two inner coils are in series and connected via the rectifier and the switch to the battery and so provide a trickle charge current with the lamp switch in all positions.

Charge rate regulation is achieved by the insertion in the circuit of a series resister in the 'off' and 'low' positions. The resister is cut out in the headlamp position in order to compensate for the dropping of output when the headlamp feed coils are in circuit using the same core legs. The resister is embodied inside the main wiring loom and is, therefore, not visible as a separate unit. Charge current is also provided in the head position and the charge rate values in all switch positions are approximately:—

| | | |
|---|---|---|
| Lights 'off' position | .. | 0.5 Amperes |
| Lights Pilot position | .. | Balanced |
| Lights Head position | .. | 0.25 Amperes |

These figures should be checked at approximately 3,000 r.p.m. and are minimum permissible readings. Charge rates will, of course, vary with engine speed, and the state of charge and condition of the battery, but the above figures will give a fair indication as to the correct functioning of the trickle charge circuit. The trickle charge system provides battery current to operate parking lights, stop lights and a D.C. type horn.

The headlamp has a reflector with an extremely efficient reflecting surface provided by vacuum electronic deposition of aluminium. This reflecting surface should not be touched or cleaned in any way, and will retain its brilliance indefinitely. The bulb is a pre-focus twin filament type giving correct beam, length and spread in head and dip positions.

The main connections in the Wipac system are made by rubber socket connectors to the lights and ignition switches, and also by individual rubber covered bullet type push-in connectors which are handy for wiring checks or the re-installation of new wiring. These connectors are not intended as plugs and sockets for frequent manipulation, and are only used when testing or fault finding, and it is extremely important that they should all be making perfect contact, as should all other connection points throughout the system.

The correct bulb ratings for use in this system are:—

| | | |
|---|---|---|
| Headlamp | .. .. | 6v. 24/24w. |
| Pilot Lamp | .. .. | 6v. 1.8w. |
| Speedometer Lamp | .. | 6v. 1.8w. |
| Rear Lamp | .. .. | 6v. 3w. |
| Stop Lamp | .. .. | Twin 6v. 6w. |

## TESTING INSTRUCTIONS

### Equipment Required

The accurate testing of the equipment can be achieved with the aid of an instrument such as the Wilkson Test Set or, in fact, any other good quality moving coil instrument used in conjunction with a 1 Ohm resistive load. Failing the availability of such an instrument, a fair indication can be obtained by the use of:—

1. A 6v. 36w. bulb with holder and two test wires about 24″ long.
2. A well charged 6 volt battery.
3. A 6v. 6w. bulb with holder and two test wires about 24″ long.

### Charge Rate Testing

The good quality moving coil D.C. Ammeter is connected in series with the battery. This is easily done by disconnecting the brown negative lead from the battery and connecting the instrument in series in the gap. These Ammeter readings should then compare favourably with the figures indicated in the General Description.

### Generator Output Testing

1. Before attempting to carry out any test to determine the generator output, it is essential that the red, orange and green generator leads are disconnected from the circuit at the four-way connector situated close by the rectifier.

2. The direct A.C. head lights are supplied between the red wire and earth.
   (a) At 3,000 r.p.m. 6 volts should be obtained on an A.C. volt meter with a 1 Ohm load paralleled across it.
   (b) At 3,000 r.p.m. a good light should be obtained from a 6v. 36w. bulb connected between the red wire and earth.

3. The battery is fed via the rectifier and from the white and orange wires. These wires should at all times be insulated from earth. This may be checked by the use of a simple continuity test circuit made up from the battery and the 6v. 6w. bulb.
   (a) The A.C. output of the charging coils at 3,000 r.p.m. should be 5½ volts on the A.C. volt meter with a 1 Ohm load paralleled across it.
   (b) A reasonably good light should be obtained from a 6v. 36w. bulb connected between the [redacted] orange and white leads.

**Rectifier Testing** (Small Full-wave Rectifier—Part No. S.1044)

First, disconnect the rectifier from the circuit by unplugging the white, brown and orange leads from the four-way connector. Next, arrange a simple series circuit with the 6v. 6w. bulb and 6v. battery so that when the circuit is completed the bulb will light. Now break the circuit at any point and connect the NEGATIVE lead to the earth bolt of the rectifier. Then connect the POSITIVE lead to the orange, brown and white leads in turn. A good light should be obtained in each case. This completes the forward flow testing.

The POSITIVE lead should now be connected to the earth bolt, and the NEGATIVE lead connected in turn to the orange, brown and white leads. There should be no light in each case. Any contra indications to the bulb lighting is indicative of a faulty rectifier.

**N.B. THE BATTERY MUST NEVER BE CONNECTED NEGATIVE TO EARTH (TRANSLUCENT LEAD) AS THIS CONDITION WILL INVARIABLY BURN OUT THE RECTIFIER. THE RECTIFIER WILL ALSO SUFFER DAMAGE IF THE ENGINE IS RUN WITHOUT THE BATTERY IN CIRCUIT.**

**Premature Bulb Failure**

The current feeding the bulbs when the lighting switch is in the headlamp position is A.C. working, **and the bulb loading under these conditions is of the utmost importance.** To ensure that the rearlamps do not blow and consequently overload the headlamp unit, a carry-over type of dip switch is used. This means that during the changeover from head to dip and vice versa both headlamp filaments are lit, thus ensuring that the heavy bulb loading is not transferred to the small tail light bulb, which would result in its failure. Firstly then, check that the dipper switch is functioning correctly, and secondly check that all bulb holder contact spring tensions are satisfactory, as intermittent open circuiting of the bulbs could again lead to circuit overload. Where premature bulb failure does take place, on no account be tempted to use 12 volt bulbs, as this would only aggravate the complaint.

A further point to check is the correct installation of the rectifier and battery. If, whilst the engine is running, the lights are switched on with the rectifier not in circuit or the battery disconnected, then the A.C. voltage will rapidly rise and the bulbs will blow. The A.C. voltage measured on a good quality moving coil meter with the lights switched on should not exceed 8.2 volts at 6,000 r.p.m.

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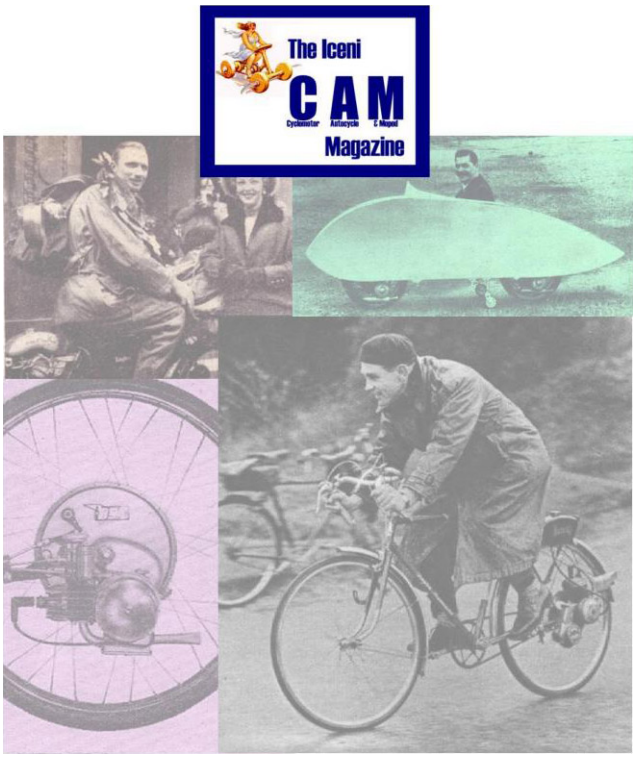


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