

# *System Operating Manual*

For use with list 11555-04



  
*Hospira*

430-00571-003 (Rev. 09/10)



# CHANGE HISTORY

<b>Part Number</b>	<b>Description of Change</b>	<b>Revised Pages</b>
430-00571-001	Original release	
430-00571-002	Second issue	
430-00571-A02 (Rev. 11/96)	Updated cover part number	Cover
	Updated Change History	i
	Updated copyright date	iii
	Added battery statement	3, 24, 28
	Added note for secondary delivery	16
	Updated shipping address	23, 32
	Updated UL/CSA information	32
Updated manual part number (no other changes)	1, 5, 6, 13, 26, 30	
430-00571-B02 (Rev. 1/97)	Updated cover part number	Cover
	Updated Change History	i
	Updated copyright date	iii
	Added note for secondary delivery	16
	Updated shipping address	32
	Updated manual part number (no other changes)	13, 30
430-00571-C02 (Rev. 8/97)	Updated front and back cover	Cover, Back
	Updated Change History	i
	Updated manual part number (no other changes)	32
430-00571-D02 (Rev. 09/04)	Changed Abbott to Hospira Verbiage	Front and Back Covers, Change History, ii, iii, iv, 3, 6, 9, 20, 23, 26, 29 thru 32
	430-00571-003 (Rev. 09/10)	Third release

Note: Change page manuals assembled by Hospira, Inc. include a change page identifier in the part number on the cover page and on the bottom of each change page. This change page manual is identified as 430-00571-003.

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# NOTES

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# 1.0 CONVENTIONS

The following conventions are used throughout this manual.

Convention	Application	Example
<i>Italic</i>	Reference to a section, figure, or table  Function or mode specific instructions	<i>(See Figure 3-1, Priming Cassette)</i>  <i>Primary Only:</i> Attach an empty container.
[ALL CAPS]	Keys or touchswitches on the device are described all caps in brackets	[OFF CHARGE]  [SPEC. FUNC]
ALL CAPS Initial Caps lowercase	Screen displays and device labels (as appropriate)	LOW BATTERY
<b>Bold</b>	Emphasis	...sets are supplied <b>Sterile</b> and are for....

## 1.1 Warnings, Cautions, and Notes

### 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.**

**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:** A Note highlights information that helps explain a concept or procedure.

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# NOTES



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## 2.0 FEATURES

The Plum XL™ is a dual-line volumetric infusion system designed to meet the growing demand for hospital-wide standardization. With its primary line, secondary line, and piggyback fluid delivery capability, the Plum XL is suited for a wide range of general floor, critical care, and home care applications. Compatibility with LifeCare® 5000 PlumSet® administration sets and accessories makes the Plum XL a convenient and cost-effective system.

The following features are included in the Plum XL:

- Non-pulsatile volumetric accuracy
- Microprocessor control
- Large LCD screen
- Wide range of standard and specialty administration sets
- Standard fullfill, partfill, syringe and vial use
- Parenteral (blood) and non-parenteral (enteral) fluid delivery
- Titration
- 1 mL/hr KVO at dose end
- Battery operation

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# NOTES

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## 3.0 GETTING STARTED

This section describes the instrument installation procedures for the Plum XL.

The Plum XL 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 this device and the administration of parenteral or enteral fluids and drugs.

### 3.1 Unpacking

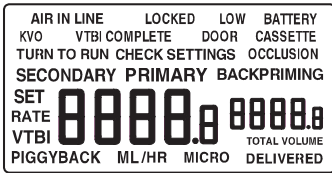
**CAUTION: Product damage may occur unless proper care is exercised during unpacking and installation. Do not use the device if it appears damaged in any way. The battery may not be charged upon receipt. Do not place device in service if it fails the self test.**

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

### 3.2 Self Test

Plug in AC power cord, then confirm the AC plug symbol (next to the OFF CHARGE setting) is illuminated. Place a primed administration set into the cassette door (see *Instructions for Use*). Close the cassette door.

**Note:** When plugging the device into an AC power outlet, grasp the AC power cord plug and use a forward motion into the socket. Do not use a sideways motion. When unplugging the device, grasp the AC power cord plug and pull straight out. Do not pull out using the power cord cable and do not pull out at an angle.



After the cassette door is closed, turn the control dial to SET RATE. The LCD screen displays all the symbols briefly. Verify the screen display matches the illustration (shown at the left) exactly. If the LCD screen does not match, remove the device from service and contact hospital or Hospira technical service personnel.

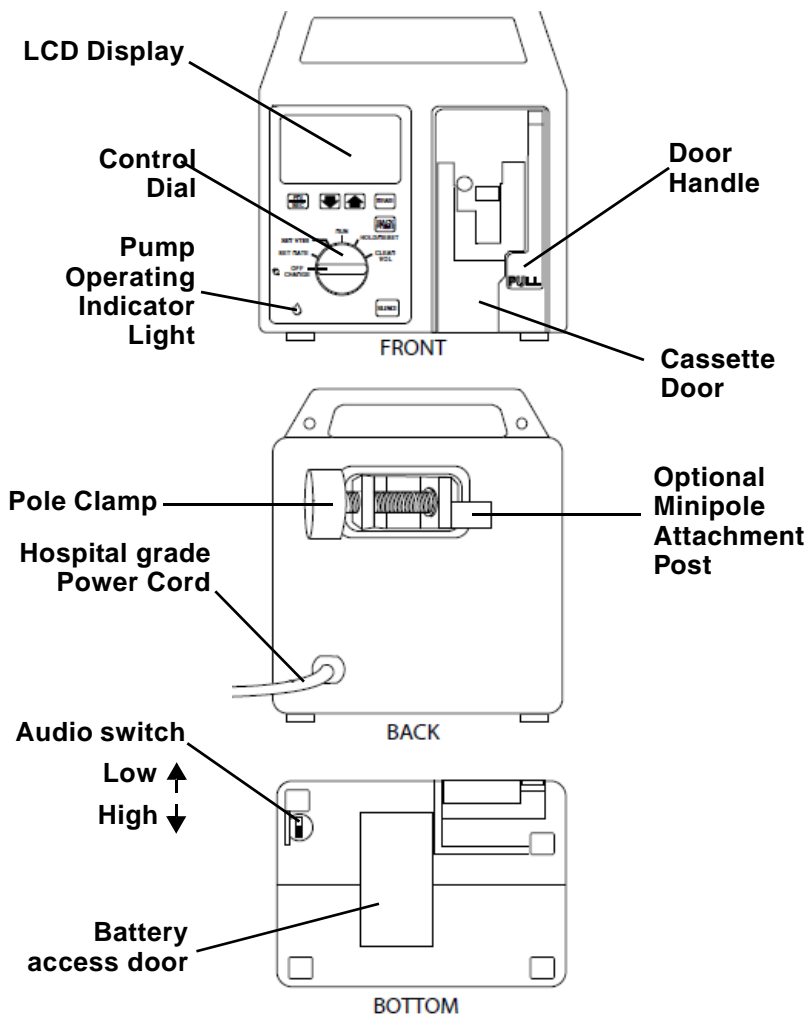
After the self-test, unplug the Plum XL from AC power and confirm that BATTERY displays on the screen (indicating battery power is in use). To ensure the battery is fully charged, remove the administration set, then plug the Plum XL back in for a minimum of eight hours in the OFF CHARGE setting.

**CAUTION:** Do not operate the Plum XL 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.

**Note:** If an alarm occurs during the self-test, note the message, then take the appropriate corrective action (see *TROUBLESHOOTING*). Repeat the self test. If the alarm recurs, remove the device from service and contact appropriate personnel.

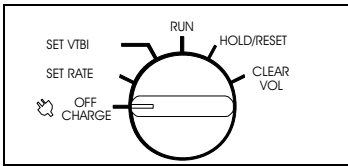
## 4.0 COMPONENTS

The Plum XL components are illustrated below.

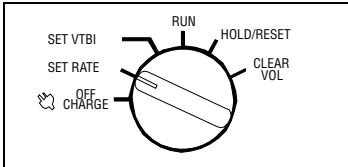




9226A001

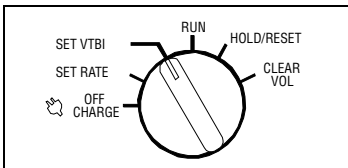
## 4.1 Control Dial Settings





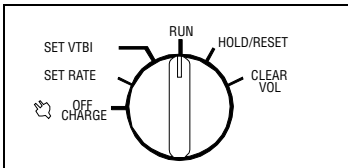
**OFF CHARGE** Stops all active functions. Battery charges in any dial setting when the Plum XL is connected to AC power. Store the Plum XL in the OFF CHARGE setting and plugged into AC power.



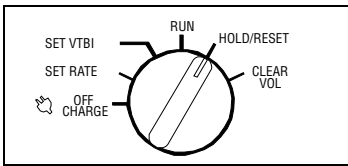
**SET RATE** Sets the delivery rate for the primary or secondary line using the   keys. The rate range is 1 to 9999 mL/hr (1 mL increments).



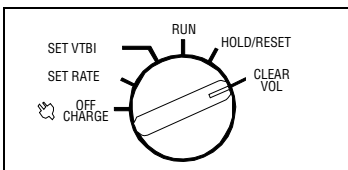
**SET VTBI** Sets the volume to be delivered (VTBI) from the primary or secondary line using the   keys. The VTBI range is 1 to 9999 mL (1 mL increments).



**RUN** Starts fluid delivery at the rate set by the user. RUN is the only position that delivers fluid. The flow indicator light (drip symbol) 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 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 Clear Volume).

## 4.2 Keys



[PRI-SEC] key 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] key 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.



[BACKPRIME] key 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 reprime empty secondary tubing above the cassette.



[SILENCE] key 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 the Troubleshooting Section.

## 4.3 AUDIO SWITCH



The audio switch has two sound level settings. Turn the switch toward the front panel for the LOW setting or toward the back for the HIGH setting.

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# NOTES

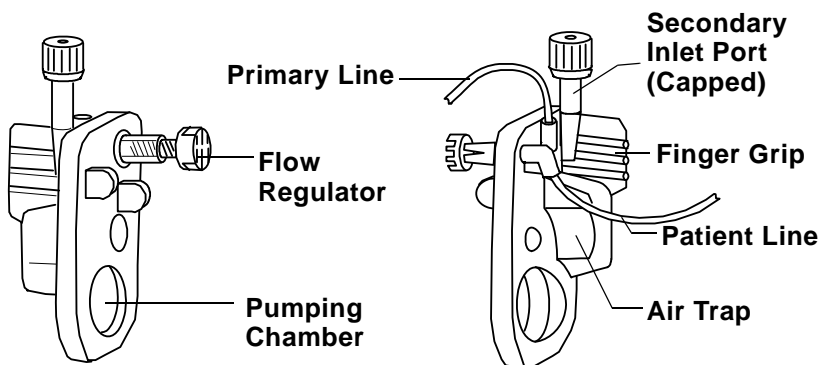


## 5.0 INSTRUCTIONS FOR USE

Cassette priming, loading, and device programming are explained in this section.

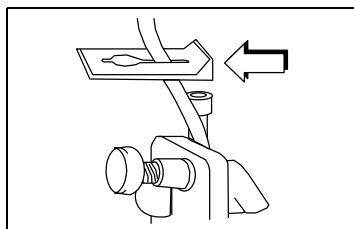
### 5.1 CASSETTE

The Plum XL is compatible with the wide range of LifeCare 5000 PlumSet administration sets. Become familiar with the components illustrated below before preparing the cassette.

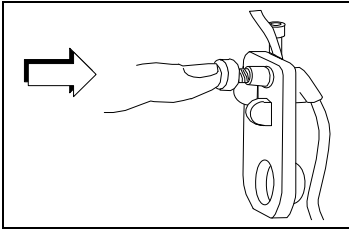


#### 5.1.1 PREPARE CASSETTE

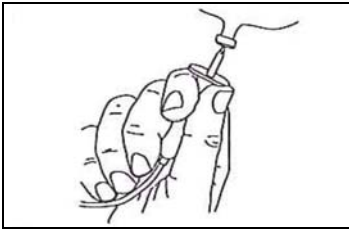
Use aseptic technique to prepare the cassette for priming, then proceed as follows:



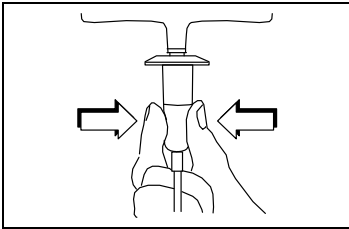
Close administration set upper clamp.



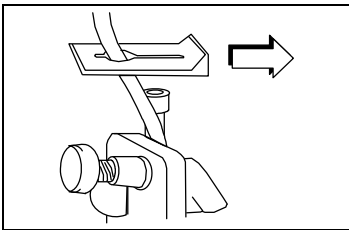
Push in flow regulator to close it.



Expose outlet of IV container, then insert piercing pin with a twisting motion.



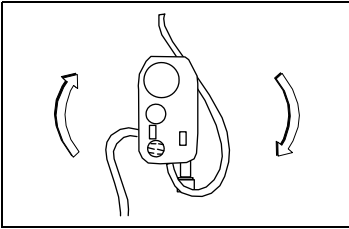
Fill drip chamber to score mark.



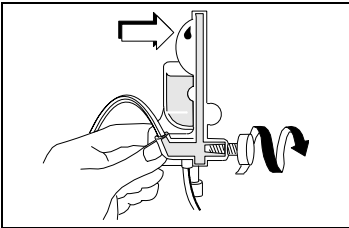
Open the upper clamp.

### 5.1.2 PRIME CASSETTE

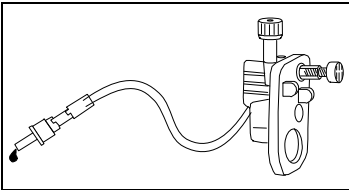
To prime the cassette, proceed as follows:



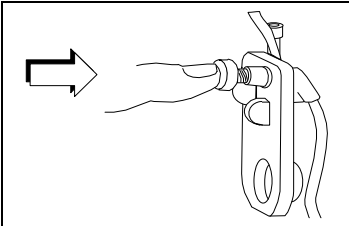
Invert the cassette.



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



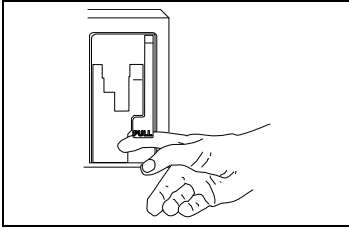
Turn cassette upright, then prime remainder of the administration set.



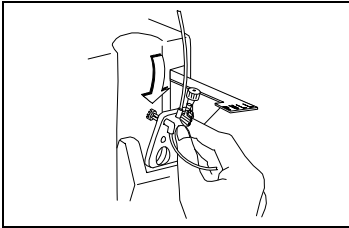
Push in flow regulator to close.  
Confirm no flow.

### 5.1.3 LOAD CASSETTE

To load the primed cassette into the Plum XL, proceed as follows:



Open cassette door by lifting the handle up.



Holding the primed cassette by its handle, slide it into the cassette door guides until it firmly seats in the door. Close the cassette door. Confirm no flow.

### 5.1.4 PREPARE SECONDARY LINE

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

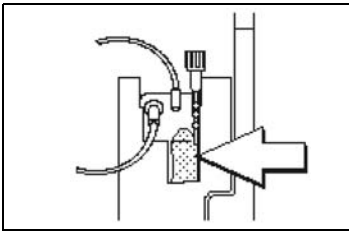
Plum XL features a secondary or piggyback delivery mode when patient infusion therapy requires administering more than one drug.

In addition to standard containers, Plum XL uses syringes or vials on the secondary port for piggyback or secondary delivery. The secondary line can be prepared without removing or repriming the cassette.

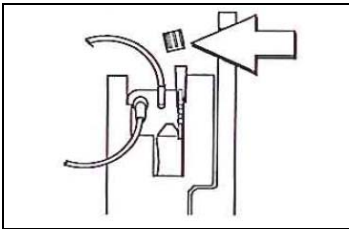
Before preparing the secondary line, observe the following guidelines:

- Review the backpriming function (see *Backpriming*)
- Use LifeShield<sup>®</sup> capped port, pierced reseal with blunt cannula, or standard latex reseal cassette
- Attach the secondary line, syringe, or vial to the appropriate secondary cassette inlet using an 18- or 19- gauge, 1-1/4 inch (or shorter) needle, blunt cannula, or male adapter
- *Syringes*: Attach the syringe adapter (List 9292) to syringes 10 cc or smaller (syringes must be larger than 3 cc)
- *Vials*: Attach the vial adapter (List 9293) to the secondary line vial

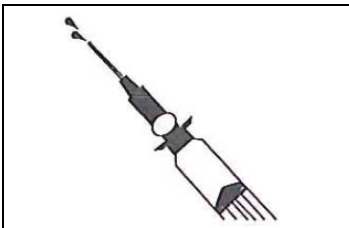
To prepare the secondary line, use aseptic technique and proceed as follows:



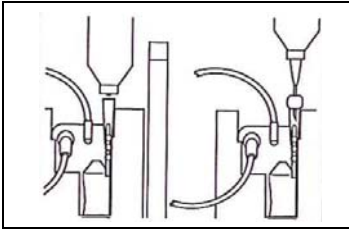
Confirm cassette air trap is full of fluid. If air is present, use backpriming function to expel air.



Remove cap from secondary inlet port (unless reseal port).

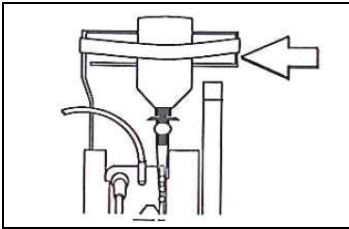


*Syringe*: Invert syringe and expel air (syringe adapter with blunt cannula shown).



Attach the secondary container to secondary inlet port (capped port shown on left, prepierced port on 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 (List 9294).

*Vial:* Backprime air from the vial adapter into the vial.

## 6.0 PROGRAMMING

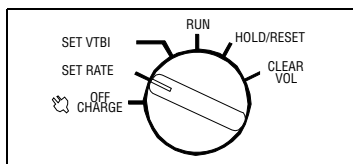
The Plum XL has the following delivery modes:

- Primary only delivery
- Secondary only delivery
- Piggyback delivery

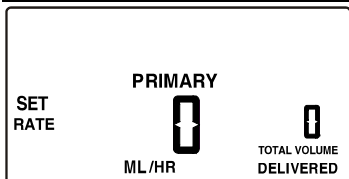
When a rate and a VTBI is entered for the primary line and no settings for the secondary line are entered, Plum XL will deliver primary only. Likewise, when a rate and a VTBI is entered for the secondary line and no settings for the primary line are entered, Plum XL delivers secondary only. When a rate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

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

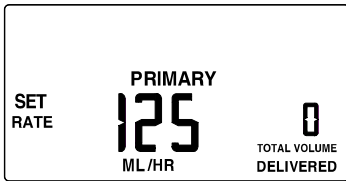
### 6.1 Primary Only Delivery



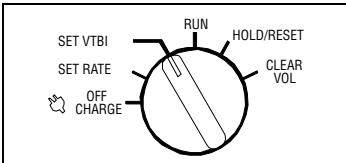
Turn the control dial to SET RATE.



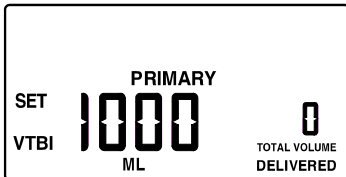
Press [PRI-SEC] to select the primary line (if not already selected).



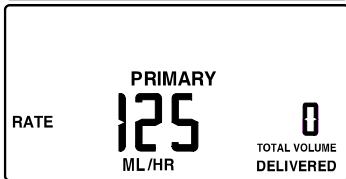
Press or key to set the primary rate.



Turn the control dial to SET VTBI.



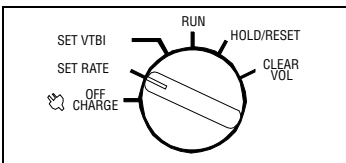
Press or key to set the volume to be delivered.



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

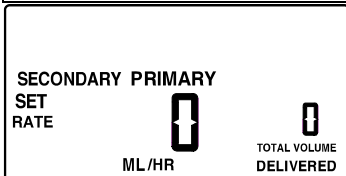
## 6.2 Secondary Only Delivery

To program the Plum XL for secondary only delivery, proceed as follows:



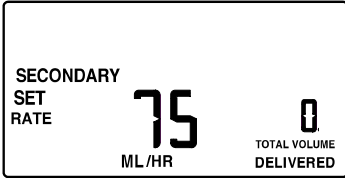
**Note:** Confirm primary rate and VTBI are set to 0 before programming secondary only delivery.

Turn the control dial to SET RATE.

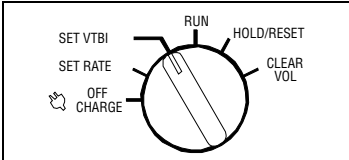


Press [PRI-SEC] key to select the secondary line (if not already selected)





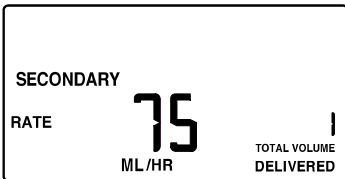
Press  or  key to set secondary rate.



Turn the control dial to SET VTBI.



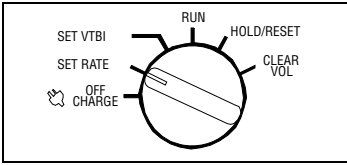
Press  or  key to set volume to be delivered.



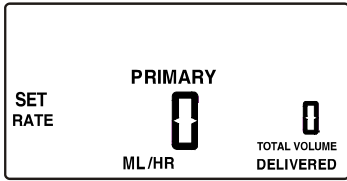
Turn the control dial to RUN.  
Secondary only delivery begins.

### 6.3 Piggyback Delivery

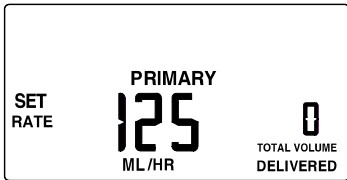
To program the Plum XL for piggyback delivery, proceed as follows:



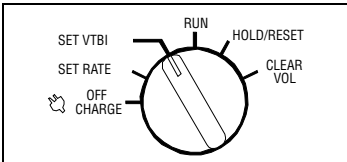
Turn the control dial to SET RATE.



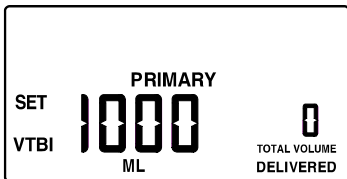
Press [PRI-SEC] key to select the primary line (if not already selected).



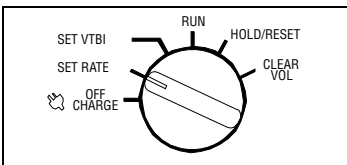
Press  or  key to set primary rate.



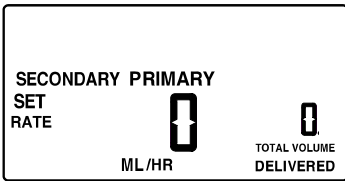
Turn the control dial to SET VTBI.



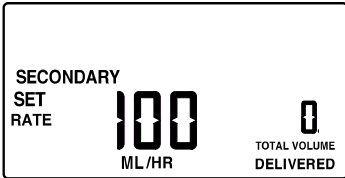
Press  or  key to set the volume to be delivered.



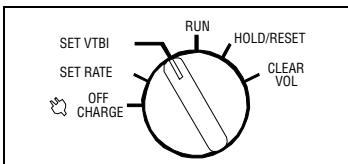
Turn the control dial to SET RATE.



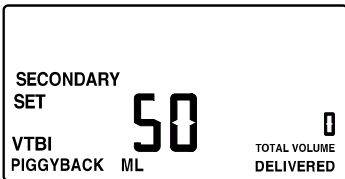
Press [PRI-SEC] key to select the secondary line.



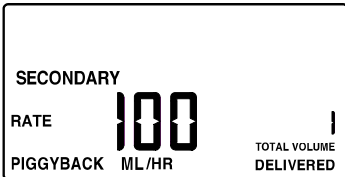
Press or key to set the secondary rate.



Turn the control dial to SET VTBI.



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



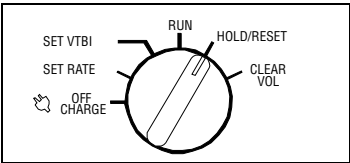
Turn the control dial to RUN. Piggyback delivery begins.

When secondary delivery completes, Plum XLs with software revisions 1.06 and earlier beep five times and begin primary delivery.

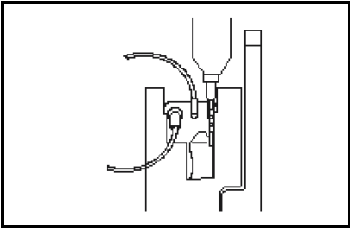
# 6.4 Backpriming

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. Fluid is backprimed from the primary line up through the secondary inlet port to expel the air. AIR IN LINE and BACKPRIMING display on the screen and an alarm sounds when air is detected in the cassette.

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).

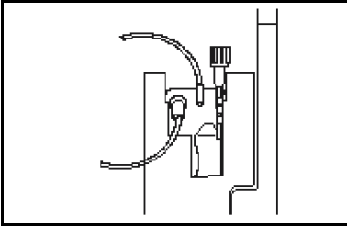
**BACK PRIME**

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

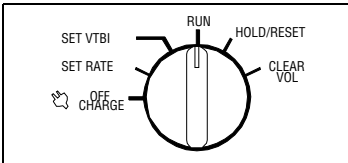
**BACK PRIME**

*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 VTBI. Backpriming cannot be used for clearing air in the line distal to the cassette.



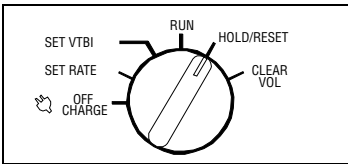
*Primary only:* Remove the container attached to the secondary inlet port, then cap the port (if appropriate).



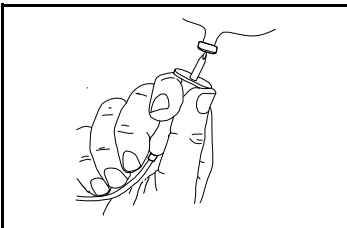
To resume delivery, turn the control dial to RUN.

## 6.5 Changing Containers

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

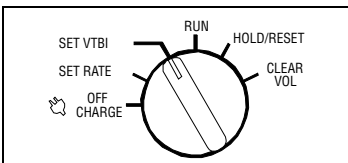


Turn the control dial to HOLD/RESET.

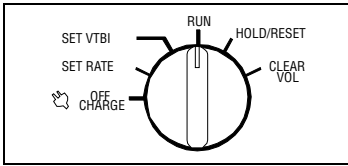


With the cassette door closed, spike the new container.

**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

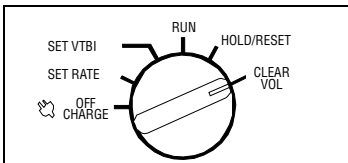
Titration is the incremental adjustment of the fluid delivery rate while pumping (primary or secondary) is in progress.

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:** Total volume delivered is the total amount of fluid (both primary and secondary) delivered to the patient.



To clear the total volume, turn the control dial to CLEAR VOL. Four beeps sound before the total volume is cleared.

**Note:** To cancel the clear total volume function, turn the control dial away from the CLEAR VOL setting before the fourth beep sounds (e.g., turn the control dial to HOLD/RESET).

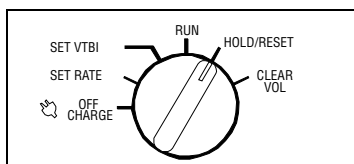
## 7.0 TROUBLESHOOTING

This section contains solutions to routine clinical conditions that may occur while using the Plum XL that do not require assistance from hospital or Hospira Technical Service Center personnel.

Problems that may occur in the Plum XL are in two categories: alarms and malfunctions.

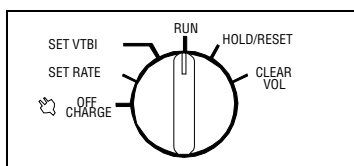
### 7.1 Alarms

During an alarm condition, the screen backlight and the alarm message flash, and the audible alarm sounds. To clear an alarm condition, proceed as follows:



Press the [SILENCE] key. Observe the alarm message displayed. Turn the control dial to HOLD/RESET.

Correct the alarm condition.



Turn control dial to RUN.

The following tips help correct the alarm conditions that may occur:

MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
AIR IN LINE	Air detected distal to cassette	Remove and reprime cassette
AIR IN LINE BACKPRIMING	Air detected proximal to cassette	Backprime to expel all air
	Container empty	Change container and backprime to expel air

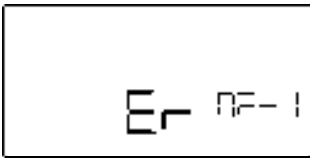
MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
CHECK SETTINGS	Rate or VTBI not set	Turn to SET RATE or SET VTBI to check setting or enter values
DOOR/ CASSETTE	Cassette door open	Turn to OFF CHARGE, close cassette door, then restart
	Cassette improperly loaded	Turn to OFF CHARGE, reload cassette, then restart
	Cassette improperly primed	Turn to OFF CHARGE, reprime cassette, then restart
	Cassette failed valve leak test	Turn to OFF CHARGE, open and close cassette door, then restart. If condition recurs, replace PlumSet
LOW BATTERY	Approximately 30 minutes of battery power remains	<p>Connect to AC power</p> <p><b>Note:</b> Pressing the [SILENCE] key mutes the audible alarm for 15 minutes from the time the LOW BATTERY alarm occurred</p> <p><b>Note:</b> When the battery discharges, pumping stops and the alarm sounds continuously for one minute before the device shuts down completely</p>
OCCLUSION	Clamp closed	Open clamps
	Tubing kinked	Unkink tubing
	Possible clotted catheter	Check IV site



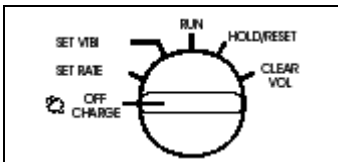
MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
TURN TO RUN	Control dial not in OFF CHARGE or RUN position and no key is pressed for five minutes	Turn control dial to RUN, OFF CHARGE, or HOLD/RESET
VTBI COMPLETE	<p><i>Secondary Only, or Primary Only:</i> Programmed VTBI completed</p> <p><i>Piggyback:</i> Primary VTBI completed</p> <p><b>Note:</b> KVO also displays on the screen indicating the 1mL/hr KVO rate is in progress</p>	Discontinue infusion, or change container and program new VTBI setting

## 7.2 Malfunctions

During a malfunction, an "Er" and an error number display on the screen and the audible alarm sounds. To verify the malfunction, proceed as follows:



Record the error number displayed on the screen.



Turn the control dial to OFF CHARGE.

Turn the control dial to its previously set setting to retest the device. If the malfunction recurs, remove the device from service.

## **7.3 Technical Assistance**

For technical assistance, or to order parts, accessories, or manuals, contact Hospira Technical Service Center at 1-800-241-4002

Do not return the device without prior approval from Hospira Technical Service Center.

For technical assistance from outside the U.S., contact the nearest Hospira representative.

## **7.4 Precautions**

For optimum operation of the Plum XL, observe the following precautions.

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.

Product checkout should be performed by qualified personnel only.

Product damage may occur unless proper care is exercised during unpacking and installation. Do not use the device if it appears damaged in any way. The battery may not be fully

charged upon receipt. Do not place device in service if it fails the self test.

**CAUTION: Do not operate the Plum XL 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.**

Only LifeCare 5000 PlumSet administration sets can be used with this device.

After the cassette door is closed, turn the control dial to SET RATE. Verify screen display (see Self Test). If the Plum XL screen does not match exactly, remove the device from service and contact appropriate personnel.

Consult drug container labeling to confirm drug compatibility, concentration, delivery rates, and volumes are all suitable for secondary or piggyback delivery mode.

Setting the primary rate greater than the secondary rate will result in a more rapid infusion of any residual secondary drug remaining in the line and the cassette.

Backpriming is not recommended for reconstituting secondary containers containing dry powders.

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.

Before disconnecting a syringe from the cassette, pull up the plunger slightly to avoid spilling the fluid. For rigid containers (e.g., vials), open the cassette door, remove and invert the cassette (ports down). Close upper slide clamp before removing the container (to minimize spilling of fluid during replacement of the container).

Sets should be changed in accordance with current, recognized guidelines of IV therapy. Discard per hospital procedures.

LifeCare IV infusion sets with integral non-blood filters are not for use in the administration of blood, blood products, emulsions, suspensions, or any medications not totally soluble in solution being administered. These medications may be administered through the lower Y-injection site, below the filter.

Use the syringe adapter (List 9292) when using syringes 10 cc or smaller on the secondary line (syringes must be larger than 3cc).

Use 19-gauge or larger needle or catheter for viscous fluids if operating at rates greater than 500mL/hr.

Use a cassette with a capped secondary port when delivering viscous fluids on the secondary line.

*In vitro* studies have suggested that packed red blood cells with unusually high hematocrit be diluted with blood-compatible fluids, such as 0.9% Sodium Chloride Injection, USP, to decrease hemolysis and increase flow rate.

A small amount of fluid is expelled from the set (less than 0.1mL) each time the door is opened or closed with a set installed. If potent drugs are being used, take appropriate action to guard against overmedication of the patient.

Before opening door, close clamp on secondary set or remove secondary container from secondary port to prevent mixing of primary and secondary fluids.

Repeated opening and closing of the door may defeat the proximal air-in-line alarm and may cause an air-in-line alarm, requiring repriming. Repeated opening and closing of the door may also cause the drip chamber to fill.

The screen displays VTBI in integers. Any fraction of a milliliter delivered is not displayed, but is retained in memory.

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

Cleaning solutions containing “dimethyl benzyl ammonium chloride” or “phenyl” compounds are not recommended. These compounds are known to slowly degrade components made from some polycarbonate materials.

Using abrasive cleaners, or any cleaning solution not recommended by Hospira may result in damage.

Do not sterilize the Plum XL with heat, steam, ETO, or radiation.

Do not use sharp objects (e.g., pens, pencils, fingernails, paper clips, or needles) to clean the Plum XL.

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

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# NOTES

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## 8.0 CLEANING/SANITIZING

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

### CAUTIONS:

**To avoid mechanical or electronic damage, do not immerse the Plum XL in any cleaning fluids or cleaning solutions. Do not spray cleaning solutions toward any openings in the device or directly on the device.**

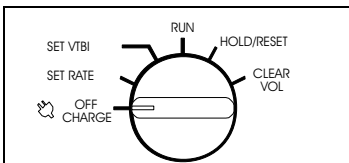
**Cleaning solutions containing “dimethyl benzyl ammonium chloride” or “phenyl” compounds are not recommended. These compounds are known to slowly degrade components made from some plastic materials.**

**Using abrasive cleaners, or any cleaning solution not recommended by Hospira may result in damage.**

**Do not sterilize the Plum XL with heat, steam, ETO, or radiation.**

**Do not use sharp objects (e.g., pens, pencils, fingernails, paper clips, or needles) to clean the Plum XL.**

Establish a routine schedule for cleaning the Plum XL. To clean the Plum XL, proceed as follows:

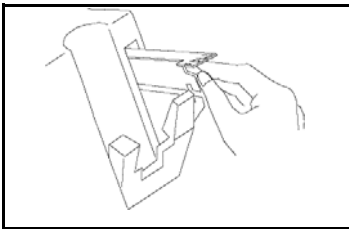


Turn control dial to OFF CHARGE, then disconnect the Plum XL from AC power.

Clean the exposed surfaces of the Plum XL using a soft, lint-free cloth. Dampen the cloth using one of the recommended cleaning solutions listed as below, or mild, non-abrasive soapy water.

<b>Cleaning Solution</b>	<b>Manufacturer</b>	<b>Preparation</b>
7X <sup>®</sup>	Linbro Scientific, Inc.	Per manufacturer's recommendation
Super Edisonite <sup>®</sup>	S. M. Edison Chemical Co.	Per manufacturer's recommendation
Household bleach	Various	One part bleach in four parts water

Clean all elements behind the cassette door on a routine basis. Use cotton-tipped swabs saturated with cleaning solution. The cassette door may be unlatched from the door handle to facilitate cleaning.



To unlatch the cassette door from the handle, tilt the Plum XL back, open the cassette door, then push door release tab out to fully open door.



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## 9.0 STORAGE

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

- Store the Plum XL away from excessive heat, cold, and humidity
- Store the Plum XL connected to AC power
- Turn the control dial to the OFF CHARGE setting



# NOTES

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## 10.0 BATTERY MAINTENANCE

**CAUTION:** Do not operate the Plum XL 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 XL to AC power immediately.

Plum XL can be battery powered for emergency backup and temporary portable operation. A fully charged new battery will provide approximately eight hours of operation at 125 mL/hr or 1000 mL volume delivered, whichever occurs first. Plum XL should be operated on battery power for six continuous hours at least once every six months for optimum performance and battery life.

The battery charges whenever Plum XL is connected to AC power. If the Plum XL is running at 125 mL/hr, a full recharge takes approximately 16 hours. If the Plum XL is turned to OFF CHARGE, recharge takes approximately 8 hours.

As a general rule, the more often the battery is discharged and recharged, the sooner it will need to be replaced. Consult a qualified hospital 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.

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# NOTES

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## **11.0 Service**

All servicing or adjustments to the Plum XL should be referred to qualified technical personnel. A Technical Service Manual may be ordered from Hospira Technical Service Center.



# NOTES

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## 12.0 SYSTEM ACCESSORIES

Plum XL is compatible with all Plum accessories, and all LifeCare 5000 Series PlumSet administration sets.

**Note:** Accessories are updated without notice. Contact a Hospira representative for current listings.

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# NOTES



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## 13.0 SPECIFICATIONS

### PHYSICAL:

- Dimensions:** Approximately 8.25H x 7.5W x 8.75D inches (including pole clamp)
- Weight:** Approximately 7.75 lbs (with battery)
- Casing:** High-impact plastic

### ELECTRICAL:

- Power Requirements:** 100-130 VAC, 47/63 Hz, less than 35W
- Power Cord:** Hospital-grade AC cord, 10 ft long, with transparent plug
- Fuses:** 0.5 A, 250 V, Slow Blowing
- Battery:** Sealed lead-acid, rechargeable 8 V battery, internal to device. Accessible for ease of field replacement, with color-coded leads and polarized connector
- Battery Life:** A fully charged new battery will provide approximately eight hours of operation at 125 mL/hr or 1000 mL total volume delivered, whichever occurs first. The device should be operated on battery power for six continuous hours at least once every six months for optimum performance and battery life

**Recharge:** The battery charges whenever the device is connected to AC power. If the device is running at 125 mL/hr, a full recharge takes approximately 16 hours. If the device is turned to OFF CHARGE, recharge takes approximately 8 hours.

**ENVIRONMENT:**

**Operating Temperature:** 10 to 40 C, 10% to 90% relative humidity

**DELIVERY RATE RANGE:**

**Primary, Secondary Mode:** 1 to 999 mL/hr (in 1 mL increments)

**KVO:** 1 mL/hr

**DOSE LIMIT RANGE:**

**Primary, Secondary Mode:** 1 to 9999 mL (in 1-mL increments)

**OCCCLUSION RANGE:**

**Distal:** 8 to 15 psig

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## 14.0 WARRANTY

Subject to the terms and conditions herein, Hospira, Inc., herein referred to as Hospira, warrants that (a) the product shall conform to Hospira'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 battery shall be free from defects in material and workmanship under normal use and service for a period of 90 days after purchase. Hospira 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 Hospira's option, the repair or replacement of the product. In no event shall Hospira'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 Hospira be liable for incidental, consequential, or special damages or losses or for lost business, revenues, or profits. Warranty product returned to Hospira 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 Hospira'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 Hospira and using Hospira 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, flow detectors, detachable AC power cords, and patient pendants.

In providing any parts for repair or service of the product, Hospira 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 a Hospira representative performing repair or service is not an authorized agent of Hospira.

For customer service within the United States, contact:

**1-877-9Hospira or 1-877-946-7747**

For technical assistance and product return authorization within the United States, call:

**1-800-241-4002**

**Note:** Outside the U.S., contact your local Hospira sales office.

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

## **WARNING**

**A POSSIBLE EXPLOSION HAZARD EXISTS IF THE DEVICE IS USED IN THE PRESENCE OF FLAMMABLE ANESTHETICS.**

Patents Pending

Plum, PlumSets, LifeShield, and LifeCare are registered trademarks of Hospira, Inc. Plum XL is a trademark of Hospira, Inc. 7X and Super Edisonite are not registered trademarks of Hospira, Inc.



**NRTL/C  
CSA 22.2  
No. 125  
UL544**

CSA is a registered trademark of the Canadian Standards Association. The use of NRTL/C adjacent to the CSA mark indicates that the product has been certified by CSA to U.S. and Canadian standards. CSA has been accredited by the U.S. Occupational Safety and Health Administration (OSHA) as a Nationally Recognized Test Laboratory (NRTL).

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