

GENERAL INFORMATION

This manual contains relevant information concerning the technical aspects of using the Mediheat MH900/12 Portable Fluid Bag Warmer, and should be read by all persons expected to operate it.

These operating instructions are an integral part of the device, and it should only be used as specified in this manual.

The Mediheat MH900/12 is UL approved. (No. 0843)

The device is classified as a class IIa device (MDD).

Adjustments, modifications or repairs may only be carried out by persons authorised by the manufacturer.

1. CONTACT DETAILS

The Mediheat MH900/12 is manufactured by:

Peco Services

Helbeck Road
Brough
Cumbria
CA17 4BG
England

Telephone: 017683 41111

Email: info@pecoservices.co.uk

If you have any technical questions regarding your Mediheat, please call the number above and have the unit's model and serial number available, which can be found either on its rear face or underside.

2. WIRING & POWER SUPPLY INSTRUCTIONS

The device is fitted with a power supply lead and plug suitable for connection to a vehicle cigar lighter socket or DIN socket. The supply should be **12V DC only**, and the source must be capable of supplying up to **8 amps**.

When connecting the unit to a DIN socket, the red cigar lighter adapter fitted to the end of the plug should be removed. The adapter must be used when connecting to a standard cigar lighter socket to avoid causing damaged to the vehicles electrical system.

The Cigar/DIN plug is fitted with an internal 8 amp fuse and there is also a BS4265 fuse housed in a holder fitted in the base of the device rated at 8 amps. If replacing the plug, or connecting the device to a fused switch, the circuit must be capable of carrying an 8 amp current at 12 volts DC, and be protected by an 8 amp fuse.

The unit should be connected with the correct polarity. If in doubt, consult an electrician.

The wires in the supply lead are coloured in accordance with the following code:

Red – Positive
Black – Negative

Mains Connection

The unit can be connected to the mains via a suitable 12V DC 8 amp transformer fitted with a DIN socket or in-line connector.

3. CONTROLS & INDICATORS

The unit is divided into three sections which each have the following indicators and controls:

- | | | |
|---|------------------------------|---|
| a | Amber 'Heater' Light | Illuminates when the electronic thermostat switches the heater elements on. |
| b | Green 'At Temperature' Light | Illuminates when fluid bag is close to preset temperature (35-38 °C). |
| c | Red 'Warning' Light | Illuminates under three conditions as follows: |
| | 1 | When the unit is first switched on or has suffered an interruption to the power supply. |
| | 2 | If the sensor inside the unit reaches a temperature exceeding 38 °C. This may occur after a warm bag is removed from the unit, or if one of the sections has been left for some time without a bag in it. |
| | 3 | If the thermostat controlling the section corresponding to the warning light has malfunctioned. |
| d | 'Reset' Button | Used to reset the Warning circuit. |

4. OPERATING INSTRUCTIONS

The Mediheat MH900/12 should always be operated in its carrying case, as this is an integral part of its design.

It should be connected to a suitable power supply as detailed in section 2.

There is no separate power switch on the unit, so as soon as it is connected to the power supply all three red 'Warning' lights should illuminate, indicating that the Warning circuit is functioning correctly. Fluid bags can now be placed into the unit. The bags can remain in their outer protective packaging.

It is important to ensure that they slide fully to the bottom of the heating slots, as this will allow the temperature probes to accurately sense the temperature of the bags.

The reset buttons can now be depressed to reset the Warning circuits, which will 'start' the unit. Each heater slot is controlled independently. The red lights should extinguish and the amber lights illuminate.

As the temperature of the bags approaches 35 °C, the thermostat will start to cycle on and off along with the appropriate heater light, gradually increasing the fluid temperature until it stabilises at approximately 37 °C.

As the heater light extinguishes, its associated green 'At Temperature' light will illuminate indicating that the bag is ready to use, therefore each fluid bag slot should have either the amber or green light on whilst the unit is connected to a power supply and has been started.

The time taken to warm the bags will depend on several factors such as ambient temperature, the starting temperature of the fluid, and the quantity of fluid being heated, but the following table can be used as a guide:

Ambient temperature	5 °C	10 °C	15 °C	20 °C
Time to reach 37 °C	105 minutes	90 minutes	75 minutes	30 minutes

Times in the above table have been attained using one litre saline solution fluid bags, with the starting temperature of the fluid the same as the ambient temperature.

The unit can be left on continuously, so that the bags are always at the correct temperature, however if left in a vehicle the unit should not be operated for long periods with the engine off as this could lead to difficulty restarting the engine.

Consideration should be given to the effects on the shelf life of the fluid bags when they are kept at a continuous 37 °C. Tests have shown that no serious reduction of shelf life occurs at increased temperatures with Saline, Hartmanns or Glucose solutions, but your bag supplier should be consulted for technical advice before using this equipment.

Warning light circuit

The warning lights indicate that either the power has been interrupted, there has been a temporary overheat (above 38 °C) of the indicated section, or that there is a fault with the indicated section's thermostat. When operated, the circuit switches the red light on and simultaneously switches the heaters for the indicated section off.

By depressing the reset button, the circuit is reset and the 'Heater' or 'At Temperature' lights should illuminate. However, if the internal temperature of the indicated section is still above 38 °C, the red light will re-illuminate as soon as the button is released. If this happens, you should wait a few minutes for the section to cool and try again.

The Warning circuit can be triggered in three ways:

- 1 When first connected to a power supply or if the power is interrupted.

This does not indicate a fault with the unit, and resetting the circuits by pressing the reset buttons will 'Start' it.
- 2 If a sensor detects a temperature above 38 °C inside the unit.

This may occur under certain normal operating conditions, for example:
 - a. Just after a warm bag has been removed from the unit, whilst there is still latent heat within the section's elements.
 - b. If there is no bag in a section for a long period, sufficient heat may build up to operate the circuit.
 - c. The unit is left in direct sunlight in an enclosed vehicle.
- 3 If the section indicated by the warning light has malfunctioned.

To ascertain whether the warning is due to temporary overheating or a malfunction, proceed as follows:

The indicated section reset button should be depressed. If the red light does not extinguish when the button is released, leave the unit to cool for a few minutes then try again.

If the section resets, place a bag into the slot and monitor. If the circuit operates again **whilst the bag is still in the slot**, the unit has malfunctioned and should be returned to your supplier.

Warning circuit operation with no bag in the heated slot does not indicate a malfunction, even after continued resetting, and in this situation the section should be left in the warning state until a bag is placed into it, at which time it can be reset.

IMPORTANT NOTICE

The Mediheat MH900/12 is not suitable for heating Blood or Plasma Products.

Version DMF 01.03

Use in the field

The MH900/12 has been designed to be as user friendly as possible. Therefore there are no controls or switches on the unit that could be operated accidentally.

When one warm bag is removed, the unit can still function, as the three slots that hold the fluid bags are controlled independently.

As bags are used, the unit can be replenished but to avoid confusion, it is recommended that a system be employed so as to allow the user to know in which order the bags have been replaced. We would recommend that bags are always taken from one end first, and that you work across the slots.

If the unit has to be disconnected from the power supply to reach a casualty, the bags will start to cool down. As with warm up times, the rate of cooling will depend on external influences, but the table below can be used as a guide: (test carried out using 1 litre fluid bags left inside the unit, which remained in its carrying case).

Disconnection Period	1 hour	2 hours	3 hours	4 hours
Bag temperature with an ambient of 10 °C	36.8 °C	35.0 °C	33.6 °C	32.4 °C

5. Maintenance

The unit's casing is a sealed unit and does not have any user serviceable parts.

The only maintenance that is required is routine cleaning. Before cleaning the unit, disconnect from the power supply and remove from the carrying case.

The casing is made from ABS plastic, and care should be taken not to allow solvents to come into contact with it. Both the casing and carrying case should only be cleaned with a damp cloth and mild detergent or disinfectant. Ensure all surfaces are wiped dry before the unit is returned to its carrying case.

In the event of a spillage inside the unit, the power should be switched off immediately:

1. Remove the unit from the carrier case.
2. Any liquid should be removed with an absorbent cloth.
3. If there is any evidence of fluid entering the unit along the hinge line it should be returned to your supplier for inspection.

6. Technical Data

6.1 Electrical Safety (classification in accordance with IEC 601/Part 1)

Type of Protection

Against electrical shock: Safety class II

Degree of Protection

Against ingress of liquids: Symbol: IPX0

6.2 Power supply

Voltage: 12-15 V **DC only**

Input Current: 7.5A

6.3 Fuses

Internal: BS4265 8A

DIN Plug: Automotive 8A

6.4 Heater

Rating: 90 watts

Thermostat temperature: 37 °C

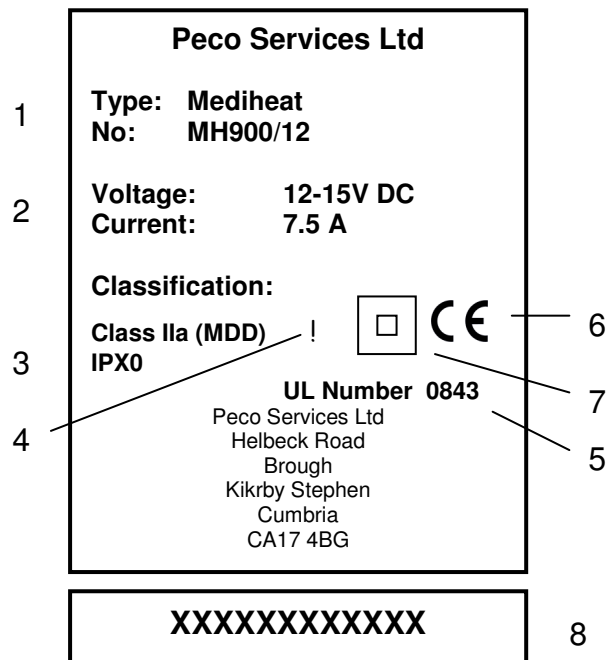
Over temperature

Thermostat:

6.5 Lifetime of device

The device has an operational life of 5 years.

6.6 Type Label



Legend:

1. Type, part number
2. Power requirements
3. Protection against ingress of liquids
4. Caution: Consult accompanying documents
5. UL certification
6. CE mark
7. Class II equipment
8. Serial number

7. Certificates

EC DECLARATION OF CONFORMITY

We

Peco Services Ltd
(manufacturer)
Helbeck Road, Brough
Kirkby Stephen
Cumbria CA17 4BG
(address)

declare that the product

Mediheat

MH900/12
(Type or model number)

Portable Fluid Bag Warmer

XXXXXXXX
(Serial number)

Ila
(Class)

is produced in accordance with the requirements specified in MDD 93/42
EEC Appendix VI (EC Declaration of conformity).

Appleby, Cumbria 27th April 2004
Place and date

Managing Director

Quality Assurance