

# 7500-700 Battery Charger

## Instructions for Use



**MICROAIRE®**  
*For Surgery. For Life.™*

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# Introduction

The MicroAire REF 7500-700 Battery Charger has been designed to charge all MicroAire 14.4 volt NiMH battery packs. This manual has been written to help describe the procedures required to keep the MicroAire Battery Charger system operating properly.

Throughout the manual, the following terms are used to identify tips and precautions that will help avoid accidental injury to patients or personnel, or prevent damage to the system.

**NOTE:** Used to point out the easiest means of carrying out techniques.

**WARNING:** Used to indicate that the safety of the patient and hospital personnel could be involved.

**CAUTION:** Used to point out special procedures or precautions that must be followed to avoid damaging the system/instrument.

## General Warnings:

**WARNING:** Risk of fire. Replace fuse with T5A/250V.

**WARNING:** Risk of fire. Replace battery pack only with a MicroAire REF 6640-710 Battery Pack, REF 7505-710 or REF 7500-620 Aseptic Battery Pack. Always use the REF 7500-625 Charger Adapter for the Aseptic Pack.

**WARNING:** Explosion Hazard. Not suitable for use in the presence of flammable anesthetics or oxygen.

**WARNING:** Electric Shock. Do not remove cover. Refer servicing to authorized MicroAire personnel only.

**WARNING:** Main disconnect must be achieved by removing cord from wall outlet.

**WARNING:** Do not operate stacked on or in close proximity to other equipment. If operation in close proximity to other equipment is unavoidable, observe that all equipment operates normally in the installed configuration.

**WARNING:** Use only with a medically approved Type SJT or equivalent three wire grounded power cord rated for 125V or 250V AC, 10A, constructed with 18/3 AWG wires and an IEC 320 appliance connector and a Hospital Grade outlet plug.

**WARNING:** Grounding reliability can only be achieved when the equipment is connected to an equipment receptacle marked "Hospital Only" or "Hospital Grade".

**WARNING:** No modification of this equipment is allowed.

**WARNING:** Medical electrical equipment may be affected by electromagnetic interference. It should be installed and used in accordance with the electromagnetic compatibility information provided herein.

**WARNING:** Portable and mobile RF communications equipment can affect medical electrical equipment.

**CAUTION:** Federal Law (USA) restricts this device to sale by or on the order of a physician (or properly license practitioner).

## Markings:

REF 7500-700

### Ratings:

- Class 1 Equipment
- Input Rating: 100-240 V~, 50-60 Hz, 0.30 Kw
- Output Rating: 24 V DC, 150 W



Follow Instructions for Use. This icon is blue.



Consult Instructions for Use (IFU).



Charge Complete (Green Light)



Charging (White Light)



Charge Failed (Blue Light)



Standby (Green Light)



Temperature Limitation



**DO NOT** Lubricate



**DO NOT** Immerse



Lock



Unlock



Humidity Limitation



Atmospheric Pressure Limitation



Waste Electrical and Electronic Equipment (WEEE) European Community Symbol. Regarding Electrical Equipment European Union end of life of product, indicating separate collection for electrical and electronic equipment. ALWAYS follow the current local recommendations and/or regulations governing environmental protection and the risks associated with recycling or disposing of the equipment at the end of its usual life.



Waste Electrical and Electronic Equipment (WEEE) European Community Symbol. Batteries contain materials that must be recycled or disposed of properly. Do not dispose of as unsorted municipal waste. ALWAYS follow the current local recommendations and/or regulations governing environmental protection and the risks associated with recycling or disposing of the equipment at the end of its usual life. ALWAYS decontaminate a battery pack exposed to infectious material before sending it to a waste treatment facility.



European Conformity Mark with MicroAire's Notified Body Number



MEDICAL-GENERAL MEDICAL EQUIPMENT AS TO ELECTRIC SHOCK, FIRE, AND MECHANICAL HAZARDS ONLY. IN ACCORDANCE WITH ANSI/AAMI ES 60601-1 (2005) + A1 (2012) + CAN/CSA C22.2 No. 60601-1 (2014) + | Control Number: E494242



Date of manufacture. Y=year, M=month.



Manufacturer



Product catalog number



Serial number



Non-Ionizing Electromagnetic Radiation



Prescription

# BATTERY CHARGER SETUP AND OPERATION

1. Plug in the Charger to a standard wall power supply. All LED lights will turn on for 10 seconds, off ten seconds, and on for ten seconds again, except for the Standby LED in the center.
2. At the end of the LED test sequence, the single Green Standby LED in the center will turn on to indicate that the charger is ready. This light will remain on until the charger is unplugged from the power source.

## OPERATION

1. Verify that the "Standby" LED is on.
2. Insert a MicroAire REF 6640-710 or REF 7505-710 Battery into any slot. The battery can only be inserted on the charger in one position.
3. If charging the REF 7500-620 Aseptic Battery, first place the REF 7500-625 Charger Adapter into the charger. Then place the REF 7500-620 into the REF 7500-625.
4. The "Charging" LED corresponding to that slot will blink until the battery is ready for fast charge. If the battery is hot, or has a very low charge, the "Charging" LED may blink for some time. When fast charge begins the "Charging" LED will be on continuously.
5. When the charging sequence is complete the "Charge Complete" LED will illuminate.
6. The "Charge Failed" LED will illuminate if the battery takes too long to begin or complete fast charge. Remove and re-insert the battery in a different slot to attempt charging again. If three consecutive "Charge Failed" indications are received, contact MicroAire Customer Service for replacement.



NOTE: The Battery Charger is designed for use only with MicroAire Batteries REF 6640-710, REF 7505-710 and REF 7500-620 Aseptic Battery.

NOTE: All personnel should become familiar with the power equipment before it is set-up for use in any procedure. Personnel in-serviced should include, but not limited to, central processing personnel, members of the surgical team, and the bioengineering department.

WARNING: Prior to use system components should be inspected and operated to detect any damage or malfunction. Do not use if damage is apparent.

## CLEANING / DECONTAMINATION

1. External surfaces of the unit should be periodically wiped down with a mild pH enzyme disinfectant. Charger should not be kept in patient vicinity. Unplug charger from wall outlet prior to cleaning.

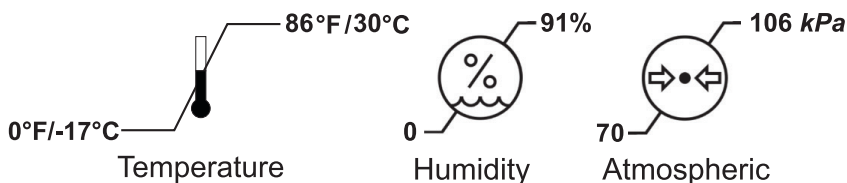
### CAUTION:

- Do not autoclave.
- Do not immerse in liquids to cool.
- Do not flash sterilize.
- Do not use Ethylene Oxide Sterilization.
- Do not use a washer sterilizer.
- Do not process in equipment using peracetic acid.

# ENVIRONMENTAL PARAMETERS

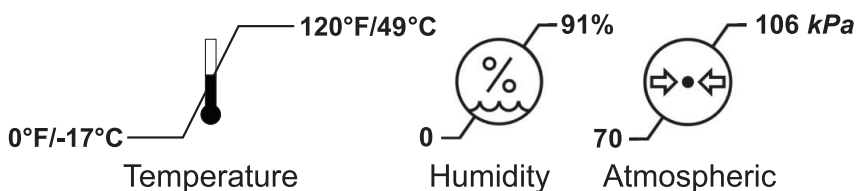
## OPERATING CONDITIONS

This device has been tested and proven to operate within the following conditions:



## SHIPPING & STORAGE CONDITIONS

This device has been tested and proven to operate after repeated exposure to the following conditions:



Shipping: The materials and components used in the construction of this device were selected to ensure that the device could be shipped by any standard commercial method without special handling conditions.

# TROUBLESHOOTING

If the unit fails to operate properly, check the following:

1. The Unit is connected to a functional power outlet.
2. The Standby LED is on.
3. The unit is connected to an operational battery pack.
4. Check that ventilation holes at top and bottom of the unit are not obstructed.

If the Standby LED is off, it indicates that the charger is not ready for service. Unplug the charger, and plug it into a functional power outlet. The test sequence described in the SETUP section should occur. The fans should run while all the LED's are on. If the charger feels warm to the touch, allow it to cool, then repeat SETUP test. If the Standby LED does not illuminate at this time, contact MicroAire Customer Service for repair service.

# DISPOSAL/RECYCLE

Always follow the current local recommendations and/or regulations governing environmental protection and the risks associated with recycling or disposing of the equipment at the end of its useful life.

# SERVICES AND REPAIR

Periodic inspection and factory service is essential to keep precision MicroAire instruments running properly. If repairs are required, they can be accomplished quickly with a minimum of disruption to the hospital's schedule.

## IN HOSPITAL SERVICE

All MicroAire equipment should be inspected and tested periodically in accordance with the facility's Bio-Engineering policy. Such service should be documented within the Bio-Engineering Department.

## MICROAIRE REPAIR SERVICE

Responsive service comes with every MicroAire product. If a problem arises, contact our Customer Service Department at:

USA: (800) 722-0822 / (434) 975-8000

Fax: (434) 975-8010

[inquiry@microaire.com](mailto:inquiry@microaire.com)

Outside USA: (434) 975-8000

Fax: (434) 975-4134

[intlsvc@microaire.com](mailto:intlsvc@microaire.com)

We may be able to help solve the problem quickly without returning the item to the factory. DO NOT disassemble or attempt to service the equipment. It can only be serviced at the factory. Unauthorized service will void the warranty.

To return an item to the factory, follow this procedure:

1. Clean and disinfect equipment before sending for repair.
2. Along with the items sent for repair, enclose a description of the problem encountered, the type of use, the place of use, a contact name, and a telephone number. This information is helpful to our repair technicians.
3. If the instrument is out of warranty, enclose a purchase order number with the instrument. If the instrument is under warranty, include the purchase date.
4. In the United States, ship the merchandise by Express Mail, Federal Express, or UPS Blue Label to prevent shipping delays. From outside the United States, return goods by Federal Express or Air Freight.
5. Return the merchandise prepaid.
6. If an estimate of repair costs is needed before the repair technicians start work, include the name and telephone number of the person to contact.
7. We will repair and reship the item by 2nd Day Air within the United States and by Federal Express or Air Freight outside the U.S. unless specified otherwise.

## PERIODIC INSPECTION

Because of the stressful nature of surgical use and decontamination, we recommend that all equipment be returned to the factory for routine inspection and service at least once a year. There is no charge for service during the warranty period.

# WARRANTY

MicroAire Surgical Instruments warrants its REF 7500-700 Battery Charger to be free from defects in material and workmanship in their manufacture for a period of 1 year from the original purchase date by the end customer. The warranty is limited to the repair or replacement of the product without charge.

This warranty is void in the event of abuse, misuse, or use in other than normal surgical environment, or in the event of disassembly, alteration, or repair of the product not authorized by the manufacturer, or in the event that the product has not been used in a reasonable manner and in compliance with the written instructions furnished by Manufacturer.

All other expressed or implied warranties of fitness and merchantability are excluded here from, and manufacturer shall have no liability of any kind for incidental or consequential damages.

## Extended Warranty

An extended warranty is available on all MicroAire instruments. If the instrument is out of warranty, it must first be restored, if necessary, to full serviceable condition before being eligible for the extended warranty.

Guidance and manufacturer's declaration – electromagnetic emissions		
The MicroAire REF 7500-700 Battery Charger system is intended for use in the electromagnetic environment specified below. The customer or the user of the MicroAire REF 7500-700 Battery Charger system should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
Radio Frequency (RF) Emissions CISPR 11	Group 1	The MicroAire REF 7500-700 system 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.
RF Emissions CISPR 11	Class A	The MicroAire REF 7500-700 system is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Pass	

**NOTE:** The 7500-700 Battery Charger has no essential performance.



**Guidance and manufacturer's declaration – electromagnetic immunity**

The MicroAire REF 7500-700 Battery Charger system is intended for use in the electromagnetic environment specified below. The customer or the user of the MicroAire REF 7500-700 Battery Charger system should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines	±2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
	±1 kV for input/output lines	±1 kV for input/output lines	
Surge IEC 61000-4-5	±1 kV line to line ±2 kV line to earth	±1 kV line to line ±2 kV line to earth	Mains power quality should be that of a typical commercial or hospital environment.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

**Guidance and manufacturer's declaration – electromagnetic immunity**


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Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	<5% $U_T$ (>95% dip in $U_T$ ) for 0.5 cycle 40% $U_T$ (60% dip in $U_T$ ) for 5 cycles 70% $U_T$ (30% dip in $U_T$ ) for 25 cycles <5% $U_T$ (>95% dip in $U_T$ ) for 5 s	<5% $U_T$ (>95% dip in $U_T$ ) for 0.5 cycle 40% $U_T$ (60% dip in $U_T$ ) for 5 cycles 70% $U_T$ (30% dip in $U_T$ ) for 25 cycles <5% $U_T$ (>95% dip in $U_T$ ) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the MicroAire REF 7500-700 Battery Charger system requires continued operation during power mains interruptions, it is recommended that the MicroAire REF 7500-700 Battery Charger system be powered from an uninterruptible power supply or a battery.

NOTE:  $U_T$  is the a.c. mains voltage prior to the application of the test level.

**Guidance and manufacturer's declaration – electromagnetic immunity**

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Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF IEC 61000-4-6</p> <p>Radiated RF IEC 61000-4-3</p>	<p>3 Vrms 150 kHz to 80 MHz</p> <p>3 V/m 80 MHz to 2.5 GHz</p>	<p>3 Vrms</p> <p>3 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the MicroAire REF 7500-700 Battery Charger system, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance:  <math>d = (1.2) \sqrt{P}</math> 150 kHz to 80 MHz  <math>d = (1.2) \sqrt{P}</math> 80 MHz to 800 MHz  <math>d = (1.2) \sqrt{P}</math> 800 MHz to 2.5 GHz</p> <p>...where <math>P</math> is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and (<math>d</math>) is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey<sup>a</sup>, should be less than the compliance level in each frequency range<sup>b</sup>.</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 

NOTE 1: At 80 MHz and 800 MHz, 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.

Superscript 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 MicroAire REF 7500-700 Battery Charger system is used exceeds the applicable RF compliance level above, the MicroAire REF 7500-700 system should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the MicroAire REF 7500-700 Battery Charger system.

Superscript b: Over the frequency range 150 KHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the MicroAire REF 7500-700 Battery Charger system

The MicroAire REF 7500-700 Battery Charger system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the MicroAire REF 7500-700 system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the MicroAire REF 7500-700 system as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz $d = (1.2) \sqrt{P}$	80 MHz to 800 MHz $d = (1.2) \sqrt{P}$	800 MHz to 2.5 GHz $d = (2.3) \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.2	1.2	2.3
10	3.7	3.7	7.4
100	12	12	23

The use of the accessories, transducers, or cables with medical equipment other than those specified may result in increased emissions or decreased immunity of the medical equipment.

Guidance and manufacturer's declaration –  
power output, vibration exposure, noise emission value and mass weight information

Power Output kW - KiloWatts	Vibration Exposure		Noise Emission Value			Mass Weight (kg)
	$a_{hv}$ (m/s <sup>2</sup> )	Uncertainty K (m/s <sup>2</sup> )	$L_{PA}$ (dB(A))	$L_{C,peak}$ (dB(C))	$L_{WA}$ (dB(A))	
0.15	-	-	-	-	-	8.2



**MicroAire Surgical Instruments, LLC3590**  
Grand Forks Boulevard  
Charlottesville, Virginia 22911 USA  
Phone: (800) 722-0822 (434) 975-8000  
Order Fax: (800) 648-4309 or (434) 975-4131  
[www.microaire.com](http://www.microaire.com)



**MediMark Europe**  
11, rue Emile Zola - BP 2332  
F-38033 Grenoble Cedex 2  
France