

LAB-CRAFT

MAINS CHARGING UNIT CP3 DISTRIBUTION UNITS DP2, DP3, DP3a

DESCRIPTION

The system comprises two matching units, a charging unit and a distribution unit, plus a caravan storage battery (not supplied). Each unit is completely independent and can be installed separately if only part of the system is required.

The units may be mounted in any convenient position, ideally close to each other. The battery can be secured either inside or outside the caravan unit. If fitted inside, the battery must be in an enclosed container which is vented to the open air since the fumes from a battery on charge can reach toxic levels.

THE MAINS CHARGING UNIT CP3

This unit is an independent mains charger with high and low charge rates. It is fitted with a combined overload fuse and indicator lamp which will only light when the battery is connected and is a direct indication of the charging current. It will glow brightly when supplying a high charge and will only just glow when trickle charging a fully charged battery.

It is important to replace the lamp or fuse with the correct ratings, i.e. Fuse 5 amp., Lamp 6.5v 0.3a.

INSTALLATION INSTRUCTIONS

Remove the centre screw and mains input plug. Gently prise the cover free of the spring clips at each side of the unit. The unit can be fixed to any flat surface by means of the fixing holes provided in the inside corners of the case. Alternatively it may be partly recessed into a caravan wall cavity or into the side of a cupboard and in this way the wiring can be completely hidden. A rectangular hole 4 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ " is required. Take care not to restrict the ventilating holes at each end of the unit. It is normal for this unit to be hot after several hours' use.

Inside the top of the unit is a screw terminal connecting block. Observe polarity: Red + and Black - and connect a pair of heavy duty wires to these terminals which should be fed out through a convenient hole in the case.

Replace the cover securely and tighten the centre cover fixing screw.

Connect the free ends of the two wires to the terminals marked 'CHARGER INPUT' on your control unit. If the charger unit is to be used on its own, connect these two wires directly to your battery via suitable battery clips.

The A.C. Mains input to the charger unit is made to the special three pin plug marked 'MAINS INPUT' and under no circumstances may this plug be re-inserted when the cover is removed.

Connect the charger unit to the Mains supply. Only good quality rubber or plastic 3 core cable should be used and efficiently serbed.

Ensure that all connections are protected from exposure to moisture. Connect only to 220-240 volt A.C. Mains using fused mains plug.

An additional universal two pin Mains outlet is provided for double insulated shavers, hair dryers, etc. which is isolated by the Mains Switch on the unit, but it is not individually fused.

This Socket must not be used for loads in excess of 500 watts (2 amps.)

Appliances with three core mains leads must not be connected to this socket.

To charge the caravan battery, switch on MAINS and adjust the rate of charge required, depending on battery condition.

THE LOW VOLTAGE DISTRIBUTION UNIT DP2, DP3, DP3a

This unit has three functions. It provides the facility for charging the caravan battery by means of the car dynamo or alternator whilst towing and is also a fused distribution outlet box for the low voltage supplies throughout the caravan. In addition it AUTOMATICALLY SELECTS THE CORRECT POLARITY TO THE CARAVAN REGARDLESS OF THE POLARITY OF THE TOWING VEHICLE OR OTHER POWER SOURCE. i.e. provided the caravan fluorescent lighting, T.V., etc. are correctly wired to the distribution unit it does not matter whether the towing vehicle is positive earth or negative earth. The unit will automatically select the correct polarity.

INSTALLATION INSTRUCTIONS

Gently prise the cover free of the spring clips at each side of the unit. The unit can be fixed to any flat surface by means of the fixing holes provided in the inside corners of the case. Alternatively it may be partly recessed into a caravan wall cavity or into the side of a cupboard and in this way the wiring can be completely hidden. A rectangular hole 4 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ " is required. Take care not to restrict the ventilating holes at each end of the unit.

Proceed with the wiring as follows: CORRECT POLARITY MUST BE OBSERVED AT ALL TIMES, i.e. RED is battery POSITIVE (+) and BLACK is battery NEGATIVE (-).

1. Connect the terminals marked 'CARAVAN BATTERY' directly to the caravan storage battery using a length of 8 amp cable. (Twin mains cable 3/029 or Vehicle wire 40/0076 is suitable).

A 7.5 amp 'In-lead' fuse is required, and this should be connected directly to the positive (-) Terminal of the battery and the free end connected to the cable mentioned above.

2. Depress the 'SUPPLY ON' switch on the Unit and check for a reading on the Battery Condition Meter (the pointer will move very slowly) then switch off and remove the battery fuse before proceeding with the wiring.

3. From the towing plug, trace the cable back to the terminal board fitted to the caravan and locate the two wires which are connected to Pins 31 and 52 on the plug (on some makes of plug Pin 52 is marked 54g).

These same two wires will be connected to the Blue and White supply leads in the caravan.

Make a connection from these Blue and White leads (at any convenient point) to the terminals marked BLUE and WHITE on the Distribution Unit, using colour coded wire of 23/0076 gauge—8 amp rating.

4. Check this connection by plugging into your towing vehicle, switch 'SUPPLY SWITCH' to ON and 'CHARGE SOURCE' switch to 'TOWING VEHICLE'. Then check for a reading on the Battery Condition Meter which will indicate a charge from the towing vehicle battery.

5. Switch off and remove plug before proceeding.

5. LAB-CRAFT Fluorescent Lighting fittings may now be installed and wired to the terminals marked OUTLET No. 1. Outlets Nos. 2 and 3 may be similarly used for lighting or other accessories such as T.V., Water Pump, Extractor Fan, etc. The load on each outlet should not exceed 40 watts, and the total load from all three outlets should not exceed 90 watts at any one time.

Split the lighting load between two outlets to prevent total failure of the lighting should a fuse blow.

7. Replace storage battery fuse and test installation by switching on.

HINTS ON INSTALLATION

All interconnecting wire used for the 12 volt supply should not be less than 23 strands of 0076" copper (23/0076) otherwise known as 23/36 swg. This cable is rated at 6 amps and should have an adequate, mechanically tough, insulation. All leads should be as short as possible to keep volt drop losses in the leads to a minimum.

Suitable cables and accessories are marketed by LAB-CRAFT (obtainable from your local Caravan dealer) and these approval components should always be used.

Remember to check your battery regularly and top up when necessary. Keeping the battery in good condition will not only extend its life but also that of the lighting units.

When parked for any length of time it is also advisable to remove the 7-pin plug from the car unless you wish the load to be shared by both car and caravan battery. This will also prevent accidental discharge from the car battery should the caravan battery be in a very low state of charge.

Whilst towing, the car battery will always receive priority and most of the charging current. When the car battery is in a good state of charge the car dynamo or alternator will supply to the caravan battery a charge current sufficient to replace, in one day's touring, an average evening's use of the caravan facilities. This is dependent upon the caravan battery previously being in a good state of charge.

REMEMBER TO SWITCH THE DISTRIBUTION UNIT TO 'TOWING VEHICLE' CHARGE SOURCE IF YOU WISH TO CHARGE WHILST ON TOW.

NOTES ON USE OF BATTERY CONDITION METER

Switch SUPPLY switch on. Several seconds will elapse before any reading is indicated and a full minute should be allowed for accurate readings.

When the towing vehicle is connected, the meter will read the average of the caravan battery plus the car battery. Therefore to read the condition of the caravan battery only, remove the towing plug or alternatively switch the 'charge source' switch to the 'mains charger' position.

Two alternative types of meter are fitted to the DPS units, both are identical in operation, but on the type with a voltage scale marked 3 to 17, the second green section (referred to below) is omitted. Therefore the remarks below for ON CHARGE—GREEN SECTION will refer to the right-hand half of the white section, on this type of meter.

CHARGING FROM MAINS

OFF CHARGE—RED SECTION: Battery charge is extremely low.

If, with a normal load and no charger working, the pointer settles in this area—the battery requires attention and prolonged charge.

OFF CHARGE—GREEN SECTION: Battery charge is below full.

With normal load and no charge, this section indicates that the battery will soon require recharging. Switch on charging unit or recharge from vehicle at earliest opportunity.

NORMAL—WHITE: Battery fully charged.

With or without a load and no charge, this is the ideal condition and indicates a fully charged battery in good condition.

ON CHARGE—GREEN SECTION: Battery fully charged (see above).

This section will be indicated when a normal load is being used with the mains charger on, and shows the charge is balancing the load. When the pointer nears the top of this section the charge should be switched off.

ON CHARGE—RED SECTION: Charging voltage too high.

If the pointer stays in this section for more than a few minutes the charger MUST be switched off as running in this section for any length of time may cause permanent damage to fluorescent lighting fittings.

If this section is reached after a very short period of charge on a discharged battery then a faulty battery is indicated.

CHARGING FROM TOWING VEHICLE

The sections OFF CHARGE RED, GREEN AND WHITE will indicate the condition of the battery as above when the towing socket is disconnected. It will not be possible to observe the battery condition or charge as the caravan will be under tow.

All readings on the indicator should be ignored when the towing vehicle engine is idling since readings may vary at very slow engine speeds solely due to operation of the voltage regulator.