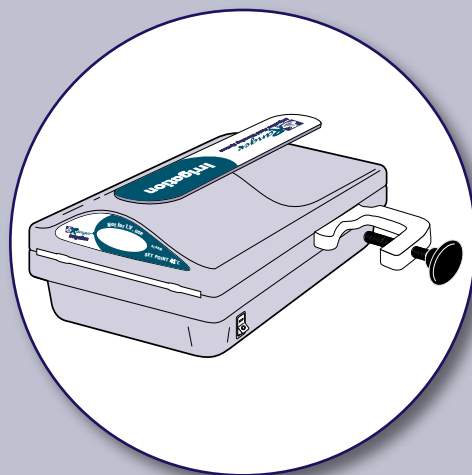




Operator's Manual



Model 247
Irrigation Warming System

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Technical Service and Order Placement

Technical Service

USA

TEL: +1-952-947-1200
+1-800-733-7775

FAX: +1-952-947-1400

ACTAMED LTD.

TEL: +44-1924-200-550

FAX: +44-1924-200-518

GERMANY

TEL: +49-4154-9934-0

FAX: +49-4154-9934-20

FRANCE

TEL: +33 4 42 98 14 00

Indigo (in France only): 0 820 33 90 40

FAX: +33 4 42 98 14 01

Order Placement

USA

TEL: +1-952-947-1200
+1-800-733-7775

FAX: +1-952-947-1400
+1-800-775-0002

In-warranty Repair and Exchange

Replacement parts to correct a problem are delivered at no charge. To return a device to Arizant Healthcare Inc. for service, first obtain a Return Authorization (RA) number from a customer service representative. Please use the (RA) number on all correspondence when returning a device for service. A shipping carton will be delivered to you at no charge, if needed. We will service and ship your device within five (5) working days of our receipt. Call your local supplier or sales representative to inquire about a loaner device while your device is being serviced.

When You Call for Technical Support

Remember, we will need to know the serial number of your unit when you call us. The serial number label is located on the bottom of the warming unit.

Introduction

The Ranger Irrigation Fluid Warming System is designed to warm irrigation fluids and deliver these at flow rates under gravity up to 867 mL/min when the bag is hung 100 cm above the scope. At these flow rates, the device maintains fluid output temperatures ranging from 33°C to 41°C (Note: This is for room temperature fluids only). It takes less than 2 minutes to warm up to the 41°C set point temperature. The alarm points on the Model 247 are 48°C and 50°C.

The fluid warming disposable set is sterile, latex-free, single-use-only and is designed to be used with the reusable Model 247 warming unit.

Indications for Use

The Ranger Irrigation Fluid Warming System is intended to warm irrigation fluids.

Warnings and Precautions

DANGER

Explosion hazard. Do not use in the presence of flammable anesthetics.

WARNING

- Electrical shock hazard. Do not open the warming unit case.
- Do not substitute other devices (i.e. Model 245) for the Ranger Irrigation warming unit or Ranger Irrigation disposable sets. Thermal or electrical injury or device damage may occur.
- Do not continue use of the unit if the over-temperature alarm continues to sound and the temperature does not return to the set point temperature. Immediately stop fluid flow and discard the disposable set. Have the warming unit tested by a biomedical technician or call Arizant Healthcare Inc. Technical Service.



PRECAUTION

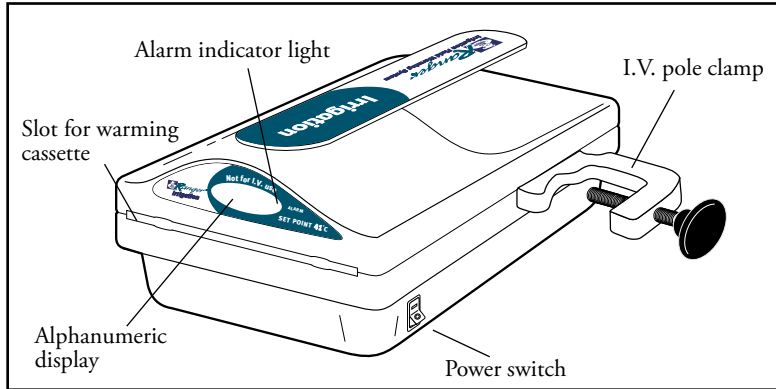
- Not for I.V. use.
- Do not immerse the warming unit. Wipe with a clean, slightly damp cloth.

CAUTION

- To prevent tipping, clamp the Ranger Irrigation warming unit to an I.V. pole with a minimum 14" (35.6 cm) radius wheelbase and at a height no higher than 44" (112 cm). Failure to do so may result in damage to the product.

Product Description

The Ranger Irrigation Fluid Warming System consists of a warming unit and a sterile disposable fluid delivery set.



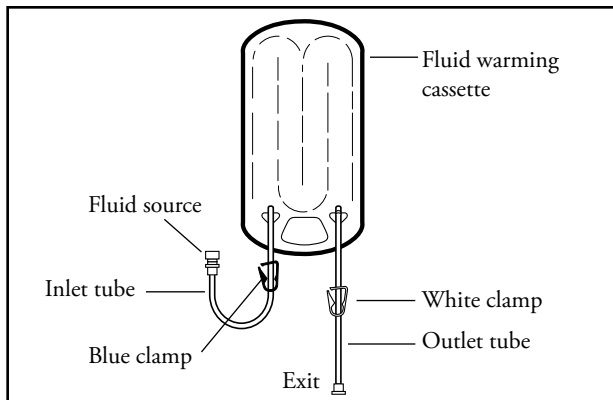
RANGER Irrigation Warming Unit

The warming unit is a compact, lightweight, liquid-resistant device with a clamp located on the side for attachment to an I.V. pole. When mounted to the I.V. pole, the unit fits easily above the Bair Hugger® 500 or 700 series warming unit. A carrying handle on the top of the unit makes it easy to transport.

Located on the front panel you will find:

- Alphanumeric display that indicates the heater temperature during normal operation. In an over-temperature condition, the display alternately flashes a temperature of 48°C or higher and the word “HI.” In an under-temperature condition, the display alternately flashes a temperature of 33°C or lower and word “LO.”
- Alarm indicator light that comes on when either an over- or under-temperature condition occurs.

RANGER Irrigation Fluid Warming Disposable Set



Irrigation fluid warming disposable sets¹ include a warming cassette (heat exchanger), tubing, connectors, flow chamber and clamps.

MODEL 247	FLOW RATE	PRIMING VOLUME	PATIENT LINE LENGTH
Irrigation Set	0-867 mL/min ²	308 mL	213 cm

1. Refer to the instructions provided with each disposable set for information on use.

2. With the bag hung 100 cm above the scope under gravity flow.

Model 247 Product Safety Features

The following chart describes the safety alarm features of the Ranger Irrigation warming unit.

ALARM TYPE	SET-POINT	INDICATION	DESCRIPTION
Primary over-temperature alarm system	48°C	LED alternately displays “HI” and temperature, alarm sounds, alarm light flashes.	Primary Alarm: Alarm sounds, controller cuts power to the heaters until temperature falls below 41°C. When heater temperature drops below 41°C (in a few seconds), audible and visual alarms stop.
Independent back-up over-temperature alarm system (cut-off).	50°C	LED displays the temperature or has gone dark, alarm sounds.	Primary failure. Temperature will rise to 50°C within a few seconds. The safety backup system is activated at 50°C and power is immediately shut off to the heating plates.
Under-temperature alarm	33°C	LED displays “LO” and temperature, alarm sounds, alarm light flashes.	Heater temperature has fallen to 33°C. Alarms will stop when temperature rises above 33°C. Continue use of unit.

NOTE: The difference in over-temperature alarm system cut-off points does not indicate any difference in safety and is simply a result of tighter controller tolerances.

The Ranger Irrigation Fluid Warming System is designed with very tight controls to regulate its temperature to the 41°C set-point. The microprocessor controller measures the temperature at the fluid pathway inside the warming plate four times every second, making it very responsive to changes in flow rate.

Instructions For Use

Preparation and Setup of the Ranger Irrigation Warming Unit

**DANGER**

Explosion hazard. Do not use in the presence of flammable anesthetics.

1. Attach the Ranger warming unit to the I.V. pole. Tighten the pole clamp securely.

CAUTION: To prevent tipping, clamp the Ranger Irrigation warming unit to an I.V. pole with a minimum 14" (35.6 cm) radius wheelbase and at a height no higher than 44" (112 cm). Failure to do so may result in damage to the product (see figure 1).

2. Slide the irrigation fluid warming cassette into the slot in the warming unit. The cassette can only fit into the device one way (see figure 2).
3. Prime the disposable set. For more information about priming the set, refer to instructions provided with the disposable sets.
4. Plug the power cord into an appropriate outlet. Turn the unit ON. In a few seconds the alphanumeric display will illuminate. It takes less than 2 minutes to warm up to the 41°C set point temperature.
5. Begin infusion. When infusion is completed, remove the disposable set and discard according to institutional protocol.

Removing the Irrigation Fluid Warming Disposable Set from the Ranger Irrigation Warming Unit

1. Close the inlet clamp proximal to the fluid warming cassette and open all clamps distal to the cassette.
2. Disconnect the disposable set from the fluid source, if applicable.
3. Allow a small amount of fluid to drain from the end of the patient line to reduce pressure in the cassette.
4. Remove the irrigation fluid warming cassette from the warming unit and discard according to institutional protocol.

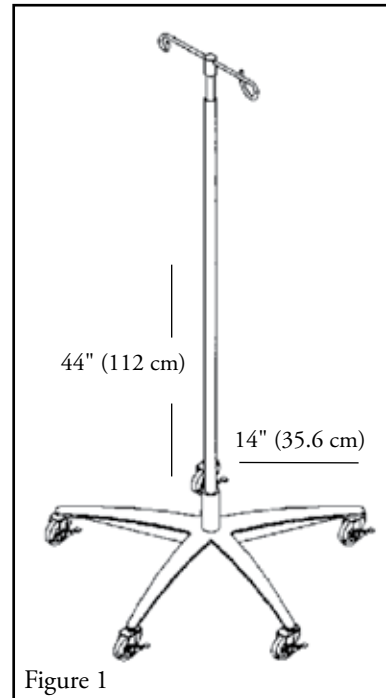


Figure 1

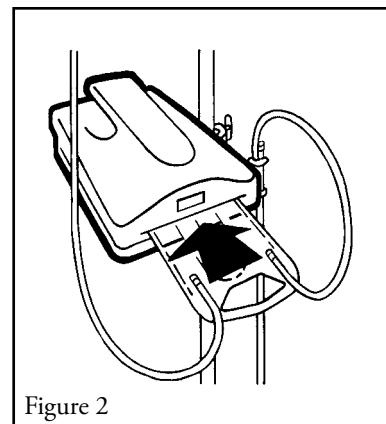


Figure 2

Troubleshooting

CONDITION	CAUSE	SOLUTION
Nothing illuminates on the warming unit panel.	<ul style="list-style-type: none"> Unit is not turned on, plugged in, or power cord is not plugged into an appropriate outlet. Unit failure. 	<ul style="list-style-type: none"> Turn unit on. Make sure the power cord is plugged into the power entry module of the warming unit. Make sure the warming unit is plugged into a properly grounded outlet. Call Arizant Healthcare Inc. Technical Support.

CONDITION	CAUSE	SOLUTION
Alarm indicator illuminates and alarm sounds, alpha-numeric display alternately flashes a temperature of 48°C or higher and the word "HI."	<p>Temporary over-temperature condition because:</p> <ul style="list-style-type: none"> An extreme change in flow rates occurred (e.g., from 500 ml/min to stop flow). Unit was turned on and reached set point temperature before warming cassette was inserted. Fluids were prewarmed to above 42°C before being run through the warming unit. 	<ul style="list-style-type: none"> Open flow to reduce temperature. Alarms will stop when the display reads 41°C. The unit is ready to use. Alarms will stop when the display reads 41°C. The unit is ready to use. Turn off unit. Discontinue infusion of fluids. Do not warm fluids before infusing them through the Ranger Irrigation warming unit.

CONDITION	CAUSE	SOLUTION
Alarm sounds, alphanumeric display and alarm indicator light go dark.	Primary controller failure. Unit will no longer operate.	Power to heating plates will shut off if temperature rises to 50°C. Turn unit off and unplug it. Discontinue use of unit. Discard disposable set. Alarm will continue to sound if you do not unplug unit. Call Arizant Healthcare Inc. Technical Support.

CONDITION	CAUSE	SOLUTION
<ul style="list-style-type: none"> • Unit alarms soon after plugging it in (unit does not have to be turned on for this condition to occur). • Heater temperature rises to 50°C and unit shuts down soon after plugging it in (unit does not have to be turned on for this condition to occur). 	Test screw on bottom of unit is loose or missing.	Make sure test screw is completely tightened. If it is missing, turn unit off and unplug it. Call Arizant Healthcare Inc. Technical Support.
Alarm sounds but unit has been turned off.	Independent backup safety system has been activated.	Unplug unit. Call Arizant Healthcare Inc. Technical Support.
Cannot remove warming cassette from unit.	<ul style="list-style-type: none"> • Warming cassette is too full, fluids are still being infused, or clamp is open proximal to the warming cassette. • Warming unit is below patient level, creating excessive back pressure. 	<ul style="list-style-type: none"> • Make sure fluid is drained from warming cassette before sliding out the cassette, that fluids are no longer infusing, and that clamp is closed proximal to the warming cassette. • Raise unit above patient level.
Alarm indicator light illuminates and alarm sounds, alphanumeric display alternately flashes a temperature of 33°C or below and the word “LO.”	Under temperature condition caused by very high flow using very cold fluid, or defective heater/relay.	Alarm should stop when temperature rises above 33°C. If alarm continues, unplug unit and discontinue use. Call Arizant Healthcare Inc. Technical Support.
Alphanumeric display reads “Er 4” or “Open.”	Open wire on temperature sensor.	Do not use unit. Call Arizant Healthcare Inc. Technical Support.
Alphanumeric display reads “Er 5” or “Open.”	Electrical interference.	Remove the unit. Refer to biomedical technician or call Arizant Healthcare Inc. Technical Support.

Maintenance and Storage

Cleaning the Ranger Irrigation Warming Unit

Clean the Ranger unit on an as-needed basis.

CAUTION

- Do not immerse the warming unit in cleaning or sterilizing solutions. The unit is not liquid-proof.
- Do not clean the warming unit with solvents. Damage to the case, label, and internal components may result.

TO CLEAN THE EXTERIOR OF THE WARMING UNIT:

1. Disconnect the Ranger Irrigation warming unit from the power source.
2. Wipe the outside of the unit with warm, soapy water, nonabrasive cleaning solutions, dilute bleach, or cold sterilants. Do not use abrasive materials.
3. Wipe with a dry, soft cloth.

TO CLEAN THE HEATING PLATES:

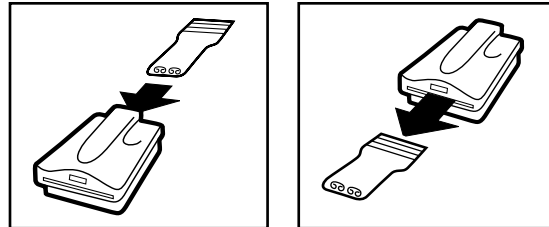
The Ranger Irrigation hardware cleaning tool is intended to clean both heating plates of the warming unit. It is not necessary to disassemble the warming unit to use the tool.

CAUTION

- Do not insert metallic instruments in the warming unit, as damage to the heating plates may occur.
- Do not use abrasive material or solutions to clean the heater plates.
- Do not allow spills to dry inside the unit, as this may make it more difficult to clean the unit.
- The cleaning tool provides only superficial cleaning—it does not disinfect or sterilize the interior of the unit.

METHOD

1. Unplug the warming unit.
2. Unfold the cleaning tool. Wet the foam pads with a nonabrasive solution, such as Alconox* brand detergent.
3. Insert the tool from the back of the unit and pull the tool all the way out from the front.
4. Rinse the tool with water and repeat 3 times. Discard the tool according to institutional protocol.
5. Wipe off the unit to remove excess fluid.



TO CLEAN RESISTANT, DRIED-ON FLUIDS:

1. Spray a nonabrasive solution inside the slot of the warming unit and let sit for 15-20 minutes.
2. Clean the unit by using the cleaning tool.

NOTE: You may use a nonmetal instrument, such as a cotton swab, to clean the upper channels. If you are unable to adequately clean the unit, call Arizant Healthcare Inc. Technical Service.

Storage

Store all components in a cool, dry place when not in use.

Servicing

There are no user-serviceable parts in the Ranger Irrigation warming unit. All service must be performed by Arizant Healthcare Inc. or an authorized service technician.

Call Arizant Healthcare Inc. Technical Service at 800-733-7775 or 952-947-1200 for Service Information.

*Alconox is a registered trademark of Alconox, Inc.

Specifications

Physical Characteristics

WARMING UNIT

4.5 in. (11 cm) high x 7.5 in. (19 cm) wide x 10 in. (25 cm) long;
wt.: 7 lb. 7 oz. (3.4 kg)

CLASSIFICATION

Classified under IEC 601-1 Guidelines (and other national versions of the Guidelines) as Class I, Type B, Ordinary Equipment. Not suitable for use in the presence of flammable anesthetic mixtures with air or with oxygen or nitrous oxide. Classified by Underwriters Laboratories Inc. with respect to electric shock, fire, and mechanical hazards only, in accordance with UL 60601-1 and in accordance with Canadian/CSA C22.2 No. 601.1.

Electrical characteristics

INPUT VOLTAGE

100-120 or 220-240 VAC

OPERATING FREQUENCY

100-120 VAC, 50/60 Hz
220-240 VAC, 50 Hz

MAXIMUM HEATING POWER

900 W

FUSE

10 Amp

Temperature characteristics

SET POINT TEMPERATURE

41°C

OVER-TEMPERATURE ALARM

48°C

UNDER-TEMPERATURE ALARM

33°C

OVER-TEMPERATURE CUTOFF

50°C

Leakage Current

Meets leakage current requirements in accordance with UL 60601-1 and IEC 601-1.

Environmental Conditions

OPERATING TEMPERATURE RANGE

15° to 40°C (59° to 104°F)

STORAGE TEMPERATURE RANGE

-20° to 45°C (-4° to 113°F)








OPERATING HUMIDITY

10 to 85% RH, noncondensing

ATMOSPHERIC PRESSURE RANGE

50 kPa to 106 kPa

Definition of Symbols

	ON
	OFF
	Fuse
	Attention - Read accompanying documents
	Non Explosion-Proof
	Type B Applied Part
	Voltage, Alternating Current (AC)



Operator's Manual

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Wakefield WF2 7AW, United Kingdom
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