

REPEATER Pump Operator Manual



SAFETY NOTICES

SAFETY SUMMARY

Safety information provided in this manual protects both the user and service personnel. Specific warning and caution statements are also found wherever applicable.

This device is for pharmacy use only.

This device is for indoor use only.

TERMS IN THE MANUAL



CAUTION Statements identify when the user should stop using the device if certain symptoms or operating problems occur.



WARNING Statements identify when the user should stop using the device if certain symptoms or operating problems occur.

TERMS MARKED ON EQUIPMENT

- DANGER - High Voltage
- Protective ground (earth) terminal
- ATTENTION - Refer to this manual for instructions

POWER SOURCE

This equipment is intended to operate from a power source which does not exceed 130 volts (120 volt model) or 250 volts (220–240 volt model) between the supply conductors or between either supply conductor and ground. A protective ground connection (grounding conductor in power cord) is essential for safe operation.



CAUTION! Use only an undamaged, unadulterated, grounding hospital-grade power cord.

Grounding the Instrument

This equipment is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle.



WARNING! Loss of the protective ground connection may cause all accessible conductive parts (including controls that appear to be insulated) to render an electric shock.

Proper Fuse

Unplug the device before opening the fuse drawer. To avoid fire hazard, use only a fuse of the correct type, voltage rating and current rating, as specified in REPEATER Pump Specifications in this manual. Access the fuse drawer using a standard flathead screwdriver. The fuse-holder must remain set for 240V for 220-240V models (099E).

WARNINGS FOR AUTHORIZED SERVICE PERSONNEL

Do not perform internal service or adjustment of this instrument unless another person capable of performing first aid and resuscitation is present. Dangerous voltages exist at several points in this equipment. To avoid personal injury, do not touch exposed connections or components while the power is on. Disconnect power before removing protective panels, soldering, or replacing components. Users should contact Baxter Corporation Englewood for servicing.

TABLE OF CONTENTS

INTRODUCTION	1	USING ADVANCED FEATURES	6
Before You Begin	1	Automatic Operation	6
Buttons and Functions	2	Memory Functions	6
SETTING UP THE REPEATER PUMP	3	EXAMPLE APPLICATIONS	7
GENERAL PUMP OPERATION	3	Sterile Applications	7
Pumping	3	Non-Sterile Applications	8
Pause	3	CLEANING AND MAINTENANCE	9
Drawback	3	Cleaning the Pump Exterior	9
Reverse Mode	3	Cleaning the Rotor Assembly	9
Speed Settings	4	TROUBLESHOOTING GUIDE	10
Clearing Settings	4	REPEATER PUMP SPECIFICATIONS	11
STARTING A PROCEDURE	5	WARRANTY	12
Installing a Tube Set	5	CONTACT	12
Prime	5		
Calibration	6		

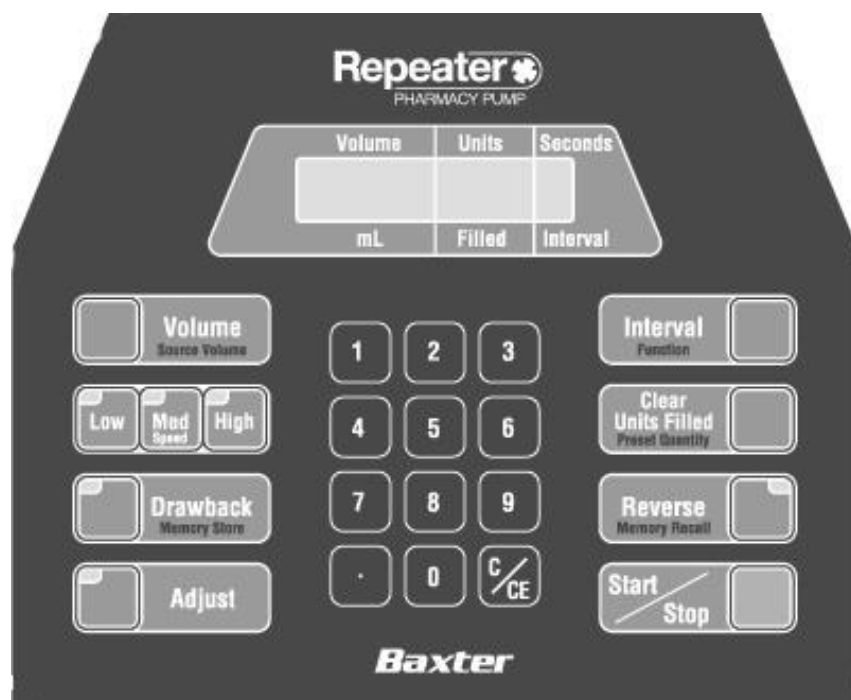
INTRODUCTION

The REPEATER Pump is a peristaltic pump for fluid transfer that facilitates repeatable drug dosage distribution and reconstitution in hospital pharmacies. The device is for use with IV bags, syringes, elastomeric infusers and other drug administration containers.

Some examples of the applications that the REPEATER pump facilitates:

- Filling IV and oral syringes
- Filling elastomeric infusers
- Reconstitution
- Pooling

BEFORE YOU BEGIN



Familiarize yourself with the buttons on the REPEATER Pump.

Most buttons have two functions.

- Primary functions are in large white letters.
- Secondary functions are in small green letters. To use, press **Interval** and the desired secondary function button at the same time.

NOTE: Use only the pad of your finger to press a button. Other objects, such as pens and fingernails, can damage the face plate.

BUTTONS AND FUNCTIONS

Button	Primary Function	Secondary Function
Volume / Source Volume	Press to enter the volume to be delivered (from 0.2 to 9999 mL).*	Press to enter the amount in the source container (from 0.2 to 9999 mL in whole milliliters).
Low / Med Speed / High	Press to select the speed at which the volume is delivered.	None
Drawback / Memory Store	Press to draw back into the tubing.	Press to store the displayed settings in a memory cell.
Adjust	Press to enter an adjustment.	None
Interval / Function	Press to enter the number of seconds (from 0.1 to 9.9) between fills. The interval is rounded to the whole second on the display.	Press to use secondary function.
Clear Units Filled / Preset Quantity	Press to reset the number of units filled to zero.	Press to enter the number of units to be filled.
Reverse / Memory Recall	Press to change the rotor direction and reverse fluid flow.	Press to recall and display contents within memory cells.
Start / Stop	Press to start and stop the delivery. The foot pedal acts the same as Start / Stop.	
Numeric keypad / C/CE	Press to enter volumes, preset quantities, adjustments, interval seconds and other information.	Press to clear entries and reset the display. Press once to cancel the last number entered. Press again to cancel the entire entry.

* Volume may be entered in increments of 0.01 mL for deliveries up to 99.99 mL, and in increments of 1 mL for deliveries of 100–9999 mL. The pump will operate continuously when 0 mL is entered for volume.

NOTE: When the pump is turned off, the last used settings are stored. When it is turned back on, those settings are reloaded as long as a memory error did not occur. In the event of a memory error, default settings will be loaded.

Adjustment for delivery volume accuracy must be performed each time the pump is powered on.

Text that is bolded in the manual indicates that it is a button or function.

SETTING UP THE REPEATER PUMP

1. At the location where you want to use the REPEATER Pump, unpack it from its carton. Save the carton.
NOTE: Do not choose a location near magnets, which may affect the safety interlock circuit.
2. Install the Pole Mount by inserting the pole into the mount in the back on the left side, adjusting the height, then tightening the screw.
3. If you want to use the optional foot pedal to start and stop the pump, insert its tube into the port on the side of the pump.
4. Insert the power cord into its receptacle on the pump and into a grounded outlet.

GENERAL PUMP OPERATION

NOTE: The REPEATER Pump does not verify the source ingredient.

PUMPING

Use **Start / Stop** to begin pumping.

If desired, the foot pedal may be used in place of pressing **Start / Stop**.

PAUSE

You may want to pause the pump while it is pumping.

1. Press **Start / Stop** before the delivery is completed.
2. The pump beeps indicating the fill is not complete. The display shows PAUSE / (the volume delivered) DONE.
3. Press **Start / Stop** to complete the fill. -OR- Press **Volume**, then press **C/CE** to reset the fill volume.

DRAWBACK

Using **Drawback** relieves line pressure and is designed to prevent excess dripping between fills. When lit, **Drawback** is active.

1. To change the drawback on/off state, press **Drawback** until the light indicates it is in the desired state.
2. Press **Start / Stop**.
3. The pump delivers the specified volume. When drawback is active, the rotor reverses about a quarter of a turn at the end of the fill.

REVERSE MODE

You can reverse the direction of pumping. Due to the physical differences between the inlet and the outlet of a tube set and the accessory in use, the pump does NOT deliver the same volume in reverse that it does going forward. If the pump is returned to the forward direction, it must be adjusted again.

1. To change the pump direction, press **Reverse**. When **Reverse** is lit, **Reverse** is active.
2. If you change **Volume** or **Speed**, and the pump is in reverse, a beep sounds as a reminder.

SPEED SETTINGS

You can change the speed at which the REPEATER Pump operates to satisfy your application.

There are three speed ranges (Low, Med, High) and nine speeds (1–9) within each range. The default speed settings are Low - 4, Med - 7, and High - 5. To change the speed settings:

1. Press **Low / Med Speed / High**. The display flashes the current setting.
2. Press a higher number for a faster speed setting or a lower number for a slower speed setting.
3. To revert to the default settings, press **Low / Med Speed / High**, then **C/CE**.

Application	Tube Set	Suggested Speed Setting
Sterile Applications		
Syringe Filling	Sterile Transfer Tube Set	HIGH
IV Admixture and transfers	Sterile Transfer Tube Set Bifurcated/Trifurcated Tube Set	HIGH MED
Filtration	Sterile Transfer Tube Set	Dependent on capacity of the filter and solution being filtered
Non-Sterile Applications		
Oral Syringes	Oral Transfer Tube Set Oral Tube Set and Bag Combination	HIGH
Vials	Oral Transfer Tube Set Oral Tube Set and Bag Combination	HIGH
Gels / Ointment transfer	Gel Tube Set and Bag Combination	LOW

CLEARING SETTINGS

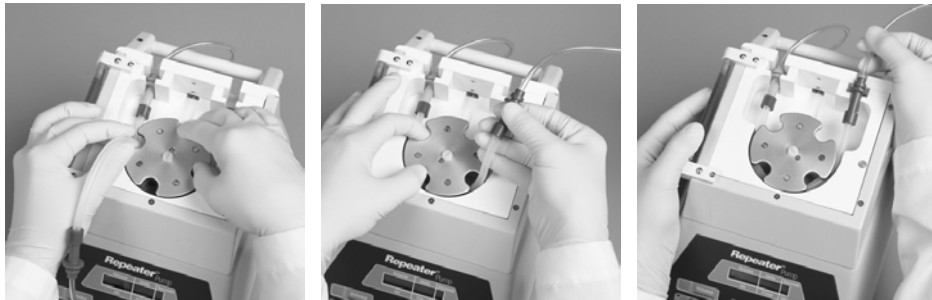
1. Press **Interval** and **C/CE**. The pump is reset to its defaults:
 - Volume: 0, Continuous mode
 - Speed: Med-7
 - Reverse: Off
 - Drawback: Off
 - Interval: 0
 - Preset Qty: 0

NOTE: This does not reset the Units Filled.
2. Press **Clear Units Filled**. The *Units Filled* is reset to 0.

STARTING A PROCEDURE

INSTALLING A TUBE SET

NOTE: Always verify the compatibility of the fluid with the tube set materials before pumping.



1. Open the tube set package and straighten out the tubing.
2. Facing the pump, install the connector on the inlet side (spike, bag or weight) into the channel between the back of the pump and the rotor section.
3. Rotate the pump head so you can feed in the tubing.
4. Insert the tubing into the slot and rotate the pump head counterclockwise to “walk” the silicone tubing section around the rotor. NOTE: Do not twist the silicone section. Do not force the tubing down into the pump head housing. The pump is designed to operate with the tubing centered on the pump head.
5. Place the connector in the channel on the right side of the pump. Move the rotor back and forth several times to make sure that it moves freely.
6. Attach the tube set to the container of fluid that you wish to pump. NOTE: Verify that the tube set materials are compatible with the fluid being pumped.
7. Close the top lid.
8. Turn on the REPEATER Pump.

PRIME

1. Make sure the top lid is closed.
NOTE: The pump will not operate with the lid open, and will stop if the lid is raised.
2. Clear the pump memory, if desired.
 - a. Press **Interval** and **C/CE** at the same time.
 - b. Press **Clear Units Filled**.
3. Press **Start / Stop** to prime the tube set. Press **Start / Stop** again when the tube is free of air and large bubbles.
4. Press **Volume**. When 0 flashes, use the numeric keypad to enter the desired volume.
NOTE: When the volume is 0, the pump works continuously.

Press **Start / Stop**. The Units indicates that the entered volume has been delivered once.

CALIBRATION



CAUTION: You will need to adjust the pump after certain changes in conditions:

- Variations in accuracy due to changes in operating conditions
- Desired delivery accuracy has not been achieved
- Before starting a new procedure
- After a power cycle
- Change in back pressure at the outlet. Examples: different type of destination container, needle gauge, filter
- Altering speed settings
- Reversing the pumping direction

1. Clear the pump memory, if desired.
 - a. Press **Interval** and **C/CE** at the same time.
 - b. Press **Clear Units Filled**.
2. Set the pump up exactly as you will run it (correct speed, tube set, needle, adapter etc.).
3. Run the volume you want into a graduated cylinder or representative destination container.
NOTE: The delivered volume may be high or low on this first test volume.
4. Press **Adjust**.
5. Enter the volume actually delivered.
6. Press **Adjust** again.
7. Run the volume again to confirm that the adjustment was accurate. If necessary, repeat steps 4 to 6 until the adjustment is correct.
8. Begin filling by pressing **Start / Stop**.

Clearing an Adjustment

To clear any adjustment that has been entered, press **Adjust**, enter 0, then press **Adjust** again. The **Adjust** light goes out and the adjustment is canceled. Delivery volume may change if the **Adjust** value is cleared.

USING ADVANCED FEATURES

AUTOMATIC OPERATION

You can set the pump to automatically deliver volumes with a specific time interval between deliveries.

NOTE: Make sure the outlet end of the tube set is in a destination container.

Setting the Time Interval

1. Press **Interval** and then press the number of seconds you want to elapse between fills.
2. Press **Start / Stop**. The pump will deliver the requested volume with a delay time between deliveries until **Start / Stop** is again pressed if no Preset Quantity has been entered. Check the Units display for the number of deliveries.

Setting the Preset Quantity

1. Press **Interval** and **Preset Quantity** at the same time. Check the Units display to see 0 flashing.
2. Enter the number of times you want the pump to deliver at the specified time interval.
3. Press **Start / Stop**. The pump delivers the requested number of units and then stops.

MEMORY FUNCTIONS

Memory Storage

Twenty cells are available for storage of commonly used pump settings. Once the display is set, any of the settings may be changed without affecting the stored settings.

1. Press **Interval** and **Memory Store** at the same time. The display flashes "MEM STO" and the lowest empty cell number. If all cells have been programmed, you will be asked to enter the number of the cell to be overwritten.
2. Enter that number, or the number of a different cell to overwrite it.
3. Press any button and the display shows "Saved X" (where X is the cell number).

Memory Recall

Stored settings may be selected and recalled.

1. Press **Interval** and **Memory Recall**. The display flashes "MEM RECL" and "CELL?"
2. Enter the desired cell number.
3. Press any button to load the memory contents.

EXAMPLE APPLICATIONS

STERILE APPLICATIONS

NOTE: Always inspect final solution in container for visible particulate.

NOTE: Always follow proper aseptic technique when preparing sterile products.

Filling a Syringe

NOTE: Filling 1 mL syringes with the REPEATER Pump is not recommended because an inconsistent fill volume may result due to their physical properties. A 3 mL syringe is the smallest recommended size for small volume fills.

1. Install a RAPIDFILL Luer-to-Luer Connector on the outlet of the sterile tube set. An optional Syringe Filling Fixture is available to hold the tube set for easier filling of syringes.
2. Spike your source container and prime the tubing.
3. Set the volume to be delivered.
4. Select desired speed.
5. Attach the syringe.
6. Press **Start / Stop**, and wait for the pump to stop.
7. Read the syringe volume.
8. Set this syringe aside.
9. Follow the procedure for calibration until desired delivery accuracy is achieved.
10. Press **Start / Stop** to deliver the fill into the syringe.

Drug Reconstitution Using Vials

1. Spike your source container and prime the tubing.
2. Attach a 16-gauge needle to the end of the tube set.
3. Set the pump for the volume to be delivered.
4. Set on **High** speed.
5. Pump the volume into a graduated cylinder.
6. Read the volume.
7. If necessary, follow the procedure for adjusting the REPEATER Pump until desired accuracy is achieved.
8. Insert the needle, pushing all the way into the vial of drug powder, including the vent.
9. Press **Start / Stop** to deliver the fill into the vial.



Pooling

1. Install the tube set.
2. Attach the container that you will be pooling into on the inlet side.
3. Press **Reverse** to put the pump into reverse mode.
4. Access first source container using aseptic technique.
5. Press **Start / Stop** and transfer all the fluid from the container into the pooling container. Repeat 4 & 5 until all fluid has been pooled.

NOTE: If desired, **Source Volume** and **Interval** can be used for these applications.

Using Multiple Source Containers



WARNING! The Sterile Bifurcated and Trifurcated fluid transfer tube sets are designed to transfer one type of source fluid from multiple containers.

1. Install tube set.
2. Spike the source containers, close the inlet clamps and hang.
3. Open an inlet clamp.
4. Press Start / Stop to prime the inlet to the “Y” fitting.
5. Close the clamp and repeat for the remaining inlets.
6. The last inlet is used to prime the rest of the tube set.
7. Open all inlet clamps.

NOTE: Inlet clamps are not designed to occlude the inlet line; they are designed to reduce dripping and spills during disposal of the tube set.

8. Follow the instructions for calibration.

NON-STERILE APPLICATIONS

Oral Dispenser Filling

Use the procedure for filling sterile syringes with these changes:

NOTE: Filling 0.5 and 1 mL oral dispenser is not recommended with the REPEATER Pump using this procedure. Due to the physical properties of these dispensers, inconsistent fill volumes may result. A 3 mL dispenser is the smallest recommended for automated small-volume fills.

1. Use an oral set. Be sure the inlet does not draw against the sides or bottom of the container when the pump is operating.
2. Use a RAPIDFILL Luer Lock-to-Oral Connector.
3. Viscous solutions require a reduced speed: Start with a medium speed and lower as necessary.



Oral Vial Filling

1. Use an oral or non-sterile set. Attach a needle or filling extension, if desired.
2. Set the pump for the desired volume and speed setting.
3. Using a graduated cylinder, follow the instructions for calibration.



Gel or Ointment Filling

NOTE: Viscous liquids do not always stop flowing when the rotor stops turning, making them difficult to calibrate. Dispensing three volumes into a graduated cylinder (or three syringes) and averaging the volumes, will result in more consistent accuracy, as will waiting for fluid flow to stop before moving to the next step.

1. Install a Gel Set in the pump.
2. Set the pump to Continuous Flow Mode and **Low** speed.
3. Press **Start / Stop** to prime the gel to the end of the RAPIDFILL Connector, and then **Start / Stop** again to stop the pump.
4. Follow the directions in this manual for setting up and executing your delivery, taking note of the above caution.

NOTE: Using the **Drawback** function also helps prevent dripping at the end of the tube set.

CLEANING AND MAINTENANCE

The REPEATER Pump does not require any scheduled maintenance. However, spills must be cleaned up immediately. Regular cleaning of the pump and rotor will extend pump life and performance.



WARNING! Unplug the pump before cleaning to avoid electrical shock hazard.

CLEANING THE PUMP EXTERIOR

Use a mild detergent or 70% isopropyl alcohol to clean the exterior. The front faceplate and other components may be damaged if stronger cleaning agents or abrasive pads are used.

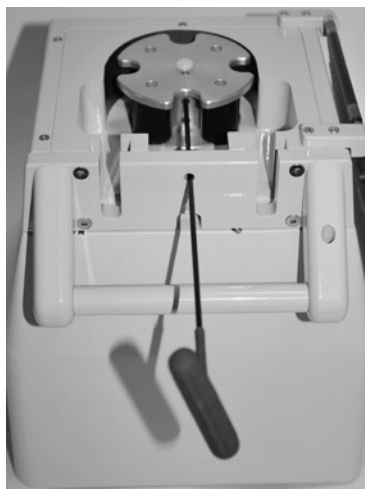
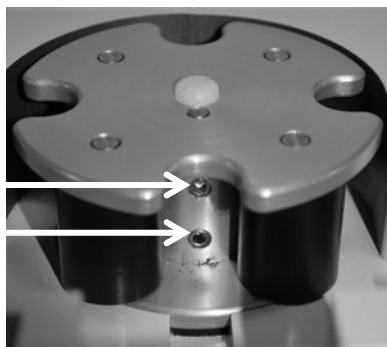
CLEANING THE ROTOR ASSEMBLY

Spills in the rotor housing must be cleaned up immediately. Moisture (from the spilled liquid or cleaning solution) can damage the electronics and interfere with proper rotor functioning.

Dried dextrose and saline solutions may cause the rotor to freeze up. Use your fingers to loosen the rollers on the rotor; do not use pliers or other tools to loosen the rollers. Then clean the rotor by performing these steps:

1. Using a 2.5 mm Allen wrench as shown, loosen both set screws (as indicated by the arrows) on the rotor assembly.
2. Pull on the top of the rotor assembly to remove it.
3. If the rotor is stuck, remove the cap on top of the rotor.
4. Insert a 5 mm bolt into the threaded hole and turn clockwise to pull off the rotor.
5. Soak the rotor in hot water to free the rollers.
6. Let it dry thoroughly before reinstalling.

Set Screws



TROUBLESHOOTING GUIDE

Symptom	Solution
Pump will not turn on or run	<ul style="list-style-type: none"> • Check that pump is plugged in and outlet is operational. • Check that power switch is ON. • Rotor door must be closed for pump to operate.
Inaccurate fill volumes	<ul style="list-style-type: none"> • Adjust the pump according to the Operator Manual. • Make sure the tube clamps are open. • If there is a kink in the tube, reshape the tube. • Check the tube set for an obstruction. • Change the speed setting appropriately for the viscosity of the fluid or the restriction on the outlet end of the tube set • Make sure the oral set inlet is not resting against the bottom or side of the container. • Check if the tube set has excessive wear. If so, replace the set.
Rotor stutters	<ul style="list-style-type: none"> • Be sure that all rollers turn freely. Clean, if necessary. • Check that the tube set is not caught at the bottom or top edge of the rotor. If so, remove the set and reinstall, making sure not to twist the silicone section. • Check the outlet side of the tube set for a closed clamp or obstruction. • Change the speed setting if the viscosity of solution needs a slower setting. • The needle used or other outlet device may require a lower speed setting.

Prompts / Error Codes	Action Required
Alternating Messages	
MEM RECL and CELL ?	Enter the memory cell number to be recalled
MEM STO and CELL ##	Enter the memory cell # in which to store the current device set up
Source? and #####DONE	Depleted source volume, where ##### is the volume Add more source volume or discontinue run
RECOVERY, HOLD, START	Pump is recovering from a memory error Push Start / Stop button to continue
Single Messages	
?-RANGE	Volume is outside of specified ranges Enter a volume
READJUST	A pump condition has changed that requires adjustment Perform another adjustment (calibration)
?-DOOR	Top door is open Close door to continue with pumping operations
?-VOLUME	Interval has been set, but no unit volume entered Enter a volume
SAVE_OVL	Non-recoverable hardware error; call Technical Services.
0033, 0034, 2003, 4034, 4035	A critical error has occurred; call Technical Services.

If the problem persists, or your issue is not covered here, contact an authorized Baxter Technical Services Representative. In case of equipment returns, use the saved shipping carton.

Technical Services: 800.678.2292

REPEATER PUMP SPECIFICATIONS

DIMENSIONS

Size	12.75" (324 mm) long 8.25" (210 mm) wide 9.75" (248 mm) high
Weight	24.15 lbs (10.95 kg)
Power	H938099: 120V, 60Hz, 200VA H938099E: 220-240V, 50HZ, 200VA
Fuse Rating	H938099: 3A, 250V, Slow Blow H938099E: 1.6A, 250V, Time Delay

PERFORMANCE

Volume Entry Range	0.2 to 9,999 mL
Water Flow Rate Maximum	13.5 mL/second (16G needle)
Accuracy (in forward, water)	± 10% at 0.2 mL ± 5% at 0.4 mL ± 2% at 1 mL ± 1% above 2 mL
Minimum Dispensing Volume	0.2 mL
Volume Dispensing Resolution	0.01 mL

Equipment is suitable for continuous operation

ENVIRONMENTAL CONDITIONS

Operating Temperature	41 to 104°F (5 to 40°C)
Storage Temperature	32 to 147.2°F (0 to 64°C)
Maximum Relative Humidity	80% up to 89°F (31°C) , decreasing linearly to 50% at 104°F (40°C)
Maximum Altitude	Not to exceed 2000 m
Main Supply Voltage Fluctuation	Not to exceed ±10%
Sound Pressure Level	Does not exceed 85 dBA

For Indoor Use Only

Class I Equipment (Grounded Type)

INSTALLATION (Over Voltage) CATEGORY II

POLLUTION DEGREE II ENVIRONMENT

EMC EMISSIONS CLASSIFICATION

Emissions	EN55011:2007 Class A
Immunity	EN61326-1:2006

ORDERING INFORMATION

REPEATER Pump

H938099 (120V)

H938099E (220V)

Includes power cord, foot pedal (part no. 3200-0146) and one-year warranty.

The REPEATER Pump is made in the USA.

WARRANTY

The Limited Warranty provided with the purchase of the REPEATER Pump covers defects in materials or workmanship for a period of one year from the date of purchase or lease. This Warranty does not cover failures due to negligence or misuse and does not cover pumps with non-Baxter modifications. Baxter Healthcare Corporation pays for pump service and repair, including freight both ways, unless the failure is due to negligence, misuse or modifications. Baxter may, at its sole discretion, exchange the REPEATER Pump for another that is in good working order. Baxter warrants that the pump will perform in accordance with the specifications and information published by Baxter. There are no other warranties, whether express or implied, made by any representative or other agent of Baxter Healthcare Corporation which shall be binding upon Baxter Healthcare Corporation. This is an exclusive warranty. Any remedies under this Warranty are restricted to repair or replacement of the defective product. Baxter is in no way liable for incidental or consequential damages.



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