

CADD-MS™ 3

Ambulatory Infusion Pump

Patient Information Guide


smiths

Table of Contents






Important safety information	1
Warnings.....	1
Cautions.....	4
Glossary of Terms.....	6
Introduction.....	8
Delivery features	8
Continuous Rate	8
Doses	8
Other features.....	9
Pump Illustrations.....	10
Description of features and buttons.....	12
Battery cap	12
Display	12
Programming keys	12
▲ and ▼ keys	12
Demand Dose button.....	12
Cartridge cap.....	12
Features.....	13
Vibration alert	13
Occlusion (blockage) sensor	13
Cartridge sensor	13
Watertight	13
History	13
Description of pump display & menus.....	14
Screensaver and backlight	15
Menus.....	16
Editing values	16
“Timeout” feature	16
“Home screen” example.....	17
Sample “menu” screens.....	18
Changing the battery	19
Insert a battery.....	19
Self Tests.....	20
Stopping and starting the pump.....	21
Starting the pump.....	22
Beep or Vibrate.....	23

Loading a cartridge	25
Supplies required	25
1. Filling the cartridge	25
2. Attaching an infusion or extension set and loading a filled cartridge into the pump	26
3. Fill the tubing	30
4. Fill cannula	32
5. Set site change reminder	34
Delivering a Demand Dose	35
Canceling doses	36
Canceling a dose (Demand or Automatic) while in progress	36
Canceling next Automatic Dose	37
History	38
Continuous Rate Menu	40
Automatic Dose Menu	41
Demand Dose Menu	42
About alarms (Beep/Vibrate settings)	43
Troubleshooting	45
Alarms	45
Alerts	47
Other Messages	48
Cleaning your pump	51
The pump and	52
Extreme temperatures	52
Water	52
If the pump is dropped or hit hard	53

Important safety information

WARNING: Read this entire guide before using the CADD-MS™ 3 Ambulatory Infusion Pump. If you do not understand something or have any questions, contact your healthcare provider or Smiths Medical MD, Inc. Incorrect use of this pump, failure to follow the instructions and important information contained in this guide, or improper/inadequate troubleshooting can lead to death or serious injury. Warnings, cautions and other important safety information follows, and can be found in bullet form throughout the manual (indicated by the  symbol).

Warnings

-  **The CADD-MS™ 3 Ambulatory Infusion Pump is designed for subcutaneous, intravenous, epidural and intrathecal infusion of medication. DO NOT use with blood or cellular blood products. Use the pump only as instructed in this guide and by your healthcare provider.**
-  **This manual describes how to use and troubleshoot the CADD-MS™ 3 pump. Smiths Medical does not, however, make any recommendations about any specific programming related to your therapy.** Whether certain features are appropriate for you must be determined before use. Before using the pump, you must receive appropriate training in all its functions and in troubleshooting problems.
-  **To avoid a risk of explosion,** do not use the pump in the presence of flammable anesthetics or explosive gases.
-  **Do not use pump cases that have a magnetic clasp.** They can affect the internal electronics and cause delivery inaccuracy and/or system faults.
-  **The CADD-MS™ 3 pump and accessories include small component pieces that could pose a choking hazard to small**

children.

- ☞ Before going to bed, you should **make sure the cartridge contains enough medication to last through the night.** Do not use the “vibrate” alarm at night. If you are a very deep sleeper, you may want to set the audio volume to High (the loudest setting) before going to bed.
- ☞ **The time and date must be set correctly, since delivery factors are time-based, and all history is stored based on time and date.** Occasionally the time will need to be reset, for example, during daylight savings time or to adjust for a different time zone. Contact your healthcare provider if the time and/or date are wrong.
- ☞ **If there are any system problems during the self tests, the pump will stop the tests and display an alarm screen letting you know there is a problem. If this happens, do not use the pump.**
- ☞ **Always use the pump’s Load feature when starting a new cartridge.** This will assure that the cartridge is properly loaded and the infusion or extension set is filled with medication.
- ☞ **Always use “aseptic” technique, particularly when working with the cartridge, infusion set, catheter and access site to minimize the risk of infections** (see “Aseptic Technique,” page 6).
- ☞ **Always read the Instructions For Use** provided with the medication, cartridge, infusion set, and any other accessory used with the CADD-MS™ 3 pump.
- ☞ **To avoid accidentally infusing medication or causing a backflow of blood from the access device (or site), disconnect the infusion set tubing from the access device (or site) before removing a used cartridge or replacing an infusion set.** Never use the pump’s “load cartridge” or “fill tubing”

features while tubing is connected to your body, or an unintended dose of medication can be delivered.

- ☞ **If not properly tightened, medication could leak from the cartridge and tubing connections and disrupt delivery.** Signs of leakage can also mean opportunity for contamination leading to infection.
- ☞ **Never use Fill Tubing when the infusion set is connected to your body,** or an unintended dose could be delivered.
- ☞ **Always remove all air from the cartridge and infusion set before starting medication delivery. Air bubbles in the system can slow or stop medication delivery.** Check all connections carefully for leaks, as leakage can slow or stop medication delivery to your body, and allow an opening for contamination leading to infection.
- ☞ **Talk to your healthcare provider regarding when/if it is acceptable to cancel a dose.** Automatic Doses are scheduled based on your therapy needs and should not be canceled without first deciding (with your healthcare provider) when it is safe to do so.
- ☞ **If the pump is dropped or hit against something hard, always inspect it carefully to make sure it is still working properly.** Make sure the display is working correctly, and the cartridge, cartridge cap, battery cap and infusion set are connected correctly. If there is damage to the pump's outer shell (cracks, chips), the pump may no longer be watertight.
- ☞ **If the display has missing or incomplete characters, or if the pump does not seem to be working correctly, stop using the pump immediately.** Contact your healthcare provider for information on servicing your pump.

Cautions

- 🔊 **Avoid strong electromagnetic fields, like those present with Magnetic Resonance Imaging (MRI) and direct x-ray, as they can affect how the pump works.** If you cannot avoid them, you must take the pump and pouch off.
- 🔊 **Do not expose the pump directly to ultrasound.**
- 🔊 **Do not use the pump in a hyperbaric chamber** as this may affect how the pump works and may also cause damage to the pump.
- 🔊 **Do not use cell phones within six (6) inches (15 cm) of the pump.** Interference with the pump electronics by cell phones can occur. If a cell phone interferes with the pump, the pump will generate a System Fault alarm.
- 🔊 To avoid damage when storing the pump, first remove the battery and cartridge. Place the pump in the original carton and keep it away from cold, heat, and dampness. After 30 days, all pump programming will be lost and your healthcare provider will need to reprogram your pump.
- 🔊 The pump may experience problems if operated in conditions where temperatures are lower than 35.6°F (2°C) or higher than 104°F (40°C), when relative humidity (non-condensing) exceeds 90%, and when atmospheric pressure is lower than 10.2 PSI (70 kPa) (10,000 feet above sea level) or higher than 15.4 PSI (106 kPa). If you experience problems, remove the pump from use.
- 🔊 The pump may be damaged if stored in environments where temperatures are lower than -4°F (-20°C) or higher than 140°F (60°C), when relative humidity (non-condensing) exceeds 90%, and when atmospheric pressure is lower than 10.2 PSI (70 kPa) (10,000 feet above sea level) or higher than 15.4 PSI (106 kPa).

- ⚠ **Do not use NiCad, nickel metal hydride, carbon zinc (heavy duty), lithium or any rechargeable batteries.** They will not power the pump properly, and the battery life indicator on the home screen may not show the correct amount.
- ⚠ **Strong household cleaners and chemicals will damage the pump's outer shell** if applied directly or indirectly (on your hands, for instance). Avoid the following in particular:
 - Household cleaners (such as Formula 409®)
 - Jewelry cleaner
 - Petroleum-based products (such as gasoline or GooGone®)
 - Products that contain high levels of D.E.E.T. (such as Deepwoods Off® insect repellent)
- ⚠ **Never use abrasive cleaners, solvents, bleach, scouring pads or sharp instruments when cleaning your pump, as they can scratch, discolor or damage the pump's outer shell.** If the display is scratched, it may be difficult to read and you will need to have it replaced. If the outer shell is chipped or cracked, it may no longer be watertight and will require service.
- ⚠ **Never use steam or very hot water (exceeding 120°F [49°C]) in an attempt to sterilize the pump. Never put your pump in the dishwasher.** Exposing the pump to these high temperatures could damage the pump's electronics and result in the need to service your pump.
- ⚠ **Use only Smiths Medical MD, Inc. 3 ml medication cartridges.** Other manufacturers' products will not work with the CADD-MS™ 3 pump.

Glossary of Terms

The following is a list of terms that you should know before reading this manual, because the manual uses these terms often:

Automatic Dose: Automatic Doses are programmed amounts of medication delivered at specific times of the day.

Access site: The area on your body into which the cannula or needle of the infusion set is inserted.

Aseptic technique: Aseptic technique is used to minimize the risk of infection. Use aseptic technique when working with the cartridge, infusion or extension set, cannula/needle and preparing the access site. Wash your hands thoroughly with soap and water. Do not touch or blow directly on any part that comes in contact with medication (the “fluid path”). Make sure the area (counter or tabletop, etc.) where you are working is clean.

Continuous rate: The amount of medication delivered continuously over 24 hours a day, providing delivery of medication at all times. The continuous rate is measured in *milliliters per hour* (ml/hr).

Cannula: A small, soft tube or needle, inserted into your body, through which medication is delivered.

Cartridge: The container that holds the medication. The Smiths Medical 3 ml Medication Cartridge looks like a small syringe.

Demand Dose: A Demand Dose is an extra programmed amount of medication initiated by the patient as needed.

Dose: An amount of medication given at specified times and or as needed.

Fluid path: The areas inside the cartridge and infusion set that come into direct contact with the medication. These areas include the inside of the tubing and connectors, the inside and tip of the needle and cannula, and the inside and tip of the cartridge. To help protect against infection, never touch or blow directly on

any part of the fluid path.

Infusion set: The tubing that is attached to the end of the cartridge, through which the medication is delivered into your body.

Infusion pump: A small electromechanical medical device designed specifically for delivering precise amounts of medication into the body. The CADD-MS™ 3 pump is controlled by two microprocessors (computer chips) which continuously monitor each other to make sure the system is working properly.

Occlusion: Blockage. Occlusions are associated with the infusion set and/or access site, and mean that medication delivery is stopped. Blockage can be caused by a number of things, including the tubing being pinched or kinked, the cannula or needle being blocked, as well as other reasons.

Pushrod: On the CADD-MS™ 3 pump, the cartridge is attached to the pushrod and, when the pump is started, the motor causes the pushrod to move forward and push medication through the infusion set into your body.

Introduction

Your healthcare provider has decided that you should use the CADD-MS™ 3 Ambulatory Infusion Pump as part of your treatment.

The CADD-MS™ 3 pump can be carried with you and delivers medication into your body. The pump is programmed by your healthcare provider specifically for you.

Your healthcare provider will instruct you on the proper use of this pump. This guide is intended as a supplement to those instructions. Use the pump only as your healthcare provider has instructed. Use only the features or procedures for which you have been trained. If there is anything you do not understand ask your healthcare provider for additional instructions.

Read all of the warnings and cautions on the previous pages and throughout the manual.

Delivery features

The pump may be used to deliver medication in two ways, as a continuous rate and as an added dose.

Continuous Rate

The pump may be programmed to deliver a steady flow of medication called the “**Continuous Rate**.” Your pump may be programmed with one or more different rates per 24 hour period to meet your medication needs throughout the day and night.

Doses


The pump can deliver two types of doses, an Automatic Dose (programmed to deliver at a preprogrammed time) as well as Demand Doses, which are delivered as needed. Your pump may have one or both types of doses available, depending on how your healthcare provider has programmed it. There may also be lock-out times programmed so that you must wait a specific amount of

time between giving doses.

Other features

The pump has a large display (or screen) where all programming, operating and alarm information is displayed. Programming of the pump is menu-driven, like an ATM or cell phone.

The pump is powered by one “AAA” (IEC LR03) alkaline battery, which is readily available at most grocery stores, hardware stores, drug stores, and electronic stores. The expected battery life is approximately 2 weeks (battery low alert) at 0.124 ml/hr.

 **Caution: Do not use NiCad, nickel metal hydride, carbon zinc (heavy duty), lithium or any rechargeable batteries.** They will not power the pump properly, and the battery life indicator on the home screen may not show the correct amount.

As long as the pump's labels and outer shell are intact, the pump is watertight to a depth of 8 feet (2.4 meters) for 30 minutes or 12 feet (3.6 meters) for 3 minutes.

Pump and delivery history are automatically tracked by the pump, and can be viewed in the **History** menu.

The pump requires the use of the Smiths Medical MD, Inc. 3 ml Medication Cartridge and an infusion set (any manufacturers' infusion set can be used, as long as it has a standard luer lock to connect to the cartridge).

Pump Illustrations

Figure 1

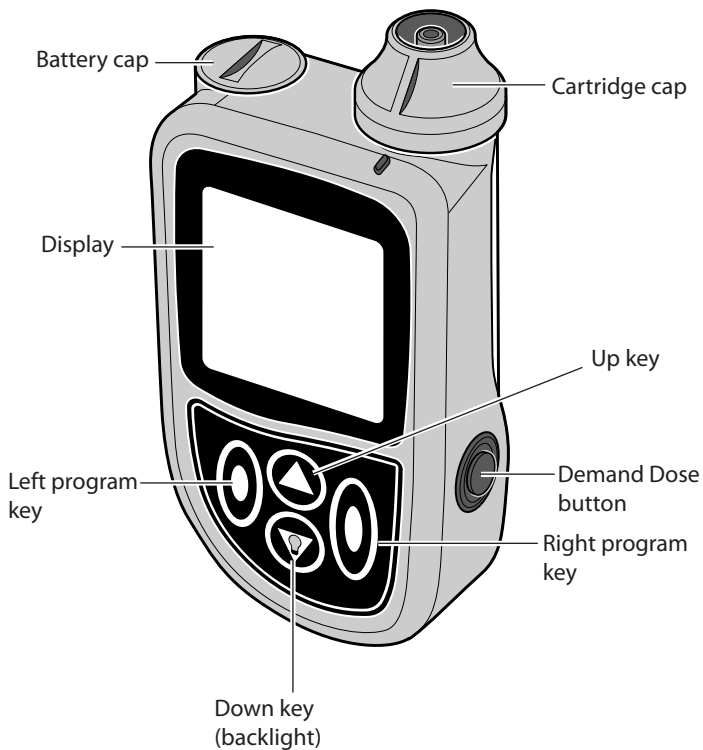
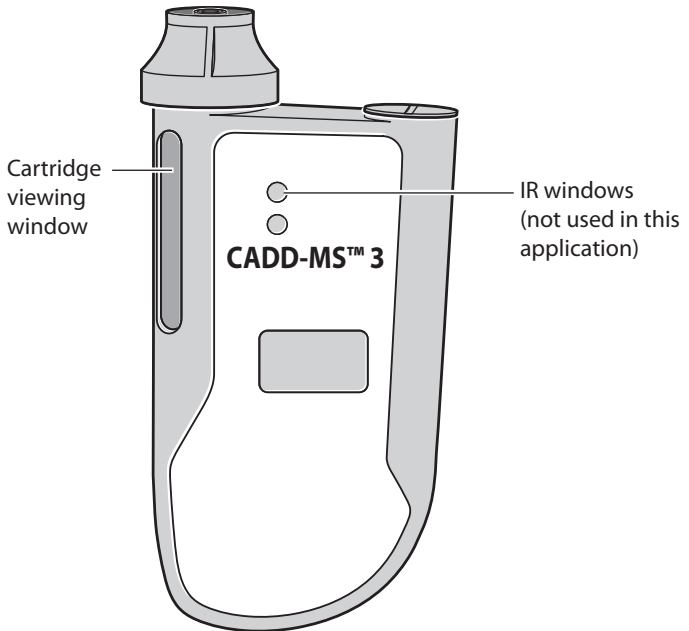


Figure 2



Description of features and buttons

Battery cap (Figure 1)

Holds the battery in place in the battery compartment. The pump uses one “AAA” (IEC LR03) alkaline battery. The approximate amount of battery life is displayed in the home screen, and an alarm is given when battery power is low. Keep extra batteries on hand.

Display (Figure 1)

The display (also referred to as the screen) shows all the programming, operating and alarm/alert information for the pump.

Programming keys (Figure 1)

There are two keys on the front of the pump right below the display that do not have any names or symbols on them. These are the programming keys. They have different functions, depending on where you are in a menu. In the display right above each key is a short description of what happens if you press it. Always look to the display above each key to see what the key is used for.

▲ and ▼ keys (Figure 1)

The ▲ and ▼ keys are used to move around in menus, and to program amounts. Whenever you can use the up and down keys, the symbol ◀ is shown in the bottom, middle part of the display. When you are at the top or bottom of a menu, only one of the keys can be used, and the symbol will change to ▼ or ▲, respectively.

Demand Dose button (Figure 1)

If Demand Doses can be delivered, press the Demand Dose button to deliver a dose.

Cartridge cap (Figure 1)

Once you load a filled cartridge into the compartment, press and

turn the cartridge cap over the top of it to hold it firmly in place. You can look at the cartridge viewing window (Figure 2) to make sure the cartridge is properly loaded, and to periodically check the amount of medication left in the cartridge.

Features

Vibration alert

If you don't want the pump to beep during alarms and alerts, you can program it to vibrate instead. This feature can be used in meetings, classrooms, etc. If you choose Vibrate, the "beep" that accompanies each key press is also disabled. Battery life will decrease more rapidly when using the Vibration alert feature.

Occlusion (blockage) sensor

The occlusion sensor continuously tests for blockage that prevents medication from being delivered.

Cartridge sensor

There is a sensor in the cartridge chamber that has two functions. It senses when a cartridge is correctly loaded in the chamber. If the cartridge becomes loose or detached during use, the sensor causes an alarm to occur. When you load a new cartridge into the pump, the sensor also measures how much medication is in the cartridge, and displays this information in the upper left part of the home screen.

Watertight

As long as the pump's labels and outer shell are intact the CADD-MS™ 3 pump is watertight. The pump is watertight to a depth of 8 feet (2.4 meters) for 30 minutes or 12 feet (3.6 meters) for 3 minutes. Dry the pump with a clean towel after it is exposed to water. You will need to discuss the use of a watertight dressing on your access site with your healthcare provider.

History

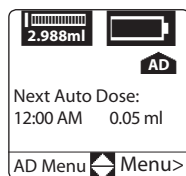
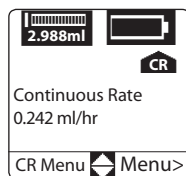
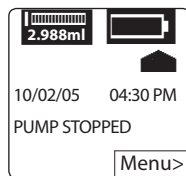
The pump has a History feature that displays a variety of delivery history information.

Description of pump display & menus

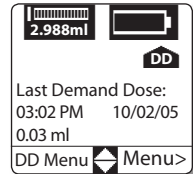
All programming, operating and alarm/alert information is shown in the display. The pump is menu driven, like a cell phone or ATM.

The “**Home**” screen shows various information relating to pump operation. If all of the delivery types are turned off, the home screen at right is shown. Depending on which features you are using, one or more of the following home screens will be shown:

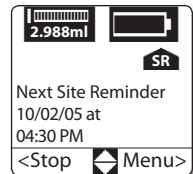
- The **Continuous Rate (CR)** home screen shows the current continuous rate being delivered. This home screen will only be visible if your pump is programmed with a Continuous Rate. You can also access the Continuous Rate menu from this home screen (discussed later in this manual).
- The **Automatic Dose (AD)** home screen shows when the next automatic dose is scheduled to be delivered. This home screen is only visible if your pump is programmed to deliver Automatic Dose(s). You can also access the Automatic Dose menu from this home screen (discussed later in this manual). When an Automatic Dose is being delivered, the screen will show “**Auto Dose Active**”.



- The **Demand Dose (DD)** home screen shows the amount and time of the last demand dose programmed. This home screen is only visible if your pump is programmed to allow Demand Dose delivery. You can also access the Demand Dose menu from this home screen (discussed later in this manual). When a Demand Dose is being delivered the screen will show “**Demand Dose Active**”.



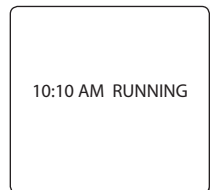
- The **Site Reminder (SR)** home screen shows the date and time of your next programmed site reminder alert. This home screen will only be visible if set to **Yes** (in use) in the **Setup / Alerts** menu. If you haven't programmed another site reminder, it shows when the previous one occurred.



A variety of symbols appear on screen. For example, any time you have to answer a question before proceeding, the question appears on the screen accompanied by . Alarms and alerts are accompanied by . If the pump is performing a task which takes a little time, you will see .

Screensaver and backlight

The screensaver allows the pump to save on battery power. When you are at the home screen and no keys or buttons are pressed for 15 seconds, the screensaver display appears. The screensaver shows the time and whether the pump is running or stopped. Press any key on the keypad to deactivate the screensaver and return to the home screen. Pressing the key turns on the screen backlight; the backlight automatically turns off when the screensaver







reactivates. When the motor is running, the backlight blinks. You can only turn on the backlight from the screensaver. The backlight does not function when battery is “low.”


Menus

To choose a menu item, press the  or  key to highlight the item you want, then press **Select**.



Editing values

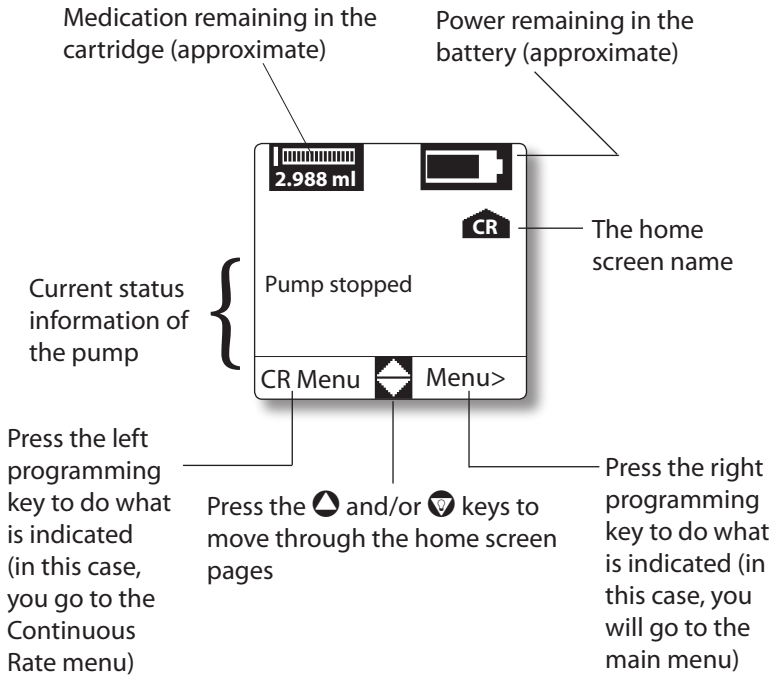
Screens with a single field: press the  or  key to change a value, then press the < or > key to save it or continue editing or move to another screen.

Screens with more than one field: press the > key (**Next**) to move to the field you want to change, and then press the  or  key to change the value. On some screens pressing the < key (**Done**) will save your changes and move to another screen. On others, pressing the < key (**Back**) will save the value in the field and move to the previous field on the screen. There are two exceptions: 1) where your changes take effect only when you exit the screen, and 2) the New Patient Screen and the Enable Delivery Methods screen.

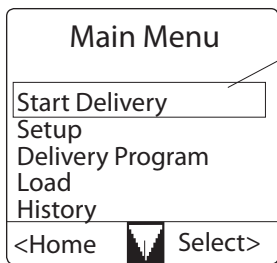
 **Warning: Because the method of saving values varies by screen, it is essential that you review the program before beginning delivery.**



“Timeout” feature



If you change a value using the  or  key and then decide you don’t want to change it after all, wait 45 seconds and the field will return to its original value. Warning beeps or vibrations will let you know that this is happening.

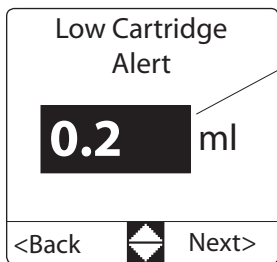




“Home screen” example



In a menu, press  or  to highlight the item you want, then press **Select**

When at the top or bottom of a menu, only the  or  indicator is shown



If the value you are editing is highlighted, press  or  to “scroll” through the available values. When the value you want appears, press **Next** to move forward to the next screen, or press **Back** to back up one screen. Any changes you have made will be saved when you press either **Next** or **Back**

Sample screens

Changing the battery

When a battery gets low on power, the pump will alarm to let you know it's time to change the battery. The expected battery life is approximately 2 weeks (battery low alert) at 0.124 ml/hr (the “Vibrate” alert uses up battery power faster).

Insert a battery

1. Put the edge of a coin into the slot on the battery cap and turn it counter-clockwise (left) to open it (see Figure 3). Remove the old battery (if present). Discard used batteries according to local laws and requirements.

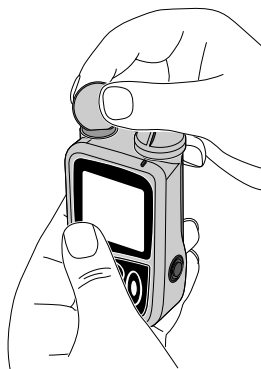


Figure 3

2. Insert one “AAA” (IEC LR03) alkaline battery into the compartment, making sure the + side goes in first (see Figure 4); if you insert the battery wrong, the pump will not start.

⚠ Caution: Do not use NiCad, nickel metal hydride, carbon zinc (heavy duty), lithium or any rechargeable batteries. They will not power the pump properly, and the battery life indicator on the



Figure 4

home screen may not show the correct amount.

3. Place the battery cap back over the compartment. Push down and turn the cap clockwise (right). Again use a coin to tighten the cap. Make sure the cap is on tight.

If you insert a new battery and the pump doesn't turn on, check to make sure that the battery is in the correct orientation (the + side goes in first). If it still doesn't turn on, try a new battery.

Once the battery is correctly inserted, the pump turns on automatically and performs "self tests" to make sure all the systems are working properly.

Self Tests

During the self tests, the pump's internal computer performs tests on all the major hardware, computer, and electronic systems.

⚠ Warning: If there are any system problems during the self tests, the pump will stop the tests and display an alarm screen letting you know there is a problem. If this happens, do not use the pump.

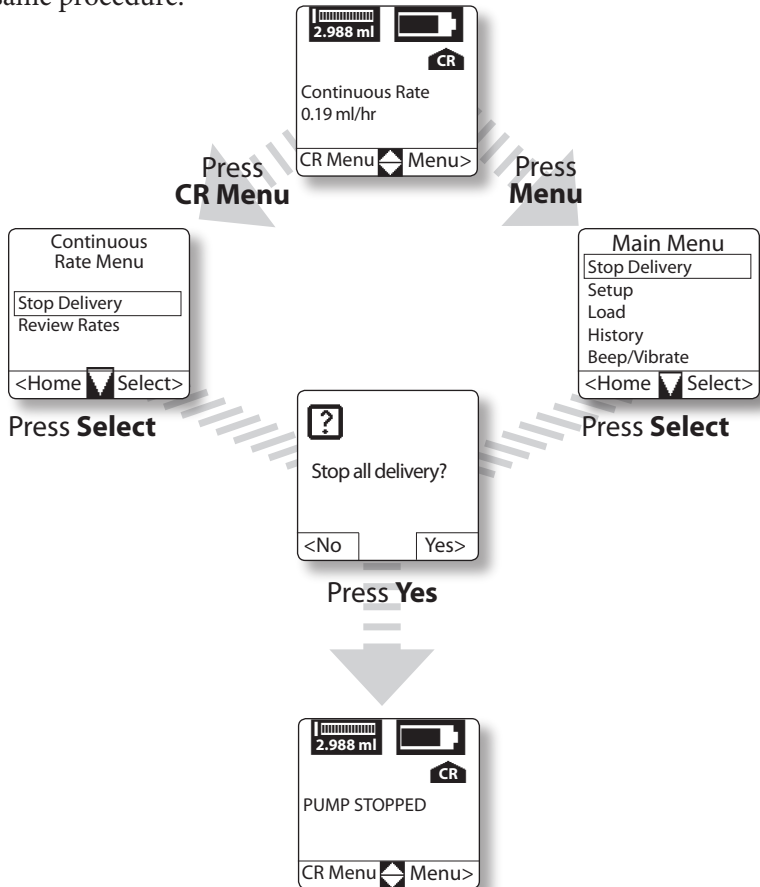
After installing a new battery, watch the pump's display and verify the following:

- The internal computer's software version appears, as well as the pump serial number and last error code (if any).
- The entire display becomes a darker gray. Look for any blank or incomplete areas, which indicates a broken display. The display then briefly goes blank; if the entire display is not blank, it indicates a broken display.
- The pump's internal computer tests the major hardware, computer and electronic systems. If there is a problem with any system, an alarm occurs and you will not be able to start medication delivery.

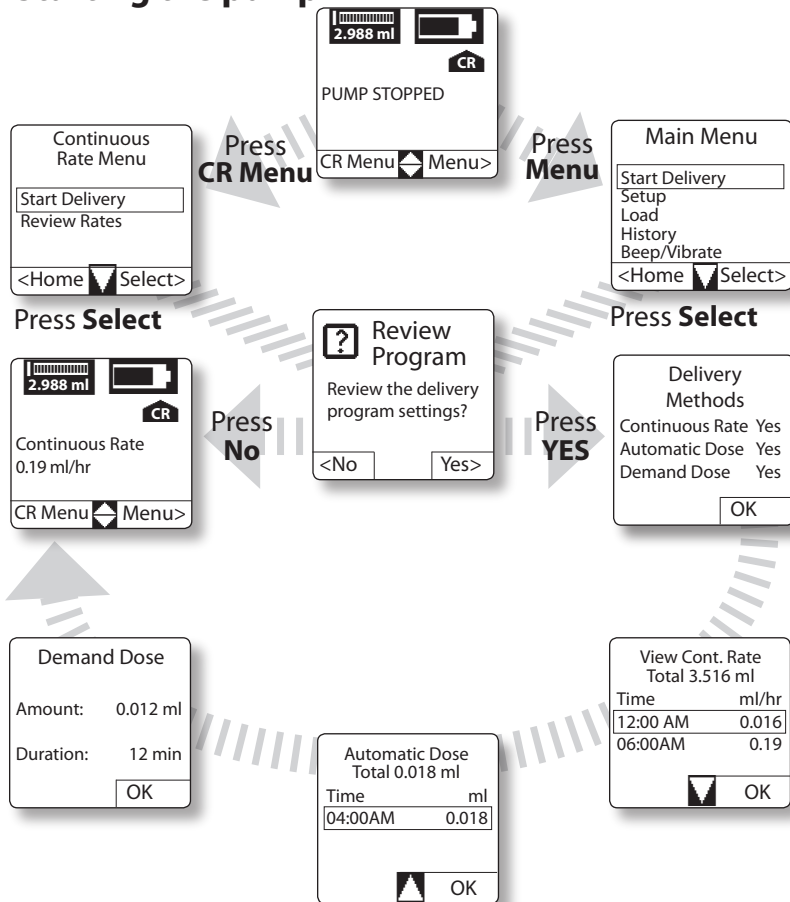
When the self tests are complete, power up ends and the pump beeps six times.

Stopping and starting the pump

You can stop and start the pump from any of the home screens or in the main menu. Certain items in the menu (those having an effect on delivery) can only be accessed if the pump is stopped. Shown below is how to stop the pump from the CR home screen, although stopping from any of the home screens will use the same procedure.



Starting the pump

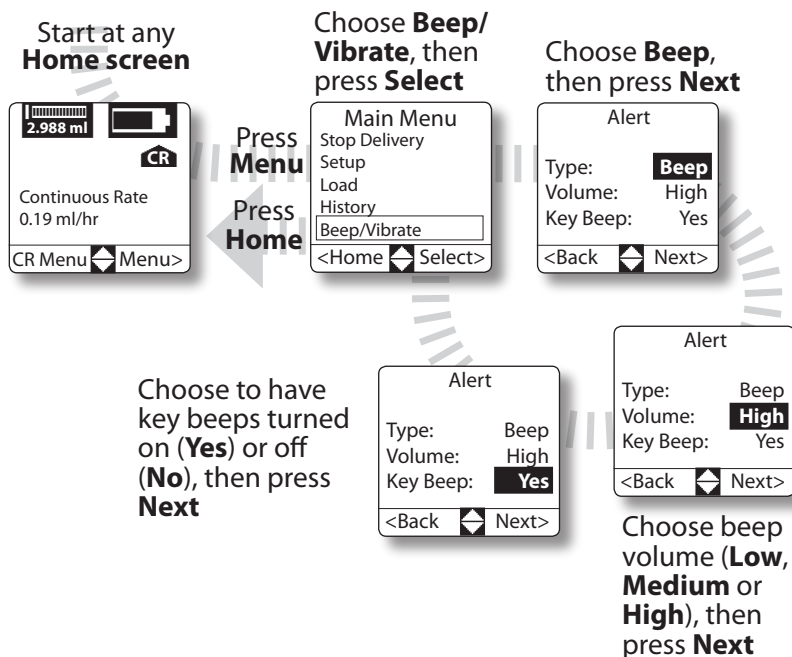


Press **OK** to move through the program review screens. Press **▲** or **▼** to scroll through the continuous rate and automatic dose screens (if needed). Continuous Rate, Automatic Dose and Demand Dose will only appear here if your healthcare provider has programmed the pump that way.

Beep or Vibrate

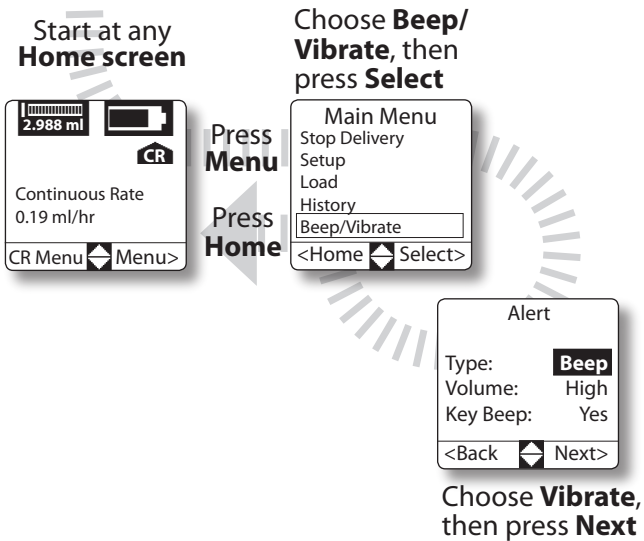
Choose **Beep** or **Vibrate*** to signal alarms and alerts. Then, if using **Beep**, decide how loud the beep is and whether you want the pump to beep each time you press a key. **Low** is quietest and **High** is loudest. It is factory preset to **High**.

Beep:





*Note that **Vibrate** uses up batteries much faster.

Vibrate:




Loading a cartridge

The **Load** feature in the pump menu takes you through each step needed to load a filled cartridge in the pump and start delivering medication.

-  **Warning: Always use the pump's Load feature when starting a new cartridge.** This will assure that the cartridge is properly loaded and the infusion or extension set is filled with medication.
-  **Warning: Always use “aseptic” technique, particularly when working with the cartridge, tubing set, catheter and access site to minimize the risk of infections** (see “Aseptic Technique,” page 6).

Supplies required

In addition to the pump, you will need:

- 1 filled Smiths Medical MD, Inc. 3 ml Medication Cartridge
- 1 infusion or extension set with standard female luer connection (for connecting to cartridge)
-  **Warning: Always read the Instructions For Use** provided with the medication, cartridge, infusion set, and any other accessory used with the CADD-MS™ 3 Ambulatory Infusion Pump.

1. Filling the cartridge

Use aseptic technique (see page 6).

Fill the cartridge according to the *Instructions for Use* supplied with the cartridge.

2. Attaching an infusion or extension set and loading a filled cartridge into the pump

⚠ Warning: To avoid accidentally infusing medication or causing a backflow of blood from the access device (or site), disconnect the tubing from the access device (or site) before removing a used cartridge or replacing an infusion set.

Never use the pump's "Load" or "Fill Tubing" features while tubing is connected to your body, or an unintended dose of medication can be delivered.

1. Turn the cartridge cap counter-clockwise (left) approximately $\frac{1}{4}$ turn and remove it from the pump (see Figure 5). If required, remove the used cartridge (you may get the "Cartridge Removed" alert; press OK). **NOTE:** turning the cartridge cap may also turn the cartridge, so it may already be disconnected from the pushrod when the cap is removed. If not, turn the cartridge $\frac{1}{4}$ turn to the left to disconnect it from the pushrod.
2. Thread the infusion set tubing through the cartridge cap; remove the protective cap from the luer end of the infusion set and insert the luer through the hole in the cap and firmly tighten it onto the tip of the cartridge (see Figure 6).

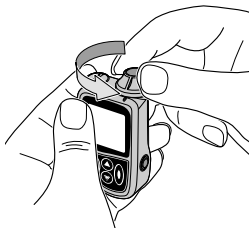


Figure 5

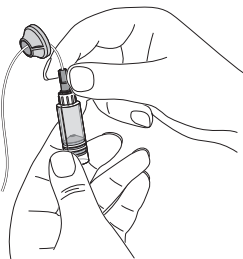


Figure 6

⚠ Warning: If not properly tightened, medication could leak from the cartridge and tubing connections and disrupt delivery. Signs of leakage can also mean opportunity for contamination leading to infection.

3. Insert the new cartridge into the cartridge chamber (see Figure 7). Gently turn the cartridge clockwise (right) about $\frac{1}{4}$ turn to fasten it onto the pushrod (you may need to first turn the cartridge until it drops onto the pushrod).

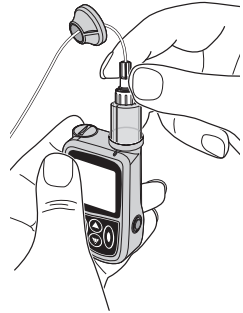


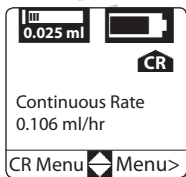
Figure 7

4. Open the pump's **Load** menu and load cartridge (see the next page).

NOTE: You will not be able to load a cartridge that contains less than 0.02 ml (the sensor may have trouble sensing the cartridge amount).

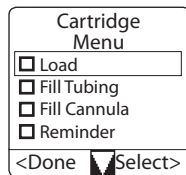
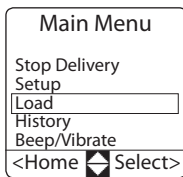
CADD-MS™ 3 Ambulatory Infusion Pump

Start at any
Home screen



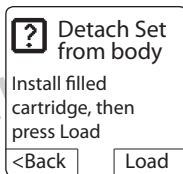
Press
Menu

Choose **Load**, then
press **Select**

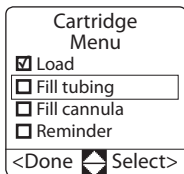
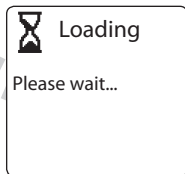


With **Load**
chosen, press
Select

Press
Load*

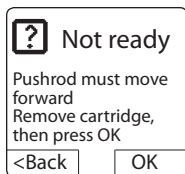


**

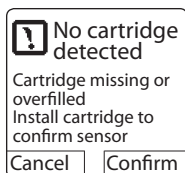


* See the next page for additional screens which may appear when you press **Load**.

** See the next page for additional screens which may appear after the “**Loading**” screen.



* In order for the pump to assure that the cartridge is correctly connected to the pushrod, the pushrod must start in a forward position. If it is not far enough forward when you press **Load**, **or if you attempt to load a cartridge that contains less than 0.02 ml**, the screens shown above will appear. Remove the cartridge, then press **OK** (or press **Back** to return to the previous screen). If you press **OK**, the pushrod moves forward, then you return to the cartridge menu. If your cartridge contains less than 0.02 ml, you will need to start with a new filled cartridge. With **Load** still chosen, press **Select**.



** If, during the loading process, you intentionally or accidentally remove the cartridge, or if the cartridge is too full (more than 3 ml), the screens shown above will appear. The pump needs to check to make sure that the cartridge sensor is working properly.

- If the cartridge is not installed, install it;
- If a cartridge is installed make sure it is not too full (fill with no more than 3 ml). With the tubing set attached, press down gently on the cartridge (this will push excess medication into the infusion set tubing). Press **Confirm**. The pump will confirm that the sensor is working properly. (If the sensor is not working, you will get this message repeatedly and your pump will need to be serviced.) If the sensor is confirmed, you must remove the cartridge and press **OK**. The pushrod moves forward, then you return to the cartridge menu. With **Load** still chosen, press **Select**.

5. Verify, by looking through the cartridge viewing window, that the cartridge is properly attached to the pushrod. **Fasten the cartridge cap back onto the pump. Make sure the rib on the cap lines up with the rib on the pump, indicating the cap is secured (see Figure 8).**



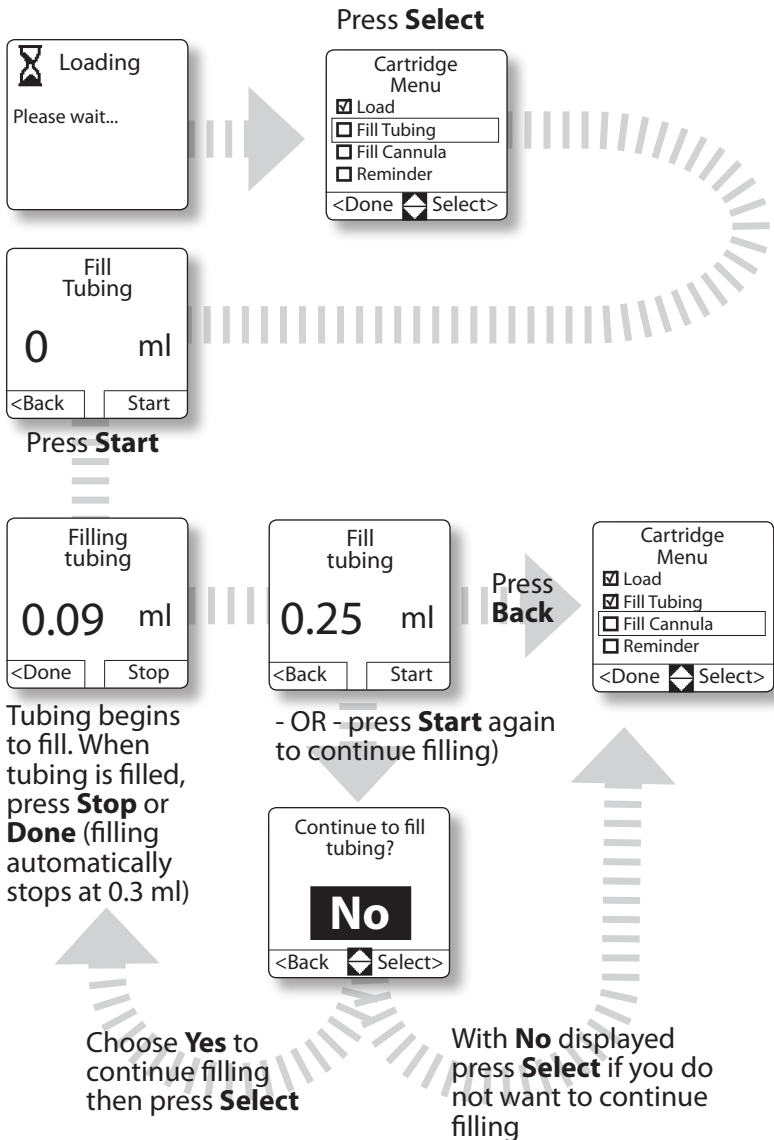
Figure 8

3. Fill the tubing

Filling forces medication from the cartridge and pushes air out of the tubing. Filling is complete when you see medication come out of the end of the tubing and all air is removed. The amount of medication used to fill the tubing is not counted as medication delivered to you.

⚠ Warning: Never use Fill Tubing when the infusion set is connected to your body, or an unintended dose could be delivered.

NOTE: Once the (☑) symbol appears next to **Fill** tubing, you will not be able to re-enter that step unless you first press **Done** to return to the main menu, then re-enter the **Load** menu.



4. Fill cannula

Filling the cannula is an important step if you are using an infusion set that has a separate needle or cannula that needs priming prior to use. It delivers a small amount of medication that fills the access device. If you do not fill the cannula, there is a delay in medication delivery once the pump is started as the access device fills.

Press **Select**

Fill Tubing	
0.25	ml
<Back	Start

Cartridge Menu	
<input checked="" type="checkbox"/>	Load
<input checked="" type="checkbox"/>	Fill Tubing
<input type="checkbox"/>	Fill Cannula
<input type="checkbox"/>	Reminder
<Done	Select>

Fill Cannula	
0	ml
<Back	Fill

Cartridge Menu	
<input checked="" type="checkbox"/>	Load
<input checked="" type="checkbox"/>	Fill Tubing
<input checked="" type="checkbox"/>	Fill Cannula
<input type="checkbox"/>	Reminder
<Done	Select>

Choose amount needed to fill cannula (listed in instructions supplied with infusion set), then press **Fill** (once you enter an amount here, that amount becomes the “default,” and will always be shown in this screen)

5. Set site change reminder

The Site Change reminder screen appears if turned on by your healthcare provider. Setting the site change reminder will cause the pump to beep (or vibrate) to remind you that it is time to change your tubing and/or access site.

Press **Select**

Cartridge Menu	
<input checked="" type="checkbox"/> Load	
<input checked="" type="checkbox"/> Fill tubing	
<input checked="" type="checkbox"/> Fill cannula	
<input type="checkbox"/> Reminder	
<Done Select>	

Site Reminder	
Reset:	Yes
Interval:	3 days
Time:	08:00AM
<Back Next>	

At reset, choose **Yes***. Choose interval between alerts, then press **Next**; choose time, then press **Next**.

Cartridge Menu	
<input checked="" type="checkbox"/> Load	
<input checked="" type="checkbox"/> Fill Tubing	
<input checked="" type="checkbox"/> Fill Cannula	
<input checked="" type="checkbox"/> Reminder	
<Done Select>	

Press **Done**

Main Menu	
Stop Delivery Setup	
Load	
History	
Beep/Vibrate	
<Home Select>	

Press **Home**

2.988 ml	
CR	
Continuous Rate	
0.106 ml/hr	
CR Menu	Menu >

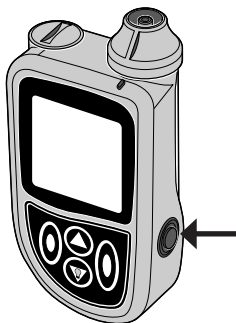
*When you choose **Yes**, the alert clock is reset to zero, and will begin a new countdown (in this example, in 3 days at 08:00 AM your pump will give the alert). Choosing **No** allows the alert clock to continue the countdown from the last time it was reset.

Delivering a Demand Dose

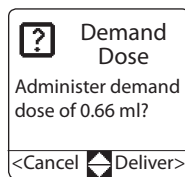
Your healthcare provider may have programmed your pump to allow a “Demand Dose”. Unlike Automatic Doses, you choose whether or not to deliver a Demand Dose. If the pump is programmed to allow demand doses, you can choose to deliver a dose or not, so long as it is not prevented by any Lockout time.

A Demand Dose is initiated by pressing the Demand Dose button on the side of the pump. A Demand Dose can be given only when the pump is running.

If you try to deliver a Demand Dose during the lockout period, the display will show **No dose allowed**. If the pump is not programmed to allow Demand Doses, pressing the button will have no effect.



Press Demand Dose button; Demand Dose screen appears




To give the dose, press **Deliver**. If you do not want to give the dose, press **Cancel**.

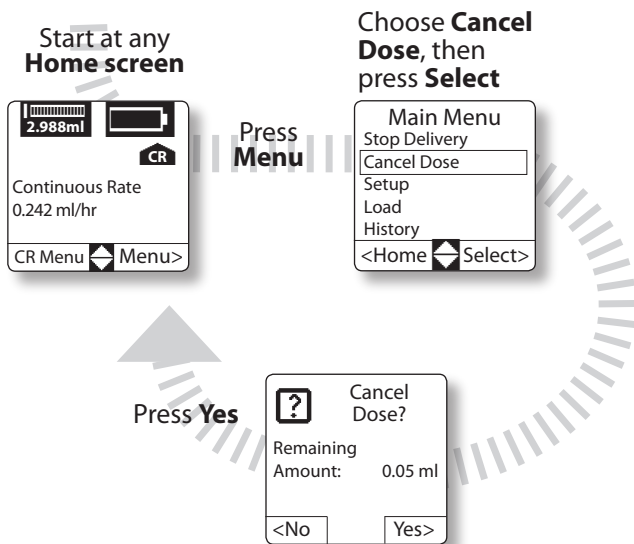
Canceling doses

You can cancel delivery of a dose while it's in progress. You can also cancel the next scheduled Automatic Dose.

Stopping the pump will stop any dose in progress. Use the procedures on the following pages to stop delivering a dose without stopping the pump.

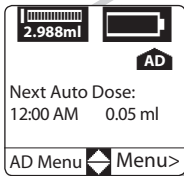
 **Warning: Talk to your healthcare provider regarding when/if it is acceptable to cancel a dose.** Automatic Doses are scheduled based on your therapy needs and should not be canceled without first deciding (with your healthcare provider) when it is safe to do so.

Canceling a dose (Demand or Automatic) while in progress



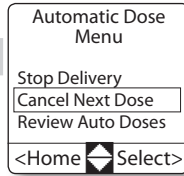
Canceling next Automatic Dose

Start at
Automatic Dose
(AD)
Home screen

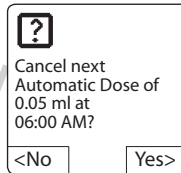


Press
AD Menu

Choose **Cancel
Next Dose**, then
press **Select**



Press **Yes**




History

The pump stores history in two ways:

- As events; the pump stores information for the previous 4000 events.
- By the delivery date; the pump stores delivery information for the previous 90 days.

History can be viewed directly on the pump display from the History menu.

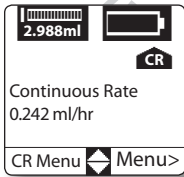
You can scroll through the history reports using the  and  keys in History.

The history reports are:

Complete History: this includes delivery totals, alerts, errors, battery changes, cartridge changes, changes to the pump program, etc. Each “event” in the complete history report includes the date and time of its occurrence. It includes the last 4000 events.

Delivery Summary: this is a daily breakdown of medication delivery, and may include the Demand Doses, Automatic Doses, and Continuous Rate delivered and includes a total amount delivered for that day. Only those delivery options that are active on your pump will appear in the Delivery Summary (for example if your pump isn’t programmed to allow a Demand Dose it will not appear here).

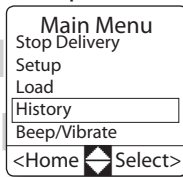
Start at any
Home screen



Press
Menu

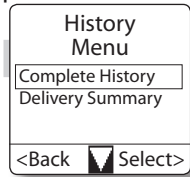
Press
Home

Choose **History**,
then press **Select**

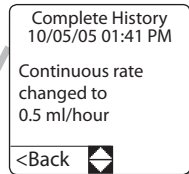


Press
Back

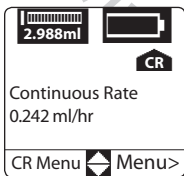
Choose **Complete
History**, then
press **Select**



A sample Complete History report screen. You can press the ▲ or ▼ keys to view other events in the report. Press **Back** when you're finished viewing.



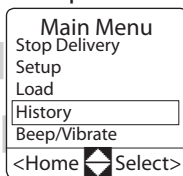
Start at any
Home screen



Press
Menu

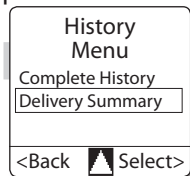
Press
Home

Choose **History**,
then press **Select**

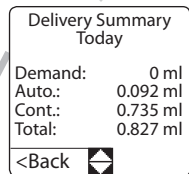


Press
Back

Choose **Delivery
Summary**, then
press **Select**



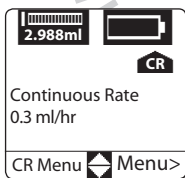
A sample Delivery Summary screen. Press the ▲ or ▼ keys to change the date and see delivery summaries from previous dates. Press **Back** when you're finished viewing the report.



Continuous Rate Menu

If your pump is programmed with a continuous rate, a continuous rate home screen is added. A Continuous Rate Menu is also added, where you can view (but not change) the Continuous Rate schedule.

Start at Continuous Rate (CR) Home screen



Press **CR Menu**

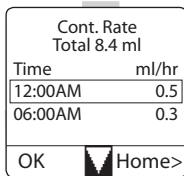
Press **Home**

Choose **Review Rates**, then press **Select**



(Press **OK**)

(Press **Home**)

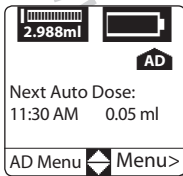


Press the ▲ or ▼ keys to view the entire Continuous Rate schedule (if needed). Press **Home** to return directly to the home screen or press **OK** to return to the Continuous Rate Menu.

Automatic Dose Menu

If the pump is programmed to deliver automatic doses, an automatic dose home screen is added. An Automatic Dose Menu is also added, where you can view (but not change) the dose schedule and cancel doses. (Canceling the next Auto Dose is discussed on page 37.)

Start at Automatic Dose (AD) Home screen



Press
AD Menu

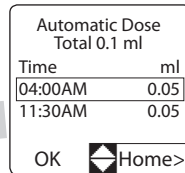
Press **Home**

Choose **Review Auto Doses**, then press **Select**



(Press
OK)

(Press
Home)

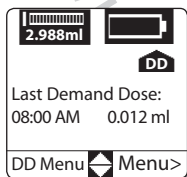


Press the ▲ or ▼ keys to view the entire Auto Dose schedule (if needed). Press **Home** to return directly to the home screen or press **OK** to return to the Automatic Dose Menu.

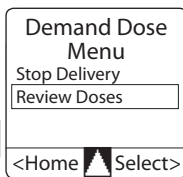
Demand Dose Menu

If your pump programming allows for demand doses, a demand dose home screen is added. A Demand Dose Menu is also added, where you can view (but not change) the dose amount and duration and cancel doses.

Start at Demand Dose (DD) Home screen



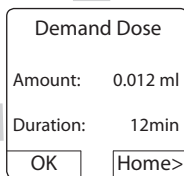
Choose **Review Doses**, then press **Select**



Press **DD Menu**

Press **Home**

(Press **OK**)



(Press **Home**)

Press **Home** to return directly to the home screen or press **OK** to return to the Demand Dose Menu.

About alarms (Beep/Vibrate settings)

The pump can be set to “**Beep**” or “**Vibrate**” when an alert or alarm occurs (see page 23). With **Beep** selected, you can also choose whether the pump beeps when you press a key. When **Vibrate** is selected, the pump will not beep (or vibrate) when keys are pressed. (**NOTE:** the battery is used much more quickly when you use **Vibrate**.)

There are several types of alarm tones/vibration patterns:

- **Siren alarm:** Indicates pump is not working correctly and must be removed from use.
Beep: 2 alternating beeps repeated constantly. Remove pump from use.
Vibrate: Disabled.
- **Continuous alarm:** Indicates a problem which may have caused medication delivery to be stopped. See to alarms immediately.
Beep: 4 double-beeps, repeating every 10 seconds until you press the appropriate key to silence it.
Vibrate: 4 double-vibrations, repeated every 10 seconds until you press the appropriate key to silence it.
- **Attention alarm:** Indicates a problem that you need to see to, however it is not serious enough to have stopped delivery. Examples include low cartridge volume, low battery, etc.
Beep: 4 double-beeps, repeated once per minute.
Vibrate: 4 double-vibrations, repeated once per minute.
- **Single alarm:** This is a notification alert.
Beep: pump beeps once.
Vibrate: pump vibrates once.

- **Stopped alarm:** Indicates the pump is stopped.

Beep: 3 beeps, repeated every 5 minutes.

Vibrate: 3 vibrations, repeated every 5 minutes.

You can set the volume of the **Beep** alarm to **Low**, **Medium**, or **High** (see page 23). If a continuous alarm occurs that is not cleared within 5 minutes, the pump will switch between vibrating and beeping at the high setting in order to get your attention.

The backlight automatically lights whenever an alarm or alert occurs.


Troubleshooting

Alarms

	Battery Depleted
Delivery Stopped	
Insert a new battery	


What it means / Alarm: Delivery stops. The battery does not have enough power for the pump to work.

How to make it stop: You must change the battery immediately. If the repeating two beep alarm occurs, power may be so low that the display goes blank or the pump continuously attempts to restart; always replace the battery whenever this occurs.

	Blockage Detected
No delivery	
Check tubing or site for blockage	
OK	

What it means / Alarm: Delivery suspended. There is something preventing medication from being delivered. **Continuous alarm.**

How to make it stop: Alarm will recur unless blockage is cleared. Check tubing, making sure it is not kinked; make sure tubing is not trapped in clothing or pouch. Check cannula, making sure it is properly inserted, if applicable. Press **OK**. If still blocked, follow instructions from your healthcare provider.

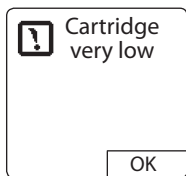
	Cartridge empty
Insert filled cartridge to continue delivery	
OK	

What it means / Alarm: Delivery suspended. The cartridge is empty. **Continuous alarm.**

How to make it stop: Press **OK**. You must load a new cartridge now.

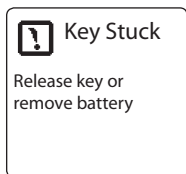


What it means / Alarm: Delivery suspended. Pump detected that cartridge was removed or not properly installed. **Continuous alarm.**
How to make it stop: Press **OK**. Disconnect the tubing from the access site. Correctly load a cartridge onto the pushrod and prime the tubing (see page 28).



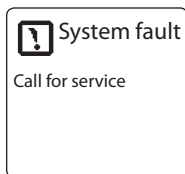
What it means / Alarm: The cartridge is nearly empty. If Continuous Rate delivery is active, it will continue. If Automatic or Demand Dose is active, delivery of doses will not start or will be suspended. **Continuous alarm.**

How to make it stop: Press **OK**. There is enough medication to continue delivering the continuous rate for a short time, but not enough to start a dose, or complete a dose that is in progress (the dose may be completed when a new cartridge is loaded). You must begin preparation to load a new cartridge.



What it means / Alarm: A key has been pressed continuously for 5 minutes, or a key was pressed during the pump's power up. **Continuous alarm.**

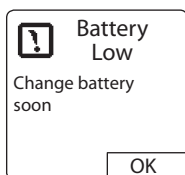
How to make it stop: If you are pressing a key, stop pressing it. If you are not pressing a key, remove and reload the battery. If the alarm persists, there may be a problem with the keypad that requires service.



What it means / Alarm: Delivery stops. The pump's computer has detected a problem with the pump. **Siren alarm.**

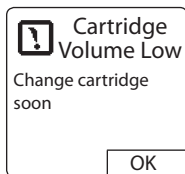
How to make it stop: Disconnect the tubing from the access device. Remove the battery to silence the alarm and contact your healthcare provider to initiate pump service. Do not use the pump.

Alerts



What it means / Alert: This alert occurs only during waking hours (6:00AM to 10:00PM). A series of 4 **Attention alarms** given every 4 hours until battery is depleted.

How to make it stop: Press **OK**. Change the battery as soon as possible.



What it means / Alert: The amount of medication left in the cartridge is low. Alert repeats at intervals until **Cartridge Very Low** alarm occurs. **Attention alarm.**

How to make it stop: Press **OK**. Replace the cartridge as soon as practical.



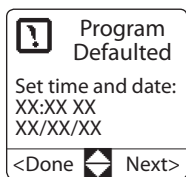
What it means / Alert: An alarm or alert occurred while you were programming/editing a value. **Single alarm.**

How to make it stop: Press **OK**. Reprogram the value.



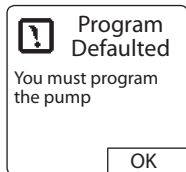
What it means / Alert: The cartridge volume needs to be rechecked to make sure it will be displayed correctly on the home screen. **Attention alarm.**

How to make it stop: Remove the cartridge (if present), then press **Next**.



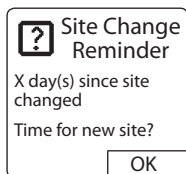
What it means / Alert: The time and date settings in the program have been reset and must be reprogrammed. **Attention alarm.**

How to make it stop: Press the or key to choose the currently highlighted setting, then press **Next** to move highlight to next setting. When time and date are correct, press **Done**.



What it means / Alert: All pump settings are reset to default values (usually seen with new pumps or when internal battery is discharged). **Attention alarm.**

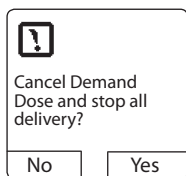
How to make it stop: Press **OK**. Contact your healthcare provider to reprogram the pump.



What it means / Alert: It is time to change your infusion set and access site. **Attention alarm.**

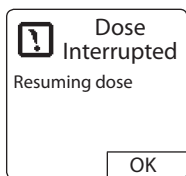
How to make it stop: Press **OK**. Follow the instructions for Loading the cartridge starting on page 25.

Other Messages



What it means / Alert: You have tried to stop the pump while a Demand Dose is delivering. **Single alarm.**

How to make it stop: To stop the pump and cancel the remainder of the Demand Dose, press **Yes**. To leave the pump running and continue delivering the Demand Dose press **No**.



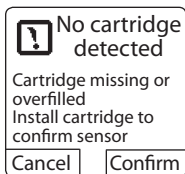
What it means / Alert: Dose delivery was interrupted, and will now resume. **Single alarm.**

How to make it stop: Press **OK**.



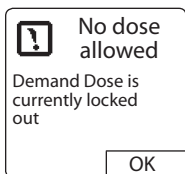
What it means / Alert: Dose delivery was interrupted and the dose duration period has now expired. **Single alarm.**

How to make it stop: Press **OK**. The dose will not be delivered, and you must wait for the dose lockout period to expire before delivering another dose.



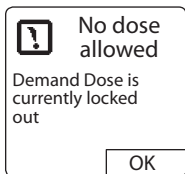
What it means / Alert: You have attempted to use the “Load” portion of the load cartridge menu, but no cartridge is detected. It may also mean that you filled the cartridge too full (more than 3 ml). **Single alarm.**

How to make it stop: If a cartridge is installed, remove from the pump and make sure the cartridge does not have more than 3 ml or less than 0.02 ml of medication. If a cartridge is not installed, install one. Press **Confirm**. If the cartridge sensor is not confirmed, you will need to have your pump serviced.



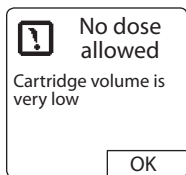
What it means / Alert: You attempted to deliver a Demand Dose during the lockout period. **Single alarm.**

How to make it stop: Press **OK**. The Demand Dose home screen displays the time that the next dose will be available.



What it means / Alert: You attempted to deliver a Demand Dose or Automatic Dose was being delivered. **Single alarm.**

How to make it stop: Press **OK**. The Demand Dose home screen displays the time that the next dose will be available.



What it means / Alert: You attempted to deliver a dose, but the cartridge volume is too low.

Single alarm.

How to make it stop: Press **OK**. Load a new cartridge, then deliver the dose.




What it means / Alert: You have tried to stop the pump. **Single alarm.**

How to make it stop: To stop the pump, press **Yes**. To leave the pump running, press **No**.

Cleaning your pump


Routinely clean your pump to prevent buildup of dirt or dried fluids. Try to wipe spills off the pump right away to avoid a sticky buildup, which will be harder to wipe off later.


When cleaning your pump, **ONLY** use a sponge or soft cloth with a solution of warm water and a mild soap, such as liquid dish or hand soap.

 **Caution: Strong household cleaners and chemicals will damage the pump's outer shell** if applied directly or indirectly (if it is on your hands, for instance). Avoid the following in particular:

- Household cleaners (such as Formula 409®)
- Jewelry cleaner
- Petroleum-based products (such as gasoline and GooGone®)
- Products that contain high levels of D.E.E.T. (such as Deepwoods Off® insect repellent).

Make sure to clean inside the battery or cartridge compartment; moisten one end of a cotton swab (such as a Q-tip®) and gently clean inside the compartment. Use the dry end of the swab to dry the compartment.

 **Caution: Never use abrasive cleaners, solvents, bleach, scouring pads or sharp instruments when cleaning your pump, as they can scratch, discolor or damage the pump's outer shell.** If the display is scratched, it may be difficult to read and you will need to have it replaced. If the outer shell is chipped or cracked, it may no longer be watertight and will require service.

 **Caution: Never use steam or very hot water (exceeding 120°F [49°C]) in an attempt to sterilize the pump. Never put**

your pump in the dishwasher. Exposing the pump to these high temperatures could damage the pump's electronics and result in the need to service your pump.

The pump and:

Extreme temperatures

If outside in very cold temperatures for any length of time, keep the pump next to your body and covered by warm clothing.

Avoid leaving the pump in direct sunlight. Remove the pump before entering a hot tub, jacuzzi or sauna, as the temperatures may be too high for the pump to operate properly.

Water

As long as the pump's labels and outer shell are intact (no cracks or chips), the pump is watertight. The pump does not need to be removed when showering or bathing. You will need to dry the pump with a clean towel after it is exposed to water.

If the pump is dropped or hit hard

If the pump is dropped or hit against something hard, it will need to be immediately looked over carefully to make sure it is not damaged. Disconnect your infusion or extension set from your body and stop delivery until you have made sure the pump is working correctly. Remove the battery, then reinsert it. The pump will perform the self-tests, and alarm if there is a problem.

Make sure the pump display is working correctly. If there are missing or incomplete characters, the pump will need to be serviced.

Look over the pump's outer shell carefully, checking for cracks or chips. If there are cracks or chips, the pump will no longer be watertight. The pump will need to be serviced if there is any damage.

Make sure the cartridge cap and battery cap are in place and secure. Check all connections on the cartridge and infusion set. If moisture is present, tighten the connectors. If the connectors appear damaged, replace the cartridge and infusion set.

⚠ Warning: If the pump is dropped or hit against something hard, always inspect it carefully to make sure it is still working properly. Make sure the display is working correctly, and the cartridge, cartridge cap, battery cap and infusion set are connected correctly. If there is damage to the pump outer shell (cracks, chips), the pump may no longer be watertight.

⚠ Warning: If the display has missing or incomplete characters, or if the pump does not seem to be working correctly, stop using the pump immediately. Contact your healthcare provider for information on servicing your pump.

smiths

Smiths Medical MD, Inc.

St. Paul, MN 55112 USA

www.smiths-medical.com

1 800.426.2448

1 651.633.2556



***Authorized Representative in the European
Community:***

Smiths Medical International Ltd.

WD24 4LG, UK

Tel. +44 (0)1923 246434



CADD-MS 3 and the Smiths design mark are trademarks of the Smiths Medical family of companies. The symbol ® indicates the trademark is registered in the U.S. Patent and Trademark Office and certain other countries.

All other names and marks are trademarks, tradenames, or service marks of their respective owners. U.S. and foreign patents pending.

© 2005 Smiths Medical family of companies. All rights reserved.

2005-12 40-5471-51A