

- **BSA OR** press **Calculate** to manually calculate BSA (if available)

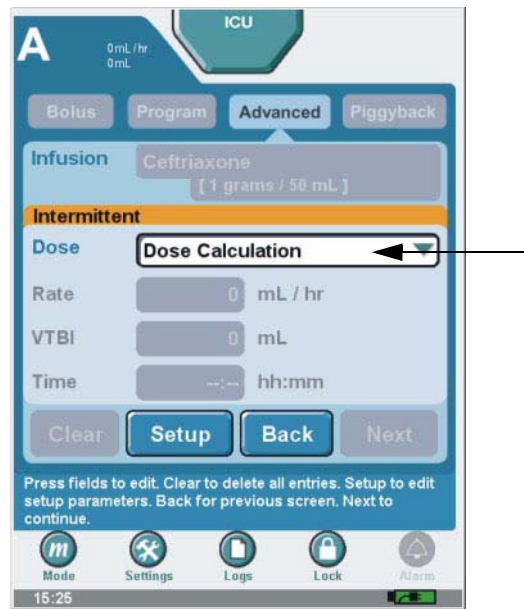


Figure 92: Intermittent Programming Screen

10. Press **Enter** to accept the dose. The rate is automatically calculated and appears in the rate field.

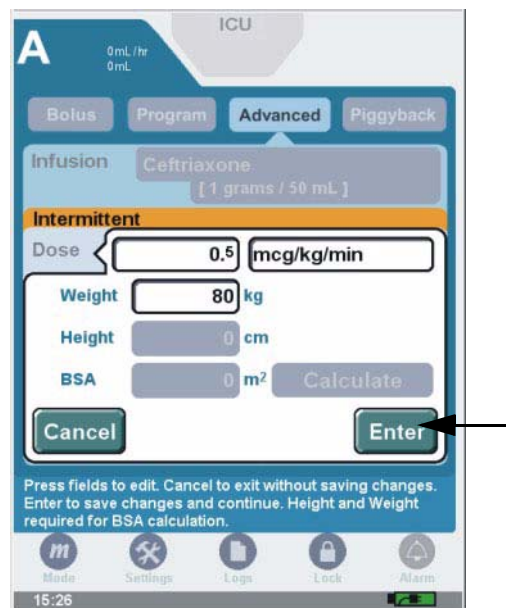


Figure 93: Intermittent Dose Calculation Screen

11. Press VTBI field (Volume to be infused) and enter the amount of fluid to be delivered. Time is automatically calculated.

Note: Entering two of the three programming parameters (Rate, VTBI, or Time) automatically calculates the third.

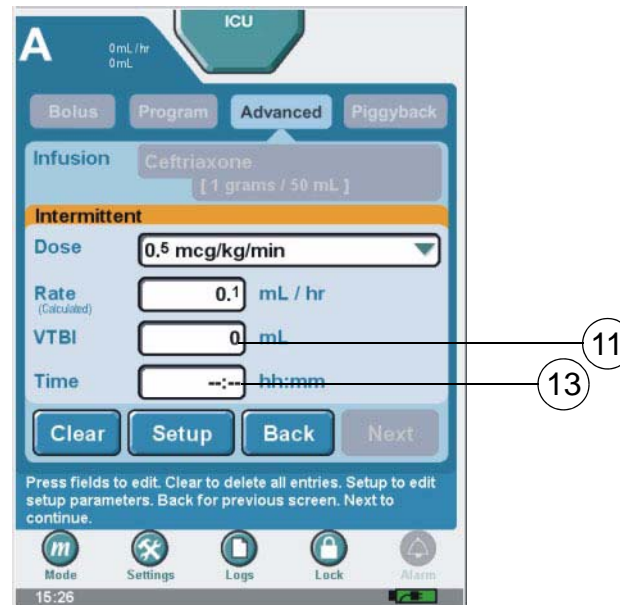


Figure 94: Intermittent Programming Screen

12. Press **Enter** to accept VTBI.
13. To enter Time—if required—press time field. Select **hours** (hh) or **minutes** (mm). Enter time period using numeric keypad. Press **Enter**.

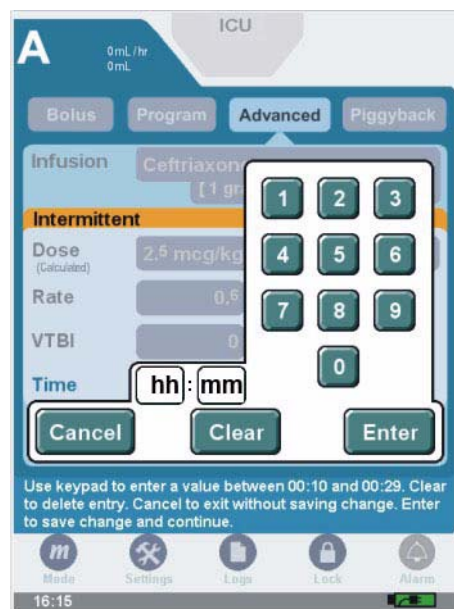


Figure 95: Time Numeric Keypad

14. When finished entering parameters on the **Intermittent Programming** screen, press **Next** to display the Confirm Intermittent screen.

Program-level buttons have the following functions:

- **Clear** restores default field values for current screen
- **Setup** displays the Intermittent Setup screen
- **Clear All** deletes entire program
- **Back** displays the Intermittent Setup screen

Press **Setup** to advance screen to access **Clear All**. **Clear All** deletes entire Intermittent program.

Note: User may enter KVO rate for continuous delivery between Intermittent cycles. See “Chapter 8: Program Options” for more detail.

15. Review the therapy parameters, and then press **Start Intermittent**.

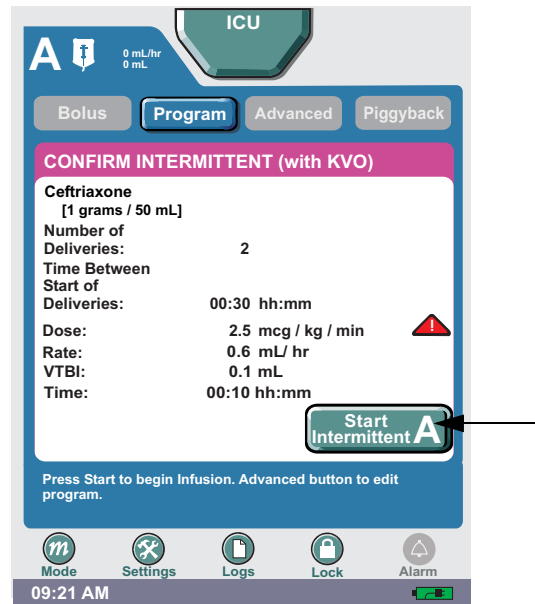


Figure 96: Confirm Intermittent Screen

16. The therapy begins and the Delivering screen displays with **DELIVERING INTERMITTENT Delivery X of Y** (where Y is the total number of programmed intervals) on the status line. To stop the therapy, press **Stop Program**.

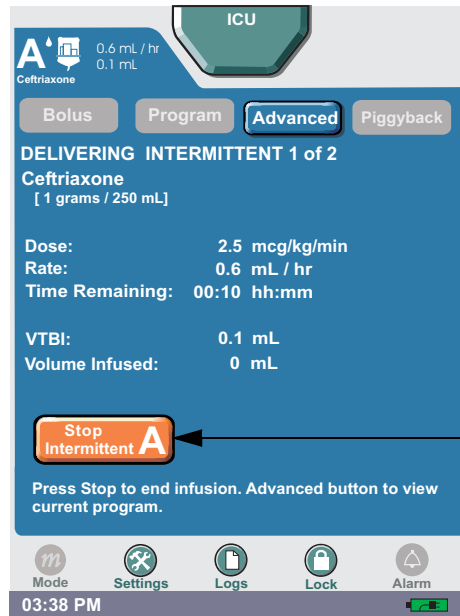


Figure 97: Delivering Intermittent Screen X of Y

Note: Between phases of an Intermittent therapy, **WAITING FOR INTERMITTENT X of Y** displays on the status line. Each additional phase of an Intermittent therapy updates the status line with **DELIVERING INTERMITTENT / X of Y**. Between phases of delivery, medication continues to infuse at KVO rate.



Figure 98: Waiting for Intermittent X of Y screen; Delivering Intermittent X of Y screen

17. When the Intermittent program completes and the VTBI is delivered, **COMPLETED INTERMITTENT** displays on the status line of the **Delivering** screen.

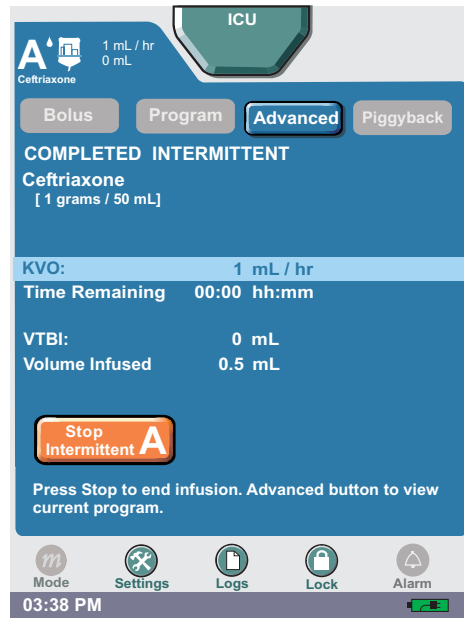


Figure 99: Completed Intermittent Screen

NOTES:

Chapter 8: Program Options

Options allows the selection of additional functions and alarms while infuser is stopped. **Options** button is available from any therapy programming screen. Press **Options** to access Options selection menu. Press up or down arrows on scroll bar to view available options. Press selectable fields to change an option. The following options may be changed by the user:

Deliver at End of Infusion

Press **Deliver at End of Infusion** and select **None**, **KVO**, or **Continue Rate**.

- Select KVO to change to KVO rate at end of infusion.
- Select Continue Rate to deliver programmed therapy rate at end of infusion.
- Select None for no delivery at end of infusion.

Press Done to accept change and exit Options menu.

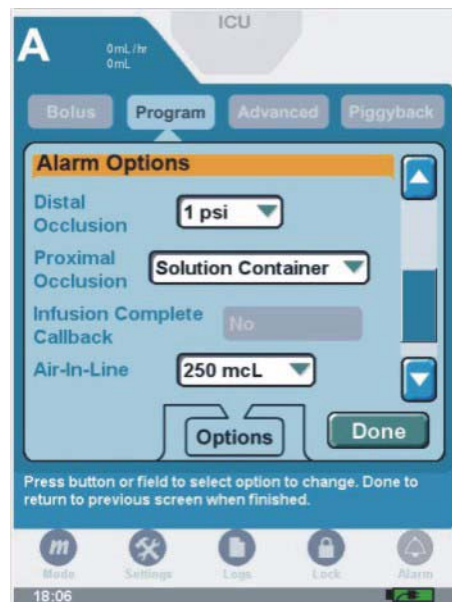


Figure 100: Options Menu screen

KVO Rate

Press **KVO Rate** and enter rate using numeric keypad. Press **Done** to accept change and exit Options menu.

Power Priming a Set

Power priming may be used to prime or remove air from an administration set. In general, the time required to power prime an administration set is:

- 60 seconds for a 72" microbore set

Note: Refer to the SYMBIQ™ administration sets labels for information regarding use with different flow rates.

- 3 minutes for a 72" macrobore set

WARNING: Always prime the administration set to remove air from the cassette, tubing, and injection sites prior to connecting to the patient. Always disconnect the administration set from the patient prior to priming or purging.

To power prime a cassette:

1. In the programming screen, fill in infusion information. When completed, press **Options** to display the Options screen.

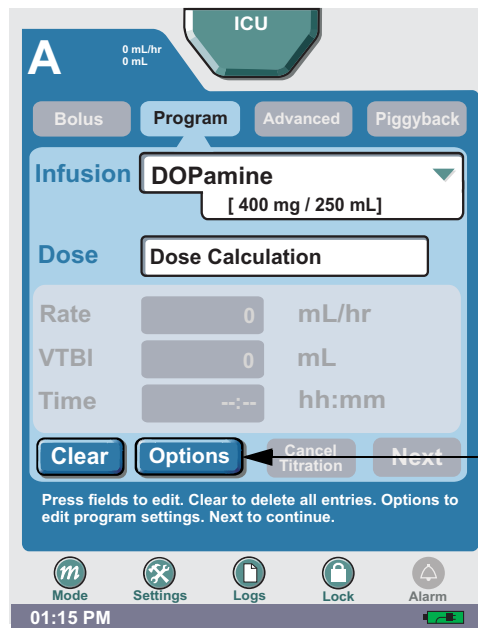


Figure 101: Programming Screen

- On the **Options** screen, press **Select Amount** under the Power Prime label.

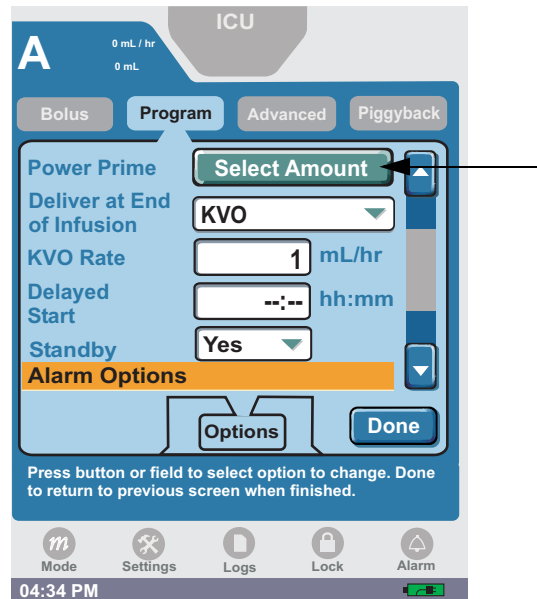


Figure 102: Options Screen

- The Disconnect Tubing system message activates reminding you to ensure the administration set is disconnected from the patient. Press **OK** to display the Power Prime screen.

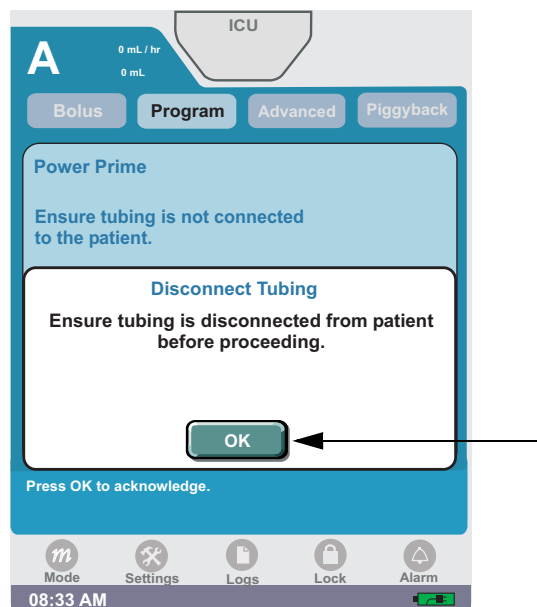


Figure 103: Disconnect Tubing System Message

- On the **Power Prime** screen, select one of these three priming options:
 - Prime 1 mL
 - Prime 3 mL
 - Prime 5 mL

Note: The power prime rate is 250 mL/hour.

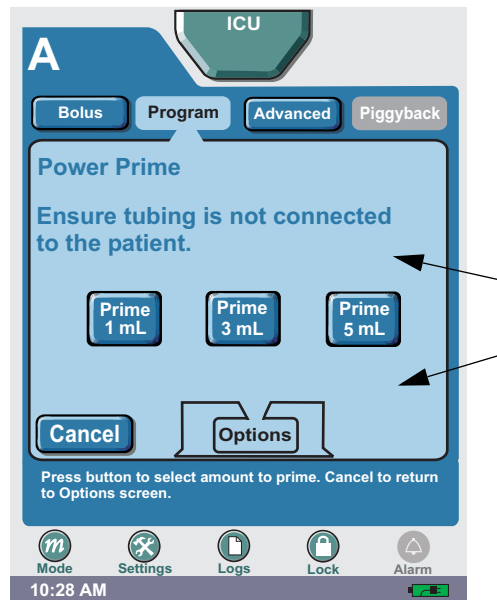


Figure 104: Power Prime Screen

5. The **Power Prime Progress** screen displays showing the cumulative amount of fluid primed measured in mL. To cancel priming, press **Cancel**.

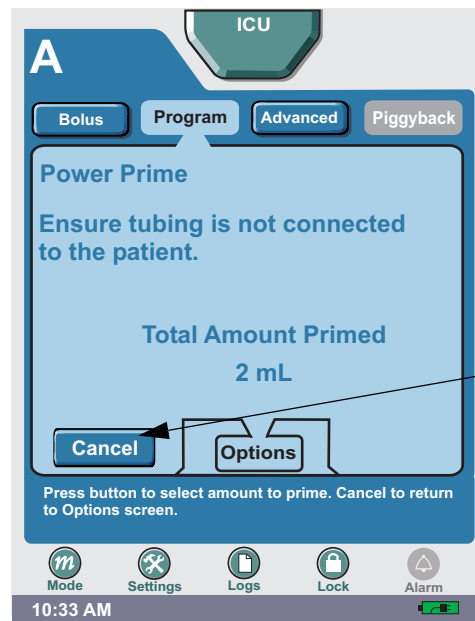


Figure 105: Power Prime Progress Screen

Note: 50 mL is the maximum total primed value allowed. If primed to 50 mL, the priming will stop and the total primed will display for 5 seconds. The Infuser will then return to the **Options** screen.

When priming finishes, press **Cancel** to return to the **Options** screen. See [Figure 102: "Options Screen" on page 107](#). Priming is complete when a steady drip of fluid is observed at the end of

administration set. Repeat Power Prime as often as necessary to obtain steady drip at end of tubing.

6. On the **Options** screen, press **Done** to return to the Programming screen. The power priming process is complete; continue entering program parameters as desired.

Note: If an occlusion occurs during power priming, priming stops and the infuser reverts to the Power Prime screen. Clear the occlusion and select one of the three power prime options to restart priming.

Delayed Start

You can delay the start of a programmed therapy (from one minute up to 12 hours) with the Delayed Start programming option. If allowed for the current program and enabled in the selected CCA, Delayed Start is available for all therapies. Once a therapy is started on a channel, Delayed Start is not available on that channel. You cannot select Delayed Start for a channel with an active alarm until the alarm is cleared.

To program a delayed start:

1. Press the **Delayed Start** field. Use numeric keypad to enter time period. Press **Done** to accept change and exit Options menu.

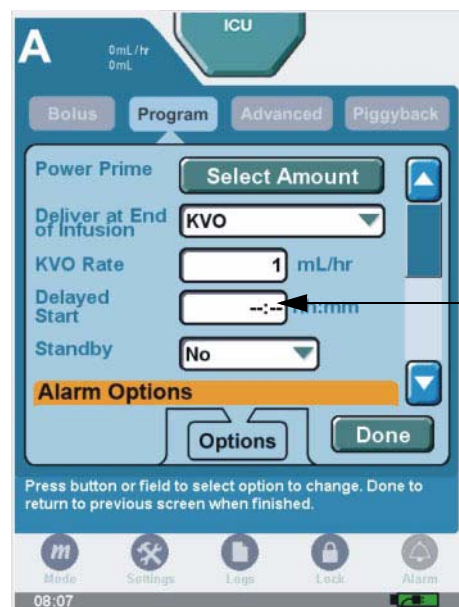


Figure 106: Options Screen

2. Press **Next** on the programming screen to display the Confirm Delayed Start screen.
3. Review the program parameters. Press the **Press Here to Confirm <Therapy> and Start Countdown for Delayed Start** button to display the Confirm Program screen.

4. The infuser starts therapy when the delayed start countdown reaches zero.
5. Press **Delayed Start** to start the therapy before the delayed start time elapses.

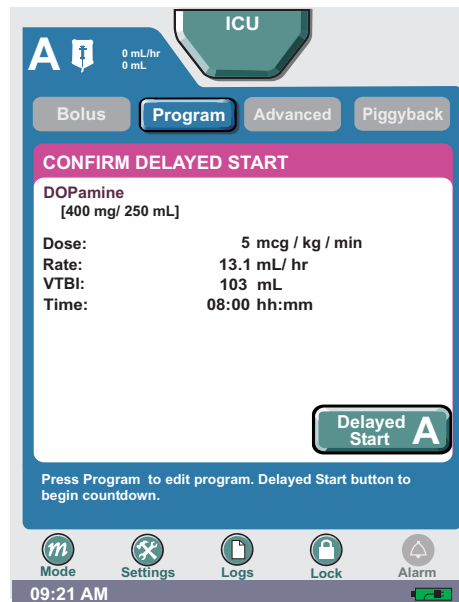


Figure 107: Delayed Start Confirmation Screen

Standby Mode

You can place the SYMBIQ™ Infusion System in Standby mode for up to 24 continuous hours before starting a programmed therapy. Standby is not available for Intermittent.

Standby can be selected anytime after programming a therapy except when infusing. You can also place the infuser in Standby mode without a cassette loaded if enabled in the defined device settings in the Drug Library.

If the infuser has been in Standby mode for 24 hours, all program settings are cleared, a message box displays confirming settings have been cleared.

To place an infuser in Standby mode:

1. Press the **Standby** field to display the Standby drop-down list.

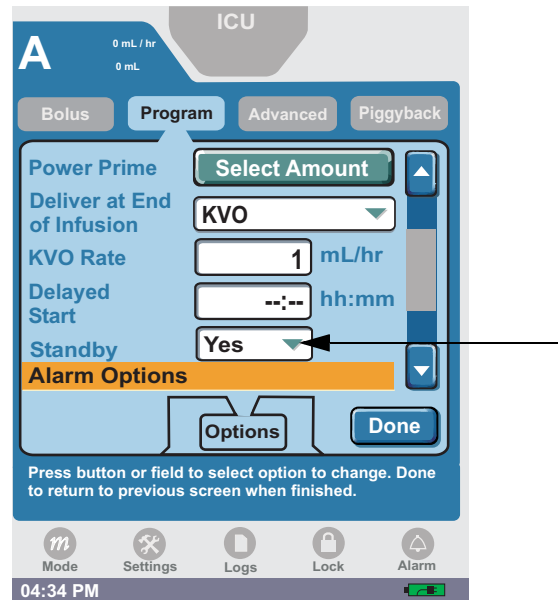


Figure 108: Options Screen

2. Press **Yes** to place the infuser in Standby mode or **No** to remove the infuser from Standby mode.

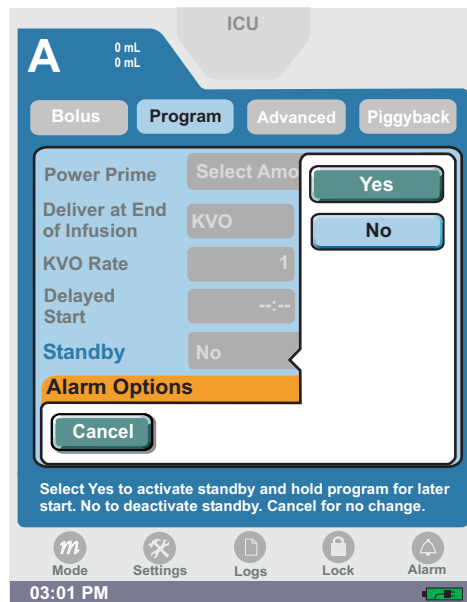


Figure 109: Standby Drop-Down List

3. Press **Done** to accept changes and return to the Programming screen.

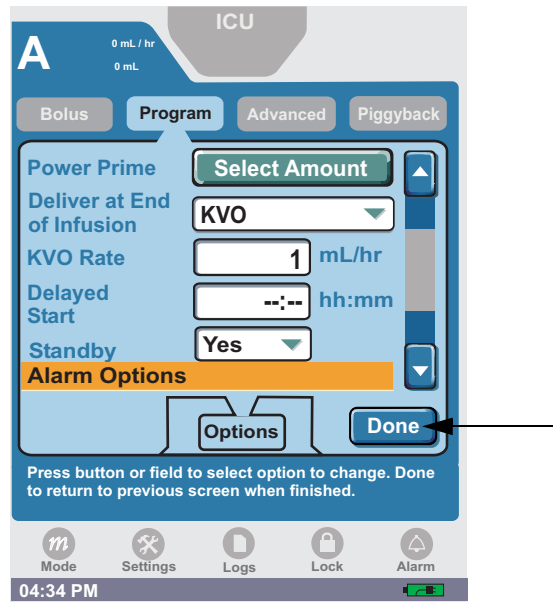


Figure 110: Options Screen

4. Press **Next** to display the Confirm Standby screen.
5. Review the program parameters. Press the **Standby** button to initiate Standby.
6. Press **Cancel Standby** to return to the Confirmation screen.
7. Press **Start** to begin infusion.

Alarm Options

Distal Occlusion

To select the Distal Occlusion alarm:

1. Use the vertical scroll bar to scroll down to the Alarm Options section, and then press the **Distal Occlusion** field.

Note: The unit of measure is either psi or mmHg as configured in the Drug Library from the facility's respective CCA.

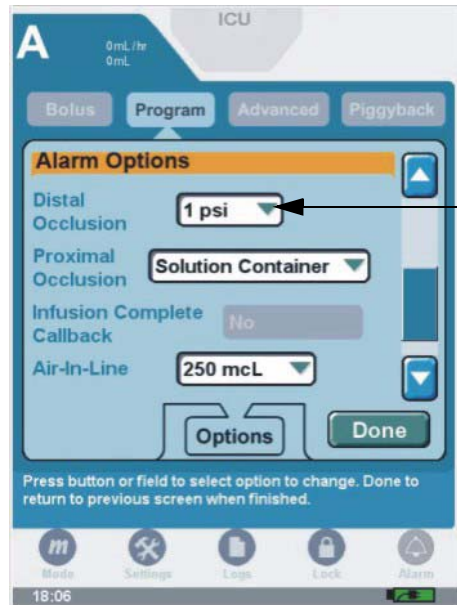


Figure 111: Options Screen

2. Select the desired distal occlusion setting.

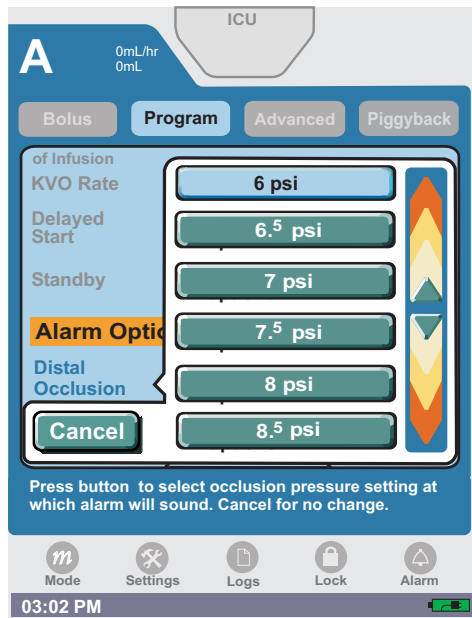


Figure 112: Distal Occlusion Setting Drop-Down List

3. Press **Yes** to change the distal occlusion setting. Press **No** to return to the psi settings list without saving changes.



Figure 113: Change Distal Occlusion Setting Message Box

4. Press **Done** to return to the **Programming** screen.

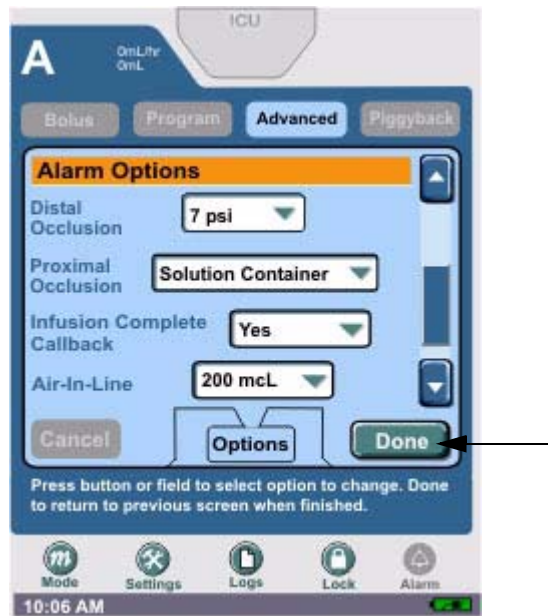


Figure 114: Options Screen

Proximal Occlusion

To select the Proximal Occlusion alarm:

1. From any programming screen, press **Options** to display the Options screen.

1. Use the vertical scroll bar to scroll down to the Alarm Options section, and then press the **Proximal Occlusion** field.

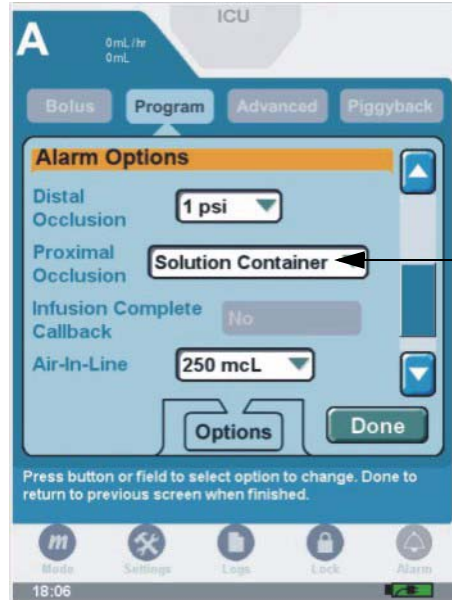


Figure 115: Options Screen

2. Select **Solution Container** or **Syringe**.

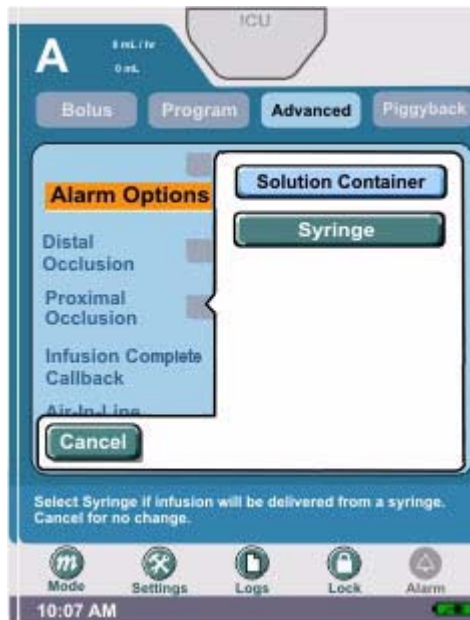


Figure 116: Proximal Occlusion Setting Drop-Down List

3. Press **Yes** to change the proximal occlusion setting. Press **No** to return to the proximal occlusion settings list without saving changes.



Figure 117: Change Proximal Occlusion Setting Message Box

4. Press **Done** to return to the Programming screen.

Infusion Complete Callback

To select the Infusion Complete Callback alarm:

1. Use the vertical scroll bar to scroll down to the Alarm Options section, and press the **Infusion Complete Callback** field.

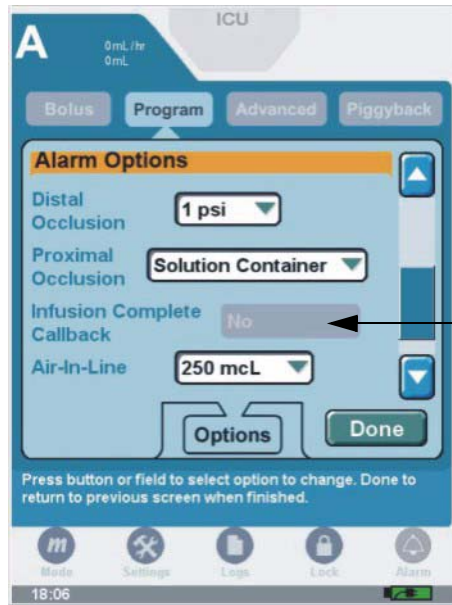


Figure 118: Options Screen

2. Select **Yes** or **No**.

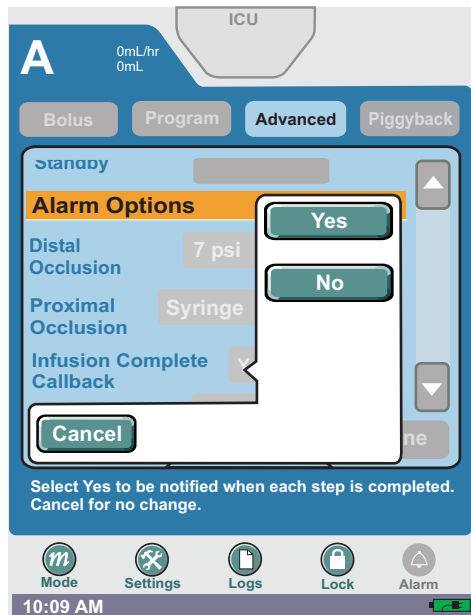


Figure 119: Infusion Complete Callback Drop-Down List

3. Press **Yes** to change the Infusion Complete Callback setting. Press **No** to return to the Infusion Complete Callback settings list without saving changes.



Figure 120: Change Infusion Complete Callback Message Box

4. Press **Done** to return to the Programming screen.

Note: If selecting the Infusion Complete Callback alarm for a Multistep therapy, the alarm activates at the end of each step in the therapy.

Air-In-Line

To select the Air-In-Line alarm setting:

1. Use the vertical scroll bar to scroll down to the Alarm Options section. Press the **Air-In-Line** field to display the Air-In-Line settings list.

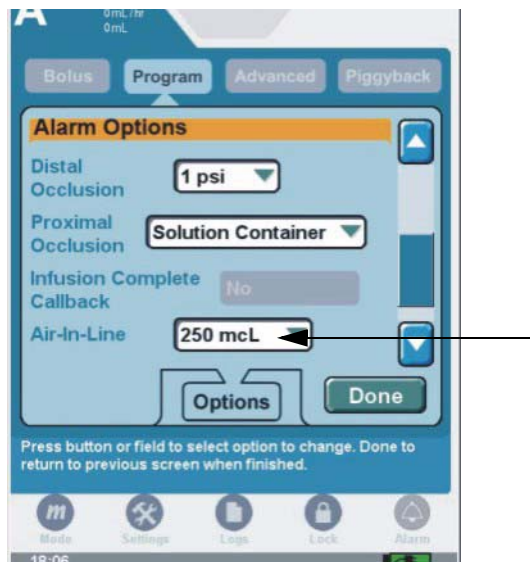


Figure 121: Options Screen

2. Select the desired air-in-line setting.

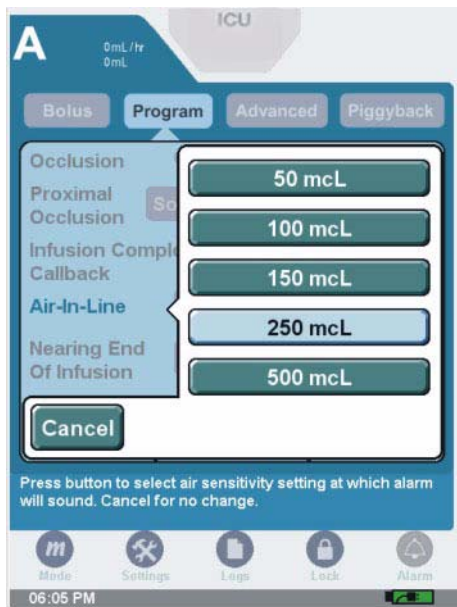


Figure 122: Air-In-Line Sensitivity Drop-Down List

3. Press **Yes** to accept the air-in-line setting. Press **No** to return to the mcL settings list without saving changes.

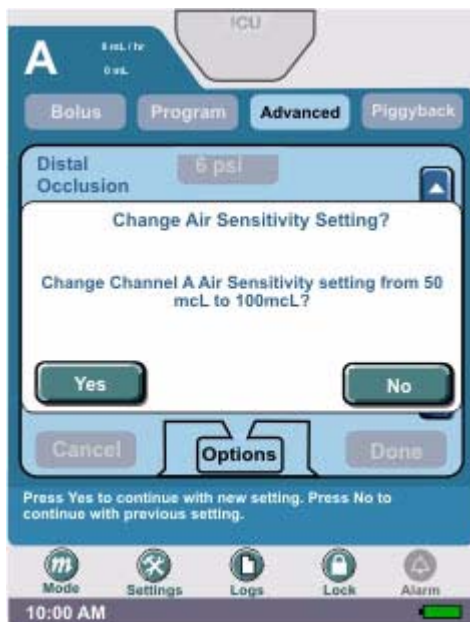


Figure 123: Change Air Sensitivity Setting Message Box

4. Press **Done** to return to the **Programming** screen.

Nearing End Of Infusion

To select the Nearing End Of Infusion alarm:

1. Use the vertical scroll bar to scroll down to the Alarm Options section. Press the **Nearing End Of Infusion** field to display the selection list.

Note: A medium urgency alarm sounds until silenced.

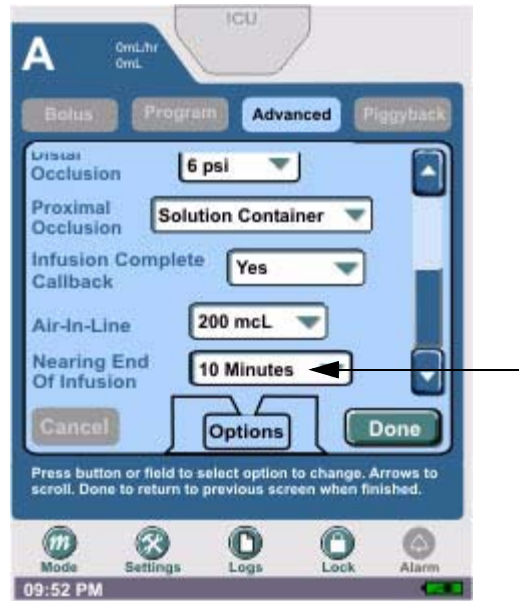


Figure 124: Options Screen

2. Select the desired setting.



Figure 125: Nearing End of Infusion Alarm Setting Drop-Down List

3. Press **Yes** to change the Nearing End of Infusion setting. Press **No** to return to the settings list without saving changes.

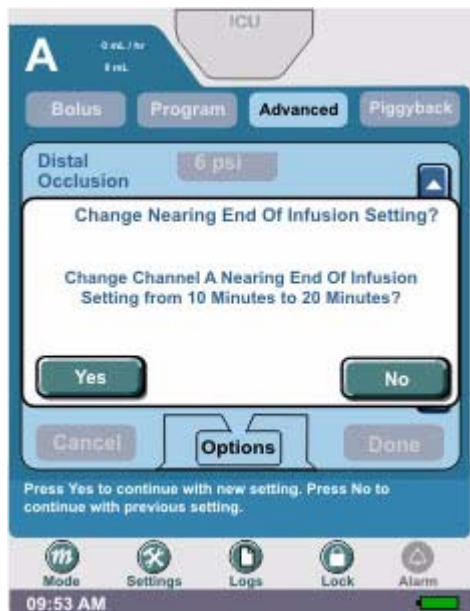


Figure 126: Change Nearing End of Infusion Setting Message Box

4. Press **Done** to return to the **Programming** screen.

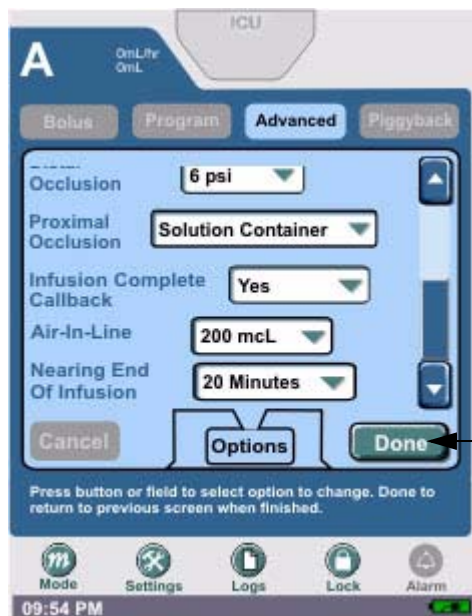


Figure 127: Options Screen

NOTES:

Chapter 9: Bolus

Overview

This chapter describes how to program bolus deliveries and select program options for a therapy.

Bolus

Use Bolus to program a delivery from a primary or secondary container. Only medications designated by facility may be delivered by bolus. Bolus is only available with Basic and Multistep therapies.

Note: In Bolus from a primary container is confirmed without an underlying primary therapy confirmed, a primary therapy cannot be entered until the Bolus delivery is complete.

If primary container is selected, the VTBI delivered is subtracted from the underlying primary therapy (Basic) VTBI.

Note: Bolus may not be selected if a Piggyback or Advanced therapy has been entered.

To program a Bolus:

1. Press **Bolus** to display the Bolus Setup screen.

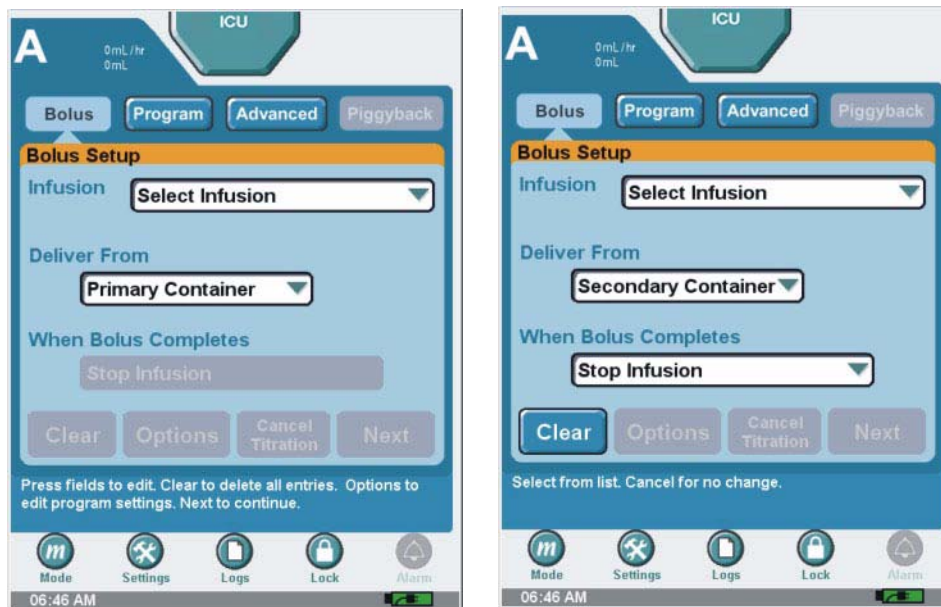


Figure 128: Bolus Setup Screens

2. Press **Select** infusion field to select medication and concentration (if necessary).
3. Press **Deliver From** and select **Primary Container** (if available) or **Secondary Container**.

4. Press **When Bolus Completes** and select either **Resume Primary Infusion** or **Stop Infusion** press **Next** to display the Bolus Programming screen.

Note: Press **Bolus Calculation** and enter Bolus medication amount using numeric keypad (enter patient weight, height, and BSA, if required). VTBI will be calculated. Press **Enter** to accept Bolus amount. Press **Time** and enter time period using numeric keypad. Rate will be calculated. (Entering rate will calculate time period.) Press **Enter** to accept time period. *The lowest displayed time increment is 1 minute. Infusion is delivered in the calculated time.*

5. Press **Next** to display the confirm Bolus screen.

Note: *If delivering a bolus from a secondary container, pressing **Next** activates the Secondary Container system message.*

6. Review the program parameters. Press **Start Bolus** to begin infusion.



Figure 129: Confirm Bolus Screen

7. The **Delivering Bolus** screen displays; to stop the therapy, press **Stop Bolus**.

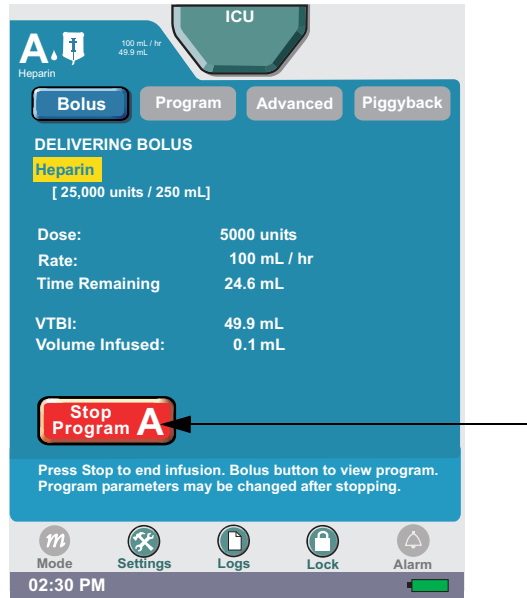


Figure 130: Delivering Bolus Screen

NOTES:

Chapter 10: Alarm and System Messages

Alarm

There are three types of alarms: invalid keypress, operational and malfunction.

- **Invalid Keypress**—an alert tone that sounds when an invalid entry is touched; for example, a double keypress.
- **Operational alarms**—active based on program options selection or when other delivery issues occur.
- **Malfunction alarms**—activate when mechanical or software issues occur that require the infuser be removed from service and examined by authorized service personnel (Biomed).

Operational alarm conditions are defined as low, medium, and high urgencies. All Malfunction alarms are high urgency.

If an alarm occurs in Delivery mode, or if a malfunction occurs, the Nurse Call relay activates to notify clinicians at remote locations (e.g., centralized nurse stations) of an alarm condition.

During an active alarm, an alarm tab displays on the screen until the alarm is resolved and/or cleared. Malfunction alarms remain active until the infuser is powered off. Pressing the alarm tab displays additional information for assistance in resolving the alarm.

For more information on alarm messages, causes, and remedies, see [“Appendix B: Alarm Messages and Troubleshooting” on page 171](#).

Alarm Urgency

The SYMBIQ™ Infusion System has four distinct levels of alarms outlined in [Table 10](#). Each alarm level includes an alarm message, a distinct audible tone, and a detailed troubleshooting tab.

The troubleshooting tab contains a full description of the alarm condition and suggested remedies or checklists to assist in resolving the root cause of the alarm. Multiple, simultaneous alarms display in order from highest to lowest priority. During an alarm, the channel LEDs and bag icons take on the alarm’s color treatment and flashing behavior.

Table 10: Alarm Conditions and Criteria

Alarm Urgency	Alarm Sound	Alarm Tab Color	Channel LED Color	Criteria for Alarm
Immediate	Single sound of three notes	N/A	N/A	Invalid press or double-key effect occurs
Low	Single two-note melody	Solid yellow	Solid yellow if alarm is delivery-related	Condition which does not require immediate attention or resolution.

Table 10: Alarm Conditions and Criteria (Continued)

Alarm Urgency	Alarm Sound	Alarm Tab Color	Channel LED Color	Criteria for Alarm
Medium	Repeating two-note melody	Flashing yellow	Flashing yellow if alarm is delivery-related	Condition which, if not resolved promptly, could result in an escalation to a Warning alarm.
High	Repeating 10-note melody	Flashing red	Flashing red if alarm is delivery-related	Condition which disrupts a therapy and/or requires immediate attention.

Alarm Appearance

If an alarm occurs while the Near Viewing screen is active, a Near Viewing Alarm overlay like the one shown in [Figure 131](#) displays. This alarm overlay contains information about the alarm name, the reason for the alarm, a suggested remedy for the alarm, and elapsed time of the alarm (if enabled).

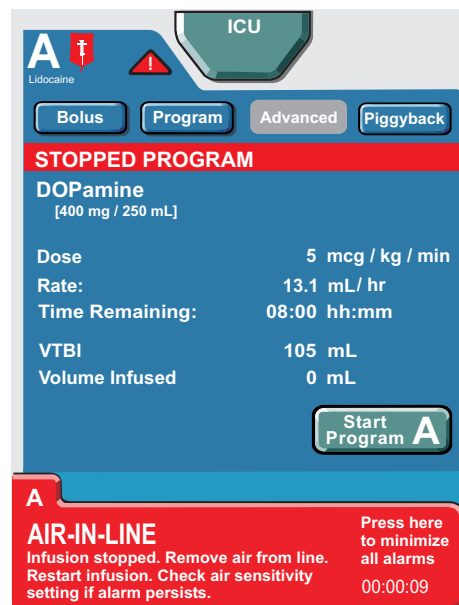


Figure 131: Near Viewing Alarm Overlay

A Far Viewing Alarm overlay is shown in [Figure 132](#). The **Far Viewing Alarm** overlay displays the alarm name and elapsed time of the alarm. Touching **Far Viewing Alarm** overlay displays **Near Viewing Alarm**.

A device-level alarm is not associated with a channel, e.g., a Low Battery alarm, displays with a center tab as shown in Figure 132. An alarm associated with the infuser displays with a center tab, because it is not associated with a channel.

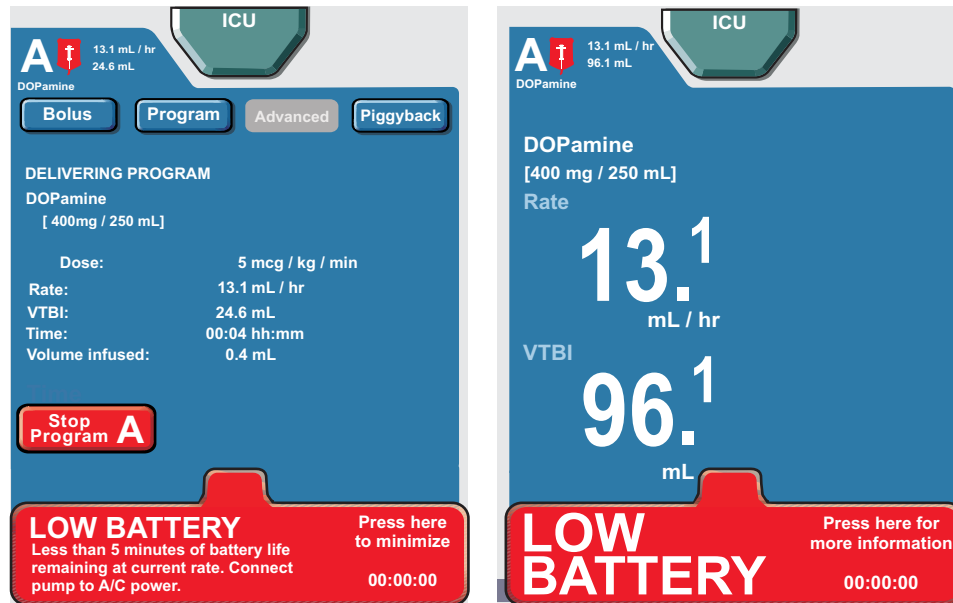


Figure 132: Near and Far Viewing Device-Level Alarm Overlay

Minimized Alarm Tabs

Active alarms may be minimized when acknowledged by the user. This occurs when the user presses the detailed alarm message tab. In this circumstance, the infuser level alarm button changes to the respective alarm color. To restore an alarm overlay to full size, press the alarm button.

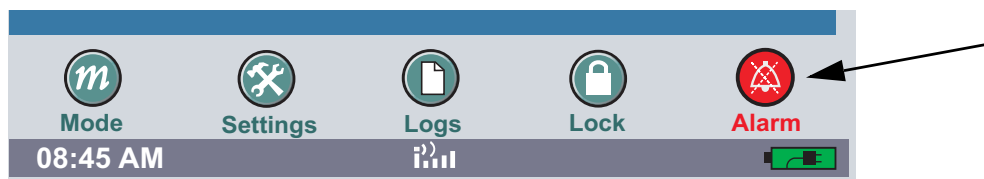


Figure 133: Low Battery Alarm button

Alarm Silencing

Audible alarms can be silenced for a two-minute interval. Pressing the **SILENCE** button silences the alarm and Nurse Call Relay (if enabled) for two minutes without affecting the touchscreen alarm message. Pressing **SILENCE** during a two-minute silence period resets the alarm silence period.

Note: All operational alarms may be silenced except the Depleted Battery alarm and the Power Loss alarm.

If a new alarm occurs during an alarm silence period, an audible alarm sounds and a message displays on the touchscreen for the highest priority active alarm.

To silence an audible alarm:

1. Press and release the **SILENCE** button on the top of the infuser.

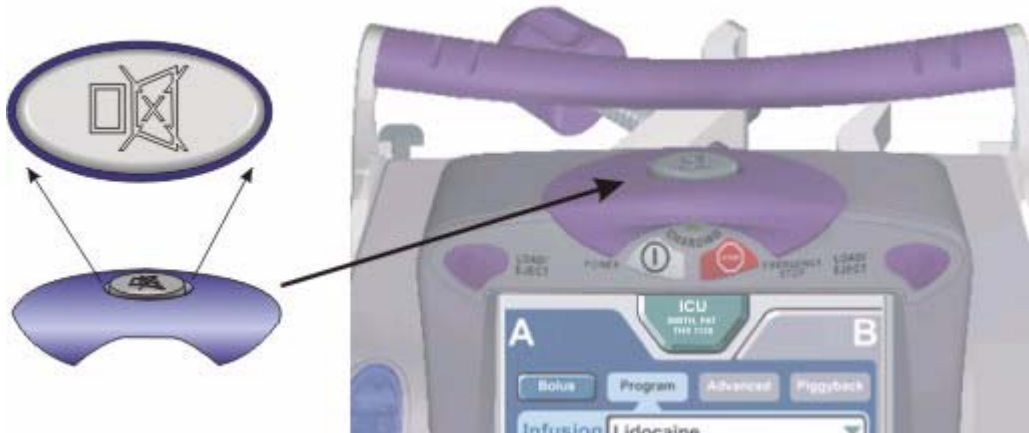


Figure 134: Infuser SILENCE Button

Multiple Alarms

Should multiple alarms occur, the highest priority alarm features both audible and visual priority. The SYMBIQ™ Infusion System can display up to six active alarms simultaneously by layering the alarm overlays from highest priority (i.e., the top or visible tab) to lowest priority. Pressing the alarm tab of a lower-priority alarm will display the associated alarm overlay.

If more than one alarm occurs, resolving or minimizing the highest-priority alarm overlay displays the next highest alarm overlay.

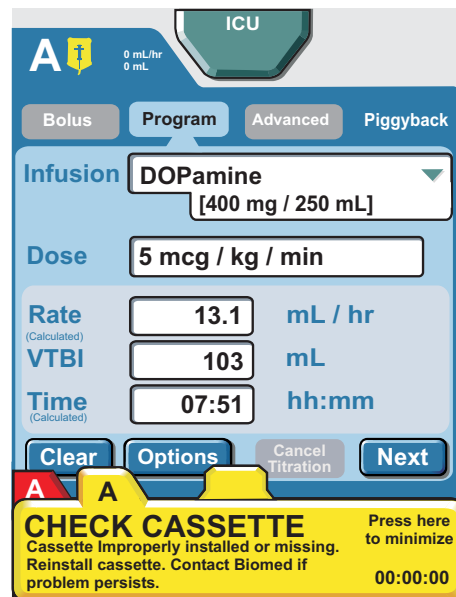


Figure 135: Infuser Screen with Multiple Alarm Tabs

System Messages

System messages provide feedback about infuser status when powered on and when input requires confirmation. System messages also provide feedback when programming a therapy. For example, violating either a hospital defined rule set or a field range activates a system message alerting you to the problem.

The **Invalid Key Press** tone sounds whenever a system message activates. Until acknowledged, system messages display while the infuser operates in violation of a defined rule set or field range limit.

Types of system messages include:

- Information or decision point messages
- Outside of Soft Limits
- Outside of Hard Limits
- Invalid Entry

For more information on system messages, causes, and remedies, see [“Appendix A: System Messages and Troubleshooting”](#) on page 161.

Exceeded Soft Limits

The Outside of Soft Limits system message activates when selected medication values exceed Drug Library-defined soft limits but do not exceed hard limits.

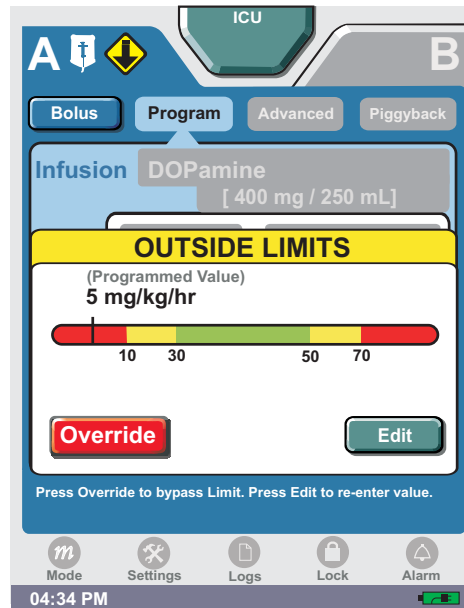


Figure 136: Soft Limit Outside of Limits System Message

When an attempt is made to enter a program value that exceeds the predefined soft limits, the event is recorded to both the Event Log and the Rule Set Override Log.

To address a soft alert:

1. To change an exceeded limits medication value, press **Edit**, change the medication value, and then press **Enter**.
2. If allowed by facility pressing **Override** will take user to the next programming step.

Note: When a program is delivering Outside of Soft Limits, an Exceeded Soft Limit icon appears.

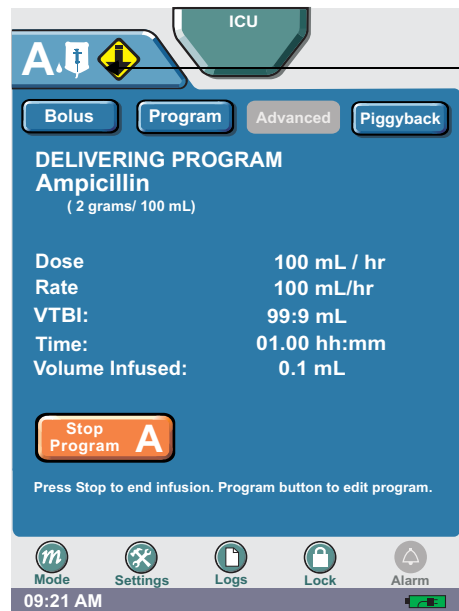


Figure 137: Delivering Screen with Exceeded Lower Soft Limit Icon

Exceeded Hard Limits

The Outside of Hard Limits system message activates when a medication value exceeds a hard limit for that medication. A Outside of Hard Limits message screen for a value that exceeds a lower hard limit is shown in [Figure 138](#).

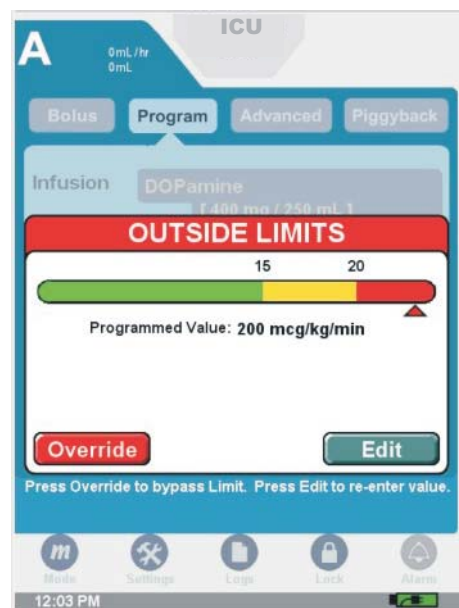


Figure 138: Outside of Hard Limits System Message

When entering a program value that exceeds the hard limit, the event is recorded to both the Event Log and the Rule Set Override Log.

To override a hard limit:

A hard limit may be overridden with proper authorization if enabled by hospital policy. A passcode is then required. The user may enter a passcode to override a Hard Limit. Press the **Override** button to display the passcode system message.

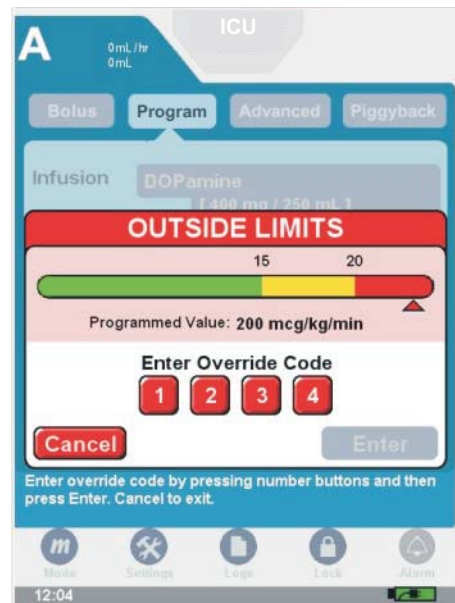


Figure 139: Override Code Screen

If no valid override passcode is defined for the current CCA, the Invalid Passcode system message activates.



Figure 140: Delivery Screen with Exceeded Upper Hard Limit Icon

Invalid Entry

Entering a value that exceeds infuser system limits, e.g., 1100 mL/hr, activates the Invalid Entry system message (Figure 141).

For example, entering a patient weight of 1000 kgs in the Patient Weight field when the acceptable patient weight range is between 1 and 999 kgs activates the Invalid Entry system message.

Pressing **Clear** on the **Invalid Entry** system message, and then entering a valid value in an active field removes the Invalid Entry system message from the touchscreen. Pressing **Cancel** on the

Invalid Entry system message closes the numeric keypad without saving changes. Invalid Entry are recorded to the Event Log.

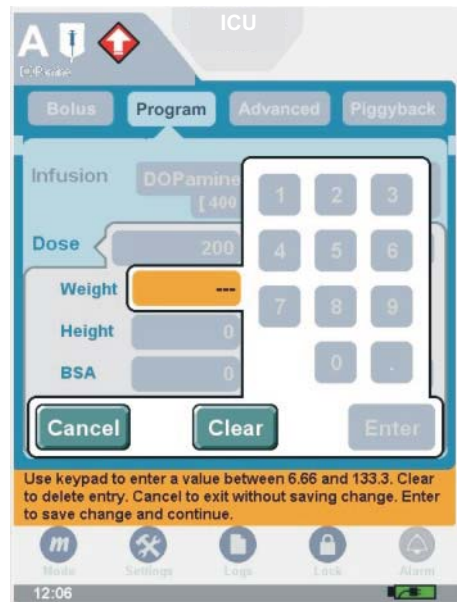


Figure 141: Invalid Entry System Message

Chapter 11: Stored Data

The SYMBIQ™ Infusion System collects and stores data which is available for on-screen viewing. Types of data stored by the infuser and viewable in Clinical mode are:

- **Patient Information**—Last Name, First Name, ID, Weight, Height, BSA (Body Surface Area), Caregiver ID, and CCA (Clinical Care Area, if defined for a hospital or institution)
- **Program Totals**—medication name and concentration, number of boluses, bolus volume infused, bolus medication amount infused (if applicable), primary volume infused, primary medication amount infused (if applicable), total volume infused, and total medication amount infused
- **Shift Totals**—date and time shift totals were cleared, combined total volume infused for all medications, and medication information for medications infused including:
 - number of boluses
 - bolus volume infused
 - bolus medication amount infused (if applicable)
 - primary volume infused
 - primary medication amount infused (if applicable)
 - total volume infused
 - total medication amount infused (if applicable)
- **Logs**—three types of logs are available for viewing:
 - *Event Log*—programming data, limit overrides, out-of-limit attempts, changes to settings, warnings, alarms, malfunctions, and power events
 - *Alarm Log*—malfunction and operational alarms
 - *Rule Set Alert Override Log*—all out-of-limit alerts, and overrides
- **Current Program**—parameters of current or most recent program including medication name and concentration, dose, rate, VTBI, duration of therapy, and alarm settings
- **Default Drug Library (DDL)**—factory-installed drug library with at least 99 medications and the manufacturer's recommended default units of measure and concentration

Patient Information

Use the Patient Information screen shown in [Figure 142](#) to enter patient name and ID (if required by your facility), Weight, Height, BSA, and Caregiver ID.

The screenshot shows a patient information entry screen. At the top left, there is a flow rate indicator 'A' showing '0 mL/hr' and '0 mL'. The selected CCA is 'ICU'. The Caregiver ID is 'GREEN'. Under 'PATIENT INFO', the Last Name is 'SMITH', First Name is 'PAT', and ID is '976543'. The Weight is set to '80 kg' and Height is '180 cm'. The BSA (Calculated) field is empty. A 'Calculate' button is present. At the bottom of the form area, there are 'Clear Patient Information and Data' and 'Done' buttons. A footer note reads: 'Refer to Manual during use. Press fields to enter patient information if desired. Done to continue.' The bottom navigation bar includes icons for Mode, Settings, Logs, Lock, and Alarm, with the time '01:54 PM' and a battery icon.

Figure 142: Patient Information Screen

The Patient Information button at the top of the touchscreen displays on all subsequent programming and delivery screens. This button contains the CCA name, patient name, and patient ID. The Patient Information button only displays patient information if configured to do so in the selected CCA.

Clinical Care Areas

Using Hospira MedNet® Service Suite (MMS), your hospital or institution can define up to 40 different CCAs. Each CCA can have up to 400 medications to choose from including “Other Drug.”

Note: Selection of a CCA is required. All other fields are optional.

When you select a CCA, the infuser uses that CCA’s configuration and medication definition settings for all subsequent therapies until a different CCA is selected. When CCAs have been downloaded to the infuser, you must either confirm the current CCA or select a new one each time the infuser is powered on.

Changing CCAs

You can change a CCA any time the infuser is powered on. When you change a CCA, the Change CCA system message activates requiring confirmation. The Change CCA system message only

activates when you change a previously selected CCA; it does not activate when you initially select a CCA.

After confirming the CCA change, press **Done** on the Patient Information screen to return to the prior screen and update Patient Information button display, if necessary.

While a primary infusion is delivering under the old CCA rule sets, any secondary infusions (bolus or piggyback) programmed on the same line also deliver under the old CCA rule sets.

To enter information in the Patient Information screen:

1. On the **Patient Information** screen, press the **CCA** field to select a CCA:

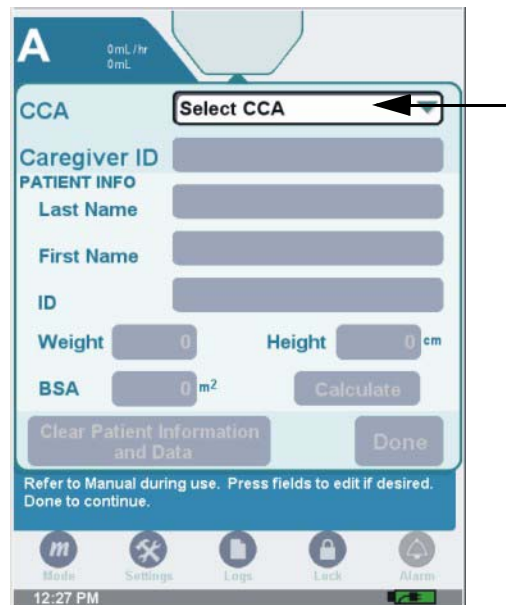


Figure 143: Patient Information Screen

- select the desired **CCA** from the CCA selection list

Note: If no CCAs have been downloaded to the infuser, the default CCA selection will be **No CCA**. If one or more CCAs have been downloaded to the infuser, the default CCA field will be **Select CCA**.

2. The facility may restrict access to a CCA by requiring a passcode. In this case, enter the **CCA Access passcode** on the **Enter Code** dialog box, if required.



Figure 144: Enter Code Dialog Box for CCA Access

Note: Entering an invalid passcode three consecutive times activates the Invalid Passcode system message for each attempt. Entering an invalid passcode a fourth time closes the Enter Code dialog box and displays the Patient Information screen without changing the CCA.

3. Press the **BSA** field to enter the patient's BSA (Body Surface Area) after entering patient weight and height.

Note: To calculate the BSA, enter patient's weight and height. Press **Calculate**. The Calculate button is only available if both weight and height values are entered.

4. Press the **Caregiver ID** field. Use the touchscreen keypad to enter an ID up to 15 characters long, and then press **Enter**.
5. On the **Patient Information** screen, press **Done** to display the Basic Program screen or press **Clear** to remove all patient values entered.

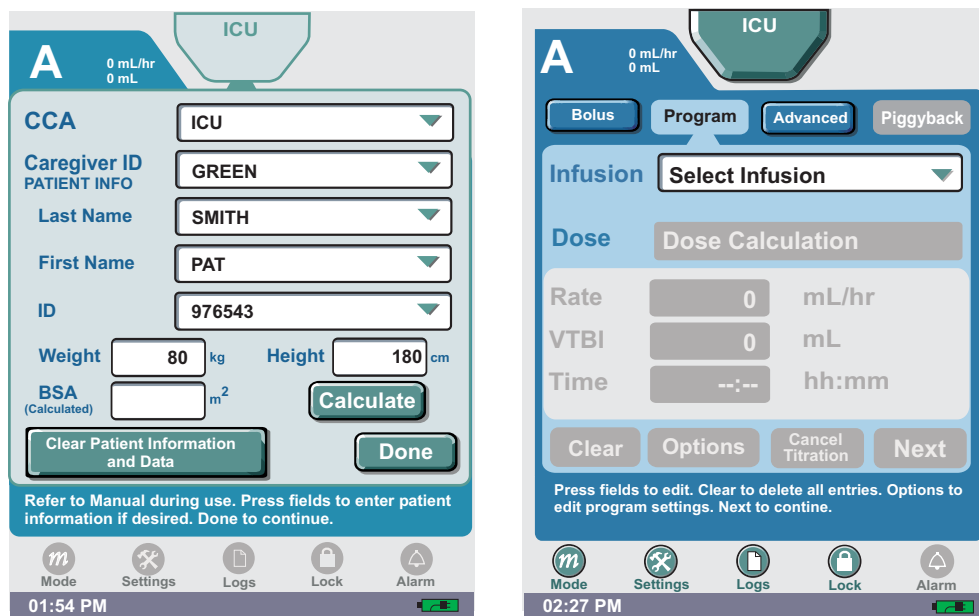


Figure 145: Patient Information and Basic Programming Screens

Note: Pressing **Clear Patient Information and Data button** clears current patient information, shift totals, program totals, the current program, and all logs visible in Clinical mode.

If no keys are pressed for 30 seconds, the Patient Information screen reverts to the screen from which it was accessed. Any values changed by pressing **Enter** on the Patient Information screen are retained.

Note: **Clear Patient Information and Data** button only displays if Infuser is not in Delivery Mode and a CCA has been selected.

To display Program Totals

The Program Totals screen shown in [Figure 146](#) contains program totals for these items:

- Medication name/medication concentration
- Number of boluses infused
- Bolus volume infused
- Bolus medication amount infused (if applicable)
- Primary volume infused
- Primary medication amount infused (if applicable)
- Total volume infused
- Total medication amount infused

All volume infused totals and medication amount infused totals include volumes delivered during KVO and Auto KVO deliveries.

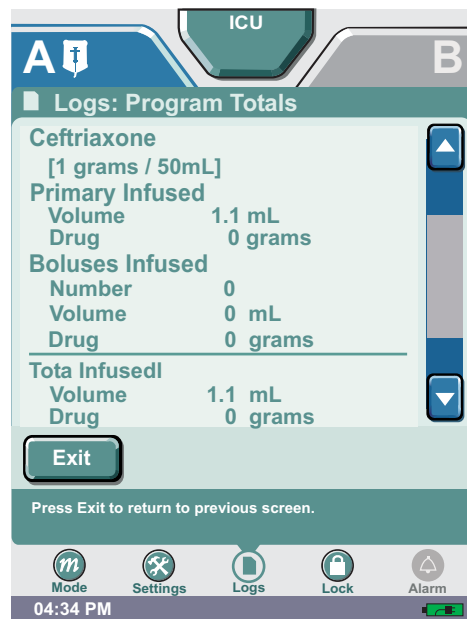


Figure 146: Program Totals Screen

Clearing Program Totals

Entering new patient information on the Patient Information screen resets program totals to zero. The following actions also reset program totals to zero:

- pressing **Clear All** on the first programming screen of a therapy
- changing a medication on an existing program screen

The cleared Program Totals values are logged to the Event Log.

WARNING: Accuracy of medication amounts recorded in the logs are dependent on the fill accuracy of IV container and amount discarded during priming.

To view the Program Totals Log:

1. Press **Logs** at the bottom of the touchscreen to display the Logs menu screen.



Figure 147: Logs Menu Screen

2. From the **Logs** menu screen, press **Program Totals**. See [Figure 146](#).
3. On the **Logs: Program Totals** screen, press the scroll bar on the right of the touchscreen to scroll through the log.
4. Press **Exit** to return to the Logs menu screen.

Note: If no keys are pressed for two consecutive minutes, the Logs menu screen reverts to the screen from which the Logs button was selected.

Shift Totals Data

The Shift Totals screen shown in [Figure 148](#) displays the following:

- Date and time shift totals were cleared
- Combined total volume infused during a shift
- Medications infused during a shift

All volume infused totals and medication amount infused totals include volumes delivered during KVO and Auto KVO deliveries.

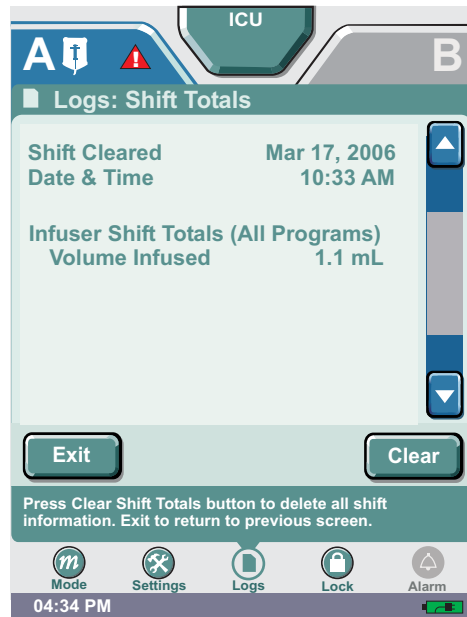


Figure 148: Shift Totals Screen

Clearing Shift Totals

Entering new patient information on the Patient Information screen clears shift totals and causes the infuser to:

- update the shift cleared date and time to the current date and time
- log the cleared values to the Event Log
- reset values to zero

To clear the Shift Total Logs:

1. Press **Logs** at the bottom of the touchscreen to display the Logs menu screen.
2. From the **Logs** menu screen, press **Shift Totals** to display the Logs Shift Totals screen.
3. On the **Logs Shift Totals** screen, press the scroll bar on the right of the touchscreen to scroll through the log.
4. Press **Clear** to display the Clear Totals message box. Press **Yes** to clear the shift totals or press **No** to return to the Logs Shift Totals Screen.
5. On the **Logs Shift Totals** screen, press **Exit** to return to the Logs menu screen.

Note: If no keys are pressed for two consecutive minutes, the Logs menu screen reverts to the previous screen.

Event Log

The Event Log records infuser events including infusion programs, limit overrides, out-of-limit alerts, changes to settings, power events, and operational alarms, and malfunctions. [Figure 149](#) illustrates the Event Log screen. The infuser stores up to 8,000 entries in the Event Log.



Figure 149: Event Log Screen

Entering new patient information on the Patient Information screen clears the Event Log viewable in Clinical mode.

To view the Event Log:

1. Press **Logs** at the bottom of the touchscreen to display the Logs menu screen.
2. From the **Logs menu** screen, press **Logs**, and then press **Event Log** to display the Event Log screen.
3. On the **Event Log** screen, press the vertical scroll bar on the right of the touchscreen to scroll through the log.

Note: The most recent event recorded displays as the top entry in the Event Log.

4. To scroll to the first record of the log, press **Beginning of Log**. Press **End of Log** to scroll to the last record of the log.
5. On the **Event Log** screen, press **Exit** to return to the Logs menu screen.

Note: If no keys are pressed for two consecutive minutes, the Logs menu screen reverts to the screen from which the Logs button was selected.

Alarm Log

The Alarm Log (Figure 150) is a filtered view of the Event Log. Every operational alarm, and malfunction is recorded in the Alarm Log. Each entry includes the associated time, date, and description of the alarm event.

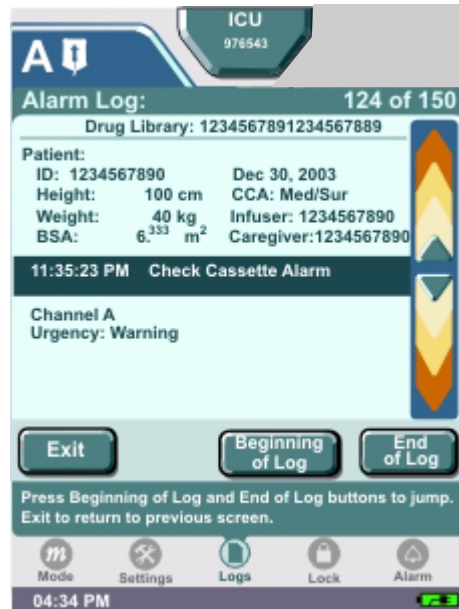


Figure 150: Alarm Log Screen

Entering new patient information on the Patient Information screen clears the Alarm Log viewable in Clinical mode.

To view the Alarm Log:

1. Press **Logs** at the bottom of the touchscreen to display the Logs menu screen.
2. From the **Logs menu** screen, press **Logs**, and then press **Alarm Log** to display the Alarm Log screen.
3. On the **Alarm Log** screen, press the vertical scroll bar on the right of the touchscreen to scroll through the log.

Note: The most recent alarm recorded displays as the first entry in the Alarm Log.

4. To scroll to the first record of the log, press **Beginning of Log**. Press **End of Log** to scroll to the last record of the log.
5. On the **Alarm Log** screen, press **Exit** to return to the Logs menu screen.

Note: If no keys are pressed for two consecutive minutes, the Logs menu screen reverts to the screen from which the Logs button was selected.

Rule Set Alert Override Log

Attempts to override CCA Rule Sets are recorded to the Rule Set Alert Override Log. Out-of-limit alerts, and rule set overrides are recorded and stored as illustrated in [Figure 151](#). The infuser stores up to 1,000 entries in the Rule Set Alert Override Log.

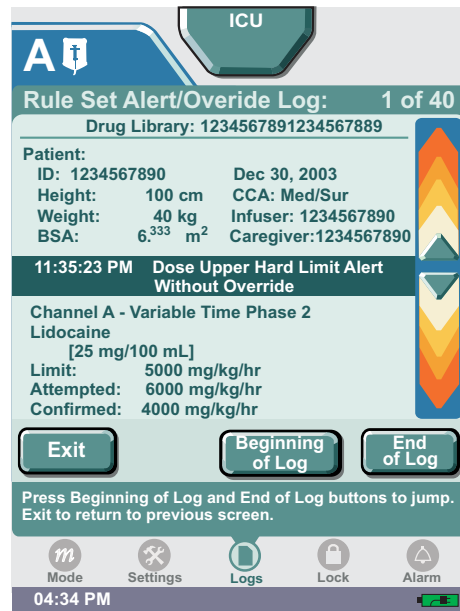


Figure 151: Rule Set Alert Override Log Screen

Anytime new patient information is entered on the Patient Information screen, the Rule Set Alert Override Log viewable in Clinical mode is cleared.

To view the Rule Set Alert Override Log:

1. Press **Logs** at the bottom of the touchscreen to display the Logs menu screen.
2. From the **Logs menu** screen, press **Logs**, and then press **Rule Set Override Log** to display the Rule Set Alert Override Log screen.
3. On the **Rule Set Alert Override Log** screen, press the vertical scroll bar on the right of the touchscreen to scroll through the log.

Note: The most recent rule set alert override event recorded displays as the first entry in the Rule Set Alert Override Log.

4. To scroll to the first record of the log, press **Beginning of Log**. Press **End of Log** to scroll to the last record of the log.
5. On the **Rule Set Alert Override Log** screen, press **Exit** to return to the Logs menu screen.

Note: If no keys are pressed for two consecutive minutes, the Logs menu screen reverts to the screen from which the Logs button was selected.

Current Program

Select Current Program to view information about the current program including dose, rate, volume, time, VTBI, volume infused, and program options.

To view the Current Program Log:

1. Press **Logs** at the bottom of the touchscreen to display the Logs menu screen.
2. From the **Logs** menu screen, press **Current Program** to display the Logs Current Program screen.
3. On the **Logs Current Program** screen, press the vertical scroll bar at the top of the touchscreen to scroll through the log.

Note: Not all Current Program logs have a vertical scroll bar. Only therapies with either multiple steps or phases will have additional screens to scroll through.

4. On the **Logs Current Program** screen, press **Exit** to return to the Logs menu screen.

Note: If no keys are pressed for two consecutive minutes, the Logs menu screen reverts to the previous screen.

Default Drug Library

The SYMBIQ™ Infusion System has a factory-installed Default Drug Library (DDL) used to program therapies. The DDL is set up as a single CCA drug library and uses the defined CCA defaults for all medication settings. To help differentiate sound-alike or look-alike medication names, the DDL uses TALL-man lettering ([Figure 152](#)).

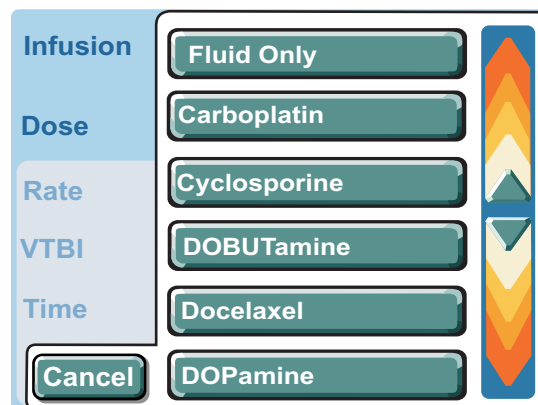


Figure 152: Infusion Field Drop-Down List with DDL Medication Names

The DDL is active and available for use until a new drug library is downloaded to the infuser using Hospira MedNet® Service Suite (MMS). Once a new drug library is successfully downloaded, it replaces the DDL as the active drug library.

Medications in the DDL have neither hard limits nor soft limits. Hard limits and soft limits are specified by each facility using Hospira MedNet® Service Suite (MMS). For a list of medications available in the DDL, see [“Appendix E: Default Drug Library \(DDL\)” on page 187](#).

High-Risk Medications

Your hospital or institution can designate certain medications as high-risk medications. High-risk medications display on the infuser touchscreen highlighted in yellow as shown in [Figure 153](#).

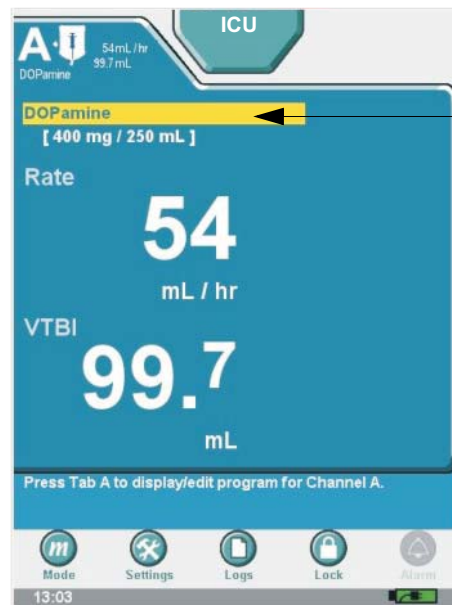


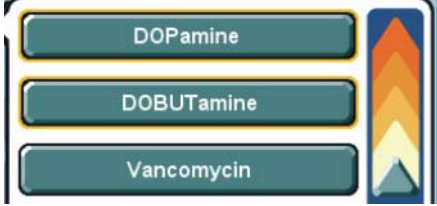
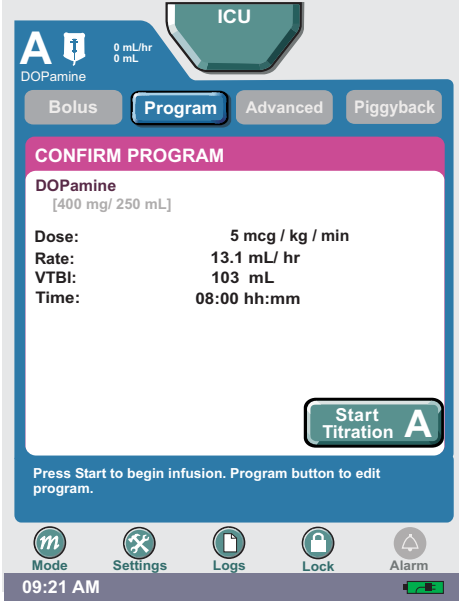
Figure 153: Far Viewing Delivery Screen with High-Risk Medication Infusing

[Table 11](#) describes other touchscreen elements that display high-risk medications highlighted in yellow.

Table 11: Touchscreen Elements with High-Risk Medications Highlighted

Element Highlighted	Touchscreen Location
Near Viewing Delivery screen with high-risk medication infusing	
Infusion field displaying a high-risk medication	

Table 11: Touchscreen Elements with High-Risk Medications Highlighted

Element Highlighted	Touchscreen Location
High-risk medication in Infusion Selection drop-down list	
Confirmation screen	

Using the Hospira MedNet® Service Suite (MMS)

The Hospira MedNet® Service Suite (MMS) assists with the reduction of medication errors by associating a hospital's predefined dosing limits, both soft and hard limits with each medication. A value—programmed outside the rule sets determined by a facility—triggers an Outside Limits message along with a visual graph indicting the predefined values for the selected medication. Rule sets are applied to medications found in all Therapy listings; Program, Piggyback, Advance and Bolus.

To ensure the predefined dosing limits are meeting clinical requirements, the SYMBIQ™ Infuser records the programmed information in the Event Log and Rule Set Override log. Up to 1000 events are stored allowing for continuous monitoring of dosing parameters, availability of medications, and to service as a clinical education tool.

The **Soft Outside of Limits** message notifies the user when a selected medication value is outside the predefined Soft Limit value. (See [Figure 136 on page 132.](#)) The user can reprogram or accept the limit.

Programming a Soft Outside limits Message

If the values enter result in either a higher or lower than the pre-defined limits, an alarm tone will sound and a pop-up **OUTSIDE LIMITS** is displayed. (figure 71 using dopamine as drug)

Press **Edit** to return to programming screen and re-enter programmed value and proceed with programming

If the clinical decision is to bypass the limit message, press **Override** and proceed with programming. When finished programming verify the programmed information on the **Confirm Program** screen and press **Start** to begin the infusion. The icons will appear in the tab on the top left corner of the screen indicating the value is either lower or higher than the pre-defined rule set.

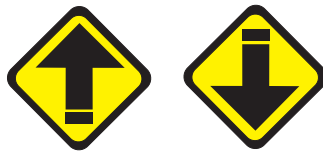


Figure 154: Upper and Lower Soft Limit icons

Programming a Hard Limit Outside Limits Message

The **Hard Outside Limits** message notifies the user when the selected value exceeds the pre-defined value. An alarm will sound and a pop-up **Outside Message** appears. A facility hard limit cannot be overridden.

Press **Edit** to return to programming screen and re-enter programmed value and proceed with programming.

***Note:** Based on a facilities policy selected CCA's may be able to override a hard limit if a valid pass code is entered.*

Chapter 12: Cleaning, Maintenance, and Storage

This chapter describes how to [clean](#), [store](#), and [service](#) the SYMBIQ™ Infusion System. This chapter also describes [battery maintenance](#) and [battery disposal](#).

Cleaning the Infuser

To ensure the SYMBIQ™ Infusion System functions properly, practice the cleaning guidelines in this chapter. Establish a routine weekly schedule for cleaning the infuser. Before cleaning the infuser you should:

- Power down the infuser using the **ON/OFF** button
- Disconnect the infuser from AC (mains) power

The exposed surfaces of the SYMBIQ™ Infusion System may be cleaned with a lint-free cloth moistened with one of the cleaning solutions recommended in [Table 12](#) or with mild, nonabrasive soapy water. Use a small, non-abrasive brush to aid in cleaning the cassette carriage.

Table 12: Cleaning Solutions for use on the SYMBIQ™ Infusion System

Cleaning Solution	Manufacturer	Preparation
Coverage™ HBV	Steris Corporation, a division of Calgon Vestal Laboratories	Per manufacturer's recommendation
Dispatch®	Caltech Industries	Per manufacturer's recommendation
Precise®	Caltech Industries	Per manufacturer's recommendation
Household liquid bleach (5.25 sodium hypochlorite)	Various manufacturers	Use per hospital procedures; do not exceed one part bleach to ten parts water
Manu-Klenz®	Calgon Vestal Laboratories	Per manufacturer's recommendation
Sani-Wipes	PDI, the healthcare division of Nice-Pak	Per manufacturer's recommendations

Cleaning Cautions

Avoid damaging the SYMBIQ™ Infusion System by following these cleaning cautions:

CAUTION: To avoid mechanical or electronic damage, **DO NOT** immerse the SYMBIQ™ Infusion System in fluids or cleaning solutions. **DO NOT** spray cleaning solutions in or near infuser openings. **DO NOT** allow cleaning solutions to saturate the air-in-line detectors or enter the infuser when cleaning the air-in-line detectors.

USE ONLY the recommended cleaning solutions and follow the manufacturer's recommendations. Using cleaning solutions not recommended by Hospira may result in product damage. The disinfecting properties of cleaning solutions vary; consult the manufacturer for specific information.

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 infuser.

DO NOT sterilize by heat, steam, ethylene oxide (ETO), or radiation.

Battery Maintenance

CAUTION: Before connecting a patient to the infuser, ensure the infuser has a fully charged battery installed for continuous infuser operation.

The SYMBIQ™ Infusion System is designed to use battery power for emergency backup and temporary portable operation. A one-channel infuser with a fully charged battery provides at least four hours of operation at 100 ml/hr with the LCD backlighting set to Power Saving mode.

The battery recharges whenever the infuser is connected to AC (mains) power. With the infuser powered off and connected to an AC power source, the battery takes four hours to recharge. Battery recharge takes longer if the infuser is powered on. In general, the more often the battery is partially discharged and then recharged, the sooner it will need to be replaced. Consult a qualified biomedical technician for battery replacement if necessary.

Note: Disconnect AC power line prior to opening unit or changing battery.

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

Battery Disposal

Do not discard the infuser's used lithium ion battery pack with regular trash. Instead, dispose of it in an environmentally sound and approved manner. Contact your local waste management

company for information on environmentally sound ways of collecting, disposing, and recycling used batteries.

Storage

To prolong the life of the SYMBIQ™ Infusion System, take the following storage precautions:

- Store away from excessive heat (more than 60° C), cold (less than -20° C), and humidity (outside 10% to 90% range)
- Store connected to AC (mains) power

Infuser Maintenance and Service

All maintenance, service, or adjustments to the SYMBIQ™ Infusion System should be referred to qualified technical personnel. A technical service manual may be ordered from your local Hospira sales representative.

Product Handling and Disposal

Do not discard the infuser's administration set with regular trash. Instead, follow hospital procedures for disposing and handling of infuser's administration set.

Please comply with local disposal and recycling regulations as appropriate for disposable batteries, rechargeable battery packs, medical electronic components and infusion sets.

NOTES:

Chapter 13: Product Specifications

Physical Specifications	
One-channel infuser dimensions:	Width: 9.9 inches Height: 10.2 inches Depth: 8.6 inches Depth with Pole Clamp: 13.0 inches Weight: 10.7 pounds
Casing:	High-impact plastic
Electrical Specifications	
Power frequency:	Between 47 Hz and 63 Hz
Fuses:	T1.6A/250VAC
AC power rating:	100-240 VAC, 100 VA MAX,
Power cord:	Hospital-grade AC cord approximately 10 feet in length with a hospital-grade plug at one end
Rear infuser AC power outlet:	Located on the back of the infuser; accommodates one additional SYMBIQ™ Infusion System only
Electrical safety:	The SYMBIQ™ Infuser has been assessed and complies with the following standards: <ul style="list-style-type: none"> • UL 60601-1 • CSA C22.2 No.601.1 • IEC/EN 60601-1-2 (2001) • IEC/EN 60601-2-24 (1998)
Battery Specifications	
Battery:	Rechargeable lithium ion 10.8 volts
Battery life for a one-channel infuser:	With a fully charged battery, a one-channel infuser will operate for at least 4 hours at 100 mL/hour with the LCD backlight set to Power Saving mode
Battery gauge:	Located on the infuser screen, the gauge indicates the amount of battery life remaining
Battery recharge:	Recharging a depleted battery requires 4 hours or less when infuser is off Battery automatically recharges while infuser operates on AC power
External Interfaces	
External communication ports:	1 Ethernet port 1 Nurse callback port
Nurse callback jack:	Standard 1/4 inch phone jack
Nurse call relay:	Industry standard type 1 Form C Reed relay

Wireless Connectivity	
Transceiver band:	2.4GHz ISM band
Wireless certification:	FCC Part 15 Class B compliant
Communications standard:	IEEE 802.11b
Input Device/Keypad	
Off-screen:	Off-screen buttons including LOAD/EJECT, On/Off, SILENCE, Emergency Stop
Touchscreen keypad:	Thin film transistor (TFT) touchscreen keys
LCD Display	
Display size:	8.4 inch diagonal color display
Viewable angles:	Minimum side angle: $45^{\circ} \pm 5^{\circ}$ Vertical angle: $60^{\circ} \pm 5^{\circ}$
Display adjustments:	User-adjustable brightness control and Power Saving mode Computer-controlled backlight brightness level
LED Display	
External power LED:	Indicates when infuser is on AC power and when charging the battery
Infuser Alarms	
Channel LED:	LED color indicates infuser alarm states: Solid red —Malfunction alarm Flashing red —High urgency Flashing yellow —Medium urgency Solid yellow —Low urgency Solid red—Latched alarm
Infuser Alarms	
Alarm tones:	Initial alarm tone (except Latched alarm) sounds at a user-defined level. Alarm tone reverts to maximum level if no user action is taken within time configured for the CCA.
Audible Tones	
Audible tone range is minimum of 45 dB(A) to a maximum of 65 dB(A) or more	
Safety Features	
Power-on diagnostics:	Checks all critical infuser components and data at power-on; any component failure is reported and logged as a Malfunction alarm
Background diagnostics:	Checks and monitors all critical infuser components and data while powered-on; any component failure is reported and logged as a Malfunction alarm. Component failure during an infusion stops delivery on the appropriate channel.
Memory Protection	
Non-volatile memory:	Stores data and logs for at least one year after power is removed from the infuser

Date and Time Settings	
Time of day clock:	Displays time of day in either 12-hour or 24-hour formats
Temperature Parameters	
Ambient Operating temperature range:	5°C to 40°C
Storage temperature range:	20°C to 60°C
Relative humidity:	Operational range of 10% to 90% non-condensing
Barometric pressure range:	Operational range from 0 to 10,000 feet
Surface temperature:	Maximum of 50° C
Occlusion Settings	
Distal occlusion:	User specified range in either psi (from 1 to 15 in increments of 0.5) or mmHg (from 50 to 775 in increments of 25)
Proximal occlusion:	-5 psi/250 mmHg
Air sensitivity settings:	User-specified bubble size threshold levels: <ul style="list-style-type: none"> • 50 mL • 100 mL • 150 mL • 250 mL • 500 mL Single bubble automatic threshold of 250 mL. Cumulative bubble automatic threshold setting of < 1mL/15 minutes.
Delivery Rate	
Delivery range:	Between 1.1 to 1000 mL/hr
KVO Specification	
KVO rate:	Between 0.1 and 20 mL/hr programmed in 0.1 mL increments; default is 1.0 mL/hr
Hemolysis	
Blood and blood products:	During the pumping of red blood cells, the increase in 5 hemolysis shall be less than 1%.

Flow Rate Accuracy

Flow rate accuracy represents the infuser's fluid delivery performance under these conditions:

Table 13: Standard Environmental Conditions and Specifications

Condition	Specification
Ambient and fluid temperature:	22° C \pm 5° C
Back pressure:	+ or -1 psig
Filling head height:	18 inches of water (\pm 4 inches)
IV fluid:	Sterile water or D25W.
Delivery rate range:	0.1 to 1000 mL/hr
Administration set condition:	No air trapped in tubing

The flow rate accuracy of the SYMBIQ™ Infusion System is \pm 5% for all rates greater than 1.0 mL/hr with 95% confidence. For rates less than or equal to 1.0 mL/hr, the flow rate accuracy is \pm 10% with 95% confidence.

WARNING: Rate accuracy can be affected by variations of fluid viscosity, fluid temperature, head height, back pressure or any combination of these. Additional factors that can have an influence are administration set configuration and use duration.

Flow Continuity

At low flow rates (between 0.1 and 1.0 mL/hr) with microbore tubing, the no-flow period does not exceed 20 seconds and the bolus volume released does not exceed 2 microliters.

Trumpet Curves

Trumpet curve graphs show representative maximum and minimum percent flow rate deviation from the programmed rate over time. This information was developed in accordance with IEC 60601-2-24: 1998, Sub-Clause 50.102. Refer to this standard for detailed information.

Trumpet curve graphs plot flow rates at 30 second intervals for the first 2 hours and for the 96th hour of delivery. The graphs plot the mean delivery rate error (average of 3 infusers) for the 2nd hour and the 96th hour as a straight line. The graph also presents maximum and minimum average delivery rate errors for this interval by plotting average delivery errors over intervals of 2, 5, 11, 19, and 31 minutes.

Sample Trumpet Curve

On the trumpet curve graph sample shown in [Figure 155](#), find the 5 minute interval (A) at the horizontal axis and read the corresponding points (B) and (C) on the vertical axis. The values are approximately +2.8% and -0.5%.

This means at the rate of 25 mL/hr, the average maximum flow rate fluctuation for any 5 minute time interval during the 2nd hour of operation was within the limits of +2.8% and -0.5% from the nominal rate. The average delivery rate error over the entire 2nd hour was +1.6% (D).

For other time intervals, look at other points at the horizontal axis to determine the corresponding limits.

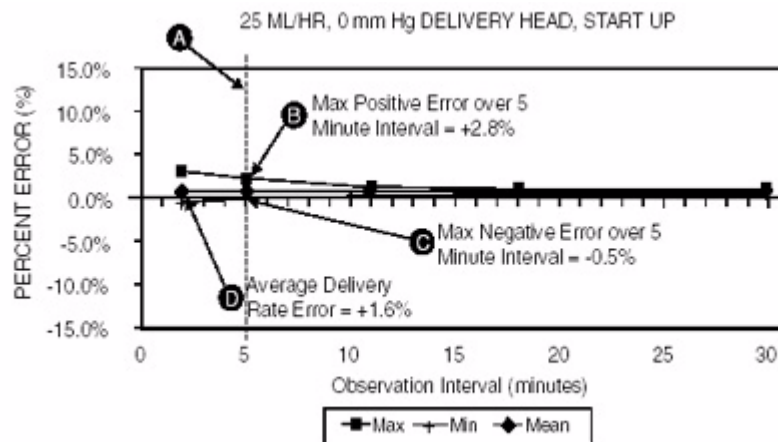


Figure 155: Sample Trumpet Curve

A trained professional can use the resulting graphs to select an infuser with the appropriate startup and flow characteristics to suit the clinical application.

To illustrate how trumpet curves are used, consider the maximum and minimum deviations at the 5 minute average interval. The upper curve provides the maximum expected delivery rate error over a 5 minute interval, the lower curve provides the minimum expected delivery rate error over a 5 minute interval.

Take for example Dopamine administered at 5 mcg/kg/ min. At 5 minutes, the average medication delivery error would be within the range of +2.8% and -0.5% of the expected nominal rate.

NOTES:

Appendix A: System Messages and Troubleshooting

Appendix A outlines system messages generated by the SYMBIQ™ Infusion System, the cause of the message, how the message text displays, steps to remedy the condition, and message logging.

On-Screen Text	System Message	Message Cause	Steps to Remedy
Battery Depleted No Power if A/C Fails.	Battery Depleted	Powering on an Infuser with a battery not having sufficient charge to power the device if AC power is disconnected.	Press OK to acknowledge.
Bolus In Progress (Bolus) Piggyback In Progress (Piggyback) Delivery will start when Bolus delivery is complete. (Bolus) Delivery will start when Piggyback delivery is complete. (Piggyback)	Delivery Will Start When Bolus/ Piggyback Completes	Pressing Start for a Basic or Advanced therapy while a bolus or piggyback delivery is in progress for that channel. If bolus, setting to resume primary when complete.	Press OK to acknowledge.
Bolus In Progress Primary infusion can be started by clinician when bolus completes.	Delivery Can Be Started When Bolus Completes	Pressing Start on the primary confirmation screen or Stop Mode screen while a bolus is infusing that is set to stop when infusion complete.	Press OK to acknowledge.
BSA Out of Range Calculated BSA is Out of Range. BSA value has been cleared.	BSA Calculated Value Out of Range (invalid value based on updated Height, Weight or pressing Calculate button)	The user changes the Height or Weight value on the Patient Information screen after the BSA value has been calculated and the new calculated BSA value is an invalid value. OR The user changes the Height or Weight value on the Dose Calculation or Bolus Amount widget after the BSA value has been calculated, and the Dosing Units include m2 and the new calculated BSA value is an invalid value. OR The user presses the Calculate button on the Patient Information Screen or Dose Calculation Widget, and the calculated BSA value is an invalid value	Press to acknowledge. Check height and weight entries
Calculated Rate Out of Range The calculated rate is outside the accepted range. Verify program parameters.	Calculated Rate Out of Range	The user enters a parameter on the Dose Calc Complex Pop-up that results in a calculated rate outside of the acceptable range.	Press OK to acknowledge.

On-Screen Text	System Message	Message Cause	Steps to Remedy
Calculated VTBI Out of Range The calculated VTBI is outside the accepted range. Verify program parameters.	Calculated VTBI Out of Range	The user enters a parameter on the Dose Calc Complex Pop-up that results in a calculated VTBI outside of the acceptable range.	Press OK to acknowledge.
Cancel Delayed Start? Programming Standby will cancel the Delayed Start.	Standby when Delayed Start is Selected	Selecting Standby when Delayed Start is already programmed.	Press Continue to cancel the Delayed Start and program Standby. Press Cancel to maintain current Delayed Start setting.
Cancel Standby? Programming a Delayed Start will cancel Standby.	Delayed Start when Standby is Selected	Selecting Delayed Start option when Standby already programmed.	Press Continue to cancel Standby and program a delayed start. Press Cancel to maintain current Standby setting.
Cassette Eject Not Allowed (Clinical Mode): Channel delivery or power priming must be stopped or Delayed Start must be canceled before cassette can be ejected. (Biomed and Service Mode): Procedure must complete before cassette can be ejected.	Cassette Eject Not Allowed	Pressing LOAD/EJECT when the associated channel is delivering an infusion in Clinical Mode. OR Pressing LOAD/EJECT while the associated channel is running an infusion test or a calibration in Biomed or Service Mode. OR Pressing Load/Eject button while the associated channel is power priming (mechanism is moving). OR Pressing Load/Eject button while the associated channel is in Delayed Start.	(Clinical Mode - Delivery Mode) Press Stop to stop delivery. Load/Eject to eject the cassette after delivery is stopped. (Clinical Mode - Power Priming) Press Cancel to stop power priming. Load/Eject to eject the cassette after power priming is stopped." (Clinical Mode - Delayed Start) Cancel
CASSETTE REQUIRED A cassette must be loaded to program this channel. Load cassette and press OK to continue.	Cassette Required	Programming screen is displaying, the ability to program without a cassette is configured off, the cassette for the associated channel is missing or improperly installed, and the user touches a program parameter field.	Press Load/Eject button and insert cassette.
CASSETTE REQUIRED A cassette must be loaded to start this channel. Load or check cassette and press OK to continue.	Verify Cassette	The confirmation screen is displaying, the ability to program without a cassette is configured on or off, the cassette for the associated channel is missing or improperly installed, and the user presses the Start button.	Press Load/Eject button and insert cassette.
Change Air Sensitivity Setting? Change Channel <channel id> Air Sensitivity setting from <old value> to <new value>?	Change Air Sensitivity Setting	Selecting an Air-In-Line Sensitivity setting that differs from the current setting and then exiting the screen for that setting.	Press Yes to continue with new setting. Press No to continue with previous setting.

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Change CCA?</p> <p>Change CCA from <old CCA name> to <new CCA name>? Changing the CCA will clear any partially programmed channels.</p>	Change CCA	<p>Changing the current CCA by selecting a CCA from the CCA Selection drop-down list.</p> <p>Note: <i>Once a CCA has been selected (i.e., the CCA field is displaying a CCA name, not "Select CCA"), this message will display each time a CCA is selected from the drop-down list.</i></p>	<p>Press Yes to change CCA.</p> <p>Press No to retain current CCA.</p>
<p>Change Distal Occlusion Setting?</p> <p>Change Channel Distal Occlusion setting from <old value> to <new value>?</p>	Change Distal Occlusion Setting	Selecting a Distal Occlusion setting that differs from the current setting and then exiting the screen for that setting.	<p>Press Yes to continue with new setting.</p> <p>Press No to continue with previous setting.</p>
<p>Change Proximal Occlusion Setting?</p> <p>Change Channel <channel id> Proximal Occlusion setting from <old value> to <new value>?</p>	Change Proximal Occlusion Setting	Selecting a Proximal Occlusion setting that differs from the current setting and then exiting the screen for that setting.	<p>Press Yes to continue with new setting.</p> <p>Press No to continue with previous setting.</p>
<p>Check BSA</p> <p>Change to height/weight may affect BSA. Check BSA value.</p>	Check BSA Entered Value	Changing height or weight values after the BSA value has been entered.	Press OK to acknowledge.
<p>Check BSA</p> <p>BSA will be recalculated using the BSA formula. New BSA is <calculated BSA value>.</p>	BSA Calculated Value Affected (Valid value)	Changing height or weight values after the BSA value has been calculated and the new calculated BSA is a valid value.	Press OK to acknowledge.
<p>Cleaning Lock Active.</p> <p>(if no cassette doors are open): Press Cleaning Lock button on the back of the Infuser to unlock.</p> <p>(if one or more cassette doors are open): Ensure tubing is disconnected from patient before proceeding. Press Cleaning Lock button on the back of the Infuser to unlock.</p>	Cleaning Lock Active	Activating the Cleaning Lock.	Cleaning Lock will automatically deactivate <user defined time (e.g., 3 minutes)> from activation.
<p>Clear All Settings and Data?</p> <p>Clearing the current patient information will also clear the CCA, caregiver ID, shift totals, program totals, medication amount totals, current program and logs.</p>	Clear All Settings and Data	Pressing Clear Patient Information and Data button on the Patient Information screen.	<p>Press Cancel to exit without clearing.</p> <p>Press Confirm to clear all settings and data.</p>
<p>Clear Program?</p> <p>Continuing will result in loss of current program information.</p>	Clear Program	Pressing Clear All on the first programming screen of an advanced therapy or Clear on the Basic Program programming screen.	<p>Press Continue to clear all programmed values and proceed.</p> <p>Press Cancel to return to current program.</p>

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Delete Information?</p> <p>Delete <information to be deleted></p> <p>Information to be deleted text:</p> <p><u>Shift Totals Screen</u>: Shift Totals</p> <p><u>Service Logs Menu Screen</u>: contents of all logs</p>	Delete Information	<p>Pressing Clear Shift Totals on the Shift Totals Screen in Clinical Mode</p> <p>OR</p> <p>Pressing Clear All on the Service: Logs Menu Screen in Service Mode</p>	<p>Press Yes to delete information.</p> <p>Press No to cancel.</p>
<p>Disconnect Tubing</p> <p>Ensure tubing is disconnected from patient before proceeding.</p>	Ensure Tubing is Disconnected from Patient	Pressing Power Prime on the Program Options screen.	Press OK to acknowledge.
<p>Door open. Unable to power down.</p> <p>One or more cassette doors are open. Close door(s) and press the On/Off button again.</p>	Unable to Power Down With Door Open	Pressing Power hard key when at least one cassette carriage is not closed (cassette present) or not in storage (cassette not present).	<p>Press OK to acknowledge.</p> <p>Press Force Shutdown to powerdown with the door open.</p>
<p>Medication Duplication</p> <p><Medication Name> is already in use.</p>	Medication Name Duplication	<p>Selecting the same medication (excluding "Other Drug") for more than one program.</p> <p>Note: <i>this applies to a bolus from secondary or piggyback dose. Bolus from primary, by default, uses the same medication.</i></p>	<p>Press Continue to complete program with duplicate Medication Name.</p> <p>Press Cancel to Clear Duplicate Medication.</p>
<p>Exceeds VTBI</p> <p>Bolus volume exceeds Volume Remaining in primary delivery.</p>	Exceeds VTBI	<p>Pressing Start Bolus after programming a bolus from the primary container on a channel with an underlying primary delivery already confirmed and the bolus VTBI exceeds the primary delivery VTBI.</p> <p>OR</p> <p>Pressing Enter on any screen on the Bolus Primary Container Programming screen that causes the Bolus VTBI to be greater than the remaining primary VTBI on a channel with an underlying primary delivery already confirmed.</p> <p>Note: <i>Values on the programming screen will not change - user will have to modify the parameter they want to correct the situation before proceeding.</i></p>	Enter valid value or clear Bolus program and increase primary VTBI.
<p>Infuser is initializing</p> <p>Start may be pressed when initialization is complete.</p>	Infuser Initializing	Pressing the Start button while the Infuser is initializing.	Press OK to acknowledge.
<p>Invalid Titration</p> <p>One or more limit has been exceeded.</p>	Invalid Titration	Pressing Start Titration for an infusion in progress and one or more limits (system or Hard/Soft) are exceeded.	Press OK to return to programming screen and resolve before continuing.

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Malfunction</p> <p>A malfunction occurred that might not have displayed. See the logs for additional information. All patient and therapy information has been cleared. Contact Biomed.</p>	Malfunction Occurred	The Infuser is powered on after a malfunction occurred during the last power up which may not display.	Press OK to acknowledge.
<p>Multiple CCAs</p>	Multiple CCAs	<p>Programming one or more channels under the current CCA and pressing Yes on the Change CCA system message when no CCA passcode is required</p> <p>OR</p> <p>Programming one or more channels under the current CCA and pressing Enter on the CCA Access Passcode Pop-up after entering a valid CCA access code</p>	Therapies in progress will continue operating under the prior CCA rule sets. New therapies will operate under the new CCA rule sets. Press OK to acknowledge.
<p>Multiple CCAs</p> <p>Channel <channel ID> is operating under <Old CCA> rule set until program in progress is complete.</p>	Old CCA Reminder	<p>Pressing any Program level button to change the current program on a channel while that channel is operating under an old CCA after a CCA change.</p> <p><i>Note: If the Advanced button is pressed and the Advanced therapy screen appears the Old CCA Reminder system message will not appear until the Advanced therapy is selected.</i></p>	Press OK to acknowledge.
<p>No Backup Battery</p> <p>In the event of A/C power loss, infusion will stop.</p>	No Battery Backup (detected at Power On)	No battery is detected when the Infuser is powered on.	Press OK to acknowledge.
<p>No Dose/Amount or Rate Limits</p> <p>There are no rule sets applied to the Dose, Bolus Amount or Rate values.</p>	No Dose/Amount or Rate Limits - Informational	A 3-D tab has been pressed and a No Dose/Amount or Rate Limits condition exists.	Press OK to acknowledge.
<p>No Primary Program</p> <p>Do you want to infuse this piggyback as a primary IV?</p>	No Primary Program	<p>A piggyback auto-program is scanned for a channel that does not have a confirmed primary program.</p> <p>Note: System Message will display over screen displaying when auto-program was initiated.</p>	<p>Press Yes to accept program and deliver as a primary infusion.</p> <p>Press No to reject the auto-program. Enter a primary infusion. Rescan piggyback after primary is programmed</p>

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Operation Test Due Return Infuser to Biomed for Operation Test as soon as possible.</p>	Operation Test Due	<p>The infuser is powered down, "Operation Test Notify When Test is Due" device setting is set to Yes and the "Reminder Test is Due" setting is reached.</p> <p>Note: Activation of the Operation Test Due System Message will be based on the current Date of the Infuser.</p> <p>Note: Once the "Reminder Test is Due" setting has been reached, this system message will display each time the Infuser is powered down until the Operation Test is completely run.</p>	Press OK to acknowledge.
<p>Outside Limits (Information will vary.)</p>	Outside of Hard Limits	<p>Pressing Enter on a Numeric Entry Keypad causes an entered or calculated value on the current programming screen to be outside of a user-specified hard limit and at least one override passcode has been defined for the current CCA.</p> <p>Note: For Lower VTBI limit checking, the Infuser must add the current Volume Infused value with the newly entered/calculated VTBI value and compare that total against the Lower VTBI limit to determine whether or not the lower limit has been violated.</p>	<p>Press Override to bypass Limit.</p> <p>Press Edit to re-enter value.</p>
<p>Outside Limits (Information will vary.)</p>	Outside of Soft Limits	<p>Pressing Enter on a Numeric Entry Keypad causes an entered or calculated value on the current programming screen to be outside of a user-specified soft limit, but that value does not violate a hard limit.</p> <p>Note: For Lower VTBI limit checking, the Infuser must add the current Volume Infused value with the newly entered/calculated VTBI value and compare that total against the Lower VTBI limit to determine whether or not the lower limit has been violated.</p>	<p>Press Override to bypass Limit.</p> <p>Press Edit to re-enter value.</p>
<p>Outside Limits (Information will vary.)</p> <p>Note: If the value that exceeds the hard limit is a calculated value, the Hard Limit Outside of Limits System Message shall be displayed with "(Calculated Value)" instead of "(Programmed Value)".</p>	Outside of Hard Limits - Informational	<p>Pressing a 3-D touchscreen tab when an Outside of Hard Limits condition exists.</p> <p>OR</p> <p>Exceeding a hard limit but no hard limit override passcodes are defined.</p>	Press OK to acknowledge.

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Outside Limits (Information will vary.)</p> <p><i>Note: If value that exceeds soft limit is a calculated value, Soft Limit Outside of Limits System Message shall be displayed with <Calculated Value> instead of <Programmed Value>.</i></p>	Outside of Soft Limits - Informational	Pressing a 3-D touchscreen tab when an Outside of Soft Limits condition exists.	Press OK to acknowledge.
<p>Outside of Limits Enter Bypass Code.</p>	Hard Limit Override	Pressing Override on the Outside of Hard Limits system message.	Enter override code by pressing number buttons and then press Enter . Cancel to exit.
<p>Patient Parameter Change</p> <p>A Program BSA, Height, and/or Weight differs from its corresponding Master value and there is no impact on a currently programmed rate value due to the change: One or more patient program values (BSA, Height, Weight) differ from Master value(s).</p> <p>A Program BSA, Height, and/or Weight change impacts a currently programmed rate (regardless of relation to corresponding Master value): One or more patient program values (BSA, Height, Weight) have been changed from their previous value(s). Rate and Time parameters have been recalculated.</p>	Patient Parameter Change	<p>Changing the program-specific height, weight, and/or BSA values on the Dose Calculation Complex screen so one or more differs from the associated Master value(s), and then attempting to leave the Dose Calculation Complex screen.</p> <p>OR</p> <p>Changing the program-specific height, weight, and/or BSA values on the Dose Calculation Complex screen so that a previously programmed rate value is affected and then attempting to leave the Dose Calculation Complex screen.</p> <p>OR</p> <p>Programming one or more channels using program-specific height, weight, and/or BSA values, changing the associated Master value(s), and then attempting to leave the Patient Information screen.</p>	<p>Press Continue to change value(s).</p> <p>Press Cancel to keep previous value(s).</p>
<p>Power Off Unavailable</p> <p>(Clinical Mode): Infuser cannot be powered down while one or more channels are in Delivery Mode. Stop Delivery on all channels to power down.</p> <p>(Biomed and Service Mode): Procedure must complete before infuser can be powered off.</p> <p>(During Drug Library Transfer from CE to the Infuser): Infuser cannot be powered down while a drug library transfer is in progress. Infuser will power down automatically upon completion.</p>	Power Off Unavailable	<p>Attempting to turn the Infuser off while in one or more channels are in Delivery mode in Clinical Mode.</p> <p>OR</p> <p>Attempting to turn the Infuser off while it is running an infusion test or a calibration.</p> <p>OR</p> <p>Cycling power during a drug library transfer from CE to Infuser.</p>	<p>Press OK to acknowledge.</p> <p>(Biomed and Service Mode) None</p>

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Program Data Will Be Deleted</p> <p>Program Data in eliminated steps will be lost.</p>	Program Data Will Be Deleted	Reducing the number of steps in a Multistep program, and the deleted steps contain programmed data.	<p>Press Continue to proceed with change and clear associated program data.</p> <p>Press Cancel to undo change.</p>
<p>Program is Being Cleared</p> <p>Programs on Channel will now operate within the <New CCA> rule set.</p>	Program is Being Cleared	<p>Accessing a Programming Mode in the Stop Mode screen after the End of Infusion Alarm has occurred (whether or not the alarm overlay was touched) and the program is operating under the old CCA after a CCA change</p> <p>OR</p> <p>Accessing a Programming Mode for the first time, for a program:</p> <ul style="list-style-type: none"> • after a power cycle less than 5 hours • occurring after End of Infusion alarm (whether or not the alarm overlay was touched) • not cleared at power on, and • operating under old CCA after a CCA change <p>OR</p> <p>A pending CCA is invoked for a channel.</p>	Press OK to acknowledge.
<p>Recondition Battery</p> <p>Battery needs servicing. Contact Biomed.</p>	Recondition Battery	Infuser battery needs reconditioning (Conditioning Cycle Request detected at power on).	Press OK to acknowledge.
<p>Resume Primary Selected.</p> <p>Any remaining volume in secondary container will deliver at primary rate.</p>	Resume Primary after Secondary	Programming a bolus from secondary and setting <i>When Bolus Completes to Resume Primary</i> .	Press OK to acknowledge.
<p>Secondary on <channel ID></p> <p>Hang Secondary container higher than Primary container. Open Secondary slide clamp.</p> <p>Note: <i>This pop-up displays over the Confirmation Screen.</i></p>	Secondary Confirmation	Pressing Next on the Piggyback or Bolus Programming Screen to access the Confirmation Screen.	Press OK to acknowledge.
<p>Transfer Drug Library?</p> <p>A new drug library is ready to be transferred to the Infuser. Transfer may take up to 5 minutes.</p>	Transfer Drug Library?	Pressing On/Off when the Infuser is in Clinical mode and a library is ready to be transferred from the CE to the Infuser.	<p>Press Yes to begin Drug Library transfer.</p> <p>Press No to power off without transferring the Drug Library.</p>
<p>Use Same Program for Channel?</p> <p>Press Yes to use the same program values that were used for the first delivery in this sequence.</p>	Use First Program Parameters	Pressing Next on the second program screen of a 3-part Interchannel Sequence where the third delivery is on the same channel as the first delivery.	<p>Press Yes to automatically enter values used in first program screen.</p> <p>Press No to enter new values.</p>

On-Screen Text	System Message	Message Cause	Steps to Remedy
<p>Values out of Range Patient <Parameter(s) separated by commas (Order: Weight, Height, BSA)> out of allowed range in the new CCA and have been cleared</p>	<p>Height/ Weight/BSA Out of Range</p>	<p>Invoking a CCA that results in the current Master patient Weight, Height and/or BSA being out of range.</p>	<p>Press OK to acknowledge.</p>
<p>Values out of Range The changed value has caused one or more values to go out of range. If you continue, all steps will be cleared.</p>	<p>Multistep Values Out of Range</p>	<p>In a Multistep program, pressing the Enter button on a Height, Weight or BSA field numeric entry widget or pressing the Calculate button on the Dose Calculation Complex screen and the resulting value causes at least one value in steps 1 or above to go out of range.</p>	<p>Press Continue to accept new value and clear all steps. Press Cancel to continue with current program.</p>

NOTES:

Appendix B: Alarm Messages and Troubleshooting

Appendix B outlines alarm messages generated by the SYMBIQ™ Infusion System, the cause of the alarm, how the alarm text displays, steps to remedy the alarm, the alarm urgency, and alarm logging.

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>ACCUMULATED AIR-IN-LINE</p> <p>ANALYSIS: Infusion stopped.</p> <p>REMEDY: Remove air from line. Restart infusion. Check air sensitivity setting if alarm persists.</p> <p>ACTION: Press here to minimize all alarms.</p>	Air-in-Line	<p>An amount of air, greater than or equal to the current air sensitivity setting, is detected in the line distal to the cassette while the device is infusing.</p> <p>OR</p> <p>An amount of accumulated air over 15 minutes exceeds the 15 minute threshold.</p> <p><i>Note: If both thresholds are violated at the same time, the single-bubble messages will display.</i></p>	<p>Restart the infusion to clear the alarm.</p> <p>Clear the current program to clear the alarm.</p> <p>Press the alarm window to minimize the alarm.</p> <p>Press the 1 mL, 3 mL, or 5 mL button on the Power Prime Screen to clear the alarm.</p>	High
<p>AIR-IN-LINE</p> <p>ANALYSIS: Infusion stopped.</p> <p>REMEDY: Remove air from line. Restart infusion. Check air sensitivity setting if alarm persists.</p> <p>ACTION: Press here to minimize all alarms.</p>	Air-in-Line	<p>An amount of air, greater than or equal to the current air sensitivity setting, is detected in the line distal to the cassette while the device is infusing.</p> <p>OR</p> <p>An amount of accumulated air over 15 minutes exceeds the 15 minute threshold.</p> <p><i>Note: If both thresholds are violated at the same time, the single-bubble messages will display.</i></p>	<p>Restart the infusion to clear the alarm.</p> <p>Clear the current program to clear the alarm.</p> <p>Press the alarm window to minimize the alarm.</p> <p>Press the 1 mL, 3 mL, or 5 mL button on the Power Prime Screen to clear the alarm.</p>	High
<p>BOLUS COMPLETE (Bolus)</p> <p>PIGGYBACK COMPLETE (Piggyback)</p> <p>ANALYSIS: Unable to resume primary infusion.</p> <p>REMEDY: Enter or Start delivery.</p> <p>ACTION: Press here to clear alarm.</p>	Infusion Complete (No Primary)	<p>A Bolus is set to Resume Primary or a Piggyback is programmed and there is no primary programmed when the Piggyback or Bolus completes.</p>	<p>Press alarm window to clear the alarm.</p> <p>Clear associated program to clear the alarm.</p> <p>Confirm a new piggyback dose to clear a Piggyback Infusion Complete (No Primary) alarm.</p> <p>Confirm a new bolus dose to clear a Bolus Infusion Complete (No Primary) alarm.</p>	Medium

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>BOLUS COMPLETE (<i>Bolus</i>)</p> <p>PIGGYBACK COMPLETE (<i>Piggyback</i>)</p> <p>STEP <n> COMPLETE (<i>Multistep</i>)</p> <p>ANALYSIS: Stop Infusion or Callback requested by caregiver.</p> <p>REMEDY: None</p> <p>ACTION: Press here to clear alarm.</p>	Infusion Complete	<p>Setting the Infusion Complete Callback Option for Piggyback, Bolus or Multistep, and the Piggyback, Bolus or any Multistep step 1 through <i>n-1</i>, respectively, completes.</p> <p>OR</p> <p>Callback Option is set to Yes because Stop Infusion during Bolus programming was selected.</p>	<p>Press alarm window to clear the alarm.</p> <p>Clear associated program to clear the alarm.</p> <p>Confirm a new piggyback dose to clear a Piggyback Infusion Complete alarm.</p> <p>Confirm a new bolus dose to clear a Bolus Infusion Complete alarm.</p> <p>Activate Multistep Step <i>n</i> Infusion Complete alarm to clear a Multistep <i>n-1</i> Infusion Complete alarm.</p>	Medium
<p>CALLBACK</p> <p>ANALYSIS: Waiting for user input.</p> <p>REMEDY: None</p> <p>ACTION: Press here to clear alarm.</p>	Callback	<p>The Infuser has been waiting for a user keypress on a pop-up for more than the time configured for the current CCA, or the DDL, if being used.</p> <p>OR</p> <p>The Infuser has been waiting for a user keypress on the Patient Information screen with no CCA selected for 2 minutes \pm 2 seconds.</p> <p>OR</p> <p>One or more channels are Active and waiting for input.</p> <p>OR</p> <p>One or more channels are Idle and waiting for input.</p> <p>OR</p> <p>All channels on a device are idle.</p>	<p>Press alarm window to clear alarm for that channel.</p> <p><i>Note: Any key press in an active area of the touchscreen will reset the Callback Alarm timers (channel and device).</i></p>	Medium
<p>CHECK CASSETTE</p> <p>ANALYSIS: <i>Alarm occurred in Delivery Mode</i>—Infusion stopped.</p> <p><i>Alarm occurred outside of Delivery Mode</i>—Cassette improperly installed or missing.</p> <p>REMEDY: Reinstall cassette. Contact Biomed if problem persists.</p> <p>ACTION: Press here to minimize all alarms</p>	Check Cassette	<p>Attempt to access the channel's Delivery mode and determine the channel's cassette is improperly installed or missing.</p> <p>OR</p> <p>Attempt to load cassette and the linear pixel array indicates there is a problem.</p> <p>OR</p> <p>Find that the sensors indicate the cassette is improperly loaded while the infuser is in Delivery mode.</p> <p>OR</p> <p>Manually eject the cassette.</p>	<p>Properly install the cassette to clear the alarm.</p> <p>Close the cassette door with no cassette present to clear the alarm.</p> <p>Press the alarm window to minimize the alarm.</p>	<p><i>Infuser in Delivery mode:</i> High</p> <p><i>Infuser not in Delivery mode:</i> Medium</p>

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>CHECK FLOWSTOP</p> <p>ANALYSIS: Cassette flowstop may not be closed.</p> <p>REMEDY: Close clamp, open door, and ensure flowstop is closed. Replace set if problem persists.</p> <p>ACTION: Press here to minimize all alarms.</p>	Check Flowstop	Cassette problem bit is set (door is closed with high pressure indicating possible debris present)	<p>Open the door to clear the alarm.</p> <p>Press the alarm window to minimize the alarm.</p>	High
<p>DISTAL OCCLUSION</p> <p>ANALYSIS: <i>Active Alarm</i>—Delivery stopped.</p> <p><i>Latched Alarm</i>—Delivery was interrupted during distal occlusion.</p> <p>REMEDY: <i>Active Alarm</i>—Clear occlusion below pump. Restart delivery. If not priming, check occlusion sensitivity setting if alarm persists.</p> <p><i>Latched Alarm</i>—None</p> <p>ACTION: <i>Active Alarm</i>—Press here to minimize all alarms.</p> <p><i>Latched Alarm</i>—Press here to clear alarm.</p>	Distal Occlusion	<p>The distal pressure is greater than the selected pressure level and the channel is in Delivery mode.</p> <p>OR</p> <p>The distal pressure is greater than 10 psi and the Infuser is power priming.</p>	<p>If distal pressure becomes less than 50% of the selected pressure level for three seconds within 60 seconds of detection, alarm auto-clears and becomes latched, Distal Alarm Auto-Clears counter increments by 1, and delivery resumes—if the channel has not exceeded the allowed number of auto clears.</p> <p>Stop Mode—Pressing Start clears the alarm.</p> <p>Note: <i>If Occlusion still exists, a new instance of the alarm will activate.</i></p> <p>Priming—Press Cancel, 1 mL, 3 mL or 5 mL button on Power Prime screen to clear the alarm.</p> <p>Press the active alarm window to minimize the alarm.</p> <p>Press the latched alarm window to clear the alarm.</p> <p>Change the Distal Occlusion threshold setting to a new threshold greater than the current measured pressure to clear the alarm.</p>	High
<p>EMERGENCY STOP</p> <p>ANALYSIS: Emergency Stop button pressed. Infusion(s) stopped.</p> <p>REMEDY: None</p> <p>ACTION: Press here to clear alarm.</p>	Emergency Stop	Emergency Stop off-screen button has been activated during infusion.	Press alarm window to clear alarm.	High

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>END OF INFUSION (KVO) (<i>KVO is delivering</i>)</p> <p>END OF INFUSION (<i>KVO is not delivering</i>)</p> <p>ANALYSIS: <i>KVO is delivering</i>—Infusion Complete. KVO in progress. <i>KVO is not delivering</i>—Infusion Complete. No KVO.</p> <p>REMEDY: Clear or edit current program.</p> <p>ACTION: Press here to clear alarm.</p>	End of Infusion	<p><i>Basic Program</i> - Programmed VTBI delivery completes.</p> <p>OR</p> <p><i>Multistep/Intermittent</i>—Last Step/Dose delivery completes.</p>	Press alarm window to clear alarm.	Medium
<p>INTERMITTENT CALLBACK</p> <p>ANALYSIS: Selected callback time has been reached.</p> <p>REMEDY: None</p> <p>ACTION: Press here to clear alarm.</p>	Intermittent Callback	<p>The selected callback time before an Intermittent Dose is less than or equal to the programmed Time Between Start of Deliveries and the callback time is reached for any dose (regardless of whether the Infuser is in Programming Mode, Delivery Mode or Stop Mode).</p> <p>OR</p> <p>The selected callback time before an Intermittent Dose is greater than the programmed Time Between Start of Deliveries and any dose but the last dose begins delivery.</p> <p>OR</p> <p>Whether a callback time or Off is selected for the Intermittent Callback option, the Infuser is in Stop or Programming mode and the start time for the next dose is reached.</p>	Press the alarm window to clear the alarm for that channel.	Medium
<p>LOW BATTERY</p> <p>ANALYSIS: Less than <30, 15, 5> minutes of battery life remaining at current rate.</p> <p>REMEDY: Connect pump to AC power.</p> <p>ACTION: Press here to minimize all alarms.</p>	Low Battery	<p>The battery has <= 30 minutes but > 15 minutes of delivery left at the current infusion rate and battery power is the last power source.</p> <p>OR</p> <p>The battery has <= 15 minutes but > 5 minutes of delivery left at the current infusion rate and battery power is the last power source.</p> <p>OR</p> <p>The battery has <= 5 minutes of delivery left at the current infusion rate and battery power is the last power source.</p>	<p>Infuser detects AC power to clear the alarm.</p> <p>Onset of a higher-priority Low Battery alarm clears a lower-priority Low Battery alarm.</p> <p>Change the delivery so the delivery time is greater than the alarm threshold (e.g., stop one of the channels or reduce the rate) to clear the alarm.</p> <p>Press the alarm window to minimize the alarm.</p>	<p><i>30 minutes:</i> Low</p> <p><i>15 minutes:</i> Medium</p> <p><i>5 minutes:</i> High</p>

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>NEARING END OF INFUSION</p> <p>ANALYSIS: Infusion almost complete.</p> <p>REMEDY: None.</p> <p>ACTION: Press here to clear alarm.</p>	Nearing End of Infusion	<p>The total time remaining on a primary infusion transitions from being greater than the user-defined Nearing End of Infusion alarm setting to being less than or equal to that setting.</p> <p>OR</p> <p>A bolus or piggyback delivery completes and the Infuser transitions back to a primary infusion that has a total time remaining which is less than or equal to the user-defined Nearing End of Infusion alarm setting.</p> <p>OR</p> <p>The total time remaining on a primary infusion is less than the Nearing End of Infusion setting on a therapy start or restart.</p> <p><i>Note: Once a Nearing End of Infusion alarm has been cleared, it will only recur if one of these triggers occurs again.</i></p>	<p>Press alarm window to clear the alarm.</p> <p>Press Start after titrating the associated program to clear the alarm.</p> <p>Change the Nearing End of Infusion alarm setting so a Nearing End of Infusion condition no longer exists clears the alarm when Done is pressed on the Options screen.</p> <p>Activate an End of Infusion alarm for a channel to clear an active Nearing End of Infusion alarm for the same channel.</p>	Low
<p>NEW DRUG LIBRARY</p> <p>ANALYSIS: New library available. Accepting library will clear current patient, programs and totals.</p> <p>REMEDY: When safe, power off Infuser to accept.</p> <p>ACTION: Press here to minimize.</p>	New Drug Library	<p>The Infuser is currently powered on and a library is ready in the CE for transfer to the infuser.</p> <p>OR</p> <p>At power on, a library is ready in the CE to transfer to the Infuser.</p>	<p>Successfully transfer the library to the Infuser to clear the alarm.</p> <p>Press the alarm window to minimize the alarm.</p>	Low
<p>None (no message can be displayed).</p>	Depleted Battery	A depleted battery is detected and the infuser is operating on battery power.	<p>Restore AC power to clear alarm.</p> <p>Replace battery to clear alarm.</p>	High
<p>None (no message can be displayed).</p>	Power Loss	The Infuser is powered by AC only and the power level drops below the level required to operate the Infuser.	<p>Restore AC power to clear alarm.</p> <p>Replace battery to clear alarm.</p>	High

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>PROXIMAL OCCLUSION</p> <p>ANALYSIS: Delivery stopped.</p> <p>REMEDY: <i>Active alarm</i>—Clear occlusion above pump. Restart delivery. If not priming, check occlusion sensitivity setting if alarm persists.</p> <p><i>Latched alarm</i>—None</p> <p>ACTION: <i>Active alarm</i>—Press here to minimize all alarms.</p> <p><i>Latched alarm</i>—Press here to clear alarm.</p>	Proximal Occlusion	<p>The proximal pressure is less than or equal to the selected pressure level and the channel is in Delivery mode.</p> <p>OR</p> <p>The proximal pressure is less than --7 psi and the channel is power priming.</p>	<p>If proximal pressure becomes greater than 50% of the selected pressure level within 60 seconds of detection, alarm auto-clears and becomes latched, Proximal Alarm Auto-Clear counter increments by 1, and delivery resumes—if the channel has not exceeded the allowed number of auto clears.</p> <p>Stop Mode—press Start to clear the alarm.</p> <p>Note: <i>If Occlusion still exists, a new instance of the alarm will activate.</i></p> <p>Priming—Press Cancel, 1 mL, 3 mL or 5 mL button on Power Prime screen to clear the alarm.</p> <p>Change the Proximal Occlusion threshold setting for the affected channel to a new threshold less than the current measured pressure to clear the alarm.</p>	High
<p>RECURRING OCCLUSION</p> <p>ANALYSIS: CCA-defined number of recurring Proximal Occlusion alarms has been reached.</p> <p>REMEDY: Check occlusion sensitivity.</p> <p>ACTION: Press here to clear alarm.</p>	Recurring Proximal Occlusion	The CCA-defined number of auto-reset Proximal Occlusion alarms for the program has been reached.	Press alarm window to clear the alarm.	Low
<p>RECURRING OCCLUSION</p> <p>ANALYSIS: CCA-defined number of recurring Distal Occlusion alarms has been reached.</p> <p>REMEDY: Check occlusion sensitivity.</p> <p>ACTION: Press here to clear alarm.</p>	Recurring Distal Occlusion	The CCA-defined number of auto-reset Distal Occlusion alarms for the program has been reached.	Press alarm window to clear the alarm.	Low
<p>REINITIALIZING SYSTEM</p>	Reinitializing System	<p>The device detects the flash memory is not formatted.</p> <p>OR</p> <p>The device forces the formatting of the flash due to a software download.</p>	Touch alarm overlay body to minimize the alarm.	High

On-Screen Text	Alarm Message	Alarm Cause	Steps to Remedy	Alarm Urgency
<p>RESTART REQUIRED ANALYSIS: The infuser needs to be restarted. REMEDY: Please restart the infuser. ACTION: Press here to minimize</p>	Restart Required	The flash memory has completed formatting.	Touch alarm overlay body to minimize the alarm.	High
<p>SERVICE BATTERY ANALYSIS: Battery should be replaced. No battery back-up. In the event of AC power loss, infusion will stop. REMEDY: Replace battery soon. ACTION: Press here to minimize all alarms.</p>	Service Battery	Battery shorted OR SMBus error/Battery Communication error OR Battery open OR Battery missing OR Battery will not charge OR Battery under-voltage OR Battery Service warning	Replace Battery to clear alarm. Press alarm window to minimize the alarm.	Low

NOTES:

Appendix C: Accessories, Administration Sets, and Components

Appendix C outlines the list number and description of accessories, administration sets, and components available for use with the SYMBIQ™ Infusion System.

List Number	Item Description
2006-04-01	Standard I.V. Pole
11249-04-01	Heavy Duty I.V. Pole
11868-04-01	PlumXL3M I.V. Minipole
11986-04-48	Vented Syringe Adapter
16000-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 106 Inch, Piggyback with Backcheck Valve, 2 CLAVE Ports, Distal Microbore Tubing and OPTION-LOK, Microdrip, Non-DEHP
16001-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 105 Inch with CLAVE Port and OPTION-LOK
16002-04-01	LATEX-FREE SYMBIQ™ Pump Set, Yellow Striped Tubing, Convertible Pin, 108.5 Inch with Distal Microbore tubing and OPTION-LOK
16003-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump 150mL Burette Set, Convertible Pin, 129 Inch with 3 CLAVE Ports, 0.2 Micron Filter and OPTION-LOK, Soluset, Non-DEHP
16004-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump 50mL Burette Set, Convertible Pin, 104 Inch with 3 CLAVE Ports, Distal Microbore Tubing and OPTION-LOK, Microdrip Soluset, Non-DEHP
16005-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 104.5 Inch with CLAVE Port and OPTION-LOK, Non-DEHP
16006-04-01	LifeShield LATEX-FREE HEMA SYMBIQ™ Pump Blood Set, Nonvented, 110 Inch with 210 Micron Filter, CLAVE Port and OPTION-LOK
16007-04-01	LifeShield LATEX-FREE Hemoset SYMBIQ™ Pump 100mL Burette Set, Nonvented, 104 Inch with CLAVE Port, 170 Micron Filter and OPTION-LOK, non-DEHP
16008-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 106 Inch, Piggyback with Backcheck Valve, 2 CLAVE Ports and OPTION-LOK
16009-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump 50mL Burette Set, Convertible Pin, 100 Inch with 2 CLAVE Ports, 0.2 Micron Filter, Distal Microbore Tubing and OPTION-LOK, Microdrip Soluset, Non-DEHP
16010-04-01	LATEX-FREE SYMBIQ™ Nitroglycerin Pump Set, Convertible Pin, 108.5 Inch with Polyethylene-Lined Tubing and OPTION-LOK
16011-04-01	LifeShield LATEX-FREE SYMBIQ™ Nutritional Pump Set, Convertible Pin, 103.5 Inch with 1.2 Micron Filter, CLAVE Port and OPTION-LOK, Non-DEHP

List Number	Item Description
16012-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 106 Inch, Piggyback with Backcheck Valve, 2 CLAVE Ports, Distal microbore segment and OPTION-LOK
16013-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 104.5 Inch, Piggyback with Polyethylene-Lined Tubing, Backcheck Valve, 2 CLAVE Ports, 0.2 Micron Filter and OPTION-LOK
16014-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump 150mL Burette Set, Convertible Pin, 124.5 Inch with 3 CLAVE Ports, Distal Microbore Tubing and OPTION-LOK, Microdrip Soluset, Non-DEHP
16015-04-01	Latex-Free SYMBIQ™ Pump Enteral Set, 99 Inch with 40 mm Screw Cap, Non-DEHP
16017-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump 150mL Burette Set, Convertible Pin, 115 Inch with 3 CLAVE Ports and OPTION-LOK, Soluset, Non-DEHP
16018-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump 150mL Burette Set, Convertible Pin, 138 Inch with 4 CLAVE Ports, 0.2 Micron Filter, Distal Microbore Tubing and OPTION-LOK, Microdrip Soluset, Non-DEHP
16019-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 105.5 Inch, Piggyback with Backcheck Valve, 2 CLAVE Ports and OPTION-LOK, Non-DEHP
16020-04-01	LifeShield LATEX-FREE HEMA SYMBIQ™ Pump Y-Type Blood Set, Nonvented, 121.5 Inch with 210 Micron Filter, CLAVE Port and OPTION-LOK
16021-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 106 Inch, Piggyback with Backcheck Valve, 3 CLAVE Ports and OPTION-LOK, Non-DEHP
16022-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 104.5 Inch, Piggyback with Backcheck Valve, 2 CLAVE Ports, 0.2 Micron Filter and OPTION-LOK, Non-DEHP
16023-04-01	LifeShield LATEX-FREE SYMBIQ™ Syringe Microbore Pump Set, 83 Inch with Syringe Holder, 2 CLAVE Ports and OPTION-LOK, Non-DEHP
16024-04-01	LifeShield LATEX-FREE SYMBIQ™ Pump Set, Convertible Pin, 105 Inch, Orange Polyethylene-Lined Light Resistant Tubing, CLAVE Port, Distal Microbore Tubing and OPTION-LOK
16025-04-01	LATEX-FREE SYMBIQ™ Nitroglycerin Pump Set, Convertible Pin, 108 Inch with Polyethylene-Lined Tubing and OPTION-LOK, Microdrip
N/A	SYMBIQ™ Tips Cards
N/A	SYMBIQ™ System Operating Manual

Appendix D: Glossary

Term	Definition
AC	Alternating Current.
active screen	A selected programming screen or a programming screen in use.
administration set	The sterile, disposable assembly with flexible tubing that connects to a source fluid container for input to the cassette carriage and to some output device for administration to the patient.
air sensitivity	The amount of air detected in which the Air-In-Line alarm activates.
air-eliminating filter	Used to reduce the risk of infusing air.
air-in-line	Air in the fluid path.
Air-In-Line alarm	Alarm that occurs if sensors detect the present measured amount of air in the fluid path.
alarm	Visual and/or audible warning from an infuser indicating a condition requiring attention, e.g., Air-In-Line alarm.
alarm analysis message	Basic descriptions of the cause of the alarm displayed on the infuser touchscreen.
alarm auto-reset condition	Condition under which an alarm clears without user intervention.
alarm base message	Short description of an alarm that appears on the infuser touchscreen.
alarm remedy message	Helpful hints and suggestions for fixing an alarm condition that display on the infuser touchscreen.
alarm system response	Any special action other than the alarm annunciation that must be taken in response to an alarm.
alarm urgency/priority	Level of alarm related to an LED/alarm tab color and behavior. There are three priorities—low, medium, and high.
allowed range	The minimum and maximum allowable values for a therapy.
audible alarm	An alarm that can be heard.
backcheck valve	Prevents fluid from backing up in part of an administration set.
backpressure	Resistance to fluid flow on the distal or output portion of the administration set, usually expressed in PSIG.
backup power source	An alternate source of power should the main power source fail.
Biomed mode	The non-delivery or service mode of infuser operation that allows authorized personnel, typically institution technicians (Biomed), access to delivery parameter limits and display default settings.
bolus	A single, uninterrupted, discrete volume of fluid delivered over a discrete period of time.
BSA	Body Surface Area, a value calculated by the infuser. $BSA=0.007184 \times \text{Height (cm)}^{0.725} \times \text{Weight (kg)}^{0.425}$.

Term	Definition
callback alarm	An alarm indicating additional action is required before an infuser can continue its program.
cancel	To stop or nullify a previously intended action.
cassette	A Hospira cassette that contains the actual pumping chamber with inlet and outlet valves and a flow stop. It also contains access ports to diaphragms for proximal and distal line pressure sensing.
cassette carriage	The cassette is loaded in the infuser via an automatic door.
cassette loaded	A cassette placed in the carriage and the carriage is closed.
Caution:	A caution 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.
Caution (medium alarm urgency)	An alarm which requires prompt user response, and if not responded to promptly, could result in an escalation of the alarm to the Warning urgency.
change a program	Adjust the values/selections of the current program.
clamp (noun)	Device used to restrict flow in the line.
clamp (verb)	To block off or restrict flow in the line.
clear history	A function that clears the log files on an infuser.
Clinical Care Area (CCA)	A subset of a drug library for use in an area or patient population of the hospital, as defined by an authorized user. A CCA can have up to 400 specific medications plus "Fluid Only" and "Other Drug." The hospital may create up to 40 CCAs and 16,000 specific medications in a drug library.
clinical mode	General use mode where an infuser can be programmed and medication can be delivered.
clock type	There are two clock types available: 12-hour and 24-hour.
cold boot	When the power is first applied to the infuser processor. It occurs when an infuser is off and the AC power is applied, or during battery operation when On/Off is pressed.
concentration	Consists of medication amount (in nanograms, micrograms [mcg], milligrams [mg], grams, milliequivalents [mEq], units [USP Units]), or diluent (volume in milliliters [mL]).
continue rate	An option used to provide fluid delivery at the current fluid delivery rate when the VTBI reaches zero.
contraindications	Conditions under which an infuser should not be used.
Default Drug Library (DDL)	A drug library with at least 99 medications including the manufacturer's package insert recommended default units of measure and default unit of concentration. Also includes "Fluid Only" and "Other Drug."
Delivery mode	The operational mode during which fluid delivery occurs.
delivery rate	The speed at which the fluid is delivered, e.g., 125 mL/hr.
delivery type	Method of infusing: Multistep, Basic therapies, Intermittent, Bolus.
diluent (volume) or amount	The volume of fluid used with the diluent unit (e.g., 250 mL).

Term	Definition
distal	In relation to the cassette, this refers to the tubing leaving the cassette going to the patient.
distal end	End closest to patient.
distal occlusion	Blockage between the infuser and the patient.
dose frequency	The rate or interval in which medication is given.
dose limit	An optional restriction of fluid deliveries.
dose rate	Delivery rate times medication concentration.
dose/dose amount	A specified volume or amount of medication.
dosing units	Dose Rate units that may be selected; for example, mcg/kg/min, mcg/kg/hr, mcg/min, mcg/hr, mg/min, mg/hr, mg/kg/hr, units/min, units/hr, grams/hr, ng/kg/min, units/kg/hr, mUn/min, mEq/hr.
download	Transfer of data from a computer to an infuser.
drip chamber	Apparatus for visualizing/monitoring fluid flow in the administration set.
drop-down box	An element of the infuser touchscreen. Pressing the down arrow of this element displays additional items.
drug library	A customized library containing medication entries available for use with the SYMBIQ™ Infusion System. Medication entries include the Medication Name/Medication Amount/Medication Unit/Diluent Amount/Diluent Unit/Dosing units, Medication class, and Hard/Soft Limits.
duration	Period of time used to deliver a VTBI at an existing delivery rate or as set by the user.
Ethylene Oxide (ETO)	Method of sterilization.
Event Log	A record that indicates what and when a specific event occurred. The Event Log includes but is not limited to programming, limit overrides, out-of-limits attempts, setting changes, warnings, alarms, malfunctions, and power events.
external power source	Any external power source like an AC mains.
FHH	Filling Head Height. The gravity-induced proximal line pressure due to fluid height in source container above the distal line output level.
flow rate	The resulting rate of fluid flow (see delivery rate and dose rate).
flow stop	A device on the administration set cassette that toggles to start and stop fluid flow through the tube.
hard limit	The upper and/or lower dose limits for the selected medication and selected CCA that cannot be overridden. Defined by the hospital for each medication in its drug library. The hard limits for a particular medication may vary across different CCAs.
Help Text area	Area on the touchscreen that provides context-sensitive information during programming steps and alarm conditions.
HIS	Hospital Information System.
hospital formulary	Proprietary list of all medications used by the hospital.
inactive screen	A programming screen that has been programmed but is not currently selected.

Term	Definition
infuser settings	Adjustable settings, e.g., distal occlusion pressure limits, air sensor sensitivity, real-time clock, and audible alarm volume.
intermittent	To give a specified dose amount of medication at regular intervals, e.g., every 4 hours.
isopropyl alcohol	A disinfectant not to be used to clean the SYMBIQ™ Infusion System.
I.V. pole	A pole that an infusion bag and an infuser are attached to.
JCAHO	The Joint Commission on Accreditation of Healthcare Organizations.
key	Buttons on the keypad or touchscreen.
KVO (Keep Vein Open)	Minimal delivery rate intended to provide sufficient fluid flow to prevent or reduce the potential for clotting at the IV infusion site. The KVO rate is the lesser of 1 mL/hr or the actual delivery rate.
LED	Light-Emitting Diode.
low flow continuity	Infusion of fluids and drugs at very low rates
malfunction	Alarm indication that a software or hardware failure has occurred (e.g., motor over-current.) These conditions usually require repair.
medication amount	The mass or quantity of the medication premixed with a diluent to express the concentration for the channel being programmed.
minimized alarm	An active alarm that has been acknowledged and is accessible by touching the alarm tab.
mL/hr only	A type of delivery expressed as volume divided by hour.
non-vented administration sets	For use with flexible containers. Not recommended for use with glass containers that are not vented by some other means.
occlusion	Blockage, may be caused by a kink in administration set tubing.
off-screen key	A key located on the infuser casing.
Options button	Button that provides access to the Options menu.
override	The user acknowledges a hard or soft limit violation prompt, and then proceeds with a program containing a parameter that falls outside the hospital-defined hard or soft limits.
PAV	Pressure Activated Valve.
parenteral	Any route other than the GI tract by which drugs, nutrients, or other solutions may enter the body for example IV, IM, or subcutaneously
piercing pin	Sharp plastic pin on an administration set that pierces the container.
piggyback	Infusion option that allows the delivery of a secondary container on the same channel.
pole clamp	Device used to connect an infuser to an I.V. pole.
power LED	Indicates an infuser is powered by AC mains when LED lit continuously. Indicates an infuser is powered by batteries when LED is off.
power priming	Used to prime or remove air from an administration set found in Options menu.
Power Saving mode	Low power state utilized when no keys have been pressed for a specified time period.

Term	Definition
power sources	Energy source an infuser draws power from like rechargeable batteries or AC mains.
power off (verb)	Turning off infuser allow the internal processors to shut off.
pressure	The measured fluid pressure for the proximal line or the distal line when a fully primed administration set is loaded into an infuser with the cassette carriage closed.
prime	To remove all air from the cassette, tubing, and injection site prior to connecting the infuser to the patient.
program (noun)	A set of coded instructions for delivering fluids.
program (verb)	Defining or entering coded instructions for delivering fluids.
programmable ranges	The minimum and maximum allowable values for a therapy.
programming mode	Operational mode during which therapy parameters are selected.
proximal	In relation to the cassette, it refers to the tubing entering the cassette coming from the container.
proximal occlusion	Blockage between an infuser and the fluid container.
psi	Pounds per square inch.
purge	Clear out or purge air from the tubing. Same as prime.
PVC plastic	Polyvinyl Chloride plastic.
rate	The infusion speed expressed in mL/hr.
rate titration	Changing the rate while an infuser is infusing.
remote access	Connecting to an infuser using a computer via wireless connectivity.
rounding	Process of making a fractional amount displayed on the screen.
rule sets	User-defined rules relating to the drug library including minimum and maximum dose, maximum rate and maximum VTBI for each medication, and maximum patient weight.
secondary container	A container connected to the primary line to infuse additional fluid or medication used in piggyback.
Service mode	The mode accessible only to Hospira personnel.
settings	Parameters such as program settings, infuser settings, or configuration settings.
set up (verb)	To make an infuser ready for use.
shift totals	Totals for a shift.
silence the alarm	To silence an infuser alarm in 2 minute intervals, press SILENCE.
slide clamp	An apparatus in an administration set that can be opened or closed to restrict or allow fluid delivery.
soft limit	The upper and lower dose limits for the selected medication and selected CCA. Soft limits can be overridden. Defined by the hospital for each medication in its drug library, the soft limits for a particular medication may vary across CCAs. If a given medication has a hard limit, its soft limits, if any, must equal or fall within its hard limits.

Term	Definition
standard conditions	Conditions the defined infuser accuracy.
standby	A delivery program state that resembles a delayed start of 24 hours for a channel in all respects except a status display of Standby instead of Delayed.
stop mode	Operating mode an infuser enters when the programmed therapy is complete, and during certain alarm conditions.
Stop Program button	Stops an infusion.
stop time	A specific time to stop a program.
subcutaneous	A route of delivery just beneath the dermal skin layer.
syringe	A device for withdrawing, injecting, or instilling fluids.
system message— advisory	A visual message indicating infuser status.
system message— prompt	While entering a program, a visual warning that informs the user of the violation of a hospital-defined rule set or a field range, e.g., a dose limit for a specific medication.
system setup	The process of preparing an infuser for use.
TALL-Man lettering	TALL-Man lettering uses upper case letters to help differentiate sound-alike or look-alike medication names. Default Drug Library medication names are displayed in TALL-Man lettering where appropriate.
therapy	A type of program that can be entered into an infuser. Available therapies include Basic Program, Taper, Multistep, Intermittent, and Interchannel Sequencing.
touchscreen key	Any key rendered on the touchscreen to facilitate interaction with an infuser.
units	A medication amount (without a quantity of mass referent) adopted as the USP standard of measure for use in a concentration.
unlock	No cleaning or program locks are active.
volume totals	Section of event history that stores volumes delivered from either the fluid container or a specified time.
VTBI	Volume To Be Infused.
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.
Warning (high alarm urgency)	An alarm condition which requires immediate operator response. For example, an infusion delivery disruption or a severely low battery.
weight	The parameter entry required with dosing units that include kg.
weight dosed	A type of therapy that uses a calculated dose amount based on the patient's weight.
y-sites	A port on the administration set tubing to inject medications via a syringe.

Appendix E: Default Drug Library (DDL)

Medication Name	Medication Name	Medication Name
Fluid Only	DOXOrubicin	Morphine
Other Drug	Epinephrine	Nafcillin
Abciximab	Epoprostenol	Naloxone
Acyclovir	Eptifibatide	NitroGLYCERIN
Albumin	Erythromycin	NitroPRUSSIDE
Aldesleukin	Esmolol	Norepinephrine
Alfentanil	Etomidate	Ofloxacin
Alteplase (rt-PA)	Etoposide	Ondansetron
Amikacin	Famotidine	Other Drug
Aminocaproic acid	Fentanyl	Oxacillin
Aminophylline	Fluconazole	Oxytocin
Amiodarone	Fluid Only	Paclitaxel
Amphotericin B	Flumazenil	Pancuronium
Ampicillin-sulbactam	Fluorouracil	Pantoprazole
Atracurium	Furosemide	Penicillin
Azithromycin	Gatifloxacin	Pentobarbital
Bleomycin	Gentamicin	Phenylephrine
Bretylium	Heparin	Piperacillin-bactam
Carboplatin	Hetastarch/NaCl	Potassium Infusion
Cefazolin	Hextend	Procainamide
Cefepime	Hydromorphone	Propofol
CefoPERAZONE	Ifosfamide	Ranitidine
CefoTAXIME	Imipenem Cilastatin	STREPTokinase
CefoTETAN	Immune Globulin IV	Teniposide
CefoXITIN	Insulin	Theophylline
CeftAZIDime	Isoproterenol HCl	Ticar-clavulanate
CeftIZOXime	Labetalol	Tirofiban
Ceftriaxone	Lepirudin	Tobramycin
Cefuroxime	Leucovorin	UROkinase
Cimetidine	Levofloxacin	Vancomycin
Ciprofloxacin	Lidocaine	Vecuronium
Cisplatin	Lorazepam	Verapamil
Clindamycin	Magnesium Infusion	VinCRISTine
Co-trimoxazole	Mannitol	
Cyclophosphamide	Mesna	
Cyclosporine	MethoHEXITAL	
Cytarabine	MethoTRESXATE	
Dexmedetomidine HCl	Methylprednisolone	
Diltiazem	Metoclopramide	
DOBUtamine	Metronidazole	
Docetaxel	Midazolam	
DOPamine	Milrinone	

NOTES:

Index

A

AC power 33
Active button 16
administration sets
 general information 54
 loading 62
 non-blood sets 57
 preparing 55
 with syringe holder 60
advanced therapies
 overview 87
Air-In-Line 118
 alarm 118
alarm
 Air-In-Line 118
 conditions and criteria (table) 127
 Distal Occlusion 112
 Infusion Complete Callback 117
 log 145
 messages 127
 minimized tabs 129
 multiple 130
 Nearing End of Infusion 120
 Proximal Occlusion 114
 silence audible 130
 silencing 129
 touchscreen appearance 128
 urgency 127
alarm messages 127
alarm tab
 End of Infusion (figure) 80
 Nearing End of Infusion (figure) 80

B

backcheck valve 59, 83
bar
 vertical hot scroll 17
 vertical short scroll 17
Basic program
 programming 71
 screen 78
Basic therapy
 end of infusion 80
 overview 71
Battery Indicator icons 36
battery power 36
Biomed Mode 47
Bolus 123
bolus

 clinician-activated, programming 123
 icon 18
Bolus Delivery
 unintended 11
Bolus Setup screen 123
button
 Active 16
 Depressed 16
 drop-down list field 17
 Emergency Stop 42
 end-of-list indicator 17
 horizontal navigation arrow 17
 on infuser body 16
 patient information 17
 Selected 16
 SILENCE 130
 Start Multistep 93
 Start Program 45
 touchscreen 16
 Unavailable 16

C

calculated field value screen 45
calculated values 45
Cassette Eject Lever (figure) 68
Cautions
 administration sets 9
 battery operation 10
 cleaning 11
 general 8
CCA 138
 access passcode (figure) 73
 changing 138
 list (figure) 72
channel LED 35
 color and conditions 36
channel level feature 24
 availability 24
 screen 24
Clinical Care Area *see* CCA
Clinical Modes
 Delivery 41
 Power 33
 Programming 40
 Stop 42
Clinician-Activated Bolus
 programming 123
Current Program log
 view 147

D

Default Drug Library (DDL) 137, 147, 187
delayed start
 programming 109
Depressed button 16
disposal
 product 153
Distal Occlusion 112
 alarm 112
document conventions 7

E

electrical artifacts 12
Emergency Stop button 42
end-of-list indicator 17

F

features
 channel level 23, 24
 device level 23, 26
 infuser 23
 program level 23, 25
flow continuity 158
flow rate accuracy 158
 standard specifications (table) 158
fluid container compatibility 56

G

glossary 181
grasping infuser (figure) 51

H

hard limit override 134
high-risk medications 148

I

I.V. pole
 attach to infuser 49, 50
 clamp knob (figure) 51
 clamp screw (figure) 50
 detaching infusers from 51
 infuser
 acceptable configurations (figure) 49
 configurations 49
 pole clamp (figure) 50
 Rapid Travel Release button (figure) 52
 removing infuser 53
icon
 basic program 18
 Battery Indicator 36
 bolus 18

Exceeded Upper Hard Limit 135
Exceeded Upper Soft Limit 133
infusion running drip 18
Intermittent therapy 18
Multistep therapy 18
piggyback 18
infuser
 acceptable configurations
 I.V. pole (figure) 49
 buttons 16
 features 23
 front view and touchscreen 15
 grasping (figure) 51
 I.V. pole
 attach 50
 configurations 49
 overview 15
 power on 33
 SILENCE button 130
 Standby mode 111
Infuser Basic Operations 33
infuser cassettes
 emergency eject 67
 power priming 106
 removing 66
infuser layout
 bottom 22
 front 15
 rear 20
infuser specifications (table) 155
 audible tones 156
 battery 155
 date, time settings 157
 delivery rate 157
 electrical 155
 external interfaces 155
 infuser alarms 156
 input device, keypad 156
 KVO 157
 LCD display 156
 LED display 156
 memory protection 156
 occlusion settings 157
 physical 155
 safety features 156
 temperature parameters 157
 wireless connectivity 156
Infusion Complete Callback 117
 alarm 117
intended audience 7
intended use 7
Intermittent therapy 95
 icon 18
 programming 95
Invalid Entry 135
 system message 46

-
- system message (figure) 136
 - invalid value handling 45
 - K**
 - keypad
 - Intermittent Time Numeric 100
 - L**
 - label
 - Sterile Parts and Pathways 54
 - list numbers
 - accessories 179
 - administration sets 179
 - loading administration sets 62
 - logs
 - Alarm Log 137, 145
 - Event Log 137, 144
 - Rule Set Alert Override Log 137, 146
 - M**
 - maintenance
 - battery 152
 - battery disposal 152
 - cleaning solutions 151
 - cleaning the infuser 151
 - medication concentration, specifying 76
 - messages
 - alarm 127
 - system 127
 - minimized alarm tabs 129
 - multiple alarm tabs (figure) 131
 - Multistep Setup screen 88
 - Multistep therapy
 - icon 18
 - programming, part II 87
 - N**
 - Nearing End of Infusion 120
 - Nearing End of Infusion alarm 120
 - New Patient dialog box 35
 - non-blood sets
 - administration sets 57
 - Number of Steps
 - drop-down list (figure) 88
 - numeric keypad
 - Time touchscreen 77
 - O**
 - Outside of Hard Limits 133
 - system message 133
 - override
 - hard limit 134
 - P**
 - patient information 138
 - patient information button 17
 - performance trumpet curves 158
 - piggyback
 - preparing for secondary delivery 59
 - piggyback icon 18
 - Piggyback infusion
 - how to program 85
 - pole clamp
 - placing I.V. pole (figure) 50
 - power
 - AC 33
 - battery 36
 - power LED 38
 - priming
 - sets 106
 - product disposal 153
 - program (Basic) 71
 - Program Lock 29
 - activate 30
 - Enter Code dialog box
 - activating 31
 - program options 83, 105
 - alarm settings 112
 - Delayed Start 109
 - Standby Mode 110
 - program totals
 - accessing screen 141
 - clearing 141
 - view log 142
 - programming
 - delayed start 109
 - Proximal Occlusion 114
 - alarm 114
 - R**
 - Rapid Travel Release button (figure) 52
 - Rule Set Alert Override Log 146
 - view 146
 - S**
 - screen
 - Advanced Therapy Selection 87, 95
 - Alarm Log 145
 - Basic Program 74
 - Basic program, filled 78
 - Basic programming 75, 140
 - Bolus Setup 123
 - calculated field value 45
-

- channel LED location 35
- channel level feature 24
- Completed Intermittent 103
- Completed Multistep 94
- Concentration drop-down list 76
- Confirm Bolus 124
- Confirm Program 78
- Delivering Bolus 125
- Delivering Intermittent X of Y 102
- Delivering Multistep 94
- Delivering Program 85
- device level features 26
- Disconnect Tubing system message 107
- Dose Calculation 77
- End of Infusion, alarm tab 80
- Enter Code dialog box
 - activating 31
 - unlocking 32
- Event Log 144
- Exceeded Upper Hard Limit icon 135
- Exceeded Upper Soft Limit icon 133
- Far Viewing Delivery 42, 148
- Far Viewing device-level alarm tab 129
- High-Risk Medication Infusing 148
- infuser
 - bottom view and layout 22
 - rear view and layout 20
 - startup 34
- Infusion Field Drop-Down List 147
- Infusion Selection drop-down list 75
- Intermittent Callback 98
- Intermittent Dose Calculation 99
- Intermittent Programming 99, 100
- Intermittent Setup 1 of 2 96
- Intermittent Setup 2 of 2 98
- multiple alarm tabs 131
- Multistep 1 of X 89
- Multistep 1 of X programming 90
- Multistep 2 of X Programming 91
- Multistep Programming 92
- Multistep scroll bar 93
- Multistep Setup 88, 89
- Multistep Summary 92
- Near Viewing Alarm tab 128
- Near Viewing Delivery 41
- Near Viewing device-level alarm tab 129
- Nearing End of Infusion
 - alarm tab 80
- No Battery system message 38
- On/Off button 34
- Options
 - Standby field 111, 112
- Patient Information 72, 74, 138, 140
- Piggyback Programming 85
- power LED location 38
- Power Prime 108
- Power Prime Progress 108
- power priming options
 - infuser cassettes 107
 - program level features 25
- Program Lock 30
 - activated 31
 - deactivated 32
- Program Totals 141
- programming
 - power prime cassette 106
- Rule Set Alert Override Log 146
- Settings 27, 29
 - Brightness 28
 - Date & Time 29
 - Sound Volume 27
- Stop Mode
 - Alarm State 43
 - Manual Stop 43
- Time touchscreen 77
- touchscreen
 - front view 15
 - Waiting for Intermittent X of Y 102
- Selected button 16
- sets
 - power priming 106
- settings button
 - sound volume settings 27
- shift totals
 - clearing 143
 - view logs 143
- shift totals data 142
- SILENCE button 130
- sound volume settings
 - settings button 27
- specifications *see* infuser specifications
- Standby Drop-Down list 111
- Standby mode
 - place infuser in 111
- Start Program button 45
- Sterile Parts and Pathways label 54
- Stop infuser
 - Emergency Stop button 44
 - Stop Program button 44
- stored data 137
- stored information
 - current program 137, 147
 - logs 137
 - patient data 137
 - program totals 137
 - shift totals 137, 142
- storing the infuser 153
- supplemental deliveries 83
- syringe holder
 - administration sets 60
- system message 131
 - Invalid Entry 46, 135

-
- Invalid Entry (figure) 136
 - Outside of Hard Limits 133
 - Soft Limit Outside of Limits 132
 - Soft Limit Outside of Limits (figure) 132
 - system messages 127
- T**
- tab
 - minimized alarm 129
 - multiple alarm 131
 - Time touchscreen 77
 - titrate
 - infusion 81
 - titration 105
 - touchscreen
 - button 16
 - front view 15
 - icons 17
 - symbols 17
- troubleshooting
 - alarm messages 171
 - system messages 161
- U**
- Unavailable button 16
- V**
- value rounding 46
 - VTBI
 - piggyback VTBI 84
- W**
- wireless communication 22
 - workflow
 - Basic program 71

SYMBIQ™ Infusion System License & Warranty

Subject to the terms and conditions herein, Hospira, 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 number 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, "repair or other service" means any repair or service other than the replacement of accessory items such as batteries and detachable mains power cords.

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.

NOTES:

Hospira, SYMBIQ™ and Hospira MedNet® MedNet Service Suite are registered trademarks of Hospira.

The process of downloading a customized drug library to an infuser is covered by U. S. Patent Numbers 5681285. Other patents pending.

The SYMBIQ™ Infusion System uses components and technologies protected by U. S. Patent Numbers 6,497,680, 5,989,222, 5,186,779, 5,745,378, 5,586,868, 5,462,256, and 5,191,795.

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



The SYMBIQ™ Infusion System is Wide Fidelity (WiFi) enabled and complies with the IEEE 802.11b communications standard.



Type CF

The SYMBIQ™ Infusion System provides an adequate degree of protection against electrical shock and is suitable for application to a patient.

IPX1

Protected against dripping water.



The SYMBIQ™ Infusion System complies with ul60601-1 with respect to Protective Earthing (ground).

**Copyright 2006
All Rights Reserved**

Hospira
North Chicago, Illinois 60045
www.hospira.com

This document and the subject matter disclosed herein are proprietary information. Hospira retains all the exclusive rights of dissemination, reproduction, manufacture, and sale. Any party using this document accepts it in confidence, and agrees not to duplicate it in whole or in part nor disclose it to others without the written consent of Hospira.

