System
Operating
Manual

For use with list 11781-04

Abbott Laboratories
North Chicago, IL 60064
USA

FOR SERVICE CALL
ARDUS Medical
1-800-878-1388

Abbott Laboratories
1.0 CONVENTIONS

This section describes the conventions used throughout this manual, as follows:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Application</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Italic</em></td>
<td>Reference to a section, figure, or table</td>
<td>(See Figure 3-1, Priming Cassette)</td>
</tr>
<tr>
<td></td>
<td>Function or mode specific instructions</td>
<td>Primary Only: Attach an empty container...</td>
</tr>
<tr>
<td>[ALL CAPS]</td>
<td>Keys or touchswitches on the device are described all caps in brackets</td>
<td>[OFF CHARGE]</td>
</tr>
<tr>
<td>ALL CAPS</td>
<td>Screen displays and device labels (as appropriate)</td>
<td>TURN TO RUN</td>
</tr>
<tr>
<td>Bold</td>
<td>Emphasis</td>
<td>...sets are supplied Sterile and are for...</td>
</tr>
</tbody>
</table>

1.1 Warnings Cautions, and Notes

Alert messages used throughout this manual are described below. Pay particular attention to these messages.

**WARNING**

A WARNING MESSAGE CONTAINS SPECIAL SAFETY EMPHASIS AND MUST BE OBSERVED AT ALL TIMES. FAILURE TO OBSERVE A WARNING MESSAGE IS POTENTIALLY LIFE THREATENING.
2.0 FEATURES

The Plum® XL3 Micro/Macro is a multi-line volumetric infusion system designed to meet the growing demand for hospital-wide standardization. The Plum XL3 houses three independent pumping units, each having a primary line, secondary line, and piggyback fluid delivery capability. The Plum XL3 is suited for a wide range of medical/surgical and critical care applications. Full compatibility with LifeCare® PlumSets® needless protection systems, makes the Plum XL3 a convenient and cost-effective infusion system.

The following features are included in the Plum XL3:

- Nonpulsatile volumetric accuracy
- Micro/Macro 0.1-999 mL/hr flow rate range
- Convenient Quickset™ Programming allows clinician to quickly increase rate and volume
- Large LCD screen
- Microprocessor control
- Panel back illumination
- Lockout Switch
- Wide range of standard and specialty administration sets
- Standard fullfill, partfill, syringe, and vial use
- Parenteral, blood, and nonparenteral (enteral) fluid delivery
- Anti-free-flow protection
- Backpumping
- Titration

CAUTION: A CAUTION usually appears in front of a procedure or statement. It contains information that could prevent irreversible product damage or hardware failure. Neglecting to pay attention to a CAUTION could result in serious patient or user injury.

Note: This symbol directs the user to consult accompanying documents.

Note: Figures are rendered as graphic representations to approximate the actual product; therefore, figures may not exactly reflect the product.
2.1 User Qualification

The Plum XL3 infusion system is for use at the direction or under the supervision of licensed physicians or by licensed or certified healthcare professionals who are trained in the use of the Plum XL3 and the administration of parenteral or enteral fluids and drugs.

3.0 GETTING STARTED

This section describes the instrument installation procedures for the Plum XL3 Micro/Macro.

3.1 Unpacking

CAUTION: Product damage may occur unless proper care is exercised during unpacking and installation. Do not use the Plum XL3 if it appears damaged in any way. The battery may not be charged upon receipt.

Inspect the Plum XL3 packaging for visible shipping damage. If any damage is found, contact the delivering carrier immediately.

Carefully remove the Plum XL3 from the shipping carton. Retain the packing slip and save all packing material in case the Plum XL3 is damaged or fails the self-test and has to be returned to the manufacturer.

Inspect the Plum XL3 thoroughly for damage.

CAUTION: If the Plum XL3 appears to be damaged; contact Abbott Laboratories.

3.2 Self-Test

CAUTION: Do not place the Plum XL3 in service if it fails the self-test.

Connect the AC power cord to AC power, then confirm the AC power indicators illuminate (next to the OFF CHARGE setting). Place a primed administration set into the cassette door of a pumping unit (see Section 5.0, INSTRUCTIONS FOR USE). Close the cassette door.

After the cassette door is closed, turn the control dial to SET RATE.
The LCD screen displays all the symbols and messages. If the screen displays any messages other than the symbols illustrated in the diagram, contact the hospital repair facility or Abbott Laboratories Technical Support Operations.

The LCD screen displays the numeric display. Verify that the numeric display alternates exactly as shown in the illustrations. If the display does not match the illustration, remove the Plum XL3 from service and contact the hospital repair facility or Abbott Laboratories Technical Support Operations.

After the Plum XL3 completes self-testing, disconnect it from AC power and confirm that BATTERY displays on the screen (indicating battery power is in use). Repeat the procedure above for the remaining two pumping units.

CAUTION: Do not operate the Plum XL3 with the battery removed. The use of a properly maintained and charged battery ensures proper operation. Always in the event of an AC power interruption or failure, verify infusion pump settings.

To ensure the battery is fully charged, remove the patient from the system immediately. If an alarm occurs during the self-test, note the message, then take the appropriate corrective action (see self-test). If the alarm recurs, remove the Plum XL3 from service and contact Abbott Laboratories Technical Support Operations.
4.1 Control Dial Settings

**OFF CHARGE** stops all active functions. The battery charges in any dial setting when the Plum XL3 is connected to AC power. Store the Plum XL3 in the OFF CHARGE setting and plugged into AC power.

**SET RATE** sets the delivery rate for the primary or secondary line using the or key. The rate range is 0.1 to 99.9 mL/hr in 0.1-mL increments, then 100 to 999 mL/hr in 1-mL/hr increments.

**Note:** Use the key to quickly raise the rate to the next higher entry in this sequence: 0, 5.0, 25.0, 50.0, 75.0, 100, 125, 150, 200, 500, 999.

**SET VTBI** sets the volume to be infused/delivered (VTBI) from the primary or secondary line using the or key. The VTBI range is 0.1 to 99.9 mL in 0.1-mL increments, then 100 to 9999 mL in 1-mL increments.

**Note:** Use the key to quickly raise the VTBI to the next higher entry in this sequence: 0, 10.0, 25.0, 50.0, 100, 150, 250, 500, 1000, 2000, 3000, 4000, 9999.

**RUN** starts fluid delivery at the rate set by the user. RUN is the only setting that delivers fluid. The pump operating indicator light on the front panel flashes during pumping.

**HOLD/RESET** stops fluid delivery. Fluid containers can be changed in this setting. If the pumping unit is in an alarm condition, HOLD/RESET silences the audible alarm. Alarm messages are retained until control dial is returned to the RUN setting.

**CLEAR VOL** clears the total volume delivered. To avoid unintentional erasure of volumes, an alert sounds to allow the user to change the setting before the volumes are cleared (see Section 6.7, Clear Volume).

4.2 Operating Keys

**[PRI-SEC]** selects the fluid line to program. Press the [PRI-SEC] key when the control dial is in SET RATE or SET VTBI to toggle between the primary and secondary line.

**[TITRATE]** adjusts the fluid delivery rate up or down while pumping is in progress. Hold the [TITRATE] key while pressing the or key to increase or decrease the delivery rate.
4.3 Additional Features

<table>
<thead>
<tr>
<th>QUICKSET TITRATE</th>
<th>BACK PRIME</th>
<th>SILENCE</th>
</tr>
</thead>
</table>

[QUICKSET] changes the rate to change in preprogrammed increments.

With the Plum XL-3 in SET RATE mode, pressing the [QUICKSET] key causes the rate to change to the next higher entry in this sequence: 0, 5, 10, 15, 20, 25, 50, 75, or 100.

[BACKPRIME] clears any air accumulated in the cassette. Press the [BACKPRIME] key when the control dial is in HOLD/RESET to pump fluid from the primary line and expel the air into the secondary line. Backpriming is also used to reprimeline secondary tubing.

[SILENCE] temporarily mutes audible alarms. The alarm display and the LCD screen continue to flash. The audible alarm resumes after two minutes if the alarm condition is not corrected. To silence a Low Battery alarm, refer to the alarm tips in Section 7.0 TROUBLESHOOTING.
5.0 INSTRUCTIONS FOR USE

This section describes the Plum XL3 Micro/Macro setup and cassette use.

5.1 Setup

To set up the Plum XL3, plug the power cord into an AC power outlet, unless temporary battery operation is desired.

Note: Use AC power whenever possible. Store the Plum XL3 connected to AC power to ensure a fully charged battery for emergency use.

Set the audio switch to the desired volume level, HIGH or LOW.

The Plum XL3 may be safely and conveniently mounted on an IV stand.

CAUTION: The XL3 system is designed to operate normally in the presence of most encountered EMF conditions. In the event of extreme levels of interference, such as encountered next to an electrosurgical generator, cellular telephones, or two-way radios, it is possible that the normal operation of a sensor or microcomputer might be disrupted. Operation of the infusion device under such conditions should be avoided.

5.2 Cassettes

The Plum XL3 is compatible with the wide range of PlumSets administration sets. Become familiar with the components illustrated in the following figure before preparing the cassette.
PREPARING THE CASSETTE

1. Open the upper clamp.
2. Make the drip chamber to the score mark.
3. Fill the drip chamber to the score.
4. Expose the outlet of the TV pump into the outlet of a twisting container, then insert the plastic tubing.

5.2.1 Administration set:
Close the upper clamp on the flow regulator to close.

For priming, then proceed as follows:
Lie the assembly technique to prepare the cassette.

Diagram:
- Pumping Chamber
- Air Trap
- Paliet Line
- Finger Grip (Capped)
- Inlet Port
- Secondary Flow
- Primary Line
- Regulator
5.2.2 PRIMING THE CASSETTE

To prime the cassette, proceed as follows:

Invert the cassette.

Turn the flow regulator until a drop of fluid is seen in the pumping chamber.

Turn the cassette upright, then prime the remainder of the administration set.

Push in the flow regulator to close it.

Confirm that there is no flow.

5.2.3 LOADING THE CASSETTE

To load the primed cassette into one of the three pumping units, proceed as follows:

Open the cassette door by lifting the door handle.

Holding the primed cassette by its fingergrip, slide it into the cassette door guides until it firmly seats in the door. Close the cassette door.

Confirm that there is no flow.

5.2.4 SECURING THE TUBING

WARNING

ARRANGE TUBING, CORDS, AND CABLES TO MINIMIZE THE RISK OF PATIENT STRANGULATION OR ENTANGLEMENT.

Press the tubing from the cassette into the grooves between the pumping units or into the grooves at the far sides of the platform under the pump modules (refer to the following illustrations).
Before preparing the secondary line, observe the following guidelines:

- Review the backpumping function (see Section 6.4, Backpumping).
- Use sets with an appropriate secondary port.
- Attach the secondary line, syringe, or vial to the appropriate secondary cassette. Inlet using an 18- or 19-gauge, 1 1/4-inch, or male adapter.
- Syringes: Attach the syringe adapter to syringes of 10 cc or smaller. The syringes must be larger than 3 cc.
- Vials: Attach the vial adapter to the secondary line vial.

To prepare the secondary line, use aseptic technique and proceed as follows:

1. Confirm that the cassette air trap is full of fluid. If air is present, use the backpumping function to expel the air.
2. Remove the cap from the secondary inlet port (unless a reseal port is used).

**CAUTION:** Consult the drug container labeling to confirm drug compatibility, concentration, delivery rates, and volumes are all suitable for intermittent or continuous secondary, or piggyback delivery mode.

The Plumb XL3 features a secondary or piggyback delivery mode when patient infusion therapy requires administering more than one drug through a single patient line.

*In addition to standard containers, the Plumb XL3 uses syringes or vials on the secondary port for piggyback or secondary delivery. The secondary port for piggyback can be prepared without removing or repriming the cassette.*
Syringe: Invert the syringe and expel the air (syringe adapter with blunt cannula is shown).

Attach the secondary container to the secondary inlet port (capped port shown on the left, preperforated port on the right).

Syringe: When using a 3 to 5 cc syringe, retract the plunger to draw approximately 1 mL of air into the syringe to clear fluid from the adapter filter.

Vial or Syringe: Secure the container to the cassette door using the optional container support arm.

Vial: Attach the vial adapter to the secondary port. Backprime the air from the vial adapter into the vial, if necessary.

6.0 PROGRAMMING

The Plum XL3 Micro/Macro has the following delivery mode from each pumping unit, A, B, or C:

- Primary only delivery
- Secondary only delivery
- Piggyback delivery

When a rate and a VTBI are entered for the primary line and no settings are entered for the secondary line, the Plum XL3 will deliver primary only. Likewise, when a rate and a VTBI are entered for the secondary line and no settings are entered for the primary line, the Plum XL3 delivers secondary only. When a rate and a VTBI are entered for the primary and secondary lines (piggyback delivery), the Plum XL3 completes secondary delivery before it begins primary delivery.

Note: The Plum XL3 retains all previous therapy settings and fluid delivery data in its memory until the settings are cleared by the user. Check the primary and secondary settings during the initial setup to confirm that all settings are correct. Confirm the proper clearing of the total volume delivered before use.

6.1 Primary Only Delivery

To program the Plum XL3 for primary only delivery, proceed as follows:

- Turn the control dial to SET RATE.
- Press the SET button.
6.2 Secondary Only Delivery

To program the Plum XL3 for secondary only delivery:

**Press the PRI-SEC key to select the primary line if it is not already selected.**

**Press the PRI-SEC key to select the secondary line if it is not already selected.**

**Turn the control dial to SET RATE.**

**Turn the control dial to SET VTBI.**

**Press the QUICKSET key to set the primary rate.**

**Press the QUICKSET key to set the volume to be delivered.**

**Turn the control dial to RUN.**

**Primary only delivery begins.**

*(Optional)* Set the panel lockout switch to locked to prevent unauthorized tampering of the device (see Section 6.8, Lockout).
Press the Ù or Ù key, or the [QUICKSET] key to set the volume to be delivered.

Turn the control dial to RUN. Secondary only delivery begins.

(Optional): Set the panel lockout switch to locked to prevent unauthorized tampering of the device (see Section 6.8, Lockout).

6.3 Piggyback Delivery

To program the Plum XL3 for piggyback delivery, proceed as follows:

Turn the control dial to SET RATE.

Press the [PRI-SEC] key to select the primary line (if it is not already selected).

Press the Ù or Ù key, or the [QUICKSET] key to set the primary rate.

Turn the control dial to SET VTBI.

Press the [PRI-SEC] key to select the secondary line.

Press the Ù or Ù key, or the [QUICKSET] key to set the secondary rate.
Turn the control dial to SET VTBI.

Press the [ ] or [ ] key to set the volume to be delivered. PIGGYBACK displays on the screen when the volume to be delivered is entered.

Turn the control dial to RUN. Piggyback delivery begins.

When secondary delivery completes, Plum XL3s with software revisions 1.02 and earlier beep five times and begin primary delivery.

[Optional]: Set the panel lockout switch to locked to prevent unauthorized tampering of the device (see Section 6.8, Lockout).

6.4 Backpriming

Backpriming is typically used to clear accumulated air from the cassette or to clear air from the secondary line without disconnecting the administration set from the patient. AIR IN LINE and BACKPRIMING display on the screen and an alarm sounds when air is detected in the cassette. Fluid is backprimed from the primary line up through the secondary inlet port to expel the air.

To expel air from the cassette when using primary delivery (secondary inlet port is capped or resealed), or when using piggyback delivery, proceed as follows:

Turn the control dial to HOLD/RESET (the alarm is silenced).

Primary only: Attach an empty container or syringe to the secondary inlet port (syringe shown).

Primary only: Press and hold the [BACKPRIME] key until enough fluid from the primary line expels the trapped air into the secondary container.

Piggyback: Press and hold the [BACKPRIME] key until enough fluid from the primary line expels the trapped air into the secondary line syringe or container.

Note: The fluid backprimed from the primary line is not added to the total volume delivered, or subtracted from the VTBI. Backpriming cannot be used for clearing air in the line distal to the cassette.
Primary only: Remove the container attached to the secondary inlet port, then cap the port (if appropriate).

To resume delivery, turn the control dial to RUN.

6.5 Changing Containers

To change a container, use aseptic technique and proceed as follows:

Turn the control dial to HOLD/RESET.

With the cassette door closed, spike the new container.

Note: If opening the cassette door, close the primary and secondary clamps before removing containers (to prevent mixing).

Turn the control dial to SET VTBI, then set the volume to be delivered.

To resume delivery, turn the control dial to RUN.

6.6 Titration

Titration is the incremental adjustment of the fluid delivery rate while pumping (primary or secondary) is in progress.

To titrate fluid delivery, hold down the [TITRATE] key and press the [+] or [-] key to increase or decrease the delivery rate.

6.7 Clear Volume

CLEAR VOL erases the total volume delivered from memory.

Note: The total volume delivered is the total amount of fluid, both primary and secondary, delivered to the patient.
Turn the control dial to "Run".

Correct the alarm condition.

HOLD/RESET;
Turn the control dial to "Run".

Press the [SILENCE] key to obscure the alarm message that displays.

To avoid unauthorized tampering of the Pump X3, set the panel LOCKOUT switch to "on" when the LOCKOUT alarm is cleared.

6.8 Lockout

To HOLD/RESET:
Turn the control dial out of setting before the fourth beep.

To cancel the alarm total volume is cleared.

7.0 TROUBLESHOOTING

Operations personnel from hospitals or Abbott Laboratories Technical Support Pump X3 Micro/Macro models do not require assistance.

This section contains solutions to routine clinical problems that may occur while using the pump. Please refer to the Pumps with Easy-to-Fix Conditions section to resolve these issues.
The following tips help correct the alarm conditions that may occur:

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>POSSIBLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR IN LINE</td>
<td>Air detected distal to cassette</td>
<td>Remove and reprime cassette</td>
</tr>
<tr>
<td>AIR IN LINE BACKPRIMING</td>
<td>Air detected proximal to cassette</td>
<td>Backprime to expel all air</td>
</tr>
<tr>
<td></td>
<td>Container empty</td>
<td>Change container and backprime to expel air</td>
</tr>
<tr>
<td>CHECK SETTINGS</td>
<td>Rate or VTBI not set</td>
<td>Turn to SET RATE or SET VTBI to check setting or enter values</td>
</tr>
<tr>
<td>DOOR</td>
<td>Cassette door open</td>
<td>Turn to OFF CHARGE, close cassette door, then restart</td>
</tr>
<tr>
<td>CASSETTE</td>
<td>Cassette improperly loaded</td>
<td>Turn to OFF CHARGE, reload cassette, then restart</td>
</tr>
<tr>
<td></td>
<td>Cassette improperly primed</td>
<td>Turn to OFF CHARGE, reprime cassette, then restart</td>
</tr>
<tr>
<td></td>
<td>Cassette failed valve leak test</td>
<td>Turn to OFF CHARGE, open and close cassette door, then restart. If condition recurs, replace PlumSet</td>
</tr>
<tr>
<td>LOCKED (flashing)</td>
<td>Control dial turned while lockout switch is on</td>
<td>Set lockout switch off. Set unit for desired operation. Set lockout switch on</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>POSSIBLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW BATTERY</td>
<td>Approximately 30 minutes of battery power remains</td>
<td>Connect to AC power</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Pressing the [SILENCE] key mutes the audible alarm for 15 minutes from the time the LOW BATTERY alarm occurred</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> When the battery discharges, pumping stops and the alarm sounds continuously for one minute before the device shuts down completely</td>
<td></td>
</tr>
<tr>
<td>OCCLUSION</td>
<td>Clamp closed</td>
<td>Open clamps</td>
</tr>
<tr>
<td></td>
<td>Tubing kinked</td>
<td>Unkink tubing</td>
</tr>
<tr>
<td></td>
<td>Possible clotted catheter</td>
<td>Check IV site</td>
</tr>
<tr>
<td>TURN TO RUN</td>
<td>Control dial is not in OFF CHARGE or RUN setting and no key is pressed for five minutes</td>
<td>Turn control dial to RUN, OFF CHARGE, or HOLD/RESET</td>
</tr>
</tbody>
</table>
7.2 Malfunctions

To verify the malfunction, proceed as follows:

1. Press the key corresponding to the message displayed on the screen.
2. Listen for alarm sounds.
3. Program new VTBL setting.
4. Change the VTBL setting and program primary and secondary delays.

Possible Cause
Corrective Action

<table>
<thead>
<tr>
<th>Message</th>
<th>Noise: VTBL also programed but new VTBL setting does not change.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTBL Complete</td>
<td>Proceed to VTBL primary delay on the screen and change the setting.</td>
</tr>
<tr>
<td>VTEXT Complete</td>
<td>Press the key corresponding to the message displayed on the screen.</td>
</tr>
</tbody>
</table>

Technical Assistance:

7.3

Abbot Laboratories
Technical Support Operations

Address:
P.O. Box 95037
Moraga Hill, California 95037

Send all inquiries, prepared returns, to the following:

1-800-241-8002

Is: The telephone number for technical support operations.

Abbot Laboratories Technical Support Operations

Do not return the product to the U.S. contact.

For technical assistance, contact Abbot Laboratories Technical Support Operations.

Note: KVO also

Program new VTBL setting.

Possible Cause: Change the VTBL setting and program primary and secondary delays.

Message: Noise: VTBL also programed but new VTBL setting does not change.

Possible Cause: Change the VTBL setting and program primary and secondary delays.

Message: VTBL Complete

Possible Cause: Press the key corresponding to the message displayed on the screen.

Schedule an appointment with one of the following:

- The nearest Abbot Laboratories representative.
- The nearest Abbot Laboratories Technical Support Operations.
- The nearest Abbot Laboratories Technical Support Operations.

Services:

Remove the KVO from the device. If the malfunction persists, proceed to the next step.

Charge the control dial to the OFF position.
8.0 PRECAUTIONS

For optimum operation of the Plum XL3 Micro/Macro, observe the following precautions.

8.1 Artifacts

Nonhazardous, low level electrical potentials are commonly observed when fluids are administered using infusion devices. These potentials are well within accepted safety standards, but may create artifacts on voltage sensing equipment such as ECG, EMG, and EEG machines. These artifacts vary at a rate that is associated with the infusion rate. If the monitoring machine is not operating correctly or has loose or defective connections to its sensing electrodes, these artifacts may be accentuated so as to simulate actual physiological signals. To determine if the abnormality in the monitoring equipment is caused by the infusion device instead of some other source in the environment, set the infusion device so that it is temporarily not delivering fluid. Disappearance of the abnormality indicates that it was probably caused by the electronic noise generated by the infusion device. Proper setup and maintenance of the monitoring equipment should eliminate the artifact. Refer to the appropriate monitoring equipment system documentation for setup and maintenance instructions.

8.2 Healthcare Professional and Patient Related

Product checkout should be performed by qualified personnel only.

Arrange tubing, cords, and cables to minimize the risk of patient strangulation or entanglement.

Consult the drug container labeling to confirm drug compatibility, concentration, delivery rates, and
Secondary containing corruptions by powers.

Backpumping is not recommended for recompressing

8.5

Backpumping

Backpumping when the secondary line is at a reduced pressure (less than 500 ml/hr less than 12.5 cm H2O) will reduce the moment of the fluid in the secondary line.

Secondary line must be larger than the syringe used.

When in use, the syringe adapter when using syringes 10 cc or

less the syringe adapter when using syringes 20 cc or

more is required to keep the secondary line from collapsing.

8.3

Battery Operation

Battery life will vary depending on the use of the pump. The

CAUTION: Do not operate the pump more than the

manufacturer's recommended time.

8.4

Seals and Accessories

Seal failure, wettability, and corrosion of a door may also cause

Seals should be changed in accordance with current

detergent. Only pumps and accessories can be used with this

Seals and Accessories

immediately.

If the LOW BATTERY alarm sounds, connect to AC power

with the control in the OFF CHARGE setting.

Connect the Pump X3 to AC power for at least 6 hours.

The battery may not be fully charged upon receipt.

Secondary air will result in more rapid inflation of any residual

Secondary air is recommended in the event of an AC power failure.

Volunteers are all suitable for intermittent or continuous
To avoid pressurization when backpriming into a syringe or a vial, the user must ensure that these containers have sufficient empty space to accept the backprimed fluid.

8.6 General

Possible explosion hazard exists if used in the presence of flammable anesthetics.

Product damage may occur unless proper care is exercised during unpacking and installation. Do not use the Plum XL3 if it appears damaged in any way.

Do not place Plum XL3 in service if it fails the self-test (see Section 3.2, Self-Test for detailed information).

The XL3 system is designed to operate normally in the presence of most encountered EMF conditions. In the event of extreme levels of interference, such as encountered next to an electrosurgical generator, cellular telephones, or two-way radios, it is possible that the normal operation of a sensor or microcomputer might be disrupted. Operation of the infusion device under such conditions should be avoided.

The screen displays VTBI in 0.1-mL increments from 0.1 to 99.9 mL. 100 to 9999 mL are displayed in 1-mL increments. Any fraction of a milliliter delivered is not displayed, but is retained in memory.

Keep the cassette door securely closed while the Plum XL3 is not in use, to avoid cassette door damage.

To avoid mechanical or electronic damage, do not immerse the Plum XL3 in any cleaning fluids or cleaning solutions.

Certain cleaning and sanitizing compounds may slowly degrade components made from some plastic materials. Using abrasive cleaners or cleaning solutions not recommended by Abbott Laboratories may result in product damage. Do not use compounds containing combinations of isopropyl alcohol and dimethyl benzyl ammonium chloride.

Never use sharp objects such as fingernails, paper clips, or needles to clean any part of the Plum XL3.

Do not sterilize by heat, steam, ethylene oxide (ETO), or radiation.

To avoid device damage, cleaning solutions should be used only as directed in Section 9.1, Cleaning and Sanitizing. The disinfecting properties of cleaning solutions vary; consult the manufacturer for specific information.
9.0 CLEANING, MAINTENANCE, AND STORAGE

The cleaning, maintenance, and storage of the Plum XL3 Micro/Macro are described in this section.

9.1 Cleaning and Sanitizing

For proper maintenance of the Plum XL3, observe the following cleaning and sanitizing guidelines.

CAUTIONS:

To avoid mechanical or electronic damage, do not immerse the Plum XL3 in any cleaning fluids or cleaning solutions.

Certain cleaning and sanitizing compounds may slowly degrade components made from some plastic materials. Using abrasive cleaners or cleaning solutions not recommended by Abbott Laboratories may result in product damage. Do not use compounds containing combinations of isopropyl alcohol and dimethyl benzyl ammonium chloride.

Never use sharp objects such as fingernails, paper clips, or needles to clean any part of the Plum XL3.

Do not sterilize by heat, steam, ethylene oxide (ETO), or radiation.

To avoid device damage, cleaning solutions should be used only as directed in the following table. The disinfecting properties of cleaning solutions vary; consult the manufacturer for specific information.
Establish a routine weekly schedule for cleaning the Plum XL3. To clean the Plum XL3, proceed as follows:

Turn the control dial to OFF CHARGE, then disconnect the Plum XL3 from AC power.

Use the recommended LifeCare Germicidal Towelette to clean the exposed surfaces of the Plum XL3. The exposed surfaces of the Plum XL3 may also be cleaned with a lint-free cloth dampened with one of the other recommended cleaning solutions listed as follows or mild, nonabrasive soapy water.

**Note:** The Abbott LifeCare Germicidal Towelette (List 11937) is a pre-moistened wipe containing a quaternary ammonium chloride germicidal detergent. The towelette has been found to be effective against a broad spectrum of bacterial, fungal, and viral pathogens. For additional information on the LifeCare Germicidal Towelette, call Abbott Customer Service 1-800-ABBOTT3 (1-800-222-6883).

<table>
<thead>
<tr>
<th>Cleaning Solution</th>
<th>Manufacturer</th>
<th>Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LifeCare® Germicidal Towelette (subject to availability)</td>
<td>Manufactured for Abbott Laboratories</td>
<td>Per manufacturer's recommendation</td>
</tr>
<tr>
<td>Super Edisonite®</td>
<td>S. M. Edison Co.</td>
<td>Per manufacturer's recommendation</td>
</tr>
<tr>
<td>Vesphene II® se</td>
<td>Calgon Vestal Laboratories</td>
<td>Per manufacturer's recommendation</td>
</tr>
<tr>
<td>Manu-Klenz®</td>
<td>Calgon Vestal Laboratories</td>
<td>Per manufacturer's recommendation</td>
</tr>
<tr>
<td>Formula C™</td>
<td>Diversey Corporation</td>
<td>Per manufacturer's recommendation</td>
</tr>
<tr>
<td>Household bleach</td>
<td>Various</td>
<td>Per hospital procedures; do not exceed one part bleach in ten parts water</td>
</tr>
</tbody>
</table>

On a routine basis, clean all of the elements behind the cassette doors using LifeCare Germicidal Towelettes or cotton-tipped swabs saturated with cleaning solution. The cassette doors may be unlatched from their door handles to facilitate cleaning.

To unlatch a cassette door from its handle, tilt the device back, open the cassette door, then push the door release tab to open the door fully.
9.4 Battery Maintenance

CAUTION: Do not operate the Plum XL3 with the battery removed. The use of a properly maintained and charged battery ensures proper operation. As always, in the event of an AC power interruption or failure, verify infusion pump settings.

CAUTION: If the LOW BATTERY alarm sounds, connect the Plum XL3 to AC power immediately.

The Plum XL3 is battery powered for emergency backup and temporary portable operation. It should be operated for optimum performance and life. A full battery charge will provide 18 hours of continuous operation at a rate of 125 mL/hr or a cumulative delivery of 1,000 mL at any combination of rates and pumping units.

The battery charges whenever the Plum XL3 is connected to AC power. Recharge takes approximately six hours.

As a general rule, the more often the battery is partially discharged and recharged, the sooner it will need to be replaced. Consult a qualified hospital biomedical technician for battery replacement if necessary.

To maintain maximum battery charge and to prolong battery life, keep the line cord connected to AC power whenever possible.

9.3 Storage

To prolong the life of the Plum XL3, observe the following guidelines:

- **Unplug** the Plum XL3 from all power sources.
- **Store** the Plum XL3 in a cool, dry, and dust-free environment.
- **Remove** the battery from the Plum XL3.
10.0 SYSTEM ACCESSORIES

Plum XL3 Micro/Macro is compatible with all Plum accessories, and all PlumSets administration sets.

**Note:** Accessories are updated without notice. Contact an Abbott Laboratories Hospital Products representative for current listings.
10 psi (±5 psi)

DISTAL

OCCLUSION RANGE:

Increments:
100 to 9699 ml (in 1-ml increments)
0.1 to 99.9 ml (in 0.1-ml increments)

Dose Limn Range:

Mode:
Primary, Secondary

KVO:

Mode:
Primary, Secondary

Delivered Rate:

Pressure:
Ambient pressure
Relative Humidity:
Temperature:

Transport and Environment:

Recharge:

The batteries charge whenever the

Battery Title:

Polarized connectors

Presses:
10 A, 250 V, Slow Blown

Power Cord:
100-130 VAC, 47/63 Hz, Less than

Weight:

High-impact plastic

Approximately 20 lbs (with batteries)

Dimensions:

Approximately 13.75" X 12.2" X 7.25" inches (excluding pole clamp)

Power Requirements:

60 W
12.0 WARRANTY

Subject to the terms and conditions herein, Abbott Laboratories, herein referred to as Abbott, warrants that (a) the product shall conform to Abbott’s standard specifications and be free from defects in material and workmanship under normal use and service for a period of one year after purchase, and (b) the replaceable batteries shall be free from defects in material and workmanship under normal use and service for a period of 90 days after purchase. Abbott makes no other warranties, express or implied, as to merchantability, fitness for a particular purpose, or any other matter.

Purchaser’s exclusive remedy shall be, at Abbott’s option, the repair or replacement of the product. In no event shall Abbott’s liability arising out of any cause whatsoever (whether such cause be based in contract, negligence, strict liability, other tort or otherwise) exceed the price of such product, and in no event shall Abbott be liable for incidental, consequential, or special damages or losses or for lost business, revenues, or profits. Warranty product returned to Abbott must be properly packaged and sent freight prepaid.

The foregoing warranty shall be void in the event the product has been misused, damaged, altered, or used other than in accordance with product manuals so as, in Abbott’s judgment, to affect its stability or reliability, or in the event the serial or lot number has been altered, effaced, or removed.

The foregoing warranty shall also be void in the event any person, including the Purchaser, performs or attempts to perform any major repair or other service on the product without having been trained by an authorized representative of Abbott and using Abbott documentation and approved spare parts. For purposes of the preceding sentence, “major repair or other service” means any repair or service other than the replacement of accessory items such as batteries and detachable AC power cords.

In providing any parts for repair or service of the product, Abbott shall have no responsibility or liability for the actions or inactions of the person performing such repair or service, regardless of whether such person has been trained to perform such repair or service. It is understood and acknowledged that any person other than an Abbott representative performing repair or service is not an authorized agent of Abbott.
WARNING

A possible explosion hazard exists if the device is used in the presence of flammable anesthetics.

Information about the use of this device in the presence of flammable anesthetics.

CAUTION: Federal (USA) law restricts this device to sale by or on the order of a physician or other licensed practitioner.

Note: Outside the U.S., contact your local Abbott Laboratories sales office.

Abbott Laboratories

755 Chicago Drive

Morton Grove, IL 60053

Telephone: (847) 677-4800

Fax: (847) 677-4222

For technical assistance and product return authorization, contact: 1-800-444-7561

For customer service within the United States, contact: 1-800-222-6683