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This product is an ordinary device of Class I Type B with continuous operation.

Important Notice

- The EICKEMEYER® Infusion Warmer meets the requirements of electromagnetic compatibility in YY0505-2005 and IEC60601-1-2:2007. The customer or user should install and use it according to the information of EMC provided in the appendix.

- The EICKEMEYER® Infusion Warmer should not be used close to other working electronic devices. If that is unavoidable, the user should ensure it could work normally under that configuration.

- The user must read the manual completely before operating the EICKEMEYER® Infusion Warmer, and strictly carry out operation in accordance with the manual.

- To keep good operation, the user should maintain the device according to the requirements in the manual.

- Please contact the EICKEMEYER® customer service, if the user cannot understand or solve some problems during operation, maintenance and repair.

- EICKEMEYER® will be responsible of providing circuit diagram, components list, drawings and calibration detailed rules, if the user needs them for repair and maintenance.

- The lifetime of this product is approx. 5 years! Please dispose according to local laws and regulations upon exceeding the lifetime of this product.

- The disposable infusion tubing set used together with this product should conform to the requirement of ISO 8536.4.

- The appearance and specifications of the product are subject to change without further notice.

Warnings

1. Strictly prohibit from using this product that electric shock has already endangered.

2. Strictly prohibit from using this product that liquid has already intruded into.

3. The product shall be used under the guidance of medical staff, and shall not be used with heat-sensitive medicine.

4. Unauthorized personnel should not dismantle the machine; otherwise the corporation will not be liable to the resulted damage and casualties.

5. Operation personnel are prohibited to touch the heating plate and patient simultaneously!

6. This product is forbidden to be flushed by liquid.
1 Introduction

In clinical conditions, the infusion fluid is often different with animal's body in terms of temperature, which may cause transfused animal suffering hypothermia and mentality atrophic, and the same cause syndrome of hypodynamia easily, ague, spasms of blood vessel muscle, arthritis ache and stomachache, even threaten the life if seriously. If the transfused solution is preheated in order to reduce the temperature difference with the blood, the animal can feel better, and the drug can be easily dissolved in the solution, thus enhancing absorption.

2 Working Principle

The EICEMEYER® Infusion Warmer (hereafter warmer or product) is an indirect heating device (dry warmer) and can be used repeatedly. The transfused fluid is heated up when it passes the infusion tube and the warmer conducts heat to the solution via the infusion tube.

3 Main Technical Specifications

**Environmental conditions of transportation and storage:**
Ambient temperature: -40 ~ +55 °C
Relative humidity: ≤ 80%

**Environmental conditions of transportation and storage:**
Ambient temperature: 5 ~ 40 °C
Relative humidity: ≤ 80%
Power supply: AC 110V ± 11V or AC 220V ± 23V
Frequency: 60Hz ± 1Hz or 50Hz ± 1Hz

Input power ≤ 70W

**Temperature controlling:**
Liquid temperature at the entrance: 15 °C ~ 25 °C or 59 °F ~ 77 °F
Liquid temperature at the exit: 35 °C ~ 46 °C or 95 °F ~ 114.8 °F (Note 1)
Displaying error of temperature: ≤ 2 °C or 3.6 °F (Note 2)

**Safety:** the power supply will be automatically cut off when the heating plate reaches 47 °C+2 °C / 116.6 °F+3.6 °F. Meanwhile, the buzzer phone gives an alarm and red-guided light glimmers.

Suitable speed of infusion fluid: 40 ~ 80 drops/min (2~5.3ml/min)

**Fuse:** T 500mAL 250V Size: φ 3.9 X 11mm

**Max. Weight:** < 600g
EICKEMEYER® Infusion Warmer

Note 1: The data measured is under the conditions of 20 °C ± 2 °C for the liquid temperature in entrance and (54~66) drops/min for the fluid speed;
Note 2: The displaying error measured is under the conditions of surrounding temperature for (20 ± 2) °C, (20 ± 2) °C for the liquid temperature in entrance and (54~66) drops/min for the fluid speed.

4 Composition of Product

The warmer is consisted of four parts:

1. Heating Source: the component that heat the liquid flowing through the warmer, including heating parts and the aluminum plate used for the installation of infusion tube.
2. Power Supply: supplying power to temperature measuring and controlling circuits.
3. Control Module: the circuits for temperature measurement, temperature displaying and heating parts controlling.
4. Shell Body: including upper cover and lower cover.

5 Applicable Range and Contraindication

Applicable range: this product is mainly used to heat the transfused liquid.
Contraindication: not applicable to heat-sensitive infusion liquids.

6 Attention

1. Unauthorized personnel should not dismantle the machine; otherwise EICKEMEYER® will not be liable to the resulted damage and casualties.
2. The product must be used under the guidance of medical staff, and must not be used with heat-sensitive medicine.
3. The user must read the manual completely before operating the EICKEMEYER® Infusion Warmer, and strictly carry out operation in accordance with the manual.
4. Don't let sharp objects contact or hit the warmer surface; otherwise the damaged heater will break the infusion tube and cause infection.
5. The warmer is forbidden to be flushed by liquid.
7 Product Illustration

1. **LCD Display**: displaying fluid temperature in the outlet of the warmer.
2. **°C / °F Switch Button**: the button facilitates user to convert the temperature between Celsius scale and Fahrenheit scale.
3. **Alarm Indicator**: the red LED light will glimmer if the heating plate reaches or exceeds 47 °C, meanwhile the warmer gives audible alarm. The alarm will release automatically once the temperature of heating plate gets back to normal.
4. **Power Indicator**: indicate the power of the warmer is connected when the green LED light is on.
5. **Run Indicator**: indicate the warmer is running when the yellow LED light is on.
6. **Adjustable Suspension Belt**: to hang the warmer on the top of an infusion pole or other support, the height from floor can be adjustable.
7. **Heating Plate**: conduct heat to the tube inside tube channel, in which the infusion fluid is consequently warmed.
8. **Tube Channel**: the tubing with infusion fluid is placed in the 's'-shape channel, which is 4mm depth and 4mm width.
9. **Sucker**: keep the cover closed tightly with magnetic force, and prevent heat from leakage in a certain extent.
10. **Power Cord**: 110V/220V AC power supply (optional)
11. **Front Cover**
8 User's Operations

Operation Steps:

1. Sterilize and clean the surface of the warmer.
2. Hang the warmer on the infusion pole/other support with the suspension belt and adjust belt to proper height.
3. Put the infusion tube (≤4mm) into the 's'-shape tube channel of the warmer, and make sure that the infusion tube is placed on the bottom of the channel.
4. Turn on the power: connect the power plug of the warmer with adapted AC power socket; the power indicator then keeps green which indicates the warmer has been connected with electricity. Meanwhile, the run indicator keeps yellow or glittering which indicates the device has begun to work. The run indicator will go out after the heating plate reaches the working temperature (41 °C or so). Then it will begin to heat the infusion liquid.
5. Alarm: the power supply will be automatically cut off when the heating plate reaches or exceeds 47 °C + 2 °C. Meanwhile, the buzzer phone gives an alarm and alarm indicator glimmers.
6. Turn off the power: pull out the power plug of the device from the AC socket when finish transfusion.
7. Sterilize and clean the surface of the infusion warmer.
8. To insure overheating alarm system can work normally, the system carries out self-checking and gives alarm voice on every turn-on of the warmer, which indicates the system is normal working, consequently insure the security of patient.

Attention:

1. The displayed temperature value on the LCD display is the temperature at the exit of the warmer after reaching the steady state.
2. The displaying error of temperature is the error under specific conditions. As the environmental temperature, the length of the infusion tube out of the warmer, or the flowing velocity and temperature of the liquid change, the actual temperature of the liquid flowing out of the warmer varies as well.

9 Maintenance

1. The performance of temperature controlling should be examined regularly; measure the temperature of heating parts by a thermometer with 0.5 °C precision, the value should be in the range of 45 ~ 47 °C.
2. The surface of the device should be kept clean.
3. The heating surface should be sterilized/cleaned thoroughly before/after use in order to prevent cross infection.
4. The surface of the warmer should be protected from contacting or hitting with sharp objects, which may cause damages of the warmer and the infusion tube, thus may cause patients' infection.
5. Keep the surface of the warmer dry. Any permeation of liquid into the warmer is strictly forbidden.
6. Make sure the device has been fixed steadily on the pole or other support before operation, so as to prevent its falling which might result to injuries or damages.
10 Warranty

The warranty period is one year, but it doesn’t cover the damages caused by:

1. Use of the power supply that doesn’t conform to the requirement of the product
2. Operation that does not observe the user’s manual
3. Human factors
4. Natural disasters with force majeure

11 Troubleshooting and Solution

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
</table>
| LED doesn’t turn on      | 1. No AC power
                        | 2. Broken LED                   | 1. Check AC power
                        |                                 | 2. Change LED                   |
| No heating               | 1. Control circuit fails        | 1. Contact EICKEMEYER® customer service                         |
|                          | 2. Warmer fails                 | 2. Contact EICKEMEYER® customer service                         |
| Non-stop heating         | Electric circuit fails          | Contact EICKEMEYER® customer service                            |

The cable matched with the device is an important part of the product and cannot be replaced randomly; otherwise it may lead to enhancement of electromagnetic emission and decline of anti-electromagnetic disturbance.

For replacement, please use the cable with original specifications and its length should not be more than 2m.

Equipment Alert:
Do NOT wrap power cord as shown in this picture.
The fluid warmer may malfunction or cord damage may result from improper storage.
12 Package and Transportation

In order to guarantee safe transportation, the producer has designed a special carton package for the liquid transfusion heater wrapped with EPE. The package can resist humidity, rain and fog.

The package is printed with the following logos:

<table>
<thead>
<tr>
<th>No.</th>
<th>Logo Name</th>
<th>Logo Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Up</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Handle with care</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>No humidity</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>No rolling</td>
<td></td>
</tr>
</tbody>
</table>

The size and weight of the package are printed on the carton.

Before delivery, the products are categorized and packed according to their functions, weights, volumes and vulnerability. And the package can meet safety requirements of transportation and storage. There is a detailed packing list in each package.

13 Installation and Debugging

After dismantling the package, the user can electrify and test the product according to the relevant procedures in 8. User’s Operations and 9. Maintenance.

The user doesn’t need to debug the warmer because the producer has finished all debugging before delivery.
# 14 Symbols and Marks

<table>
<thead>
<tr>
<th>No.</th>
<th>Position</th>
<th>Symbols and Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Earthing Terminal</td>
<td><img src="symbol" alt="Earthing Symbol" /></td>
<td>Earthing Protection</td>
</tr>
<tr>
<td>2</td>
<td>Nameplate</td>
<td><img src="symbol" alt="Class I Type B" /></td>
<td>Class I Type B</td>
</tr>
<tr>
<td>3</td>
<td>Nameplate</td>
<td><img src="symbol" alt="Disposal Symbol" /></td>
<td>Disposal of waste products must follow local laws and regulations</td>
</tr>
<tr>
<td>4</td>
<td>Nameplate &amp; Documents</td>
<td><img src="symbol" alt="Warning Symbol" /></td>
<td>Notice: please see the manual</td>
</tr>
</tbody>
</table>
## Appendix

### Guidance and manufacturer’s declaration—electromagnetic emissions

The EICKEMEYER® Infusion Warmer is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.

<table>
<thead>
<tr>
<th>Emissions test</th>
<th>Compliance</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISPR11 RF emissions</td>
<td>Group 1</td>
<td>The EICKEMEYER® Infusion Warmer uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td>
</tr>
<tr>
<td>CISPR11 RF emissions</td>
<td>Class B</td>
<td>The EICKEMEYER® Infusion Warmer is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</td>
</tr>
<tr>
<td>IEC61000-3-2 Harmonic emission</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>IEC61000-3-3 Voltage fluctuations / flicker emissions</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### Guidance and manufacturer’s declaration – electromagnetic immunity

<table>
<thead>
<tr>
<th>IMMUNITY test</th>
<th>IEC60601 Test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic discharge (ESD)</td>
<td>±6kV contact ±8kV air</td>
<td>±6kV contact ±8kV air</td>
<td>Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.</td>
</tr>
<tr>
<td>Electrical fast transient/burst</td>
<td>±2kV for power supply lines</td>
<td>±2kV for power supply lines</td>
<td>Mains power quality should be that of a typical commercial or hospital environment.</td>
</tr>
<tr>
<td>Surge</td>
<td>±1kV line(s) to line(s) ±2kV line(s) to earth</td>
<td>±1kV line(s) to line(s) ±2kV line(s) to earth</td>
<td></td>
</tr>
<tr>
<td>Voltage dips, short interruptions and voltage variations on power supply input lines</td>
<td>&lt;5% $U_t$ (&gt;95% dip in $U_i$) for 0,5 cycle 40% $U_t$ (60% dip in $U_i$) for 5 cycles 70% $U_t$ (30% dip in $U_i$) for 25 cycles &lt;5% $U_t$ (&gt;95% dip in $U_i$) for 5 s</td>
<td>&lt;5% $U_t$ (&gt;95% dip in $U_i$) for 0,5 cycle 40% $U_t$ (60% dip in $U_i$) for 5 cycles 70% $U_t$ (30% dip in $U_i$) for 25 cycles &lt;5% $U_t$ (&gt;95% dip in $U_i$) for 5 s</td>
<td>Mains power quality should be that of a typical commercial or hospital environment. If the user of the ET-TF requires continued operation during power mains interruptions, it is recommended that the ET-TF be powered from an uninterruptible power supply.</td>
</tr>
</tbody>
</table>
### Power frequency (50/60Hz) magnetic field

<table>
<thead>
<tr>
<th>Test</th>
<th>IEC61000-4-8</th>
<th>compliance level</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE</td>
<td>U&lt;sub&gt;0&lt;/sub&gt; is the a.c. mains voltage prior to application of the test level.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **NOTE:** Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

### Conducted RF

<table>
<thead>
<tr>
<th>Test</th>
<th>IEC61000-4-6</th>
<th>Test level</th>
<th>Compliance level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3Vrms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>150kHz to 80MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3V/m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>80MHz to 2,5GHz</td>
<td></td>
</tr>
</tbody>
</table>

- **NOTE 1:** At 80MHz and 800MHz, the higher frequency range applies.

- **NOTE 2:** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- **a** Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the EICKEMEYER® Infusion Warmer is used exceeds the applicable RF compliance level above, the EICKEMEYER® Infusion Warmer should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating The EICKEMEYER® Infusion Warmer.

- **b** Over the frequency range 150kHz to 80MHz, field strengths should be less than [V1] V/m.

### Radiated RF

<table>
<thead>
<tr>
<th>Test</th>
<th>IEC61000-4-3</th>
<th>Test level</th>
<th>Compliance level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3Vrms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3V/m</td>
<td></td>
</tr>
</tbody>
</table>

- Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range.

- Interference may occur in the vicinity of equipment marked with the following symbol:
**Recommended separation distances between portable and mobile RF communications equipment and the EICKEMEYER® Infusion Warmer**

<table>
<thead>
<tr>
<th>Rated maximum output power of transmitter / W</th>
<th>Separation distance according to frequency of transmitter / m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150kHz~80MHz</td>
</tr>
<tr>
<td>0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>0.1</td>
<td>0.38</td>
</tr>
<tr>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>10</td>
<td>3.8</td>
</tr>
<tr>
<td>100</td>
<td>12</td>
</tr>
</tbody>
</table>

For transmitters rated at a maximum output power not listed above, the recommended separation distance $d$ in meters (m) can be determined using the equation applicable to the frequency of the transmitter, where $P$ is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

**NOTE 1** At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

**NOTE 2** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.