

Plum 360™ with ICU Medical MedNet™ System Quick Reference Card Software 15.11 and higher



⚠ Only. Please refer to the System Operating Manual for complete operating instructions.

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Definition of Terms

ICU Medical MedNet™ Software – Enhances safety at the point of care with highly customizable drug libraries that guide users and help to protect patients by alerting to hard and soft limits, upper and lower dosing limits intended to help prevent infusion errors. These limits are based on a hospital's specific IV administration practices.

Lower Hard Limit (LHL): The lower limit that cannot be overridden.

Lower Soft Limit (LSL): The lower limit that can be overridden.

Upper Soft Limit (USL): The upper limit that can be overridden.

Upper Hard Limit (UHL): The upper limit that cannot be overridden.

Auto-Program: Auto-programming refers to the ability to receive a remotely configured therapy from ICU Medical MedNet™ software.

Definition of Operating Keys – Indicators – Display Symbols



[ON/OFF] – Infuser power on and off.



[START] – Is the first key to press to start a delivery. For safety reasons, every delivery must be confirmed by checking the programming and then pressing an additional softkey, in response to a prompt.




[STOP] – Stops delivery. If 2 lines are pumping when you press [STOP], you must press one of the following softkeys: ▲ [Stop A], ▲ [Stop B], or ▲ [Stop All] in response to the prompt to specify which line(s) to stop.



[SELECT] – Moves the cursor between fields on the display. The top pair of arrows moves the cursor up or to the left.

The bottom pair of arrows moves the cursor down or to the right



[LOCK KEYPAD] – Pressing this key, followed by entering a lock passcode disables all keys on the keypad except  **[STOP]** until a valid passcode is entered.



[AUDIO PAUSED] – Has two functions, temporarily silencing all audio output for any active alarms for two minutes or temporarily silencing keypad input sound feedback for two minutes if there is no active alarm.



[C] – Clears all values in the currently highlighted field. **[C]** also clears the dashes (- - -) that are displayed when an entry is invalid or a drug delivery parameter is beyond the pre-programmed hard limits.

NOTE: **[C]** will NOT clear an entire program.



Caution – Appears on the display to tell the clinician to use CAUTION because the specified drug has been programmed without rule sets (soft or hard limits), and may have been programmed outside of specified safety limits for that specific drug.



Upper Soft Limit Override – Appears next to the drug name when the dosage of the drug being infused is higher than the upper soft limit set for the drug in the Custom Drug Library.



Lower Soft Limit Override – Appears next to the drug name when the dosage of the drug being infused is less than the lower soft limit set for the drug in the Custom Drug Library.



Wireless Connection – Appears when the infuser is communicating with the network using a wireless connection.




ICU Medical MedNet Connection – Appears when the infuser is communicating with ICU Medical MedNet software over either a wireless or Ethernet connection.







Battery Capacity – Shows the battery charge level when a battery is installed in the infuser, or indicates that a battery is not installed.

To maintain maximum battery charge and to prolong battery life, connect the infuser to AC (mains) power whenever possible.

Set Up PlumSet™







- 1 Prime the set according to package instructions.
- 2 Push in flow regulator to close.
- 3 Insert primed cassette into the infuser, close door.
- 4 Press  [ON/OFF] to turn on the infuser.

Clinical Care Area (CCA) Selection

- 1 Use  to highlight the desired CCA.
- 2 After you select the desired CCA, press  [Choose].
- 3 The on-screen message “New Patient” may appear – press  [Yes] to clear all settings or  [No] to continue.

NOTE: If no settings currently exist or all settings are 0, this screen will be bypassed.

Change CCA During Infusion

- 1 On the Delivery (A/B) screen, press  [Settings/Vol/CCA].
- 2 Press  [Change CCA].
 - ▶ The current CCA is indicated by arrows before and after the CCA.
- 3 Use the [SELECT]  or  to highlight the new CCA.
- 4 Press  [Choose].
- 5 Press  [Previous Screen].







NOTE: New CCA is highlighted at the bottom of the screen.

NOTE: When the Delivery screen displays, the infuser will inform the user that line is delivering under a prior CCA. Until a VTBI Complete alarm occurs for the line, you can still titrate the infusion on that line under the old CCA.

Programming Line A/B with a Custom Drug Library

- 1 On the Delivery (A/B) screen, select a line to program. If you are programming a primary delivery, select Line A. If you are programming a secondary delivery, select Line B.
- 2 In the drug list, select the drug – You may use the alphanumeric keypad to search.
- 3 Select a clinical use (if applicable).
- 4 Enter Weight (if applicable), Rate and/or Dose, VTBI, and Duration as appropriate for the displayed program parameters. These values can be entered in any order.

 **CAUTION: BEFORE STARTING DELIVERY, VERIFY THE VALUES.**


- 5 Press  [START].
- 6 Confirm the program.
- 7 Press  [Yes] to start the infusion.
 - › If a maximum hard limit is exceeded, an alert appears. You cannot proceed until the entry is cleared. Press the  [C] key to clear the entry and enter a new value.
 - › If a soft limit is exceeded, an alert appears when  [START] is pressed to confirm the program.
 - › When the alert displays:
 - Select  [Yes] to override and continue to the confirmation screen.
or
 - Select  [No] to return to the program screen and edit the value.

When programming Line B with a non-Piggybackable drug (as defined in the Custom Drug Library), the delivery mode for Line B defaults to Concurrent and cannot be changed.



If there is a confirmed program on Line A with a drug that is non-interruptible when programming Line B, the delivery mode for Line B will default to Concurrent and cannot be changed.

If Line A is not programmed, or is programmed with a drug that is interruptible, and the drug selected on Line B is Piggybackable, select Piggyback or Concurrent as the delivery mode (the default is Piggyback).


Programming Line A/B without a Drug List

- 1 On the Delivery (A/B) Screen, select a line to program. If you are programming a primary delivery, select Line A. If you are programming a secondary delivery, select Line B.
- 2 On the Program screen, enter the Rate, VTBI and Duration. Values can be entered in any order.
 - › A Caution Symbol will appear  on the Confirm Program screen that alerts you that the infuser is being operated without rule sets.

 CAUTION: BEFORE STARTING DELIVERY, VERIFY THE VALUES.

- 3 Press  [START].
 - › Before starting delivery, verify the values.
- 4 Press  [Yes] to start delivery.

Programming a Bolus (with ICU Medical MedNet Safety Software only)

- › A Bolus can be delivered from either Line A or Line B (while in the piggyback mode).
 - › A Bolus can be completed only if the following conditions are present:
 - The line on which the bolus is to be delivered is currently infusing
 - Bolus Dose is enabled within the medication's selected profile
 - Rule Sets permit the medication to be delivered by bolus
 - There is adequate VTBI of the medication to complete the bolus dose
 - The device is in Piggyback mode (not Concurrent mode) if the bolus is to be delivered on Line B
- 1 Press  [A].

- 2 Press ▲ [Bolus]. The Bolus softkey is available only if the medication to be bolused is enabled in the drug library and is currently infusing.
- 3 On the Bolus programming screen enter:

Dose: _____

Duration: _____

The Rate and VTBI will be calculated.

- 4 Press ⬇ [START] for confirmation.
- 5 Select ▲ [Yes] to start the delivery.

Nurse Callback

- 1 On the programming screen, press ▲ [Add Callback].
- 2 Press ⬇ [START] and confirm your order for accuracy.
- 3 Press ▲ [Yes] to start delivery.

Callback is available for Piggyback, Loading Dose, Multistep and Bolus deliveries.

Titrate Rate on Line A/B





- 1 On the Delivery (A/B) screen, select ▲ [A] or [B] – Line does not have to be stopped to titrate Rate.
- 2 Enter a new Rate/Dose.
- 3 Press ⬇ [START] and confirm your order for accuracy.
- 4 Press ▲ [Yes] to start the titration.

Address VTBI Complete Alarm


Upon completion of delivery, the screen shows a flashing “VTBI completed Line A!

–
Add more VTBI or Clear Line A” message and the audible alarm sounds.

You can change the default setting to one of the following:


- **KVO:** The infuser continues to deliver fluid at a Keep Vein Open (KVO) rate of 1 mL/hr. If the delivery rate of the infusion that just completed was less than 1 mL/hr, the KVO rate will continue at the same delivery rate.
 - **RATE:** The infuser continues to deliver fluid at the programmed rate, maintaining the therapeutic rate until the VTBI Complete alarm can be resolved.
- 1 Press  [AUDIO PAUSED] to stop the alarm sound.
 - 2 Press  [A].
 - 3 Ensure the VTBI field is highlighted – using the numeric keypad, enter a new VTBI.
 - 4 Press  [START] and confirm your order for accuracy.
 - 5 Press  [Yes] to start the titration.

Backprime



Before you begin a backprime, ensure that there is a line or a syringe on the secondary port to accept the backprimed fluid or expelled air. When you release  [Backprime] the infuser performs a cassette test.

- 1 Press and hold  [Backprime] until fluid pumped from Line A to Line B clears air from the cassette and from Line B (if present).





NOTE: If you press and hold the [Backprime] key for two minutes, a stuck key alarm sounds and the display screen shows Power Off then On. Replace pump if alarm continues.

- 2 If the cassette test detects that there is still air in the line, repeat Step1 until the cassette test is successful.
 - 3 Press  [START] to restart the delivery. If two lines were pumping when delivery stopped, press the appropriate softkey in response to the prompt.
-

Stop and Start with 1 Line Pumping

- 1 On the Delivery (A/B) screen, press  [STOP].
 - 2 Press  [START] to resume the infusion.
-

Stop and Start when Line A and B Pumping

- 1 On the Delivery (A/B) screen, press  [STOP].
- 2 Press  [Stop All] or  [Stop A] or  [Stop B].

To Resume the infusion:

- 1 Press  [START].
- 2 Press  [Start All] or  [Start A] or  [Start B].

Standby – A/B Delivery Screen and Confirmation Screen

Standby – Enables the clinician to postpone starting the delivery for a period of 24-72 hours. Default is 72 hours.

If a line is in standby and the configured maximum standby time expires, the program is cleared and the infuser alarms 2 minutes later if there has been no interaction with the pump on either line.

To place the infusion in Standby – from the Delivery Screen:

- 1 Press ▲ [Standby] and select the desired line to put in standby mode.
- 2 On the Confirm Standby screen – press ▲ [Yes]

To place the infusion in Standby – from the Confirmation Screen:

After entering program on desired line, press ◀ [START]. From the Confirm Program Screen:

- 1 Press ▲ [Standby] and select the desired line to put in standby mode.
- 2 On the Confirm Standby screen, press ▲ [Yes] to put the delivery in standby mode.

To restart the infusion from Standby:

- 1 Press ◀ [START].

The Cancel Standby screen displays. If both lines are in standby, the infuser will give you the option to select a line.

- 2 Select the appropriate softkey. Delivery resumes on the selected line(s).

| A | PUMPING | PUMPING | B |
|-----------------------------|------------|------------------|------------------------|
| DOPamine (Stnd) | | No Drug Selected | |
| 400 mg 250 mL | | 500 mg 250 mL | |
| ▲ | 20 | Dose | 5 ▲ |
| | mcg/kg/min | | mg/min |
| 45 | Rate | 120 | |
| | mL/hr | | |
| 10 | Vol Inf | 3.3 | |
| | mL | | |
| Medical ICU1 | | | |
| Select Line A/B to program. | | | |
| Select TOP Key to Clear? | | | |
| Standby | A | B | Settings/ Volts/CCA |

| A | Confirm Program | |
|---------------------|------------------|----|
| DOPamine(CARDIAC) | | |
| Conc | 400 mg 250 mL | |
| Weight | 60 kg | |
| Dose | 10 mcg/kg/min | |
| Rate | 22.5 mL/hr | |
| VTBI | 250 mL | |
| Duration | 11 : 06 hr : min | |
| Medical ICU1 | | |
| Yes: Start delivery | | |
| No: Edit | | |
| Yes | Standby | No |

Delayed Start

- 1 On the Program screen, press ▲ [Delay].
 - 2 Enter time in hours and minutes up to 23:59 hh:mm and press ▲ [Done]. Delivery screen shows DELAYED and delay time countdown.
 - 3 Press ⏻ [START] and ▲ [Yes] to confirm to resume the infusion.
 - 4 To clear a delay, choose the line, press ▲ [Delay], then change or clear the delay settings, then press ▲ [Done].
-

Loading Dose

- 1 After your medication is selected, press ▲ [Choose].
- 2 Press ▲ [Loading Dose] before entering any values on the programming screen. The Program Loading Dose screen appears.
- 3 Enter Rate and/or Dose, VTBI, and Duration as appropriate for the parameters displayed for 1 (Loading Dose).
NOTE: On the Program Loading Dose screen, 1 represents the Loading Dose and 2 represents the Maintenance Dose.
- 4 After completely programming 1 (Loading Dose) navigate to 2 (Maintenance Dose) and program the Maintenance Dose parameters.
- 5 When both Loading Dose and Maintenance Dose are programmed, press ⏻ [START].
- 6 Confirm that all programming is correct, and then press ▲ [Yes].

Multistep

- 1 After your medication is highlighted, press ▲ [Choose].
 - 2 Press ▲ [Multistep] before entering any values on the programming screen.
 - 3 Enter Rate and/or Dose, VTBI, and Duration as appropriate for the parameters displayed for Step 1.
 - 4 After programming all values in 1 (Step 1), navigate to the 2 (Step 2), and program that step.
 - 5 After programming all values in 2 (Step 2), continue with 3 (Step 3) if desired.
 - 6 Press ▲ [To Steps 4-10] to program additional steps if needed.
 - 7 When all steps are programmed, press ◀ [START].
 - 8 Confirm that all programming is correct, and then press ▲ [Yes] to start the delivery for 1 (Step 1).
-

Lock Keypad (Method #1)

Using the Lock Keypad hardkey.

- 1 Press the 🔒 [LOCK KEYPAD] hardkey.
- 2 The Passcode data entry screen appears on the display.
- 3 Enter the passcode using the numeric keypad.
- 4 Press the ▲ [Enter] softkey.

When the keypad is locked, the lock symbol 🔒 appears in the bottom right corner of the delivery screen.

Lock Keypad (Method #2)

Via Settings/Vols/CCA

- 1 At the main delivery screen, press **[Settings/Vols/CCA]** softkey.
- 2 Press **▲ [Lock Keypad]** – the Passcode data entry screen appears on the display.
- 3 Enter Passcode to Lock using the numeric keypad.
- 4 Press **▲ [Enter]** softkey.

When the keypad is locked, the lock symbol  appears in the bottom right corner of the delivery screen.

Unlock the Keypad

- 1 Press any key on the keypad to display the Passcode data entry screen.
- 2 Enter the passcode using the numeric keypad.
- 3 Press the **▲ [Enter]** softkey.

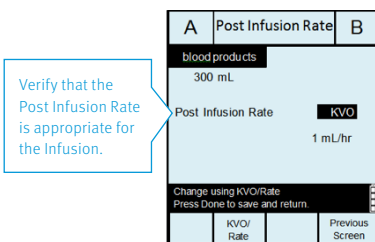
NOTE: During an infusion, pressing  **[STOP]** or opening the cassette door, activates an alarm that cannot be silenced until the keypad is unlocked.

Set the Post Infusion Rate

NOTE: Prior to changing the Post Infusion Rate, the pump must be stopped.

- 1 On the Main Delivery screen, press ▲ [Settings/Vols/CCA]. The Settings/Vols/CCA screen appears, with the Post Infusion Rate highlighted.
- 2 Press ▲ [Choose]. The Post Infusion Rate screen appears, with the current setting highlighted.
- 3 To change the current setting, press ▲ [KVO/Rate]. To return to the previous setting, press ▲ [KVO/Rate] again.
- 4 Press ▲ [Done] to save your changes and return to the Settings/Vols/CCA screen and then press ▲ [Previous Screen] to return to the delivery screen.

NOTE: When changing the Post Infusion Rate from what is defaulted on the device, the new change will remain in place for any subsequent infusions programmed on the device unless manually changed back or, when powering the device back ON and ▲ [Yes] is answered to the “New Patient?” screen.



View/Clear Volumes Infused

- 1 On the Main Delivery screen, press ▲ [Settings/Vols/CCA].
- 2 Use [SELECT] to highlight Volumes Infused and then press ▲ [Choose].
 - › The Volumes Infused Screen displays the volumes infused on Line A, Line B and the total infused.
- 3 Document totals.
- 4 Press ▲ [Clear A] to clear the Line A total only (and subtract the total from the Total Volume).
- 5 Press ▲ [Clear B] to clear the Line B total only (and subtract the total from the Total Volume).

- 6 Press ▲ **[Clear Total]** to clear all values, including the Total Volume.
- 7 To return to the Settings/Vols/CCA screen, press ▲ **[Previous Screen]**. If you do not press a key in 30 seconds, the Delivery screen automatically returns.

NOTE: The volumes infused may be cleared before a cassette is inserted.

Adjust Display Lighting and Contrast

- 1 On the Main Delivery screen, press ▲ **[Settings/Vols/CCA]**.
 - 2 Use **[SELECT]** to highlight Lighting/Contrast and press ▲ **[Choose]**. The Lighting/Contrast screen appears, with the Backlight Intensity highlighted.
 - 3 Use ▲ **[Increase Setting]** and ▲ **[Decrease Setting]** to adjust the backlight intensity.
 - 4 Press **[SELECT]** to highlight Display Contrast.
 - 5 Use ▲ **[Increase Setting]** and ▲ **[Decrease Setting]** to adjust the display contrast.
 - 6 Press ▲ **[Done]** to save the current settings and return to the Settings/Vols/CCA screen or press ▲ **[Previous Screen]** to leave this screen without saving changes.
 - 7 Press ▲ **[Previous Screen]** to return to the Settings/Vols/CCA screen.
-


View CCA and Infuser Settings

- 1 On the Main Delivery screen, press ▲ **[Settings/Vols/CCA]**.
- 2 Select ▲ **[CCA Settings]** and press ▲ **[Choose]**. The CCA Settings screen displays.
- 3 Press ▲ **[Page Up]** and ▲ **[Page Down]** to view all the CCA and infuser settings.
- 4 When finished, press ▲ **[Previous Screen]** to return to the Settings/Vols/CCA screen. Press ▲ **[Previous Screen]** again to return to the delivery screen.

Set Distal Pressure Alarm Limit

NOTE: Prior to changing the Distal Pressure Alarm Limit, the infuser must be stopped.


- 1 On the Main Delivery screen, press ▲ [Settings/Vols/CCA].
- 2 Use [SELECT] to highlight Distal Pressure Alarm Limit and press ▲ [Choose]. Change the Distal Pressure Alarm Limit.

 **CAUTION:** Do not set the distal pressure alarm level lower than 3 PSI (155 mmHG) or higher than 12 psi (624 mmHG). Setting the alarm outside of that range may result in unreliable alarm functioning.

- 3 Use the keypad to press ▲ [Done] to save your changes and return to the Settings/Vols/CCA screen or press ▲ [Previous Screen] to view the settings without making changes.
 - 4 Press ▲ [Previous Screen] to return to the Main Delivery screen.
-


Discontinue Electronic Flow Control and Setting Gravity Flow

 **WARNING:** Close all clamps before opening the cassette door

- 1 Press  [STOP]. If two lines were pumping, press ▲ [Stop All].
- 2 Press ▲ [ON/OFF] to turn off the infuser.
- 3 Close all clamps.
- 4 Open the cassette door and remove the cassette.

- 5 If only 1 line was pumping, open all clamps.
If 2 lines were pumping, you must choose one line for gravity flow. Open the clamps on that proximal line and on the distal line. Make sure one proximal line stays clamped.
- 6 Holding the cassette upright, set gravity flow by turning the flow regulator counter-clockwise.
- 7 Check the drip chamber to measure the flow rate. Refer to the administration set package for number of drops/mL.

Discontinue Fluid Administration

- 1 Press  [STOP]. If two lines are pumping, press [Stop All].
- 2 Press [ON/OFF] to turn off the infuser.
- 3 Close all clamps.
- 4 Detach the distal line from the patient access device.
- 5 Open the cassette door and remove the cassette.
- 6 Close the cassette door.
- 7 Discard the set and fluid container per hospital policy/procedure.

Alarms and Troubleshooting

The Plum 360 infuser has an intelligent alarm system that handles more than one alarm at a time. Alarms are prioritized as high, medium, or low. You can distinguish the priority by the number of beeps:


| Priority | Number of Beeps |
|----------|-----------------|
| High | 10 |
| Medium | 3 |
| Low | 2 |

High Priority Alarms

| Alarm Message and Priority | Possible Cause | Corrective Action |
|---|---|--|
| <p>Power Off then On. Replace pump if alarm continues.</p> <p>High Various E### Alarms</p> | Malfunction. | Power the infuser off, and then on. Replace infuser if this does not clear the alarm. |
| <p>Replace pump. Audio alarm failure.</p> <p>High E301</p> | Audio alarm is OFF but sensed ON, or ON but sensed OFF. | Power off the infuser. |
| <p>Replace pump. Backlight failure.</p> <p>High E302</p> | Backlight voltage out of range during operation. | Power off the infuser. |
| <p>Line B VTBI complete in prior CCA! Press STOP key.</p> <p>High N160</p> | Line B delivery VTBI=0; the line was programmed under a different CCA than the CCA currently used; and Line B has a Concurrent delivery programmed. | Stop the delivery on Line B or open the cassette door. |
| <p>Distal OCCLUSION! Resolve then Backprime.</p> <p>High N180</p> | Distal occlusion detected while attempting to backprime or during cassette check. | Examine the distal line for kinks. Resolve the distal occlusion and then either backprime or open and close the cassette door. |

| | | |
|--|--|---|
| <p>Distal OCCLUSION! Check IV line and site.</p> <p>High N186</p> | <p>A distal occlusion is detected and either the maximum auto-restarts have occurred for the infusion or auto-restart was set to zero.</p> | <p>Examine the distal line for kinks and correct any found. Restart the delivery.</p> <p>NOTE: The alarm can also be cleared by clearing the confirmed programs on any programmed line or opening the cassette door.</p> <p>See section in SOM on Avoiding a Bolus While Resolving a Distal Occlusion.</p> |
|--|--|---|

 **WARNING:** The Plum 360 infuser does not have capability to detect infiltration to the patient

| | | |
|--|--|---|
| <p>Pump too high above patient. Lower pump or replace set.</p> <p>High N187</p> | <p>Distal occlusion detected during delivery due to too much backpressure.</p> | <p>Resolve the occlusion by lowering the infuser on the pole to place it closer to the level of the patient's heart (see section on Delivery Accuracy in SOM) and then press  [START].</p> <p>NOTE: The alarm can also be cleared by clearing the confirmed programs on any programmed line or opening the cassette door.</p> |
|--|--|---|

| | | |
|--|--|---|
| <p>Data was cleared. Re-enter all programming.</p> <p>High N103</p> | <p>Corruption of retained delivery parameters is detected. Autoclear of SEEP requires fresh delivery setup.</p> | <p>Acknowledge the alarm.</p> |
| <p>Distal AIR! Disconnect/reprime. Press START.</p> <p>High N233/N234</p> | <p>The single air bolus or the cumulative air detected at the distal sensor exceeds the air detection threshold.</p> | <p>Open the cassette door. Clear programs. See section in SOM on Resolving a Distal Air-In-Line Alarm.</p> |
| <p>Door opened! Infusion stopped! Close Door.</p> <p>High N250</p> | <p>The cassette door was opened during a delivery.</p> | <p>Close the cassette door with the cassette inserted.</p> |
| <p>Cassette test failure! Check set.</p> <p>High N251</p> | <p>Faulty cassette, proximal or distal occlusion, or air was detected in the cassette during the cassette test.</p> | <p>Resolve occlusion and then open and close the cassette door. Press ▲ [Backprime]. Replace administration set.</p> |
| <p>Depleted Battery! Plug into AC now!</p> <p>High N252</p> | <p>The infuser is running on battery power and the battery voltage is below the depleted battery threshold.</p> <p>A 3 minute shut down sequence begins.</p> | <p>Plug into an AC (mains) power source.</p> <p>After plugging the device in, the pump will automatically reboot.</p> |
| <p>Keypad locked. Enter code to disable.</p> <p>High N255</p> | <p>While the keypad was locked, someone pressed ⊘ [STOP] or opened the cassette door during delivery.</p> | <p>Enter valid keypad unlock code.</p> |


Medium Priority Alarms

| Alarm Message and Priority | Possible Cause | Corrective Action |
|---|--|---|
| <p>Door opened! Delayed Start! Close Door.</p> <p>Medium N108</p> | <p>The cassette door was opened while an infusion was in Delayed Start.</p> | <p>Close the cassette door with cassette inserted.</p> |
| <p>Distal OCCLUSION - Paused! Attempting restart.</p> <p>Medium N192</p> | <p>A distal occlusion was detected and the maximum number of autoresets is configured but has not occurred for the infusion.</p> | <p>Examine the distal line for kinks and correct any found. No action is necessary if the patient can resolve the alarm condition within 60 seconds of activation (for example, moving an arm to eliminate the occlusion) before the maximum retry number is reached. Open the cassette door.</p> |

Low Priority Alarms



| Alarm Message and Priority | Possible Cause | Corrective Action |
|---|--|--|
| Keep Plugged into AC! Service battery/replace pump. Low N56/N57 | The battery or battery charge circuitry needs servicing. | Power off the infuser. Replace the infuser as soon as possible, so that it can be sent for repair. |
| Power Off then On. Replace pump if alarm continues. Low E325 | Battery voltage is greater than the expected limit. | Power off the infuser. |
| Low Battery! Plug into AC power! Low N58 | The battery charge level is low. | Plug into AC (mains) power. |
| Programming not complete! Action required! Low N102 | No operator input for two minutes after the infuser is powered on in Clinical mode, except for situations that trigger an alarm. | Press any hardkey or softkey except the hardkey that silences alarms. |

Line A – High Priority Alarms

| Alarm Message and Priority | Possible Cause | Corrective Action |
|---|--|--|
| <p>No Action Alarm! Start or Clear Line A.</p> <p>High N101</p> | <p>No operator action for 2 minutes when Line A has been stopped by the user and is not cleared or restarted.</p> <p>NOTE: Will reassert if the condition persists.</p> | <p>Press any key on the infuser except  [AUDIO PAUSED]. Select Line A to program or clear it.</p> |
| <p>Line A VTBI complete in prior CCA! Press STOP key.</p> <p>High N161</p> | <p>Line A was programmed under a different CCA than is currently being used and delivery is complete.</p> | <p>Stop the delivery on Line A. Open cassette door.</p> |
| <p>VTBI Completed Line A! Add more VTBI or Clear A.</p> <p>High N161</p> | <p>Line A delivery is complete and line was programmed under the CCA that is currently being used.</p> | <p>Add VTBI on Line A. Stop Line A. Open cassette door.</p> |


| | | |
|---|--|---|
| <p>Proximal OCCLUSION A! Check Line A.</p> <p>High N190/N191</p> | <p>Proximal occlusion or air detected on Line A during delivery.</p> | <p>Examine the proximal line for kinks and correct any found. If the occlusion is caused by a closed clamp, open the clamp. If all clamps are open, the alarm may be caused by excessive air that is creating backpressure in the cassette. To remove air, see section in SOM on Backpriming. Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines. Restart Line A.</p> <p>NOTE: The alarm can also be cleared by clearing the confirmed programs on any programmed line or opening the cassette door.</p> |
| <p>Proximal AIR Line A! Backprime.</p> <p>High N232</p> | <p>The single air bolus detected at the proximal sensor in Line A exceeds the air detection threshold.</p> | <p>Press ▲ [Backprime]. See section in SOM on Backpriming. Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines.</p> |

Line A – Medium Priority Alarms

| Alarm Message and Priority | Possible Cause | Corrective Action |
|--|--|---|
| <p>Callback to Line A! Silence audio to clear.</p> <p>Medium N105</p> | <p>A Callback Alarm was programmed for Line A, and the VTBI for Line A reaches 0 for a Loading Dose or any step in a multistep therapy except the last step.</p> | <p>Press  [AUDIO PAUSED].</p> |
| <p>Proximal OCCLUSION A! Resolve then Backprime.</p> <p>Medium N184</p> | <p>Proximal occlusion was detected on Line A during backprime.</p> | <p>Examine Line A for kinks. Resolve the occlusion. Either backprime or open and close the cassette door. Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines.</p> |
| <p>Bolus complete on Line A! Silence audio to clear.</p> <p>Medium N107</p> | <p>Bolus delivery completes on Line A and a Nurse Callback was configured.</p> | <p>Press  [AUDIO PAUSED].</p> |

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| <p>Proximal OCCLUSION A Startup! Open/close door or Backprime.</p> <p>Medium N185</p> | <p>A proximal occlusion was detected on Line A during the cassette integrity test.</p> | <p>Examine Line A for kinks. Resolve the occlusion. Either backprime or open and close the cassette door. See section in SOM on Opening the Cassette Door Completely. Check syringe size. See section in SOM on Administration Sets and Accessories Guidelines.</p> |
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Line B – High Priority Alarms


| Alarm Message and Priority | Possible Cause | Corrective Action |
|---|--|--|
| <p>No Action Alarm! Start or Clear Line B.</p> <p>High N101</p> | <p>No operator action for 2 minutes when Line B has been stopped by the user and is not cleared or restarted.</p> <p>NOTE: Will reassert if the condition persists.</p> | <p>Press any key on the infuser except  [AUDIO PAUSED]. Select Line B to program or clear it.</p> |
| <p>Line B VTBI complete in prior CCA! Clear Line B.</p> <p>High N160</p> | <p>A Line B Piggyback delivery that was programmed under a different CCA is complete, and no delivery is programmed on Line A.</p> | <p>Clear the delivery on Line B or open the cassette door.</p> |

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| <p>VTBI Completed Line B! Add more VTBI or Clear B.</p> <p>High N160</p> | <p>A Piggyback delivery on Line B is complete and the line was programmed under the current CCA and no delivery is programmed to deliver on Line A.</p> <p>NOTE: Piggyback with a Line A delivery will not alarm; it will just transition to Line A delivery.</p> | <p>Add VTBI on Line B. Clear program on Line B. Open the cassette door.</p> |
| <p>VTBI Completed Line B! Add more VTBI or Clear B.</p> <p>High N160</p> | <p>A Concurrent delivery on Line B is complete and the Line was programmed under the current CCA.</p> | <p>Add VTBI on Line B. Stop delivery on Line B. Open the cassette door.</p> |
| <p>Proximal OCCLUSION B! Resolve then backprime.</p> <p>High N183</p> | <p>Proximal occlusion detected on Line B during backprime.</p> | <p>Examine Line B for kinks. Make sure a line or syringe is attached to the secondary port and that the line is unclamped or the syringe has enough free space to accept the backprimed fluid. Either backprime or open and close the cassette door. See section in SOM on Backpriming to remove the air. Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines.</p> |

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| <p>Proximal OCCLUSION B! Check Line B.</p> <p>High N188/N189</p> | <p>Proximal occlusion detected on Line B during delivery.</p> | <p>Examine the proximal line for kinks and correct any found.</p> <p>Restart Line B.</p> <p>NOTE: The alarm can also be cleared by clearing the confirmed program or opening the cassette door.</p> |
| <p>Proximal AIR Line B! Backprime.</p> <p>High N231</p> | <p>The single air bolus detected at the proximal sensor in Line B exceeds the air detection threshold.</p> | <p>Press ▲ [Backprime]. See section in SOM on Backpriming. Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines.</p> |

Line B – Medium Priority Alarms



| Alarm Message and Priority | Possible Cause | Corrective Action |
|--|--|--|
| <p>Callback to Line B! Silence audio to clear.</p> <p>Medium N104</p> | <p>A Callback Alarm was programmed for Line B which is in Piggyback mode, Line A is programmed to resume when Line B completes, and the VTBI for Line B reaches 0 for a Piggyback therapy, Loading Dose, Maintenance Dose or any step in a multistep therapy.</p> <p>OR</p> <p>A Callback Alarm was programmed for Line B, which is in Piggyback mode, Line A is not programmed to resume when Line B completes, and the VTBI for Line B reaches 0 for Loading Dose or any step in a multistep therapy except the last step.</p> <p>OR</p> <p>A Callback Alarm was programmed for Line B, which is in Concurrent mode, and the VTBI for Line B reaches 0 for a Loading Dose or any step in a multistep therapy except the last step.</p> | <p>Press  [AUDIO PAUSED].</p> |


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| <p>Proximal OCCLUSION B. Resolve then Backprime.</p> <p>Medium N183</p> | <p>Proximal occlusion detected on Line B during cassette integrity test.</p> | <p>Examine Line B for kinks. Make sure a line or syringe is attached to the secondary port and that the line is unclamped or the syringe has enough free space to accept the backprimed fluid. Either backprime or open and close the cassette door. Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines.</p> |
| <p>Bolus complete on Line B!</p> <p>Silence audio to clear.</p> <p>Medium N106</p> | <p>Bolus delivery completes on Line B and a Nurse Callback was configured.</p> | <p>Press  [AUDIO PAUSED].</p> |

Line A and B – High Priority Alarms

| Alarm Message and Priority | Possible Cause | Corrective Action |
|--|--|---------------------------------|
| <p>No Action Alarm! Acknowledge Alert.</p> <p>High N101</p> | <p>Rate was recalculated; operator has not acknowledged the alert within 30 seconds.</p> | <p>Press a labeled softkey.</p> |

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| <p>Line not in STANDBY! Choose line(s) to Standby:</p> <p>High N101</p> | <p>No operator action for 15 seconds when the user has selected ▲ [Standby] when both lines are able to be put in standby, but has not selected a line (A, B or A & B) or selected ▲ [Cancel] to complete the action.</p> | <p>Press ▲ [Standby All], ▲ [Standby A], ▲ [Standby B], or ▲ [Cancel].</p> |
| <p>Delivery was not STOPPED! Choose line(s) to stop.</p> <p>High N101</p> | <p>No operator action for 15 seconds when the user has attempted to stop a delivery when both lines are delivering by pressing Ⓢ [STOP], but has not selected a line (A, B or A & B) or selected ▲ [Cancel] to complete the action.</p> | <p>Press ▲ [Stop All], ▲ [Stop A], ▲ [Stop B], or ▲ [Cancel].</p> |
| <p>Delivery was not STARTED! Choose line(s) to start.</p> <p>High N101</p> | <p>No operator action for 15 seconds when the user has attempted to start a delivery when both lines are confirmed by pressing Ⓢ [START], but has not selected a line (A, B or A & B) or selected ▲ [Cancel] to complete the action.</p> | <p>Press ▲ [Start All], ▲ [Start A], ▲ [Start B], or ▲ [Cancel].</p> |

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| <p>Yes: Start program No: Edit</p> <p>High N101</p> | <p>Standby is not possible and no operator action for 30 seconds when a titrated program is waiting to be confirmed.</p> | <p>Press ▲ [Yes] to confirm the program or ▲ [No] to go back to the Program screen.</p> |
| <p>No Action Alarm! Yes: Start No: Edit</p> <p>High N101</p> <p>NOTE: Standby is intentionally not included in the instruction text.</p> | <p>Standby is possible and no operator action for 2 minutes when a new program is waiting to be confirmed or placed into Standby.</p> | <p>Press ▲ [Yes] to confirm the program or ▲ [No] to go back to the Program screen, or press ▲ [Standby].</p> |
| <p>Yes: Start program No: Edit</p> <p>High N101</p> <p>NOTE: Standby is intentionally not included in the instruction text.</p> | <p>Standby is possible and no operator action for 30 seconds when a titrated program is waiting to be confirmed or placed into Standby.</p> | <p>Press ▲ [Yes] to confirm the program or ▲ [No] to go back to the Program screen, or press ▲ [Standby].</p> |
| <p>No Action Alarm! START: Confirm program</p> <p>High N101</p> | <p>No operator action for the 30 seconds when a line is titrated during infusion and the  [START] hardkey has not been pressed for a program that can be started.</p> <p>NOTE: A delivery cannot be started if it is in a concurrency violation. If it is in a concurrency violation, an alarm will occur.</p> | <p>Press  [START]. Press ▲ [Return to A/B].</p> |

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|---|--|---|
| <p>No Action Alarm! Yes: Override. No: Edit</p> <p>High N101</p> | <p>Soft limit override and no operator action for 2 minutes when a new program is waiting to be confirmed.</p> <p>OR</p> <p>Soft limit override and no operator action for 30 seconds when a titrated program is waiting to be confirmed.</p> | <p>Press ▲ [Yes] to confirm the program or ▲ [No] to go back to the Program screen.</p> |
| <p>No Action Alarm! Start or clear lines.</p> <p>High N101</p> | <p>No operator action for 2 minutes when both lines have been stopped by the user and not cleared or restarted.</p> <p>OR</p> <p>No operator action for 2 minutes after a Bolus has been cancelled (putting both lines into a stopped state).</p> <p>NOTE: Will reassert if the condition persists.</p> | <p>Press any hardkey except  [AUDIO PAUSED].</p> |
| <p>No Action Alarm! Yes: Start No: Edit</p> <p>High N101</p> | <p>Standby is not possible and there is no operator action for 2 minutes when a new program is waiting to be confirmed.</p> | <p>Press ▲ [Yes] or ▲ [No].</p> |

| Alarm Message and Priority | Possible Cause | Corrective Action |
|--|---|--|
| Proximal AIR! Backprime. High N230 | The cumulative air detected at the proximal sensors in Line A and Line B exceeds the air detection threshold. | Press ▲ [Backprime]. See section in SOM on Backpriming . Check the syringe size. See section in SOM on Administration Sets and Accessories Guidelines . |