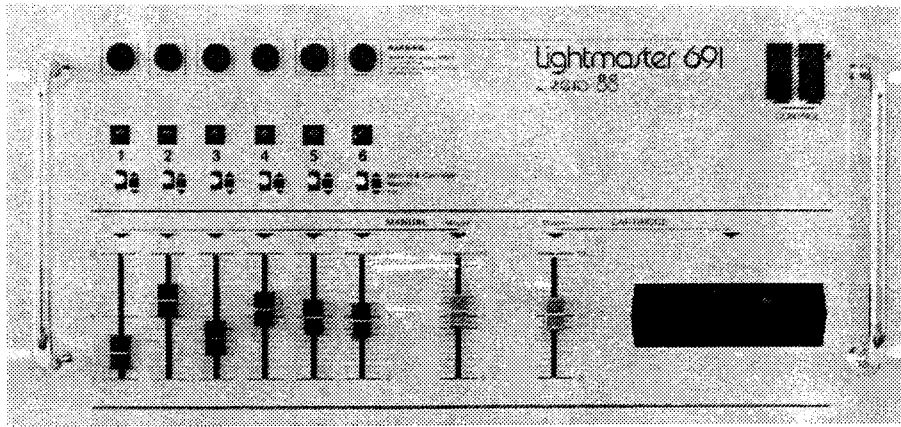


LIGHTMASTER 690 & 691

INSTALLATION INSTRUCTIONS



This manual describes the procedure for installing a Lightmaster 690 and 691 in most situations. It also gives information on fault diagnosis and simple 'on site' maintenance.

For further information and for servicing details please contact your nearest Lightmaster dealer. In case of difficulty the manufacturer's address is given at the end of this manual.

Lightmaster 691

This is a six channel lighting control unit with full dimming facilities on each channel. Power rating is nominally 2Kw per channel at 230V, (1Kw @ 115V), of tungsten or tungsten halogen lighting. The unit will operate low voltage lighting via suitable transformers subject to certain requirements (see Page 4), but will not operate Neon or Strobe lights. To control flourescent tubes, refer to manufacturers.

The unit may be operated from a wide range of power sources, and complies with requirements in most countries, (see specification on Page 3). Special versions are distributed in certain areas to comply with local regulations, but installation should be covered by this handbook.

Interfaces are available for a 691 to drive a 690 as a slave rack, and a 690 to drive another 690. Installation instructions are included with the interface.

Lightmaster 690

This is the matching dimmer rack to the 691, and is just the same as a 691, without the control functions.

It can be controlled from a wide range of Lightmaster controllers, or used to increase the power rating of a 691 installation.

Interfaces are available to connect the Lightmaster 690 to the following alternative systems:

1. + 10 Volt connection via Cannon EP8.
2. - 10 Volt connection via Octal plug.

These enable the 690 to be used with existing control desks of other manufacturer's. They are easily fitted - instructions are supplied with the interface.

Mechanical Installation

The Lightmaster 690 and 691 are both designed for rack or console mounting, and are mechanically similar.

Console cases and flight cases are available for both.

Mounting in a Console

Figure 1 shows the external dimensions of the Lightmaster.

The console should be large enough to accommodate the unit, allowing 2" behind for cables, and space for an isolator nearby. It must also allow free flow of air in and out of the unit. Fully enclosed consoles of any description will cause overheating and destroy the unit.

If in doubt - fit a fan.

Cut out a hole for the front panel as shown in figure 2. The panel may be of any thickness material provided it is strong enough to support the unit. Drop the Lightmaster in and fix with chrome headed or 'mirror' screws. Allow for rear access or for withdrawing the unit for servicing.

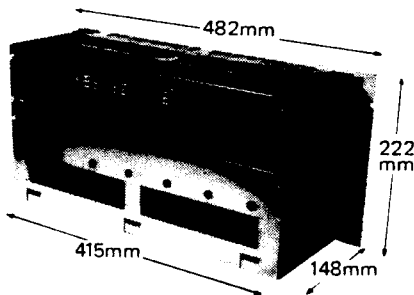


figure 1

Mounting in a Rack

The Lightmaster 691 and 690 are designed to mount directly in a standard rack. 22 cm (9") depth is required to accommodate unit and cables.

'2 u' (8.8 cm, 3.5 ") must be allowed above each unit for ventilation, and a vent panel (Lightmaster part no. 746) is available for this purpose. If mounting in an enclosed rack allow plenty of room for free air to enter and leave the enclosure.

In temperate climates, racking more than 2 high is not recommended without adequate forced draught ventilation.

In hot climates a fan will be essential in almost all circumstances.

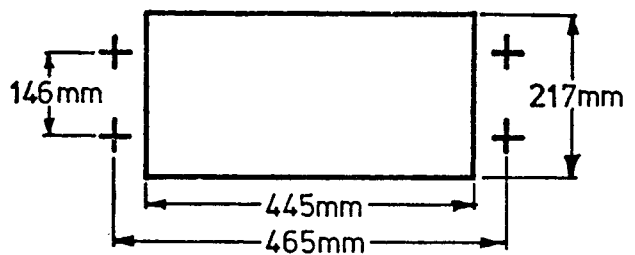


figure 2

Electrical Installation

General

All power connections to the Lightmaster 690 and 691 are made via terminals on the rear panel. These terminals can be enclosed in a metal conduit box with 'knock out' holes, (Lightmaster part no. 745).

In most countries this is mandatory - particularly when using a 3-phase supply.

The connections themselves should be made with flexible wire, and should be long enough for the unit to be withdrawn for servicing.

It is essential that an isolation switch be incorporated in the supply circuit and this should ideally be close to the unit. The switch on the Lightmaster only controls the electronics and does not isolate the supply.

The Lightmaster 690 and 691 are suitable for use on the following types of supply:

- | | |
|---|--|
| A. Single phase & neutral (2 wire) + earth
220V - 240V
60 Amp 12 Kw load
50 Hz or 60 Hz. | Single phase & neutral (2 wire) + earth
110V - 115V
60 Amp 6Kw load
50 Hz or 60 Hz |
| B. 3-phase & neutral (4 wire) + earth
220/380V - 250/440V
20 Amp per phase 12 Kw load
50 Hz or 60 Hz | 3-phase & neutral (4 wire) + earth
115/220V
20 Amp per phase 6 Kw load
50 Hz or 60 Hz |

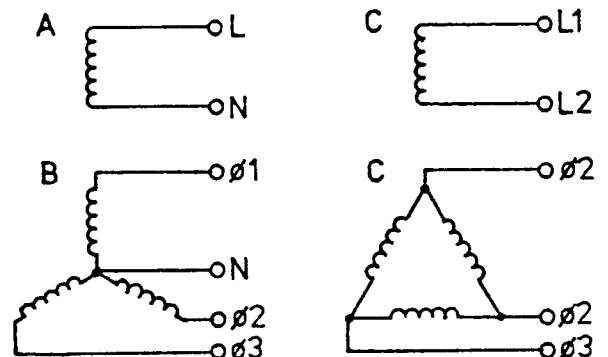
The two different Lightmaster models, 690b and 691b, having 2 fuses per channel, will be manufactured for use on the following types of supply:

- | |
|--|
| C. Single phase 2 wire (no neutral) + earth
220V - 250V
60 Amp 12Kw load
50 Hz or 60 Hz |
| D. 3-phase 3 wire (no neutral) + earth
220V - 250V Delta connected supply
30 Amp per phase 12Kw load
50 Hz or 60 Hz |

A SATISFACTORY EARTH IS ESSENTIAL FOR ALL INSTALLATIONS.

The unit is supplied for single phase operation with $\emptyset 1$, $\emptyset 2$, and $\emptyset 3$ linked by a metal strap. For 3-phase operation this strap should be removed.

The unit is switchable 50/60 Hz and 220/110V, and the settings are marked on the outside of the box when supplied. It will normally be supplied correctly set for operation in the country to which it is supplied, but if in doubt remove the back cover and check switch settings on the transformer board, BEFORE connecting supply.



Connection to Supply

691 Single Phase + Neutral (2 wire)

1. Check voltage & frequency settings from label on box. If in doubt, remove cover and check switches.

2. Ensure strap is in position connecting $\phi 1$, $\phi 2$, and $\phi 3$, on power input terminal block and that all screws are tight.

3. Install a 60 Amp isolator in a convenient location close to the Lightmaster and wire to supply in accordance with your local regulations.

4. Using 10sq mm flexible cable connect $\phi 2$, N and E to 'phase', 'neutral' and earth to the isolator.

A GOOD EARTH CONNECTION IS ESSENTIAL.

5. Connect each lighting load via a 1 sq mm 3 core flexible cable to the appropriate channel output terminals.

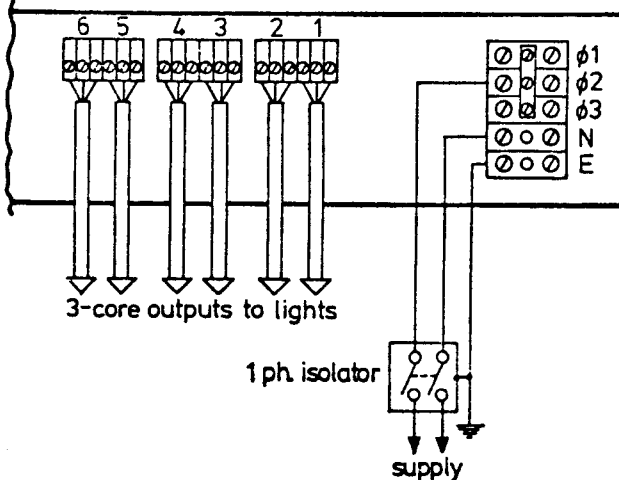
Note All neutrals and all earths are common inside the Lightmaster.

6. Check that all terminals and screws on input and output sides of power block and on output terminals are as tight as possible.

Note 6 Channel socket panels are available for all types of socket. These can be mounted in the back of the flight case.

They can also be used in a rack to build up a patching system for several Lightmasters.

SINGLE PHASE



691 3-Phase + Neutral (4 wire)

1. Check voltage & frequency settings from label on box, if in doubt remove cover and check switches.

2. Remove metal strap connecting $\phi 1$, $\phi 2$, and $\phi 3$ on power input terminal block and retain for future use. (We suggest you tape it to side of unit).

3. Install a 20 Amp 3-phase isolator in a convenient location close to the Lightmaster and wire to supply in accordance with your local regulations.

4. Using 4sq mm flexible cable connect $\phi 1$, $\phi 2$, and $\phi 3$ 'neutral' and earth, to the isolator.

A GOOD EARTH CONNECTION IS ESSENTIAL.

5. Connect each lighting load via a 1 sq mm 3 core flexible cable to the appropriate channel output terminals.

Note All neutrals and all earths are common inside the Lightmaster.

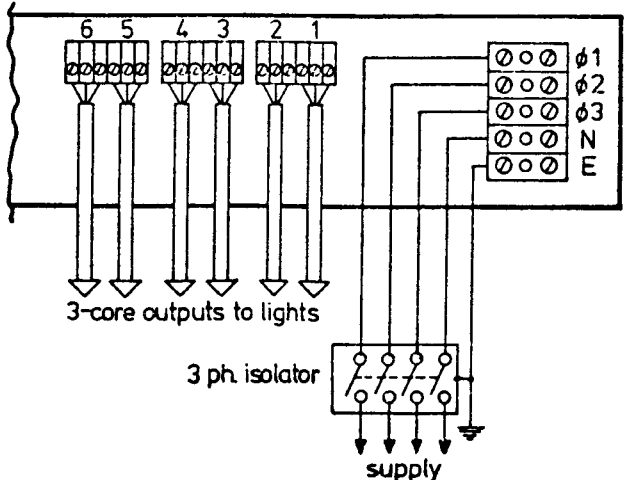
6. Check that all terminals and screws on input and output sides of power block and on output terminals are as tight as possible.

Note 6 Channel socket panels are available for all types of socket. These can be mounted in the back of the flight case.

They can also be used in a rack to build up a patching system for several Lightmasters.

THESE MAY NOT BE USED IN 3-PHASE INSTALLATIONS IN THE U.K.

THREE PHASE



Connection to Supply (cont'd)

Connect Audio input (691 only)

Connect a 3 pin XLR free socket to an audio source and plug in.

Audio level required = 50 mV - 75V

Input impedance = 30K unbalanced

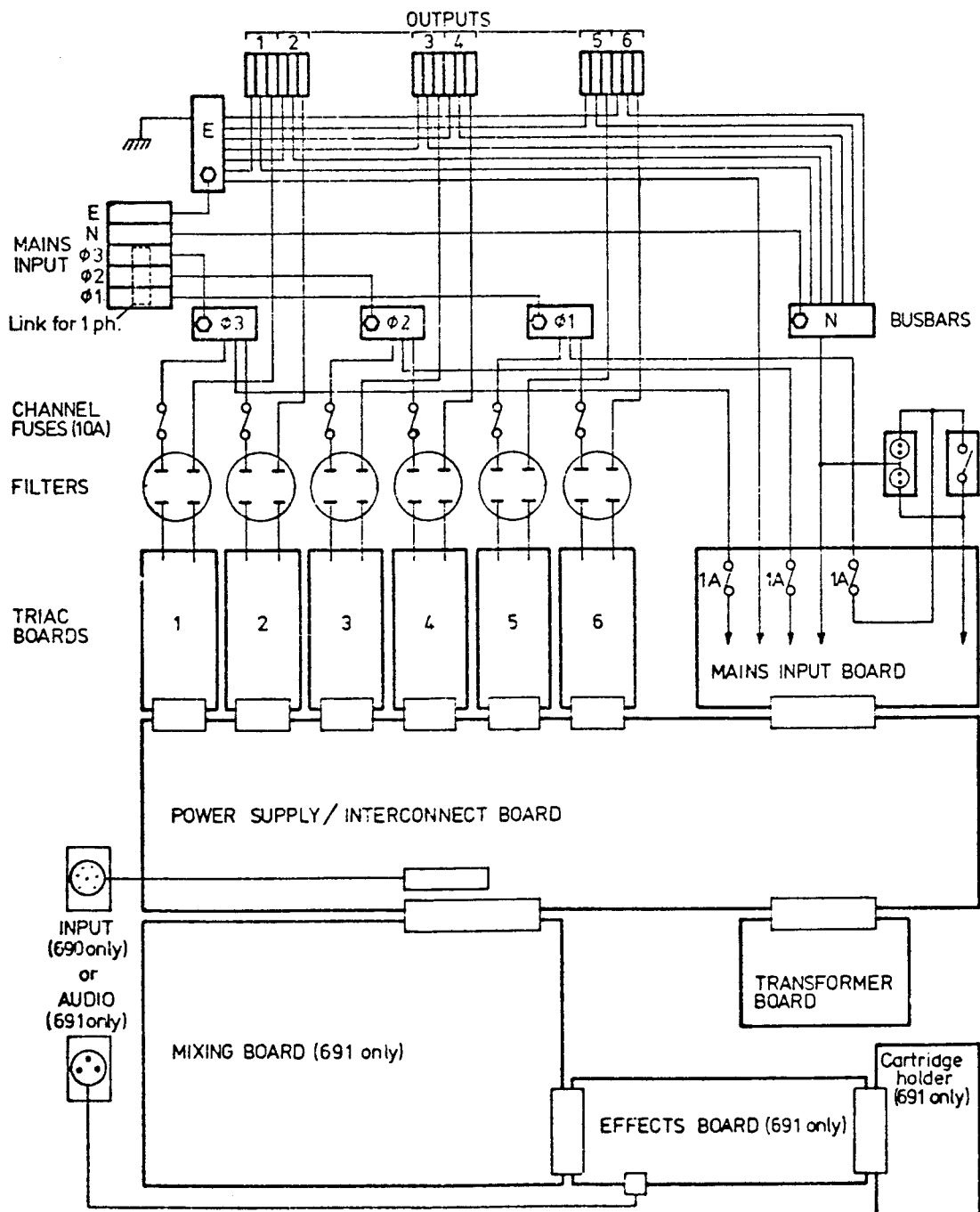
Pin connections (i) Chassis
(ii) Audio earthy side (lo)
(iii) Audio signal (hi)

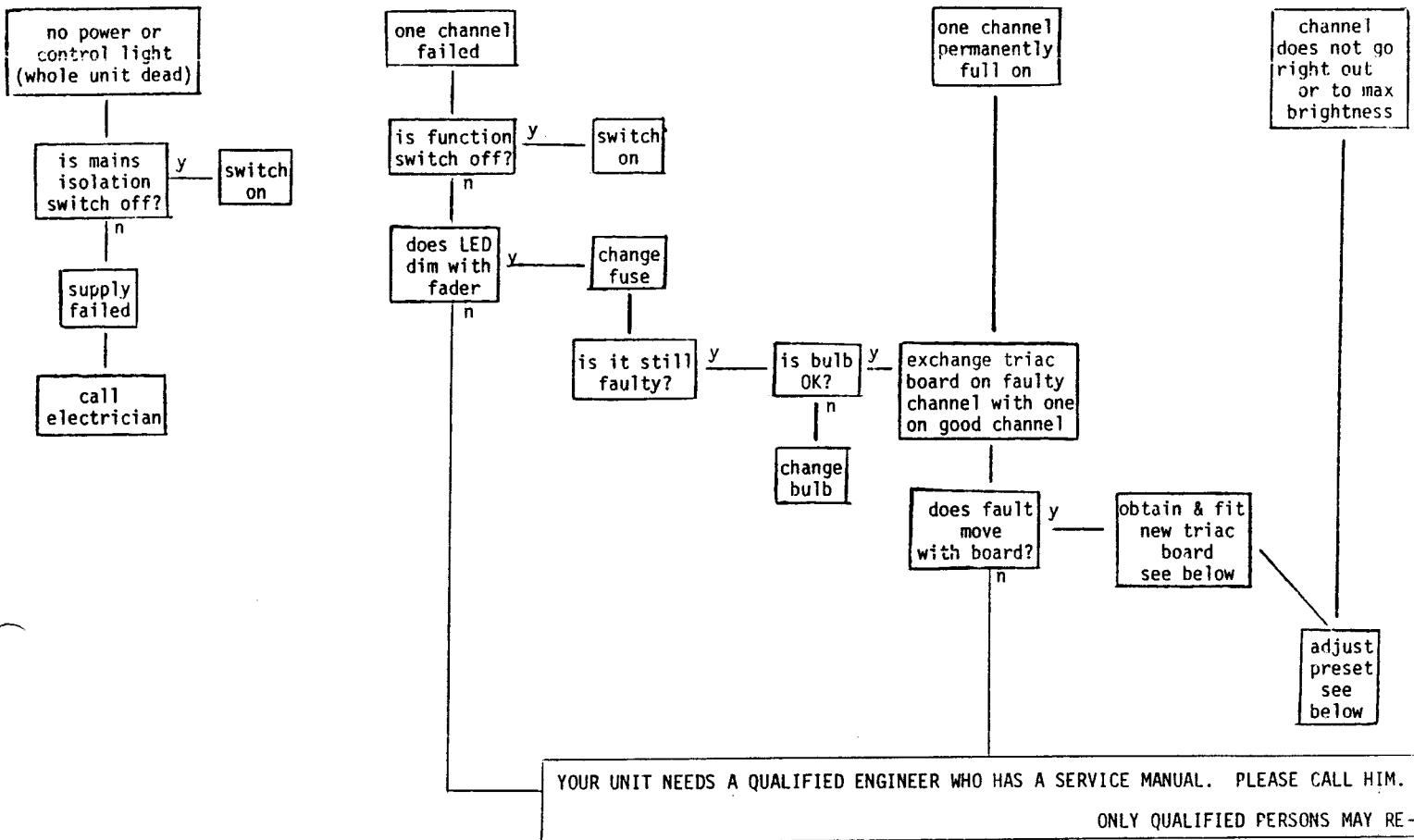
Connect Control input (690 only)

Plug in 7 pin connector from Lightmaster control unit into socket on 691. If required this cable may be extended using 7 core screened cable connected as shown.

Do not use screen as 7th conductor.

LIGHTMASTER 690 & 691 INTERNAL CONNECTION DIAGRAM





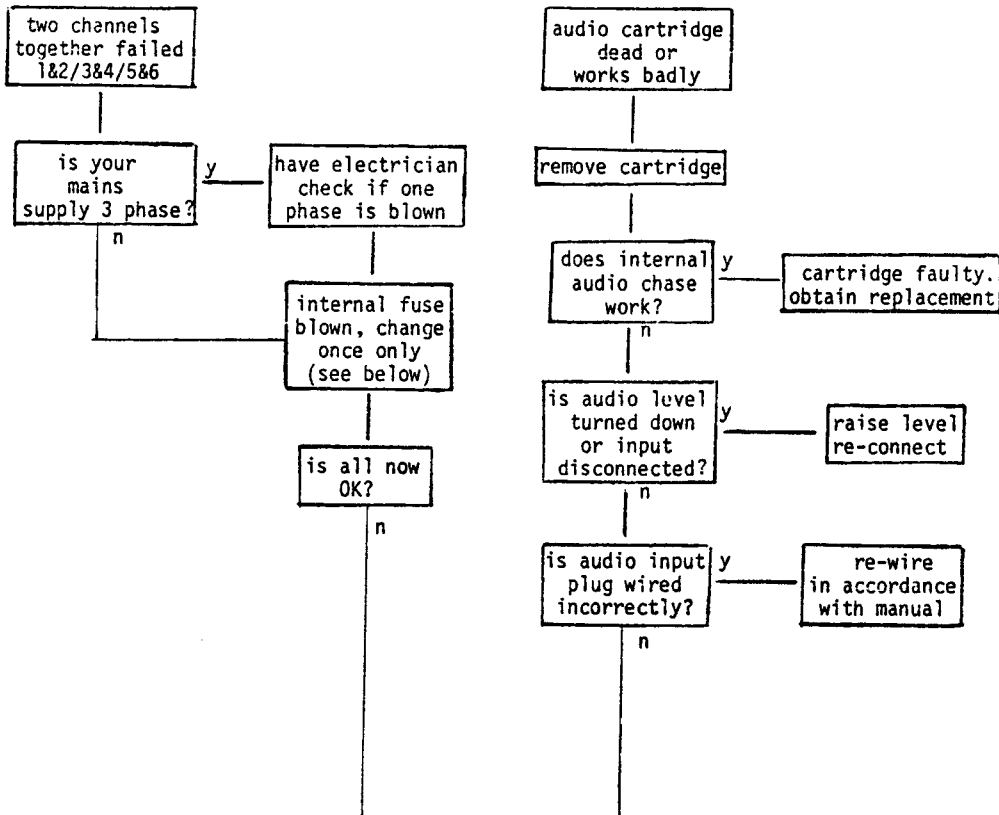
To Change Triac Board

1. Isolate unit from supply.
2. Mark position of channel pre-set controls on back cover and remove. (five screws).
3. Locate faulty triac board. Channel 1 is extreme right, channel 6 extreme left, next to the transformer.
4. Using a pair of long-nose pliers, GENTLY pull the black wire from the triac.
5. Now gently pull the thick blue wire from the FILTER. (This makes life easier when you come to refit).
6. Pull out plastic control shaft from board and retain.
7. Unscrew the one screw holding the triac board in place and GENTLY pull the board down (to unplug it) and lift out.
8. Tie a knot in the blue lead of the triac to show it is faulty.
9. Unpack new triac board. Remove black lead (if fitted) and return with old board.

10. Plug new board into Lightmaster, ensuring all the pins engage and are not bent. Replace screw and plastic control shaft.
11. Push blue wire back onto filter, and black wire onto triac, taking great care not to bend the tags. Position wires clear of black heatsink.
12. Replace back cover, carefully aligning pot shafts with holes in cover.
13. Set up channel as detailed.

To Set Up Channel

1. Ensure all covers are fitted and equipment properly earthed.
2. Ensure a load of at least 100 Watts is connected to channel to be tested.
3. Switch on unit and run normally for a few minutes to gain normal running temperature.
4. Set all sliders to 0.
Set all functions switches to manual only.



THIS EQUIPMENT CONTAINS LETHAL VOLTAGES. TAKE CARE.

REMOVE COVERS FROM THIS EQUIPMENT.

if you have a moving coil AC Voltmeter:

3. Connect Voltmeter on 250 volt range across L and N of channel to be set up.
4. Switch Voltmeter gradually down to 10 Volt range approximately, adjusting preset control to give 1% of mains (2.5V on 220/250V/1.2V on 115V supplies).

5. If possible check that lamp filament is not glowing. (Some lamps are more sensitive than others). If necessary adjust as in 6 below.

if you don't have an AC Voltmeter:

6. Adjust preset control up until lamp filament just glows and then turn back until glow just disappears. (Note different types and powers of lamp will require different settings of this control).

To Change Internal Fuse

1. Isolate unit from supply, and find out what caused fuse to blow. (May be due to over voltage or wrong mains switch settings. If in any doubt, contact service engineer).

2. Withdraw Lightmaster from rack or console.

3. Remove top cover (2 screws on top, plus top 4 screws on back). Viewing unit from behind, fuses are located at the top of the small upright circuit board next to the power lights.

4. Decide which fuse has blown. Fuse 1 supplies the whole electronics. Fuse 2 only affects channels 3 and 4. Fuse 3 only affects channels 5 and 6. It is highly unlikely that an external fault would blow fuses 2 or 3.

5. Using a small screwdriver, and a pair of long-nosed pliers, replace the blown fuse, (numbers marked just above each holder), with a 20 mm, 1 Amp ceramic type.

DO NOT use any other type of fuse.

6. Destroy old fuse.

7. Replace top cover (note flat headed screws must be used on top 2 screw positions) and re-test.

If a fuse blows again **DO NOT REPLACE**, call a service engineer.