

**WARNING: Before charging a flooded battery, always check the fluid level is topped up as recommended by the manufacturer, otherwise damage may result**

## Switching On

- 1> Connect 240V power to the van and switch on the supply.
- 2> Switch on the charger, the switch should then illuminate.
- 3> Power should now be available to charge the battery.

## Protection

The battery charger is fully protected against electrical or thermal overload. Should the units output be overloaded, short circuited or connected in reverse, then it will shut down until the fault is removed. The unit is also thermally protected to avoid the temperature rising above a safe level. If this happens then the output will switch off until the temperature has recovered to a safe level. A cooling fan is also fitted to the charger, which will operate when necessary to cool the unit.

## Fault & Charge Indicators

The charger has two indicators which show the 'mode of charge' and 'fault status'. The indicators give the following information:

- Mode -**
- Red =** Bulk mode
  - Yellow =** Absorption mode
  - Yellow Flashing =** Equalisation Mode (Flooded setting only)
  - Green =** Float mode
- Fault -**
- Red =** Overcurrent
  - Red Flashing =** Short circuit/Reverse polarity/Faulty battery/No battery connected\*
  - Yellow =** Overtemperature
  - Green =** OK

\* - This fault indication will not apply if 'float mode' has been selected.

## Powering from a generator

**WARNING: Always take care when using a generator to power the battery charger, otherwise damage may occur due to excessive voltage**

- 1> Always start the generator with the 240V power in the van switched off.
- 2> Allow the generator to warm up for a while before turning on power in the van.
- 3> If possible check the generator output to ensure the output is normal (240V  $\pm$  10%)
- 4> Try not use a generator which produces a 'square wave' output as the charger may not operate correctly, if in doubt contact the generator supplier.

## SPECIFICATIONS

MV4/180C

Input Voltage	180 – 264V AC			
Input Frequency	50 - 60Hz			
Output Voltage:	<i>Float only</i>	<i>Flooded</i>	<i>Gel</i>	<i>AGM</i>
Bulk Charge Current	N/A	18A	18A	18A
Absorption Voltage	N/A	14.5V	14.0V	14.6V
Equalisation Voltage*	N/A	15.5V (Max)	N/A	N/A
Equalisation Current	N/A	5A (Max)	N/A	N/A
Float Voltage	13.8V	13.2V	13.5V	13.6V

\*Equalisation stage is only applied to 1 in every 10 charge cycles

Load Range	0 – 18A
Output Power	279W
Standby Current	2.5 mA
Protection	Current limit @ 20.5A $\pm$ 0.5A Short circuit protection Overvoltage protection @ 18V $\pm$ 1.0V Thermal protection @ 90°C $\pm$ 5°C

Operating Temperature	-25°C to 50°C
Storage Temperature	-40°C to 85°C
Dimensions	Length: 171mm Width: 155.5mm Height: 72.5mm

Weight	1.94 Kg
Approvals	Safety: EN60335-2-29:1996 Emissions: EN61000-3-2/3 EN55014-1 Immunity: EN55014-2

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Mobile Leisure Products



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# Installation & Operating Instructions





## 4-Stage Leisure Battery Charger

> for caravans & motor homes

- > Microprocessor controlled
- > Four stage charging cycle
- > Charges Flooded, Gel or AGM Batteries
- > Built-in Status and Fault indicators
- > Thermal and electrical protection

-  > Gecontroleerde microprocessor
-  > Het laden cyclus in vier fasen
- > Overstroomde lasten, Batterijen
- > van het Gel of AGM. Ingebouwde indicatoren
- > van de Status en van de Fout. Thermische en elektrobescherming

-  > Mikroprozessor gesteuert
- > Vierstufiger aufladenzyklus
- > Aufladungen überschwemmt, Gel oder AGM Batterien
- > Eingebaute Status- und Störungsanzeigen
- > Thermischer und elektrischer Schutz

-  > Le microprocesseur a commandé
- > Cycle de remplissage à quatre étages
- > Frais inondés, gel ou batteries
- > d'AGM. Indicateurs intégrés
- > de statut et de défaut. Protection thermique et électrique

# 4-Stage Leisure Battery Charger

> for caravans & motor homes

## INSTALLATION INSTRUCTIONS

### Location

- 1> Mount the charger in an accessible position that allows the maximum possible airflow around the unit. Do not mount the charger close to a heat source, for example behind the room heater.
- 2> Locate the unit where objects are unlikely to obstruct the ventilation slots.
- 3> The unit should be mounted in a separate compartment from the battery, as this may produce explosive gasses whilst charging.
- 4> Try to keep the distance from the battery to the charger as short as possible, this will help to maintain a higher charging voltage.
- 5> To reduce the possibility of interference, try not to mount the charger close to a TV, radio or amplifier box.
- 6> Mount the unit vertically or horizontally and fix using the four corner holes.

### Connection

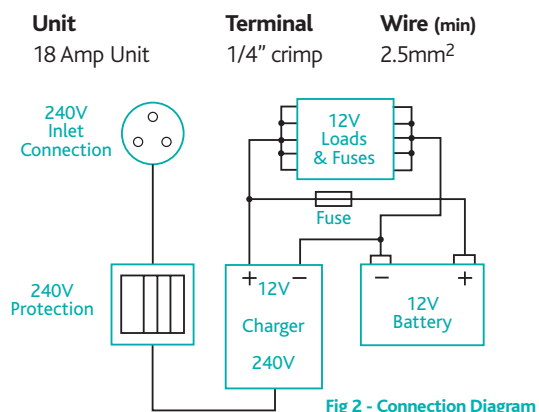
**WARNING:-** If you are unsure of the 240V mains connections to the unit, then contact a qualified electrician.

- 1> The unit should be wired to a protected mains supply rated no higher than 6 amps, using the cable provided.

Connect the cable as follows:

- Brown -** to Live Output from Fuse or MCB
- Blue -** to Neutral Output from Fuse or MCB
- Green/Yellow -** to Earth

- 2> The 12V connections to the battery should be made using the following connectors and cabling (see Fig 2):



### Notes

- 1> The minimum capacity of battery that can be used with these chargers is 60Ah. Using a smaller capacity may result in damage to the battery.
- 2> The battery charger must not be used to charge non-rechargeable batteries or they may explode.
- 3> To protect the battery and charger a fuse must always be fitted (see Fig 2)
- 4> Keep 12V and 240V cables separated where possible.
- 5> To prevent possible movement of the power plug, it is recommended that the power cord is fixed to the mounting surface using the 'p clip' provided (see Fig 4)

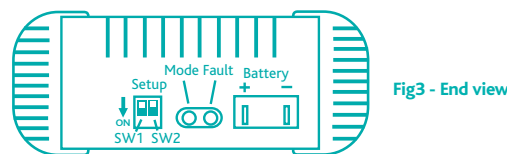
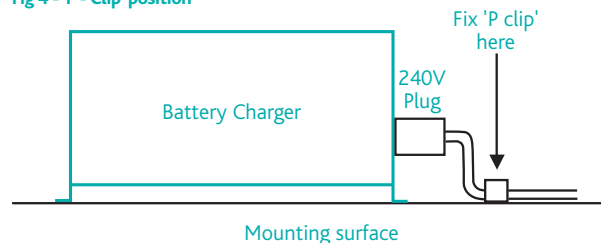


Fig 4 - 'P - Clip' position



## OPERATION

### Charging Mode & Setup Switches

The unit can be configured to charge different types of leisure batteries by setting the small switches on the end of the unit (see Table 1 & Fig 3). The default setting is for a flooded type battery but this can be changed to suit Gel or AGM types. If the switches are set to the 'Float only' position the charger may also be used to directly power 12V circuits if required. The output voltages used in each position are shown in Fig1 and in the 'Specifications' section.

### Battery Equalisation

Over a period of time the cells within a flooded type battery can gradually develop different voltages. The equalisation stage is designed to ensure the cells are returned to an equal voltage. However most flooded batteries do not require the cells equalising on every charge, so the MV4 charger only uses this stage for one in every ten charge cycles.

### Notes

- 1> If the manufacturer of your flooded battery does not recommend using an equalisation charge, then use the switch settings for an AGM battery (see below)
- 2> Never use the 'flooded mode' for a Gel or AGM battery or damage may result.

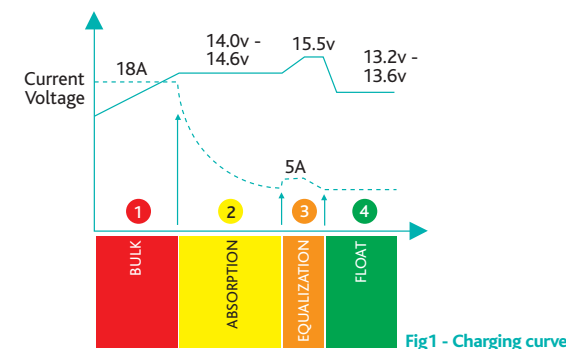


Table 1 - Setup Switches

SW1	SW2	Mode	Description
Off	Off	Float only	Setting to give a constant 13.8 volt output
Off	On	Flooded	Setting for charging a Flooded lead-acid battery (default)
On	Off	Gel	Setting for charging a Gel battery
On	On	AGM	Setting for charging an Absorbed Glass Mat Battery