TWC

LUCAS ACR
16, 17, 18, 25

# INSTALLATION INSTRUCTIONS

**A NEGATIVE TWC Regulator must be used**

**DATA SHEET**

**6**

09-89

The following is a general guide to installing the TWC regulator in most alternator charging systems whilst specific data sheets for individual alternator makes and types are also supplied, where possible.

**IMPORTANT: Whilst the TWC regulator is not difficult to fit, it is essential that you understand these basic installation instructions, before commencing. If in doubt, please consult your TWC specialist.**

A. Make sure that you have a NEGATIVE TWC Regulator, indicated on the case.

B. Disconnect the battery.

C. Mount the regulator in a dry, protected place.

D. Protect the contacts with water repellant grease e.g. Valvoline, Castrol anti-corrosion grease. Also fill the space around the contacts on the regulator to prevent ingress of water.

E. Remove the alternator casing as shown in fig. 1, pos. 10.

F. Disconnect the original regulator as shown in fig. 1, pos. 11.

G. Connect up cable 4 (BLACK) and cable 5 (GREEN) as shown in fig. 1.

H. Refit the alternator casing as shown in fig. 1, pos. 10.

I. Disconnect the ignition warning light attached to IND and reconnect to TWC cable 6 (YELLOW) fig 2, pos. 12.
*Note:* Only the actual charge indicating lamp (max. 5W) must be connected to the YELLOW cable, or the TWC Regulator will be damaged. Any automatic functions connected to this cable must be reconnected to IND on the alternator or to the oil pressure transmitter.

J. Connect up cable 1 (BROWN) and cable 2 (BLUE) as shown on fig. 2. If a blocking diode is incorporated in the system, cable 2 (BLUE) should be connected to the service battery outlet terminal.

K. Connect cable 3 (RED) to the battery (+) terminal as shown in fig. 3.
If a blocking diode is present, cable 3 (RED) should be connected to the service battery.
If a manual isolating switch is fitted, instead, connect the RED lead to the COMMON pole on the switch. This will ensure that the appropriate battery is sensed.
**ATTENTION!** Don't cut the wiring harness, as there is a temperature sensor inside.

*Note:* When two alternators are used, the TWC cable for twin alternators should be used. Refer to separate instructions for connection of this cable.

Fig. 1.

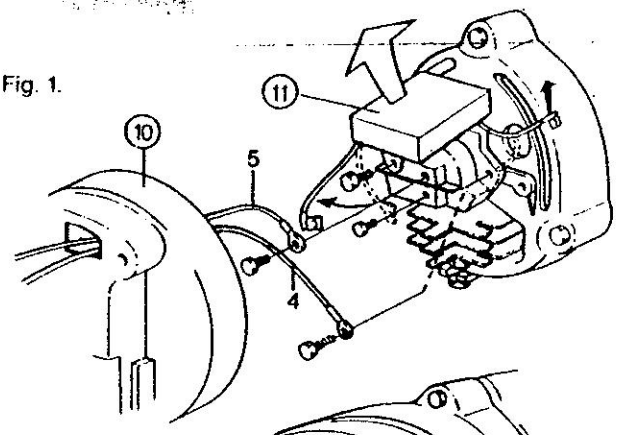
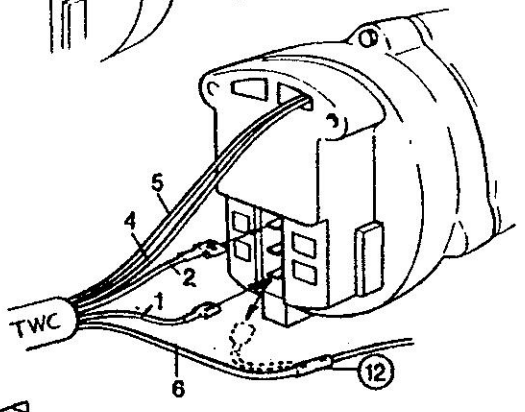



Fig. 2.



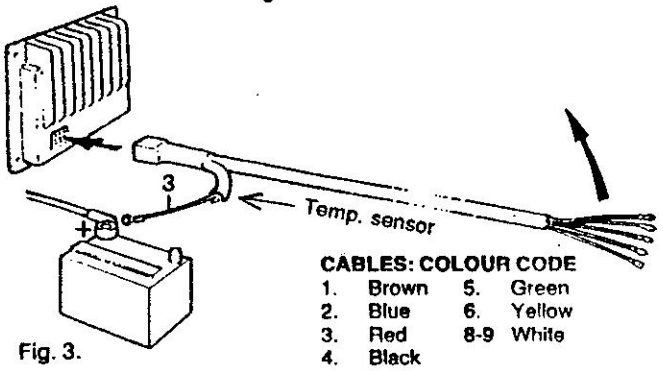




Fig. 3.

**CABLES: COLOUR CODE**

| | | | |
|---|---|---|---|
| 1. | Brown | 5. | Green |
| 2. | Blue | 6. | Yellow |
| 3. | Red | 8-9 | White |
| 4. | Black | | |

## INSTALLATION CHECK

- Connect a digital voltmeter over the battery (2-battery systems over the service battery). It will show the prevailing battery voltage.
- Turn the ignition key to the position for starting and check that the ignition warning light gives a steady emission.
- Start the engine. The ignition warning light should go out. If it flashes – see ALARM/WARNING MODE.
- Increase the engine revs. to approx. 2000 rpm. The voltage should now rise to approx. 14 volts with 12 volt system (28 volts with 24 volt systems) – refer to TEMPERATURE/CHARGING VOLTAGE RELATIONSHIP. If the battery has been heavily discharged this could take a relatively long time.
- After approx. 5 minutes, charging will cease whilst the battery status is measured by TWC. Thereafter the voltage will be increased to approx. 14.6 volts with a 12 volt system (approx. 29.2 volts with a 24 volt system) – refer to TEMPERATURE/CHARGING VOLTAGE RELATIONSHIP.
- Load the alternator by switching on electrical equipment having a high consumption, such as beaters, lamps, blower-fans, etc. Should the charge control lamp give a rapid-flash alarm – see ALARM/WARNING MODE.
- Check and record the S.G. of the acid in all the battery cells of all the batteries.
- The TWC regulator will now adjust the charging voltage to the theoretically correct voltage. If the battery has deteriorated or is heavily sulphated, it cannot receive charge. Instead of storing energy it will become warm.

**After several hours running time:**

- Check that the acid S.G. has increased. (*Note:* This will take longer for older batteries). Feel the battery/batteries with your hand. They should not get noticeably warm by the charging if they are in good condition. If a battery gets warm, it is defective and should be replaced.
*Note:* New batteries have been known to be defective. Make it a habit to regularly check S.G. and fluid levels.

**ALARM/WARNING MODE:**

'SLOW BLINK' (1 per second)

1. Too low alternator rpm.
Solution – increase revs.
2. Excessive energy demand from electrical accessories.
Solution – switch something off!

'FAST BLINK' (3 per second)

Indicates an excessive voltage drop between generator and battery resulting from:

1. Faulty isolating switch (if fitted).
2. Bad connections in electrical system.
3. Too thin gauge electrical wiring.

**NOTE:**

Following HEAVY DISCHARGES a 'SLOW BLINK' may persist for several minutes after starting the engine, due to the initial high load on the generator.
If the 'SLOW BLINK' still persists under normal conditions – charging voltage is suspect.

**WARNING:**

**The 'FAST BLINK' mode should NOT be ignored.**
Please contact your Electrical Specialist IMMEDIATELY!

**TEMPERATURE/CHARGING VOLTAGE RELATIONSHIP (12 volt system):**

| | Hotter than | | | Colder than |
|---|---|---|---|---|
| **Temperature** | **+30°** | **+30° to +10°** | **+10° to –10°** | **–10°** |
| Normal Charge | 13,8 V | 14,0 V | 14,2 V | 14,4 V |
| High Charge | 14,4 V | 14,6 V | 14,8 V | 15,0 V |

*For 24 volt systems, multiply the Charging Voltage values by 2.*