

# Operator's Manual



## Multi-Therapy Ambulatory Infusion Pump

Product Code 2M9832



**Baxter**

**CE**  
0543

## Warning

There are risks associated with using anything other than the recommended sets with this device. Sets designated for use with this device are identified in Chapter 3, "Using Administration Sets." Baxter's warranty on this device will be null and void and Baxter will assume no responsibility for incidents which may occur if the product is not used in accordance with product labeling.

## Computer Software Copyrights

©Copyright 2000 Baxter Healthcare Corporation. All rights reserved.

For use only by Baxter Healthcare Corporation. The software contains proprietary information belonging to Baxter Healthcare Corporation. The software must not be reproduced or disclosed to others without prior written approval. Any unauthorized use of this information may subject the user to substantial liability.

## Documentation Copyrights

Duplication or distribution of this manual and any information contained within is strictly prohibited without the express written permission of Baxter. This manual and any information contained within, may not be reproduced, distributed, or transmitted in any form, or by any means, for any purpose, without the express written permission of Baxter. To order additional copies of this manual, or other related manuals, contact your local Baxter Service Center.

## Disclaimer

The information in this document has been carefully examined and is believed to be entirely reliable. However, no responsibility is assumed for inaccuracies. Furthermore, Baxter reserves the right to make changes to any products herein to improve readability, function, or design. Baxter does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it cover any license under its patent rights nor the rights of others.

## Trademark Information

Baxter, the Baxter wordmark, 6060 Multi-Therapy Pump, the 6060 logo, AutoClamp, and Auto-Ramp are trademarks of Baxter International Inc. in the U.S. These and other trademark applications pending. Other product names and trademarks appearing in this manual are the property of their respective owners.

## Patent Information

This device is protected under one or more of the following U.S. Patents: **5,620,312; 5,628,619; 5,637, 093; 5,683, 367; 5,766,155; 5,791,880; 5,795,327; 5,807,336; Des. 375,848; Des. 380,260** and foreign equivalents. Other U.S. and Foreign patents pending.

---

# Change Record

Original Issue: August 2000

<b>Page or Range</b>	<b>Revision</b>
Front cover	0
Inside Front Cover	0
i — vi	0
1-1 — 1-9 (1-10 blank)	0
2-1 — 2-8	0
3-1 — 3-17 (3-18 blank)	0
4-1 — 4-70	0
5-1 — 5-25 (5-26 blank)	0
6-1 — 6-10	0
7-1 — 7-12	0
8-1 — 8-6	0
9-1 — 9-4	0
10-1 — 10-2	0
A-1 — A-5 (A-6 blank)	0
B-1 — B-4	0
Index-1 — Index-6	0
Back cover (inside blank)	0

## Meaning of the CE Mark Symbol



This symbol represents adherence to Council Directive 93/42/EEC (14 June 1993) of the European Communities concerning medical devices.

The electromagnetic compatibility (EMC) requirements are part of the essential requirements of the Medical Device Directive.

Device:	6060™ Multi–Therapy Pump
Catalogue Number:	2M9832
Manufacturer:	Manufactured by an affiliate of: Baxter Healthcare Corporation Deerfield, IL 60015 USA  Made in Singapore
Authorized Representative:	Baxter S.A. B-7860 Lessines, Belgium

---

# Table of Contents

Change Record.....	i
Meaning of the CE Mark Symbol.....	ii
Table of Contents.....	iii
<b>Chapter 1 Introduction.....</b>	<b>1-1</b>
Overview.....	1-1
Features.....	1-2
Safety Summary.....	1-4
General .....	1-4
Definitions .....	1-5
Serial Number Format .....	1-6
General Warnings .....	1-6
General Cautions .....	1-8
Notes .....	1-9
<b>Chapter 2 Pump Description .....</b>	<b>2-1</b>
Overview.....	2-1
Front Panel.....	2-1
Rear Panel.....	2-4
Cassette Chamber .....	2-6
Administration Set Components.....	2-8
<b>Chapter 3 Basic Operation.....</b>	<b>3-1</b>
Overview.....	3-1
Unpacking the Pump.....	3-1
Using Administration Sets .....	3-2
Gravity Priming .....	3-2
Loading the Administration Set .....	3-3
Using the Pump to Prime .....	3-4
Using the 100 ml Lock Box .....	3-5
Using the 250 ml Lock Box .....	3-7
General Notes on Programming and Delivery.....	3-8
Entering and Changing Infusion Parameters .....	3-8
Entering Infusion Parameters .....	3-9
Accepting or Changing Previously Programmed Parameters .....	3-9

---

Delivery Profile Overview.....	3-10
Continuous .....	3-11
Auto-Ramp <sup>®</sup> Profile .....	3-11
Intermittent .....	3-11
25 Periods .....	3-12
PCA .....	3-12
Programming an Infusion .....	3-13
Delay Delivery .....	3-15
Ready Screens / Final Confirmation Screens .....	3-16
Reviewing Profile Parameters .....	3-17
Powering the Pump Off .....	3-17
<b>Chapter 4 Programming Infusions .....</b>	<b>4-1</b>
Overview .....	4-1
Programming Continuous Profile.....	4-1
Titration in Continuous Profile .....	4-6
Repeating a Continuous Infusion .....	4-9
Programming Auto-Ramp <sup>®</sup> Profile .....	4-10
Repeating an Auto-Ramp <sup>®</sup> Profile Infusion .....	4-16
Early Down-Ramping During Auto-Ramp <sup>®</sup> Profile Delivery .....	4-16
Programming Intermittent Profile .....	4-18
Interrupting an Intermittent Infusion .....	4-24
Audible Alerts When KO Rate is 0.0 ml/hr .....	4-26
Changing the Fluid Bag to Continue the Program Cycle .....	4-26
Programming 25 Periods Profile .....	4-28
Programming 25 Periods Profile by Rate .....	4-30
Programming 25 Periods Profile by Time .....	4-32
Repeating a 25 Periods Program .....	4-35

---

Programming PCA Infusions.....	4-36
Begin Programming PCA Profile .....	4-36
Choose Method of Limiting Amount of Medication .....	4-38
Set PCA Profile Titration Limits .....	4-42
Program Optional Loading Dose .....	4-44
Check Programmed Parameters .....	4-44
Select Appropriate PCA Security Level .....	4-45
Completing PCA Programming .....	4-46
Titration a PCA Infusion .....	4-47
Giving a Demand /Remote Bolus .....	4-49
Giving a Clinician-Activated Dose .....	4-50
Reviewing PCA Profile Parameters .....	4-51
Changing Basal Rate and/or Bolus Parameters Without Losing PCA Data .....	4-57
Changing Preprogrammed Titration Limits or Medi- cation Volume Limits During an Infusion ..	4-59
Using Configuration Mode to Customize Available PCA Profile Options .....	4-63

## **Chapter 5 Delivery Options and Advanced Functions..... 5-1**

Overview.....	5-1
Shortcut Delivery of a Programmed Infusion.....	5-2
Shortcut Delivery in Programmable Mode .....	5-2
Shortcut Delivery in Lockout Mode .....	5-3
Resuming Delivery of an Interrupted Infusion.....	5-4
Resuming an Interrupted Infusion .....	5-4
Resetting an Interrupted Infusion to the Beginning .....	5-5
Selecting or Programming a Different Infusion ...	5-6
Clearing the Volume Infused Display .....	5-8
Clearing the Memory.....	5-9
Changing Concentration Without Affecting Programmed Rate .....	5-9
Making the Pump Profile-Specific .....	5-10
Setting Volume Accrual .....	5-13
Setting Date and Time .....	5-14
Entering the Patient's Identification Number .....	5-15
Programmable Mode / Lockout Mode.....	5-16
Accessing and Programming Lockout Mode .....	5-16
Delivering a Programmed Infusion in Lockout Mode .....	5-18

---

	Switching From Lockout Mode to Programmable Mode .....	5-19
	Setting Infusion Data Parameters .....	5-20
	Infusion Data Parameters in Programmable Mode .....	5-21
	Infusion Data Parameters in Lockout Mode .....	5-23
	Displaying Volume and Time Remaining .....	5-25
<b>Chapter 6</b>	<b>Troubleshooting .....</b>	<b>6-1</b>
	Alarms .....	6-1
	Alert Messages .....	6-6
<b>Chapter 7</b>	<b>Maintenance and Storage.....</b>	<b>7-1</b>
	Overview .....	7-1
	Powering the Pump.....	7-1
	Using the Internal Batteries .....	7-2
	Using the Rechargeable External Battery Pack ....	7-5
	Using the Battery Eliminator/Charger .....	7-9
	Cleaning.....	7-10
	Recommended Cleaners .....	7-10
	Cleaning Procedure .....	7-11
	Preventive Maintenance .....	7-12
	Storing the Pump .....	7-12
<b>Chapter 8</b>	<b>Technical Specifications .....</b>	<b>8-1</b>
	Dose Limits .....	8-3
	Accessories .....	8-4
	Operating Environment .....	8-5
	Storage Environment .....	8-5
	Applicable Standards .....	8-6
	Recommended Practices .....	8-6
<b>Chapter 9</b>	<b>Summary of Configurable Settings.....</b>	<b>9-1</b>
<b>Chapter 10</b>	<b>Warranty and Service Information .....</b>	<b>10-1</b>
	Warranty .....	10-1
	Service Information .....	10-2
<b>Appendix A</b>	<b>Spanish-English Display Text Translation.....</b>	<b>A-1</b>
<b>Appendix B</b>	<b>Glossary .....</b>	<b>B-1</b>
<b>Index</b>	<b>.....</b>	<b>Index-1</b>

### Overview

This manual provides operating instructions for the 6060™ Multi-Therapy Pump. The following information is provided in this chapter:

- “Features,” 1-2
- “Safety Summary,” 1-4

The 6060™ Multi-Therapy Pump (referred to in this manual as “the pump”) provides accurate, safe, and reliable volumetric delivery and may be used for subcutaneous, arterial, intravenous, and epidural delivery routes.

The pump is intended for infusion therapy. Pump users should be under the supervision of a clinician and should be instructed in using and troubleshooting the pump.

**! WARNING !**

This manual is intended for clinicians only. Do not permit patients to have access to this manual. Do not disclose the pump’s security codes to patients.

## Features

### ■ Versatile

The pump can be programmed for five primary delivery profiles:

- Continuous
- Auto-Ramp® Profile
- Intermittent
- 25 Periods
- Patient-Controlled Analgesia (PCA)

### ■ Convenient

Small size and weight increase patient mobility and make pump suitable for many ambulatory clinical applications.

### ■ Selectable Delivery Rate Units

Delivery rate can be programmed in milliliters (ml), milligrams (mg), or micrograms (µg).

### ■ Selectable Air-in-line Detection Sensitivity

Air-in-line detector can be set for 0.1 ml, 0.5 ml, 2.0 ml, or disabled.

### ■ Protection From Inadvertent Infusion Interruption

Two separate key presses are required to turn off the pump while it is running.

### ■ Protection Against Accidental Free Flow

The AutoClamp™ device on the administration set automatically clamps the tubing to ensure that there is no accidental free flow when the pump door is opened and the cassette is removed from the pumping chamber.

■ **Memory**

Infusion status is saved if the pump is turned off before an infusion is completed. When the pump is restarted, the infusion may be resumed.

Programmed infusion parameters for each of the five modes are saved until they are changed by the operator. Reprogramming the parameters before each use is not necessary.

■ **Protection From Unauthorized Use**

Selectable lockout levels and passcode protection help guard against unauthorized use of the pump.

■ **Portable**

Several options are available for powering the pump, including standard 9-volt alkaline batteries.

■ **Simple YES/NO Programming**

To program, you simply agree or disagree with the pump's prompts by pressing the **YES** or **NO** keys.

Pressing **YES** accepts the displayed option or parameter; pressing **NO** rejects the displayed option and causes the pump to clear a value or to offer an alternative selection.

The pump requires that a parameter be selected and confirmed at each programming step before progressing to the next step. When infusion parameter entry is complete and within range, the pump displays **READY**.

# Safety Summary

## General

Prior to operating this pump, carefully read this manual to fully understand the pump's functionality and to ensure safe and proper operation.

Although the pump has been designed and manufactured to exacting specifications, it is not intended to replace trained personnel in the supervision of infusions.

**BEFORE USING THE PUMP WITH THE OPTIONAL RECHARGEABLE EXTERNAL BATTERY PACK, CHARGE THE BATTERY PACK FOR AT LEAST 24 HOURS.**

**Note:** **U.S. only:** lay users should always have access to a trained professional when using this pump. In addition, lay users should read and follow the appropriate instructions in the Patient User Guides available through their clinician.

When disposing of this pump or the administration sets designed for use with the pump, follow local regulations and guidelines.

In accordance with the International Standard, IEC 60601-1 (1988-12) Medical Electrical Equipment — Part 1: General Requirements for Safety, the 6060™ Multi-Therapy Pump is classified as:

- Class II, internally powered
- IPX0
- Not suitable for use with flammable anesthetic mixtures with air, oxygen or nitrous oxide
- Continuous operation

## Definitions

**Warning** messages indicate a possible hazard which, if not avoided, could result in severe personal injury or death.

**Caution** messages indicate a problem or unsafe practice which, if not avoided, could result in minor or moderate personal injury, product or property damage.

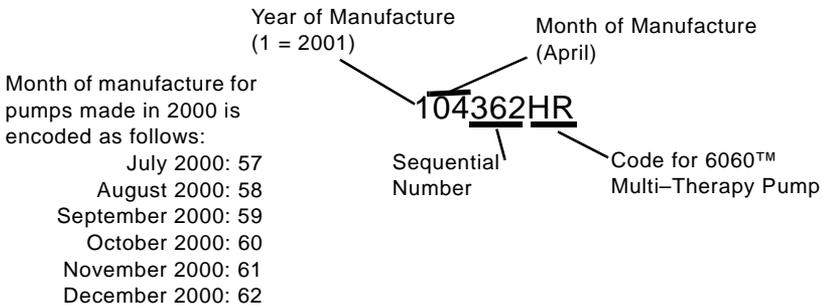
**Note** messages provide supplemental information to the accompanying text.

Table 1-1 provides definitions of symbols used on the pump's labeling.

**Table 1-1 Labeling symbol definitions**

<b>IPX0</b>	Ordinary equipment – enclosed equipment without protection against water ingress.
	Class II Battery Eliminator/Charger: Double-insulated.
	Fuse.
	Attention, consult accompanying documents.
<b>■ Labeling abbreviations:</b>	
<b>PCA/COMM. PORT</b>	Patient-Controlled Analgesia/Communications Port
<b>EXT POWER</b>	External Power

## Serial Number Format



## General Warnings

### **! WARNING !**

To ensure safe and proper operation, read the manual and any instructions accompanying disposables or accessories before operating this device.

### **! WARNING !**

The administration sets should be disposed of in an appropriate manner, considering the nature of the residual fluid that may be contained within, in accordance with institution disposal practices.

### **! WARNING !**

This pump should be used only with Baxter accessories specified in Table 8-3 on page 8-4. There are risks associated with using anything other than the recommended accessories with this pump.

### **! WARNING !**

**DO NOT CONNECT THE ADMINISTRATION SET TO THE PATIENT WHEN PRIMING.**

### **! WARNING !**

Do not use a pump that appears to be damaged or tampered with, or is not functioning properly. If the pump has been dropped or appears to be damaged, it should be taken out of service and inspected by qualified service personnel only.

### **! WARNING !**

Never open the pump's housing. Refer all servicing to an authorized technician.

### **! WARNING !**

Stop infusion if signs or symptoms of infiltration occur.

**! WARNING !**

**Do not operate the pump with the optional Battery Eliminator/Charger while the patient is immersed in water. Doing so can present an electrical shock hazard that may cause severe injury or death.**

**! WARNING !**

**Avoid excessive moisture near the battery door.**

**! WARNING !**

**Epidural administration of drugs other than those indicated for epidural use could result in serious injury to the patient.**

- Epidural administration of anesthetics is limited to short term infusion (not to exceed 96 hours) with indwelling catheters specifically indicated for short term anesthetic epidural drug delivery.
- Epidural administration of analgesics is limited to use with indwelling catheters specifically indicated for either short term or long term analgesic epidural drug delivery.
- To prevent infusion of drugs not indicated for epidural use, do not use administration sets incorporating injection sites during epidural delivery.
- Clearly distinguish pumps used for epidural drug delivery from pumps used for other routes of administration.

## General Cautions

### Caution

In the U.S., use of device is restricted by Federal Law (USA) to sale or use by, on the order of, or under the supervision of a physician or other licensed healthcare professional.

### Caution

Use only accessory equipment complying with the device's safety requirements; failure to do so may lead to reduced safety levels of the resulting system. Consideration relating to accessory choice shall also include:

- use of the accessory in the patient vicinity
- evidence the safety certification of the accessory has been performed in accordance with the appropriate UL2601-1 or IEC 60601-1 and/or IEC 601-1-1 harmonized national standard.

### Caution

As with all medical electronic equipment, care must be exercised to avoid exposing this device to powerful sources of electromagnetic interference. Using the pump near operating equipment which radiate high energy radio frequencies (such as electrosurgical/cauterising equipment, two-way radios, or cellular telephones) may cause false alarm conditions. If this happens, reposition the pump away from the source of interference.

### Caution

When infusing through a central line catheter, Baxter recommends using sets with a luer lock adapter.

## Notes

**Note:** U.S. Law requires tracking of this device. Parties acquiring this device must:

- Promptly report the receipt of this device to the manufacturer
- Report the sale of this device to any home patient
- Maintain patient and physician information for short-term home patient placements
- Report the device's purchases, receipt in trade, return after sale, loss, destruction, or retirement
- If this is an initial purchase from the manufacturer, you may return a signed copy of the packing list to the manufacturer in order to comply with these requirements. Contact the Baxter Andover service facility at 1-800-343-0366 for additional information.



## Pump Description

### Overview

This chapter describes the pump's controls and indicators. The following information is included:

- “Front Panel,” 2-1
- “Rear Panel,” 2-4
- “Cassette Chamber,” 2-6
- “Administration Set Components,” 2-8

### Front Panel

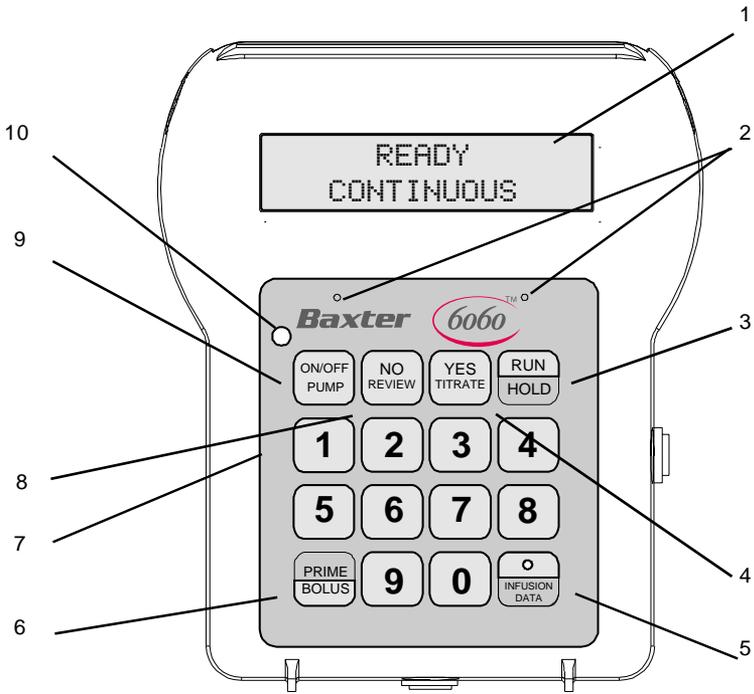
Table 2-1 describes and Figure 2-1 shows items on the front of the pump.

**Table 2-1 Front Panel Keys and Indicators**

Item	Name	Description
1	Display	Two lines of 16 dot matrix characters. Displays prompts and infusion status.
2	Red and green status indicator LEDs	<ul style="list-style-type: none"><li>• Flashing green indicator signifies that the pump is operating at the programmed specifications.</li><li>• Flashing red indicator signifies an alarm.</li><li>• Steady red indicator signifies a malfunction.</li></ul>
3	<b>RUN / HOLD</b> key	Starts, pauses or restarts an infusion. Temporarily silences an audible alarm.

**Table 2-1 Front Panel Keys and Indicators — continued**

Item	Name	Description
4	<b>YES / TITRATE</b> key	<ul style="list-style-type: none"> <li>• During programming, used to answer the pump’s prompts and accept the data being displayed.</li> <li>• During a Continuous or PCA infusion, used to access and program Titration functions.</li> </ul>
5	<b>• / INFUSION DATA</b> key	<ul style="list-style-type: none"> <li>• During programming, used to enter decimal point.</li> <li>• While pump is running, used to display volume and time remaining. At YES to PROGRAM, READY or *HOLD*, used to review or change infusion parameters.</li> </ul>
6	<b>PRIME / BOLUS</b> key	<ul style="list-style-type: none"> <li>• At READY or confirmation screens, primes the administration set.</li> <li>• During PCA infusions, provides administration of bolus doses.</li> </ul>
7	Numeric keypad	Used to enter numeric parameters and access codes.
8	<b>NO / REVIEW</b> key	<ul style="list-style-type: none"> <li>• During programming, used to answer the pump’s prompts and reject the data being displayed.</li> <li>• At confirmation or *HOLD* screens, used to review the programmed infusion parameters.</li> <li>• During a PCA profile infusion, used to view the PCA data.</li> </ul>
9	<b>ON/OFF PUMP</b> key	Turns pump on or off.
10	Ambient light detector	Monitors the external light level and adjusts the display illumination accordingly.



2

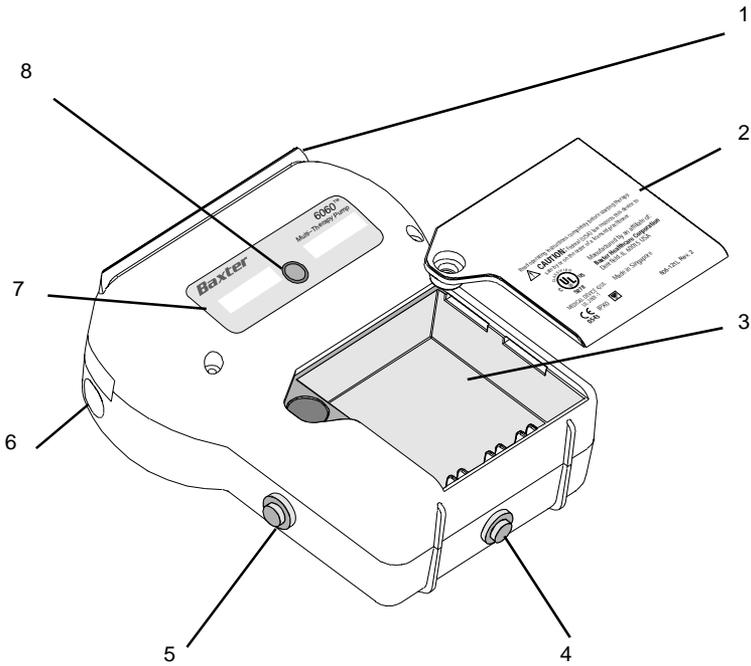
**Figure 2-1 Front View of Pump**

## Rear Panel

Table 2-2 describes and Figure 2-2 shows items on the rear of the pump.

**Table 2-2** *Rear/Side Panel Items*

Item	Name	Description
1	Rear attachment rail	Attaches the lock box to the pump.
2	Battery compartment door	Allows access to self-contained 9-volt alkaline batteries. Information about the pump is etched onto the cover.
3	Battery compartment	Holds two 9-volt alkaline batteries used for powering pump during portable use.
4	<b>EXT POWER</b> connector	Allows connection of rechargeable external battery pack or battery eliminator/charger.
5	<b>PCA/COMM</b> connector	<ul style="list-style-type: none"> <li>• Allows connection of PCA cord.</li> <li>• Provides a serial communications port that permits the exchange of information between the pump and a computer via a cable or modem.</li> </ul>
6	Cassette release/load buttons	Simultaneously pressing the two oval buttons (one on each side of pump) opens the door on the top of the pump to allow administration set loading/unloading.
7	Rear label	Identifies manufacturer information, model number, and serial number.
8	Threaded adapter	Threaded insert that allows the optional lock box to be attached to the pump.
Not shown	PCA pushbutton and cord	When connected to the <b>PCA/COMM</b> connector, administers a bolus dose when pressed if the pump is programmed for a PCA profile.



2

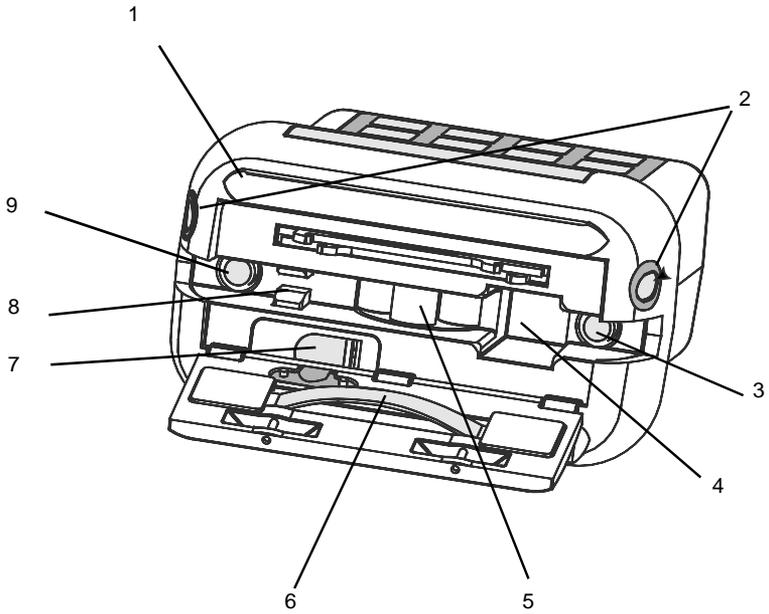
Figure 2-2 Rear/Side View of Pump

## Cassette Chamber

Table 2-3 describes and Figure 2-3 shows items visible in the cassette chamber when the pump door is open.

**Table 2-3** *Cassette Chamber Items*

<b>Item</b>	<b>Name</b>	<b>Description</b>
1	Front attachment rail	Attaches the lock box to the pump.
2	Cassette release/load buttons	Simultaneously pressing the two oval buttons (one on each side of pump) opens the door on the top of the pump to allow administration set loading/unloading.
3	Upstream pressure sensor	Monitors the pressure inside the tubing between the bag and the pump.
4	Cassette chamber	Houses the administration set cassette.
5	Pumping mechanism	Rotary peristaltic movement mechanism.
6	Door spring	Positively retains cassette when the door is closed.
7	Open door sensor	Detects if the pump door is opened.
8	Air-in-line detector	Capacitive sensor detects air in the administration set.
9	Downstream pressure sensor	Monitors the pressure inside the tubing between the pump and the patient.



**Figure 2-3** Top View of Pump with Door Open

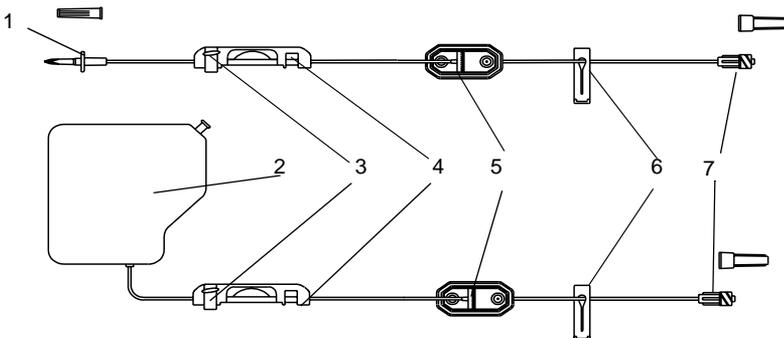
# Administration Set Components

Use only administration sets specifically labeled for use with the 6060™ Multi-Therapy pump. Administration sets components are described in Table 2-4 and shown in Figure 2-4.

**Table 2-4 6060™ Pump Administration Set Components**

Item	Name	Description
1	Bag spike	Spike used to insert the administration set into a standard solution container.
2	Fluid bag (see Note)	Solution container.
3	AutoClamp™ device	Prevents accidental free flow when door is opened and when cassette is removed from pump.
4	Cassette	Ensures proper placement of the tubing against the pumping mechanism.
5	Filter (see Note)	In-line air-eliminating filter: 1.2 or 0.22 micron.
6	Clamp	Slide clamp.
7	Luer lock adapter	Permits luer attachment to patient's access device.

**NOTE:** Not all administration sets have fluid bags or filters. See "Using Administration Sets," 3-2 for a complete list of administration sets available for use with the pump.



**Figure 2-4 Typical Administration Set Components**

## Basic Operation

### Overview

You should be familiar with the topics described in this chapter before attempting to use the pump. This chapter provides instructions on the following:

- “Unpacking the Pump,” 3-1
- “Using Administration Sets,” 3-2
- “General Notes on Programming and Delivery,” 3-8
- “Entering and Changing Infusion Parameters,” 3-8
- “Delivery Profile Overview,” 3-10
- “Programming an Infusion,” 3-13
- “Reviewing Profile Parameters,” 3-17
- “Powering the Pump Off,” 3-17

### Unpacking the Pump

Remove the pump and accessories from the shipping carton. Save the packing materials for future use.

## Using Administration Sets

### **! WARNING !**

**Use only Baxter administration sets specifically labeled for use with the 6060™ Multi–Therapy Pump.**

The following is a list of administration sets available for use with the pump.

- 2L9000
- 2L9003
- 2L9004
- 2M9856
- 2M9857
- 2M9858
- 2M9859
- 2M9860
- 2M9861

Before you deliver an infusion, you must prime the administration set. You can gravity-prime the administration set, or you can use the pump to prime. The administration set's cassette fits into the pump's cassette chamber only one way.

See “Gravity Priming” on page 3-2 or “Using the Pump to Prime” on page 3-4.

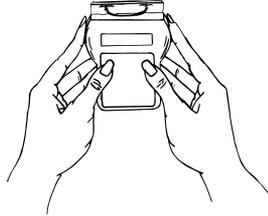
### Gravity Priming

If gravity priming, prime the administration set according to its instructions, then proceed to “Loading the Administration Set” on page 3-3.

## Loading the Administration Set

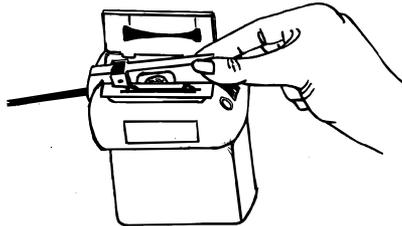
**Note:** Use aseptic technique when priming and loading the administration set.

1. Open the pump door by pressing both oval buttons on the sides of the pump.

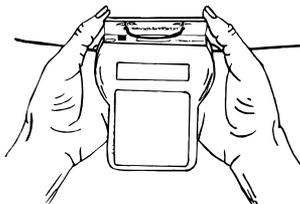


2. Place the tubing's cassette into the cassette chamber, matching the shape of the cassette with the shape of the chamber – the cassette fits only one way.

**Note:** To avoid nuisance alarms, do not press down on the cassette when loading it into the cassette chamber. The cassette will be positioned correctly when you close the pump door.



3. Close the door by pressing on both corners of the door until it clicks into place.



## Using the Pump to Prime

**! WARNING !**

The administration set **MUST NOT** be connected to the patient while priming.

**Note:** Use aseptic technique when priming and loading the administration set.

To prime the administration set using the pump:

1. Load the administration set as described in “Loading the Administration Set” on page 3-3.
2. Turn the pump on. Program the desired infusion (see the profile programming sections in Chapter 4) and advance the pump to the **Final Confirmation** screen. See “Ready Screens / Final Confirmation Screens” on page 3-16.

If the pump is in Lockout Mode, see “Programmable Mode / Lockout Mode,” 5-16 for instructions on starting an infusion in Lockout Mode.

3. At the Final Confirmation screen, press **PRIME/BOLUS**.

The pump displays one of the following:

Prime Set?

or:

Prime Set?  
enter code

4. Press **YES** or enter the following code if the pump is in lockout:

9 1 1

The pump displays:

```

READY To PRIME
Press&Hold PRIME
  
```

5. Press and hold **PRIME/BOLUS**. Solution begins to fill the administration set. While priming, the pump displays:

```

PRIMING
Volume:  0.1 ml
  
```

6. When the set is filled, release **PRIME/BOLUS**.

**Note:** After 6 ml has been pumped, the pump displays **MORE PRIME?**. If more priming is needed, press **YES**, then press and hold **PRIME/BOLUS** until the set is filled.

7. Press **NO** or **RUN/HOLD** to return to the Final Confirmation screen. The display alternates between:

```

Rate/hr (ml) AMT
XXX          XXX.X
  
```

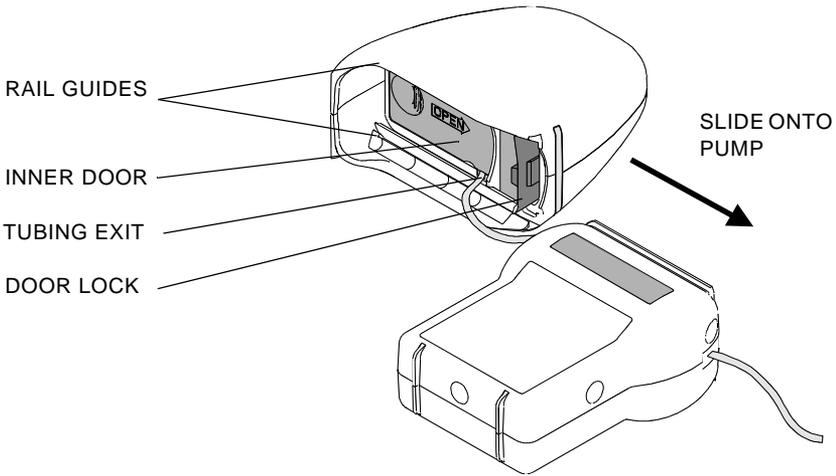
```

(Profile)
Press RUN
  
```

8. Press **RUN/HOLD** again to begin the infusion.

## Using the 100 ml Lock Box

The 100 ml lock box (product code: 2L9361) is a reusable container made of translucent plastic so that the solution within the bag can be easily inspected. The lock box stays securely on the pump and can be locked to prevent its removal from the pump.



**Figure 3-1** 100 ml Lock Box (2L9361)

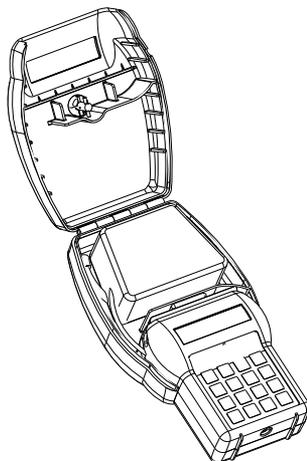
**Note:** The 2L9361 Lock Box is for use only with administration set 2L9000, which includes a 100 ml attached bag.

To use the 100 ml lock box with the pump:

1. Prime and load the administration set into the pump.
2. Hold the lock box so its front is facing you. Slide open its inner door.
3. Place the administration set bag inside the lock box, matching the shape of the bag with the lock box.
4. Place the section of tubing between the bag and the cassette into the tubing exit.
5. Close the inner door of the lock box.
6. Align the front and back attachment rails on the pump with the rail guides on the lock box and slide the lock box onto the pump. Use both hands on the pump to exert even pressure for ease in placement.
7. Use the key supplied with the lock box to lock it onto the pump if desired. The lock box does not have to be locked to stay in place.

## Using the 250 ml Lock Box

The 250 ml lock box (product code 2L9354) is a reusable container made of translucent plastic so that the solution within the bag can be easily inspected. The 250 ml lock box stays securely on the pump when locked to prevent its removal from the pump.



**Figure 3-2** 250 ml Lock Box (2L9354)

**Note:** The 250 ml lock box can be used only with an administration set with a 250 ml or smaller bag (2L9001 or 2L9000, respectively).

To use the 250 ml lock box:

1. Open the lock box.
2. Insert the administration set's cassette into the pump's cassette chamber.
3. Place the pump into the bottom section of the lock box's divided compartment.
4. Place the administration set bag into the top section of the lock box, matching the shape of the bag with that of the lock box.
5. Close the lock box and lock it onto the pump with the key included.

## General Notes on Programming and Delivery

- All profiles may be programmed in ml, mg or  $\mu\text{g}$ .
- When programming in mg or  $\mu\text{g}$ , a concentration (per ml) must be entered.
- All profiles except PCA may be programmed by rate or time. PCA may be programmed by number of doses per hour or by total amount of medication allowed.
- The green indicator flashes and a flashing arrow ( $\rightarrow$ ) appears on the display to indicate that the pump is running.
- Except after a PCA infusion, the pump switches to the programmed Keep Open (KO) when the infusion completes. For information on changing the KO rate, see “Setting Infusion Data Parameters,” 5-20. After an Intermittent profile, the KO Rate will be the KO Rate programmed for delivery between Intermittent doses.
- When the pump displays a question, you must answer by pressing either the **YES** or **NO** key in order to advance to the next screen.

## Entering and Changing Infusion Parameters

Before you begin using the pump, you must know how to enter values for an infusion's parameters, and how to accept or change an infusion's previously programmed parameters.

## Entering Infusion Parameters

Use the numeric keys to enter values for an infusion's parameters when prompted by the pump. You may enter values when a parameter's value is zero, or enter a new value directly over a previously programmed value.

### Example:

To enter...	Press
Delivery time of 1 hour 30 minutes (01:30)	At the TIME: prompt, press <b>1</b> : <b>3</b> <b>0</b>
Flow rate of 200 ml/hr	At the RATE: prompt, press <b>2</b> <b>0</b> <b>0</b>

3

## Accepting or Changing Previously Programmed Parameters

The pump retains the parameters of the most recent delivery of each programmed profile in its memory until the parameters for that delivery profile are changed or the pump's memory is cleared.

To accept a parameter as shown, press **YES**. The pump retains the displayed value for that parameter.

**Note:** The pump will not deliver an infusion that has a zero value for any of its parameters, *except* delay delivery time and Titration rate and volume. If you try to start an infusion with a zero-value parameter, the pump displays **RE-PROGRAM**. See “Alert Messages,” 6-6 for a complete list of the pump’s alert messages.

To change the value of a displayed parameter, you may press **NO** to clear the parameter to zero, or use the numeric keys to enter a new value directly over the displayed value.

You may change the programmed values of an infusion using the programming screens, or whenever the pump is displaying the Ready Screen before the start of an infusion.

You can titrate the flow rate and/or the volume during delivery of a Continuous or PCA infusion, or before or after a Continuous infusion.

See “Programming Continuous Profile,” 4-1 and “Programming PCA Infusions,” 4-36 for more information on titrating in these profiles.

## Delivery Profile Overview

The pump offers five primary delivery profiles, to cover a variety of infusion requirements. The profiles are Continuous, Auto-Ramp<sup>®</sup>, Intermittent, 25 Periods, and PCA. The parameters for any of these profiles are fully programmable, offering unlimited customization of infusion deliveries.

The five profiles differ primarily in their delivery of infusion rates over time. Descriptions of the five profiles follow.

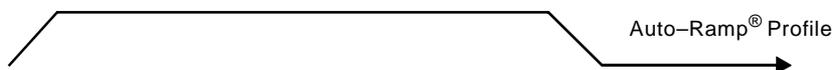
## Continuous



The Continuous Delivery Profile allows the delivery of a single rate and a single volume.

**EXAMPLE: Hydration**

## Auto-Ramp® Profile



The Auto-Ramp® Profile allows delivery of an infusion that automatically ramps up, reaches a predetermined level delivery rate, then automatically ramps down. You program the infusion's total delivery time, maximum (level) rate, total volume, and up and down ramp times. **EXAMPLE: TPN**

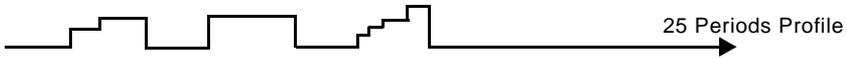
## Intermittent



The Intermittent Delivery Profile permits the delivery of a number of doses at set intervals over a period of time up to 72 hours, with a preset KO rate between doses. You program the infusion's total delivery time (up to 72 hours), number of doses, dose volume, dose time or dose rate, and KO rate.

**EXAMPLE: Antibiotics**

## 25 Periods



The 25 Periods Delivery Profile permits you to program and infuse up to twenty-five separate rates and volumes, or times and volumes, to be delivered sequentially for use in various custom regimens.

**EXAMPLE: Dobutamine or IVIG**

## PCA



The PCA Delivery Profile can provide the following delivery routes:

- Intravenous
- Subcutaneous
- Epidural

Each delivery route allows the following to be programmed:

- basal
- basal and bolus
- boluses alone

**EXAMPLE: Pain Management**

## Programming an Infusion

1. Turn pump on by pressing the **ON/OFF PUMP** key. The following screens are displayed:

```
#####
#####
```

```
SELF-TEST...
```

During the self-test, the pump checks internal functions and software components for proper operation.

### **! WARNING !**

**If an error code is displayed and/or a malfunction occurs during self-test, turn the pump off and back on again. If the error code or malfunction recurs, do not use the pump. Have it checked by Baxter's authorized service center.**

After the self-test, you may see one or more of the following screens that alert you to current settings on the pump.

```
UP OCCLUSION
DISABLED
```

Indicates that the upstream occlusion sensor has been disabled. Does not require a response.

To change the upstream occlusion alarm setting, see Chapter 5, Advanced Functions.

```
Air-in-line
Disabled
```

Indicates that the Air-in-line alarm has been disabled. Does not require a response.

To change the Air-in-line alarm setting, see Chapter 5, Advanced Functions.

Check Internal  
9-Volt Batteries

Indicates that one of the 9-volt batteries is dead or installed incorrectly, and the pump is running on only one battery.

**Note:** The message will not automatically clear. Turn the pump off and replace/install both 9-volt batteries properly before using the pump.

If the pump is not in lockout mode and the previously programmed infusion was not interrupted, the pump displays:

YES to Program  
RUN to Repeat

For information on lockout mode, see Chapter 5, Advanced Functions.

2. Press **YES** if you want to program a new infusion

OR

Press **RUN** if you want to repeat the delivery of the previously programmed infusion. See “Shortcut Delivery in Programmable Mode,” 5-2.

PRESSURE: HI

The current downstream occlusion pressure setting is displayed. This screen does not require a response.

For information on changing the downstream occlusion pressure setting, see Chapter 5, Advanced Functions.

<PROFILE>?

3. A profile name is displayed. Press **YES** to accept, or press **NO** repeatedly until the desired profile is displayed, then press **YES**.

## Delay Delivery

When programming an infusion, you can delay the start of the infusion for a specified period of time. This option is available in all modes except PCA.

- Delay time may be set from one minute to 99:59 hours.
- A programmed Delay Delivery affects only the initial infusion. The delay time will not remain in the pump's memory for future infusions.
- Fluid will be infused at the KO rate during the Delay Delivery phase. The KO rate is programmable from 0.1 to 10 ml/hr. To set the KO rate, see "Setting Infusion Data Parameters," 5-20.
- When programming a Delay Delivery in the Intermittent profile, the KO rate delivered during the delay will be the same as the KO rate programmed for delivery between Intermittent doses.
- When the pump is in Lockout Mode, the option to enter a Delay Delivery is available before the start of an infusion.

## Ready Screens / Final Confirmation Screens

When you have entered and/or reviewed all infusion parameters, the pump displays:

```
READY  
(PROFILE)
```

This indicates that the programmed parameters have been saved and will be retained until the profile is reprogrammed or the pump's memory is cleared. (See "Clearing the Memory," 5-9).

The screen is also displayed in Lockout Mode, if you press **RUN** at the `RUN to Repeat` prompt.

1. If you want to change a parameter and the pump is not in Lockout mode, press **NO** when the `READY` screen is displayed. The pump then displays:

```
(PROFILE)  
CHECK or CHANGE
```

followed by the `DELAY DELIVERY?` screen.

2. Press **YES** to accept, or **NO** to change the values you just programmed if desired.
3. If you press **RUN** from the `READY` screen, the following screens are displayed alternately:

```
Rate/hr(ml)  AMT  
125          100.0
```

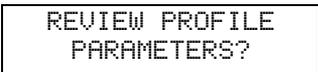
```
(PROFILE)  
Press Run
```

4. Press **RUN** to begin infusing, or **NO/REVIEW** to review each programmed parameter (See "Reviewing Profile Parameters," 3-17.)

## Reviewing Profile Parameters

To review the current programmed parameter values:

1. If the pump is already running, press **RUN/HOLD** to temporarily stop the infusion.
2. Press **NO/REVIEW**. The pump displays:



```
REVIEW PROFILE
PARAMETERS?
```

3. Press **YES**.

The pump displays the current option and limit settings, then the programmed infusion parameters.

**Note:** The pump displays change automatically, but you may advance through them more quickly by pressing **YES** as each value is displayed.

When all parameters have been displayed, the pump displays the Final Confirmation or **\*\*\*HOLD\*\*\*** screen.

4. Press **RUN/HOLD** to start or continue the infusion.

## Powering the Pump Off

- To power off when an infusion is complete, press **ON/OFF PUMP**.
- To power off before an infusion is complete, press **HOLD**, then press **ON/OFF PUMP**.

Information for the incomplete program is stored in memory. The next time the pump is turned on, it will prompt you to resume the previous infusion.



---

## Programming Infusions

### Overview

This chapter provides instructions for programming infusions in each of the pump's five infusion profiles. The following information is included:

- “Programming Continuous Profile,” 4-1
- “Programming Auto-Ramp<sup>®</sup> Profile,” 4-10
- “Programming Intermittent Profile,” 4-18
- “Programming 25 Periods Profile,” 4-28
- “Programming PCA Infusions,” 4-36

### Programming Continuous Profile

The Continuous profile has the following programming options:

- Program a single rate and the total volume. The pump calculates the time for the infusion.
- Program the total time for the infusion and total volume. The pump calculates the rate.
- Titrate the rate and/or the volume while the infusion is in progress or before the infusion begins. See “Titration in Continuous Profile,” 4-6.
- Delay the delivery for a specified period of time.

1. Power the pump on by pressing **ON/OFF PUMP**.  
The pump executes its self-test, then displays:

YES to Program  
RUN to Repeat

2. Press **YES**. The pump displays the current downstream occlusion pressure setting, then displays:

CONTINUOUS?

3. Press **YES** to select Continuous profile.

DELAY DELIVERY?

4. Do one of the following:
  - If you want to delay the start of the infusion, press **YES**, enter the delay time in hours:minutes, then press **YES** again.
  - If you want to start the infusion immediately after programming the pump, press **NO**.  
The pump displays:

PROGRAM in ml's?

5. Select the programming units as follows:
  - 5.1 To program in ml, press **YES** and go to step 6.  
If not, press **NO**. The pump displays:

PROGRAM in mg's?

- 5.2 To program in milligrams, press **YES** and go to step 5.4 to enter concentration. If not, press **NO**. The pump displays:

```
PROGRAM in ug's?
```

- 5.3 To program in micrograms, press **YES** and go to step 5.4 to enter concentration. If not, press **NO** and return to step 5.1.

**Note:** You must select a programming unit.

- 5.4 If programming in mg or  $\mu\text{g}$ , enter desired concentration in units per ml of fluid, then press **YES**.
6. The pump now prompts you to decide whether you want to program the infusion by rate or by time by displaying:

```
PROGRAM in
Rate?
```

- 6.1 To program total infusion time, press **NO** and skip to step 7.
- 6.2 To program rate, press **YES**. The pump displays:

```
CONTINUOUS
Rate:   XXXml/hr
```

- 6.3 Press **YES** to accept the displayed rate, or enter a new rate and press **YES** to accept.
- 6.4 Go to step 8 to program the volume to be infused.

7. The pump displays:

```
PROGRAM Total  
Infusion Time?
```

7.1 Press **YES**. The pump displays:

```
CONTINUOUS  
Total Time: XX:XX
```

7.2 Press **YES** to accept the displayed time period for the infusion, or enter a new time period and press **YES** to accept. The pump displays:

```
CONTINUOUS  
Volume: XXX.X ml
```

8. To program volume to be infused:  
Press **YES** to accept the displayed volume, or enter a new volume and then press **YES**.

The pump display alternates between the calculated fluid bag volume and the programmed rate and the time.

The display alternates the calculated fluid bag volume and concentration (if applicable) with the calculated total time for the infusion and the maximum rate.

**Example:**

```
Bag Volume:  
100.0ml/ 100ug
```

```
TotalTime: 01:00  
Rate: 122ml/hr
```

**Note:** If the calculated rate exceeds the pump's maximum rate of 400 ml/hr, the pump displays an alert message and forces you to re-enter values that result in a rate less than 400 ml/hr.

9. Press **YES** to confirm the displayed parameters and continue to step 10,

**OR**

Press **NO** to check or change the parameters. The pump briefly displays:

CONTINUOUS  
CHECK or CHANGE

then displays:

DELAY DELIVERY?

so you can press **YES** or **NO** as appropriate to advance through the programmed values and change parameters if desired.

10. When you are satisfied with all the values, press **YES**. The pump displays:

READY  
CONTINUOUS

**Note:** At the READY screen you can also Check or Change infusion parameters (see step 9).

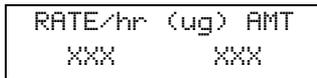
**Note:** You have the option of placing the pump in Lockout Mode at this time. See "Programmable Mode / Lockout Mode," 5-16 for information and instructions.

11. To deliver the programmed infusion at a later time, press the **ON/OFF PUMP** key to turn the pump off. When you want to begin the programmed infusion, follow the directions under “Shortcut Delivery of a Programmed Infusion,” 5-2.

To begin the infusion immediately, press **YES**. The pump displays the Final Confirmation screen:



alternating with:



12. Review the settings shown in the Final Confirmation screen and do one of the following:
  - Press **NO/REVIEW** to review parameters again.
  - Press **RUN** to begin the infusion. The green indicator light blinks and a flashing arrow is displayed on the screen to show that the pump is delivering fluid.

## Titration in Continuous Profile

Titration mode allows you to change the delivery rate and/or the volume of a continuous infusion during delivery or before the start of an infusion.

There are three ways to titrate a continuous infusion:

- Change rate without stopping the infusion.
- Change rate and/or volume when the infusion is put on hold.
- Change rate and/or volume from the Final Confirmation screen before the infusion begins.

## Changing Rate Without Stopping the Infusion

1. Press **YES /TITRATE** while the infusion is running. The pump displays:

```
TITRATION?
```

2. Press **YES**. The pump displays:

```
ENTER NEW  
Rate: 0.0 ml/hr
```

3. Enter the new rate. Press **YES** to accept the new value and continue the infusion at the new rate.

**Note:** You can change the rate without pausing the infusion. To change volume, you must put the infusion on hold.

## Changing Rate and/or Volume When Infusion is on Hold

4

1. Press **RUN/HOLD** to pause the infusion. The pump displays:

```
*** HOLD ***
```

2. Press **YES /TITRATE**. The pump displays:

```
TITRATION?
```

3. Press **YES**. The pump displays:

```
ENTER NEW  
Rate: 0.0 ml/hr
```

4. Enter the new rate and press **YES** to accept.  
The pump displays:

```
ENTER NEW
Volume:  0.0 ml
```

5. Enter a new volume if desired and press **YES** to accept.

The pump displays the new infusion rate and the cumulative volume infused, alternating with **\*\* HOLD \*\***.

6. Press **RUN** to resume the infusion.

### Changing Rate and/or Volume Before Infusion Begins

1. Press **YES/TITRATE** from the Final Confirmation screen. The pump displays:

```
TITRATION?
```

2. Press **YES**. The pump displays:

```
ENTER NEW
Rate: 0.0 ml/hr
```

3. Enter a value and press **YES**. The pump displays:

```
ENTER NEW
Volume: 0.0 ml
```

4. Enter a value and press **YES**. The pump displays **CONTINUOUS/Press Run**, alternating with programmed rate and amount.
5. Press **RUN** to start the infusion.

## Repeating a Continuous Infusion

To repeat a previously programmed continuous infusion:

1. Turn the pump on by pressing **ON/OFF PUMP**. The pump executes its self-test, then displays:

```
YES to Program
RUN to Repeat
```

2. To repeat the last program delivered, press **RUN**. The display alternates between the last programmed parameters and:

```
CONTINUOUS
PRESS RUN
```

3. Confirm that the programmed settings are suitable, then press **RUN** to start the infusion.

# Programming Auto-Ramp® Profile

The Auto-Ramp® Profile allows delivery of an infusion that automatically ramps (tapers) up, reaches a level delivery rate, and then automatically ramps (tapers) down. You enter the infusion's total volume, up- and down-ramp times, and the total delivery time or maximum level rate.

**Note:** Before beginning, verify that the pump is set up to permit Auto-Ramp® Profile programming. See "Making the Pump Profile-Specific," 5-10 for instructions on enabling infusion profiles.

To program an Auto-Ramp® Profile infusion:

1. Power the pump on by pressing **ON/OFF PUMP**.

The pump executes its self-test, then displays:

```
YES to Program
RUN to Repeat
```

2. To enter a new program, press **YES**. The pump displays its currently selected occlusion pressure setting, then displays **CONTINUOUS?**.
3. Press **NO** until the pump displays:

```
AUTO-RAMP?
```

4. Press **YES** to select Auto-Ramp® Profile. The pump displays:

```
DELAY DELIVERY?
```

5. Do one of the following:
  - If you want to delay the start of the infusion, press **YES**, enter the delay time in hours:minutes, then press **YES** again.
  - If you want to start the infusion immediately after programming the pump, press **NO**.  
The pump displays:

PROGRAM in ml's?

6. Select the programming units as follows:
  - 6.1 If you want to program in mls, press **YES** and continue to step 7. If not, press **NO** and proceed to step 6.2
  - 6.2 If you want to program in milligrams, press **YES** and go to step 6.4. If not, press **NO** and proceed to step 6.3.
  - 6.3 If you want to program in micrograms, press **YES** and go to step 6.4. If not, press **NO** and return to step 6.1.
  - 6.4 If programming in mg or  $\mu\text{g}$ , enter desired concentration in units per ml of fluid.
  - 6.5 Press **YES** to accept concentration and go to step 7. Press **NO** to enter a different concentration.
7. You can program by total time or by maximum rate. The maximum rate is reached at the end of the up-ramp time period and is sustained through the level period. The pump displays:

PROGRAM Total  
Infusion Time?

- If you want to program by time, press **YES** and go to step 10.

- If you want to program by rate, press **NO**.  
The pump displays:

```
PROGRAM
Maximum Rate?
```

8. Press **YES**. The pump displays the last maximum rate stored in memory.

```
Maximum
Rate:    XXml/hr
```

9. Press **YES** to accept the rate, or enter a new rate, then press **YES** to confirm. Skip to step 11.
10. The pump displays the previous Auto-Ramp® Profile total time stored in memory.  
Do one of the following:

```
AUTO-RAMP
TotalTime: XX:XX
```

- To accept the displayed value, press **YES**.
  - Enter a new value for total time, then press **YES** to accept. Go to step 11.
11. The pump displays the previous Auto-Ramp® Profile volume stored in memory.

```
AUTO-RAMP
Volume: XXX:X ml
```

Press **YES** to accept the displayed value, or enter a new value and press **YES** to accept.

12. The pump displays the previous up-ramp time period stored in memory.

```
Up-Ramp
TotalTime: X:XX
```

Press **YES** to accept the displayed value, or enter a new value and press **YES** to accept.

13. The pump displays the previous down-ramp time period stored in memory.

```

Down-Ramp
TotalTime: X:XX
    
```

Press **YES** to accept the displayed value, or enter a new value and press **YES** to accept.

The pump alternates the calculated fluid bag volume and concentration (if applicable) with the calculated total time for the Auto-Ramp® Profile and the maximum rate.

**Example:**

```

Bag Volume:
100.0ml/ 100ug

TotalTime: 01:00
Rate: 122ml/hr
    
```

**Note:** If the calculated rate for any part of the infusion exceeds the pump’s maximum rate of 400 ml/hr, the pump displays an alert message and forces you to re-enter values that result in a rate less than 400 ml/hr.

14. Do one of the following:
  - Press **YES** to confirm that the displayed parameters are acceptable and continue to step 15, the Ready screen.

- Press **NO** to check or change the parameters. The pump briefly displays:

AUTO-RAMP:  
CHECK OR CHANGE?

then returns to the DELAY DELIVERY? screen shown in step 4. Proceed through all the programming screens by pressing **YES** or **NO** to confirm or change parameter values.

15. When you are satisfied with the values, press **YES**. The pump stores the programmed settings in memory and displays:

READY  
AUTO-RAMP

16. Do one of the following:
  - To begin the infusion now, press **YES** to proceed to the Final Confirmation screen (step 17).
  - To deliver the infusion later, turn the pump off by pressing the **ON/OFF PUMP** key. When you want to begin the infusion, follow the directions under “Shortcut Delivery of a Programmed Infusion,” 5-2.
  - To reprogram a parameter, press **NO**. The pump displays the DELAY DELIVERY? screen again so you can advance through all the programming screens by pressing **YES** and **NO** and change the values if desired.

17. The Final Confirmation screen is displayed:

AUTO-RAMP  
Press Run

alternating with the level rate infusion rate and volume:

```

RATE/hr (m1) AMT
XX          XXX

```

18. When you have reconfirmed the programmed parameters, press **RUN/HOLD** to begin the infusion. The pump display alternates between the following:

```

RATE/hr (m1) AMT
XX.X      ->  X.X

```

```

          UP-RAMP
XX.X          XXX

```

As the infusion progresses, the rate gradually increases throughout the up-ramp time period. When the up-ramp time period is complete, rate levels off at the maximum programmed rate and the following is displayed for 10 seconds:

```

          LEVEL RATE
XX.X          X

```

alternating with:

```

RATE/hr (m1) AMT
XX.X      ->  X.X

```

During the down-ramp period, the display changes to:

```

          DOWN-RAMP
XX          X

```

When the infusion is complete, the pump beeps and displays the following until you turn it off:

```

          AUTO-RAMP
COMPLETE      XXm1

```

## Repeating an Auto-Ramp® Profile Infusion

To repeat a previously programmed Auto-Ramp® Profile infusion:

1. Power the pump on by pressing **ON/OFF PUMP**.

The pump executes its self-test, then displays:

```
YES to Program  
RUN to Repeat
```

2. To repeat the last program delivered, press **RUN**. The display alternates between the last programmed parameters and:

```
AUTORAMP  
PRESS RUN
```

3. Confirm that the programmed settings are suitable, then press **RUN** to start the infusion.

## Early Down-Ramping During Auto-Ramp® Profile Delivery

When an Auto-Ramp® Profile infusion is running at the level rate, you can begin the down-ramp portion earlier than originally programmed if necessary. This function allows you to enter a new down-ramp time, if desired, or begin the down-ramp phase immediately.

1. When the pump is in level rate, press **RUN/HOLD** to interrupt the infusion. The pump displays:

```
Early  
Down-Ramp?
```

2. Press **YES** to program early down-ramp, or **NO** to exit and continue with the infusion as originally programmed.

**Note:** The LOW BAG warning may occur when you program an early down-ramp.

After you press **YES**, the pump displays:

```

Down-Ramp
TotalTime: HH:MM
    
```

3. Press **YES** to accept the down-ramp start time shown, or enter a new time and press **YES** to accept.

The pump displays the Level Infusion Rate and cumulative volume infused, alternating with **\*\*\*HOLD\*\*\***.

4. Press **RUN/HOLD** to resume the paused infusion, beginning immediately with the down-ramp phase.

If an alarm occurs during the level rate portion of the profile:

1. Press **RUN/HOLD** to silence the alarm. The pump displays:

```

EARLY DOWNRAMP?
    
```

2. To begin the down-ramp portion of the profile immediately, press **YES**.

To continue the level rate portion of the profile, press **NO**. The pump displays:

```

***  HOLD  ***
    
```

3. Clear the alarm condition, then press **RUN** to restart the pump.

# Programming Intermittent Profile

The Intermittent profile delivers multiple doses of medication at regular intervals from a single fluid bag. You enter the total length of time over which to infuse the contents of the fluid bag. You may choose a delivery time up to 72 hours. Determine the number of doses, volume, time or rate for each dose and the KO rate to be delivered between each dose.

Think about your infusion profile when determining the total delivery time. If only one dose is in the fluid bag, total time may be anywhere between 1 minute and 72 hours. With more than one dose, the total time may be between 3 hours and 72 hours. There must be at least 2 hours between the end of one dose and the beginning of the next dose, and there cannot be more than one dose every three hours.

You have the option of delaying the delivery for a specified time.

**Note:** Before beginning, verify that the pump is set up to permit intermittent programming. See “Making the Pump Profile-Specific,” 5-10 for instructions on enabling infusion profiles.

To program an Intermittent infusion:

1. Power the pump on by pressing **ON/OFF PUMP**.

The pump executes its self-test, then displays:

```
YES to Program  
RUN to Repeat
```

2. Press **YES**. The pump displays its currently selected occlusion pressure setting, then displays:

```
CONTINUOUS?
```

3. Press **NO** until the following is displayed:

INTERMITTENT?

4. Press **YES** to select Intermittent profile.  
The pump displays:

DELAY DELIVERY?

5. Do one of the following:

- If you want to delay the start of the infusion, press **YES**, enter the delay time in hours:minutes, then press **YES** again.
- If you want to start the infusion immediately after programming the pump, press **NO**.  
The pump displays:

Total:24hrs?

**Note:** When programming an Intermittent profile, total delivery time must be between 3 hours and 72 hours, with at least 2 hours between individual doses

6. If you want a total delivery period of 24 hours, press **YES** and go to step 10.
7. If you want a different total delivery time, press **NO**.  
The pump displays:

OTHER TOTAL  
Delivery Time?

8. Press **YES**. The pump displays:

OTHER TOTAL  
Time:           HH:MM

- 9. If the time displayed is correct, press **YES**. If not, enter desired total delivery time and press **YES** to accept.

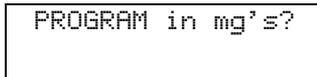
The pump displays:



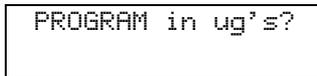
- 10. Do one of the following:
  - 10.1 If the number of doses shown is correct for the total delivery time entered, press **YES**.
  - 10.2 Enter the correct number of doses and press **YES**.

**Note:** If the number of doses you enter results in a dose frequency of less than three hours between doses, the pump displays DOSE FREQUENCY UNDER 3 HRS. Enter a lower number of doses.

- 11. Select the programming units as follows:
  - 11.1 To program in ml, press **YES** and go to step 12. If not, press **NO**. The pump displays:



- 11.2 To program in milligrams, press **YES** and go to step 11.4 to enter concentration. If not, press **NO**. The pump displays:



- 11.3 To program in micrograms, press **YES** and go to step 11.4 to enter concentration. If not, press **NO** and return to step 11.1.
  - 11.4 If programming in mg or  $\mu\text{g}$ , enter desired concentration in units per ml of fluid, then press **YES**.

**Note:** You must select a programming unit.

**Note:** You can program the doses by time or by rate.

## 12. To program by time:

When the pump displays:

```
PROGRAM
Doses in Time?
```

12.1 Press **YES**. The pump displays:

```
INTERMITTENT
DoseTime: 0:00
```

12.2 Press **YES** to accept the time, or enter a new time and press **YES** to confirm. Go to step 14.

## 13. To program by rate:

When the pump displays:

```
PROGRAM
Doses in Time?
```

13.1 Press **NO**. The pump displays:

```
PROGRAM
Doses in Rate?
```

13.2 Press **YES**. The pump displays:

```
Dose
Rate: XXX ml/hr
```

13.3 Press **YES** to accept the rate, or enter a new rate and press **YES** to confirm.

- 14. The pump displays the previous dose volume stored in memory.

```
Dose
Volume:XX.X ml/hr
```

Press **YES** to accept the displayed value, or enter a new value and press **YES** to accept. The pump displays:

```
INTERMITTENT KO
Rate: X.X ml/hr
```

**Note:** KO rate must be between 0.0 and 10.0 ml, and must be less than the dose rate. If the entered KO rate is higher than the dose rate, the pump will not accept the entered parameter and will display `KO RATE EXCEEDS DOSE RATE`.

**Note:** Intermittent KO rate does not apply to other profiles. When programmed in this sequence, the KO rate applies to the Intermittent profile only.

**Note:** If the KO rate is 0.0 ml/hr, at the end of each dose the pump displays `DOSE X COMPLETE` and beeps 4 times. The pump displays the current (KO) rate of 0.0 and the cumulative volume given, alternating every 15 seconds with `KO DOSE X`.

- 15. Press **YES** to accept the displayed KO value, or enter a new KO rate and press **YES** to accept.

The pump displays:

```
Bag Volume:
XXX.X ml
```

alternating with:

```
Dose Time: HH:MM
Rate: XX.X ml/hr
```

16. Do one of the following:

- Press **YES** to confirm that the displayed parameters are acceptable and go to step 18, the Ready screen.
- Press **NO** to check or change the parameters. The pump briefly displays:

INTERMITTENT:  
CHECK OR CHANGE

then returns to the DELAY DELIVERY? screen shown in step 4.

17. Advance through all the programming screens by pressing **YES** and **NO** and confirm or change parameter values.
18. When you are satisfied with the values, press **YES**. The pump stores the programmed settings in memory and displays:

READY  
INTERMITTENT

19. Do one of the following:

- To begin the infusion now, press **YES** to proceed to Final Confirmation. See step 20.
- To deliver the infusion later, turn the pump off by pressing the **ON/OFF PUMP** key. When you want to begin the infusion, follow the directions under “Shortcut Delivery of a Programmed Infusion,” 5-2.
- To reprogram a parameter, press **NO**. The pump displays the DELAY DELIVERY? screen again so you can advance through all the programming screens by pressing **YES** and **NO** and change the values if desired.

20. The Final Confirmation screen displays the infusion rate and amount, alternating with **INTERMITTENT Press Run**. This gives you the opportunity to reconfirm the infusion parameters.
21. When you have reconfirmed the programmed parameters, press **RUN/HOLD** to begin the infusion.

**Note:** Intermittent infusions always begin with a dose period and end with a KO period unless Delay Delivery is used.

## Interrupting an Intermittent Infusion

If the pump is turned off during an Intermittent infusion, the pump's clock keeps track of the dosing schedule.

If turned off **between** scheduled doses, the pump displays the appropriate **Resume?** prompt when it is turned back on.

If turned off **during** a scheduled dose, the clock keeps track of the time remaining in the interrupted dose. The **Resume?** prompt displayed when the pump is turned back on varies as shown in Table 4-1.

**Table 4-1 Resuming an Intermittent Infusion**

<b>If pump is turned back on....</b>	<b>Prompt</b>	<b>Response</b>
Before the scheduled end of the interrupted dose	RESUME DOSE X	<b>YES:</b> Interrupted dose continues where it left off. <b>NO:</b> YES to Program RUN to Repeat
After more than 31 minutes have elapsed beyond the original scheduled end of the dose	RESUME KO DOSE X?	Dose is cancelled.
More than 30 minutes before the start of the next scheduled dose	RESUME KO DOSE X?	<b>YES:</b> KO Dose begins. Infusion remains on original schedule. <b>NO:</b> YES to Program RUN to Repeat
Within 30 minutes before or after the next scheduled dose	BEGIN DOSE X?	<b>YES:</b> Dose begins immediately. Following KO period will be shortened or lengthened as required to keep the remaining infusion on its original schedule. <b>NO:</b> YES to Program RUN to Repeat
After more than 30 minutes after the next dose would have completed	BEGIN DOSE X?	<b>YES:</b> Dose begins immediately. All remaining doses will be rescheduled and administered according to the original programmed dose time.

## Audible Alerts When KO Rate is 0.0 ml/hr

If the KO rate is 0.0, a dose is finished and the pump is turned off, the pump sounds 4 alert beeps every 10 minutes, beginning 30 minutes before the scheduled start time of the next dose and ending 30 minutes after the scheduled start time of the next dose. During this time the next scheduled dose will be given if the pump is turned on. If two consecutive doses are missed, the alert beeps stop.

## Changing the Fluid Bag to Continue the Program Cycle

As a safety measure, the pump delivers the program based on the total infusion time entered. This time represents one complete program cycle, or the total delivery time required to infuse the fluid bag contents. When the therapy is to run more than one cycle, you may change the fluid bag either when the infusion is complete or during the final KO phase.

### Changing the Fluid Bag When a Cycle is Complete (Repeating the Cycle)

This method allows the Intermittent infusion to finish completely before changing the fluid bag and beginning a new program cycle. When the infusion is complete, turn the pump off, exchange the fluid bag, turn the pump back on, and follow the standard instructions for repeating delivery of a preprogrammed Intermittent delivery profile.

To change the fluid bag and repeat an Intermittent program cycle after a cycle has completed:

1. Turn the pump off when it displays:

INTERMITTENT COMPLETE: XXXX ml
-----------------------------------

2. Change the fluid bag, then turn the pump back on.
3. In Programmable or Lockout Mode, see “Shortcut Delivery of a Programmed Infusion,” 5-2.

## Changing the Fluid Bag During the Final KO Phase

This method allows you to change the fluid bag during the final KO phase of an Intermittent program cycle and automatically start a new program cycle when the final KO phase is complete.

1. During the final KO phase, press **RUN/HOLD** to interrupt the infusion. The pump displays:

```
***  HOLD  ***
```

2. Turn the pump off and change the fluid bag.
3. Turn the pump back on.
4. After the pump completes the self-test, it displays:

```
Resume KO dose X?
```

5. Press **YES** to resume the dose. The pump displays:

```
Repeat  
HH:MM Program?
```

6. Press **YES** to repeat delivery of the program cycle after the final KO phase is complete.

The pump displays rate and volume, alternating with:

```
KO dose X  
PRESS RUN
```

7. Press **RUN/HOLD** to resume the final KO phase of the previous infusion. When the KO phase is complete, the pump begins the new program cycle automatically.

## Programming 25 Periods Profile

This profile permits programming and infusion of up to 25 different delivery periods, each with its own rate and volume, or time and volume. The periods are then delivered one after the other.

You can program a 25 Periods profile by rate or by time.

To program a 25 Periods profile:

1. Power the pump on by pressing **ON/OFF PUMP**.

The pump executes its self-test, then displays:

```
YES to Program  
RUN to Repeat
```

2. Press **YES**. The pump displays the current downstream occlusion pressure setting, then displays:

```
CONTINUOUS?
```

3. Press **NO** until 25 Periods? is displayed.
4. Press **YES** to select 25 Periods profile. The pump displays:

```
DELAY DELIVERY?
```

5. Do one of the following:

- To delay the start of the infusion, press **YES**, enter the delay time in hours:minutes, then press **YES** again, or
- To start the infusion immediately, press **NO**. The pump displays:

PROGRAM in ml's?

6. Select the programming units as follows:

- 6.1 To program in ml, press **YES** and go to step 7. If not, press **NO**.
- 6.2 To program in milligrams, press **YES** and determine concentration as shown in step 6.4. If not, press **NO**.
- 6.3 To program in micrograms, press **YES** and go to step 6.4 to enter concentration. If not, press **NO** and return to step 6.1.
- 6.4 If programming in mg or  $\mu\text{g}$ , enter desired concentration in units per ml of fluid.
- 6.5 Press **YES** to accept concentration and go to step 7. Press **NO** to repeat the previous step or to enter a different concentration and repeat the previous step.

7. The pump displays :

PROGRAM  
Periods in Rate?

- To program by rate, press **YES** and go to “Programming 25 Periods Profile by Rate,” 4-30.
- To program by time, press **NO** and go to “Programming 25 Periods Profile by Time,” 4-32.

## Programming 25 Periods Profile by Rate

**Note:** You must complete steps 1 through 7 of “Programming 25 Periods Profile,” 4-28, before performing this procedure.

The pump displays the last rate programmed for the first period stored in memory.

```
PERIOD 01
Rate:   X.X ml/hr
```

1. Press **YES** to accept the rate, or enter a new rate, then press **YES** to confirm. The pump displays:

```
PERIOD 01
VOLUME: XXXX ml
```

2. Press **YES** to accept the displayed volume, or enter a new volume for Period 1, then press **YES** to accept. The pump displays:

```
PERIOD 02
Rate:   X.X ml/hr
```

3. Repeat steps 1 and 2 to program the rate and volume for the remaining number of delivery periods desired.
4. After you have programmed parameters for all desired periods, end period programming by programming the next period with a rate of zero, then press **YES**.

**Example:**

To deliver 16 periods, program delivery parameters for all 16 periods, then program a zero value for the 17th period as shown below:

```
PERIOD 17
RATE:   0.0 ml/hr
```

5. Press **YES** to confirm. The display alternates between:

```
Bag Volume:
  XXX.X ml
```

and:

```
Rate: XXX ml/hr
```

6. Confirm the infusion parameters, then press **YES** to continue to step 8, or **NO** to check or change the parameters.
7. If you press **NO**, the pump briefly displays:

```
25 PERIODS
CHECK or CHANGE
```

then returns to DELAY DELIVERY?. Proceed through all the programming screens to confirm or change parameter values by pressing **YES** or **NO**.

8. When you are satisfied with the values, press **YES**. The pump displays:

```
READY
  XX PERIODS
```

9. Do one of the following:
  - To begin the infusion now, press **YES** to proceed to Final Confirmation. See step 10.
  - To deliver the infusion later, turn the pump off by pressing the **ON/OFF PUMP** key. When you want to begin the infusion, follow the directions under “Shortcut Delivery of a Programmed Infusion,” 5-2.

- To reprogram a parameter, press **NO**. The pump displays the DELAY DELIVERY? screen again so you can advance through all the programming screens by pressing **YES** and **NO** and change the values if desired.
10. The Final Confirmation screen displays the infusion rate and amount, alternating with 25 PERIODS Press Run. This lets you reconfirm the infusion parameters if desired. See “Reviewing Profile Parameters,” 3-17.
  11. When you have reconfirmed the programmed parameters, press **RUN/HOLD** to begin the infusion, or press **NO/REVIEW** to review parameters.

## Programming 25 Periods Profile by Time

**Note:** You must complete steps 1 through 7 of “Programming 25 Periods Profile,” 4-28, before performing this procedure.

To program a 25 Periods profile by time:

The pump displays:

```
PROGRAM
Periods in Time?
```

1. Press **YES**. The pump displays the last time programmed for the first period stored in memory.

```
PERIOD 01
Total Time: HH:MM
```

2. Press **YES** to accept the time, or enter a new time in hours:minutes format, then press **YES** to confirm. The pump displays:

```
PERIOD 01
VOLUME: XXXX ml
```

3. Press **YES** to accept the displayed volume, or enter a new volume for Period 1, then press **YES** to accept.

The pump displays the prompt for programming the second period's time duration:

```

PERIOD 02
TotalTime: HH:MM
    
```

4. Press **YES** to accept the displayed time for Period 2, or enter a new value and press **YES** to accept.
5. Repeat steps 2 and 3 to program the time and volume for the remaining number of delivery periods desired.
6. After you have programmed parameters for all desired periods, end period programming by programming the next period for a time of zero.

**Example:**

To deliver 16 periods, program delivery parameters for all 16 periods, then program a zero value for the 17th period as shown below.

```

PERIOD 17
TotalTime: 00:00
    
```

7. Press **YES** to confirm. The display alternates between:

```

Bag Volume:
XXX.X ml
    
```

and:

```

Total Time:
HH:MM
    
```

8. Confirm the infusion parameters. Press **YES** to continue to step 11, the Ready screen, or **NO** to check or change the parameters.
9. If you press **NO**, the pump briefly displays:

25 PERIODS CHECK  
or CHANGE

then returns to DELAY DELIVERY?. You may then confirm or change parameter values by pressing **YES** or **NO**.

10. When you are satisfied with the values, press **YES**. The pump displays:

READY  
XX PERIODS

11. The programmed parameters are stored in the pump's memory. Do one of the following:
  - To begin the infusion now, press **YES** to proceed to the Final Confirmation screen (step 12).
  - To deliver the infusion later, turn the pump off by pressing the **ON/OFF PUMP** key. When you want to begin the infusion, follow the directions under "Shortcut Delivery of a Programmed Infusion," 5-2.
  - To reprogram a parameter, press **NO**. The pump displays the DELAY DELIVERY? screen again so you can see all the programming screens by pressing **YES** and **NO** and change the values if desired.

12. The Final Confirmation screen is displayed:

```

25 PERIODS
Press Run

```

alternating with the infusion rate and volume:

```

RATE/hr (ml) AMT
XX           XXX

```

13. When you have reconfirmed the programmed parameters, press **RUN/HOLD** to begin the infusion. The pump displays:

```

RATE/hr (ml)  AMT
XX.X  ->  X.X

```

## Repeating a 25 Periods Program

To repeat a 25 Periods infusion:

1. Power the pump on by pressing **ON/OFF PUMP**.

The pump executes its self-test, then displays:

```

YES to Program
RUN to Repeat

```

2. To repeat the last program delivered, press **RUN**. The display alternates between the last programmed parameters, and:

```

25 PERIODS
Press RUN

```

Confirm that the programmed settings are suitable, then press **RUN** again to start the infusion.

## Programming PCA Infusions

The PCA profile allows you a choice of three different PCA infusion patterns:

- Basal (constant) infusion rate only.
- Basal rate with demand bolus doses (patient activated bolus).
- Bolus doses on demand only.

You may also administer a loading dose at the beginning of an infusion, or a clinician-activated bolus dose at any time during an infusion.

The following programming procedure describes how to program all programming options. If your institution has used PCA Configuration Mode to disable some of the settings, not all screens will be displayed. See “Using Configuration Mode to Customize Available PCA Profile Options,” 4-63 for information on PCA Configuration options.

The pump provides three delivery route options: intravenous, subcutaneous and epidural.

### Begin Programming PCA Profile

To program a PCA profile:

1. **Power the pump on.** Press **ON/OFF PUMP**. The pump executes its self-test, then displays:

YES to Program  
RUN to Repeat

2. Press **YES**. The pump displays the current downstream occlusion pressure setting, then displays:

CONTINUOUS?

3. **Select PCA profile.** Press **NO** until PCA? is displayed.
4. Press **YES** to select PCA profile. The pump displays:

Delivery Route  
Intravenous?

5. **Select delivery route.** You can select from intravenous, subcutaneous, or epidural delivery routes. If you want an intravenous delivery, press **YES**. If not, press **NO** to display the other options.
6. When the desired delivery route is displayed, press **YES** to accept.
7. **Select programming units** as follows:
  - 7.1 To program in milligrams, press **YES** and go to step 7.4. If not, press **NO**.
  - 7.2 To program in milliliters, press **YES** and go to step 8. If not, press **NO**.
  - 7.3 To program in micrograms, press **YES**. If not, press **NO** and return to step 7.1
  - 7.4 If programming in mg or  $\mu\text{g}$ , press **YES** to accept the default concentration, or press **NO** and enter a different concentration in units per ml of fluid.
8. **Set basal rate.** Press **YES** to accept the displayed rate or enter a new rate and press **YES** to accept.

Basal  
Rate: 0.0mg/hr

- Note:** If you selected mg or  $\mu\text{g}$ , basal rate will display in terms of the selected unit.
  
- Note:** The basal rate can range from 0.0 up to 50 ml/hr, depending on the selected delivery route. If the rate is programmed in mg/hr or  $\mu\text{g/hr}$ , the delivery range is determined by 50 ml equivalent and the concentration. See Table 4-3 for complete information on dose limits for delivery routes.
  
- Note:** Fluid bag volume is always displayed in ml; so even if you are programming in mg or  $\mu\text{g}$ , enter fluid bag volume in ml.

**9. Set fluid bag volume.**

```
      Bag
Volume:  0.0ml
```

Press **YES** to accept the displayed volume or enter a new volume and then press **YES** to accept.

## Choose Method of Limiting Amount of Medication

- 10.** When programming a bolus dose, you may limit the medication available to the patient either by number of doses per hour or by total medication allowed.

Press **YES** when the appropriate choice is displayed:

```
Limit Med. by
# Doses/Hour?
```

or:

```
Limit Med. by
Tot Med Allowed?
```

**Note:** Select `Limit Med. by # Doses/ Hour` to enter the number of bolus doses that may be delivered within a one-hour time frame.  
**Examples:** “6” = q10 min.; “2” = q30 min.  
Select `Limit Med. by Tot Med. Allowed` to restrict the total amount of medication that may be infused within a certain time period, or to program bolus intervals greater than one hour.  
**Examples:** q2 hours, q4 hours, or total medication of 40 mg in 4 hours.

**Note:** If you want to program a basal rate only (no bolus doses), press **YES** to `Limit Med. by # Doses/ Hour`, and **NO** to `DEMAND BOLUS DOSE?`.

- **If you chose to limit medication by number of doses per hour**, go to “Programming a PCA Profile with Medication Limited by Number of Doses per Hour,” 4-39.
- **If you chose to limit medication by the total amount of medication allowed**, go to “Programming Demand Boluses - Limiting Medication by Total Medication Allowed,” 4-41.

## Programming a PCA Profile with Medication Limited by Number of Doses per Hour

**Note:** You must complete steps 1 through 10 of “Programming PCA Infusions,” 4-36, before performing this procedure. Perform this procedure only if you selected `LIMIT MED by # Doses/ Hr.` in step 10.

1. Choose and program demand bolus dose if desired.

```
DEMAND BOLUS
DOSE?
```

Press **YES** or **NO**. If you press **NO**, skip to “Set PCA Profile Titration Limits,” 4-42.

If you press **YES**, the pump displays:

```
Bolus
Dose: 0.0 mg
```

2. Press **YES** to accept the displayed bolus dose or enter a new bolus dose amount, and press **YES** to accept the value.

The pump displays:

```
Bolus Hr:Min
Interval: 00:00
```

3. Press **YES** to accept the displayed bolus dose or enter a new bolus dose amount, and press **YES** to accept the value.
4. Press **YES** to accept the displayed bolus interval (time between bolus doses), or enter a new interval and press **YES** to accept.

```
Bolus
Doses/hr: XX
```

**Note:** The pump will not allow the patient to receive more than the allowed number of bolus doses per hour, based on your entered bolus dose interval. You must enter the number of bolus doses allowed per hour, or enter a smaller number.

5. Enter the desired number of bolus doses allowed per hour and press **YES** to accept the value.
6. Go to “Set PCA Profile Titration Limits,” 4-42.

## Programming Demand Boluses - Limiting Medication by Total Medication Allowed

**Note:** You must complete steps 1 through 10 of “Programming PCA Infusions,” 4-36, before performing these steps. Perform this procedure only if you selected LIMIT MED by Tot. Med. Allowed. in step 10.

1. When the pump displays:

```

Demand Bolus
Dose?
  
```

Press **YES** to allow the patient to receive bolus doses on demand, or press **NO** and go to step 4 if you do not want the patient to receive bolus doses on demand.

If you press **YES**, the pump displays:

```

Bolus
Dose:      0.0 mg
  
```

2. Press **YES** to accept the displayed bolus dose, or enter a new bolus dose amount and press **YES** to accept. The pump displays:

```

Bolus
Interval:  HH:MM
  
```

3. Press **YES** to accept the displayed bolus interval, or enter a new bolus interval and press **YES** to accept. The pump displays:

```

Medication Time
Limit: 0 Hours
  
```

4. Press **YES** to accept the displayed time limit, or enter a new time limit for the medication and press **YES** to accept.

5. The pump displays:

```
Medication Vol  
Limit: 0.0 mg
```

6. Press **YES** to accept the displayed medication volume limit, or enter a new volume limit and press **YES** to accept.
7. Proceed to “Set PCA Profile Titration Limits,” 4-42.

**Note:** The Medication Volume limit should account for all hours of basal rate plus the bolus doses allowed during the specified time limit. The pump calculates the medication volume limit by including the sum of the basal volume plus the delivered bolus volumes, but does NOT include the volume of any Clinician-Activated boluses or loading dose.

**Note:** If you entered a basal rate of zero and answered **NO** to DEMAND BOLUS DOSE?, the pump displays:

```
ALERT Program  
Basal &/or Bolus
```

Press **YES** or **NO** to return to step 1 of this procedure. You **MUST** either program a continuous basal rate or allow bolus doses to be administered.

## Set PCA Profile Titration Limits

1. To allow titration during a PCA infusion, press **YES** at the prompt and continue on to set parameters.

```
SET TITRATION  
LIMITS?
```

2. If you do not wish to allow titration, press **NO** and go to “Program Optional Loading Dose,” 4-44.

3. If you want to allow titration during a PCA infusion, press **YES**. The pump displays:

```
MAXIMUM Basal
Rate: XX mg/hr
```

4. Enter the maximum basal rate you wish to allow for titration. The value shown will be the minimum basal rate set in the pump. Press **YES** if the displayed value is acceptable. If the value is not correct, enter the desired value and press **YES** to accept.

**Note:** If you selected Demand Boluses, go to step 5 and enter maximum bolus dose allowed. If you chose not to allow Demand Boluses, go to step 10 and program a loading dose if desired.

**Note:** The displayed values are the minimum set. You have to enter the maximum allowable values.

```
MAXIMUM Bolus
Dose: XX mg
```

5. Press **YES** to accept the displayed maximum bolus dose allowed for titration, or enter a new value and press **YES** to accept. The pump displays:

```
MINIMUM Bolus
Interval: HH:MM
```

6. Press **YES** to accept the displayed minimum bolus interval allowed for titration, or enter a new value and press **YES** to accept.

```
MINIMUM Bolus
Interval: HH:MM
```

7. If you are programming in bolus doses per hour, the following screen is displayed:

MAXIMUM Bolus  
Doses/hr: X

8. Press **YES** to accept the displayed maximum number of bolus doses per hour allowed for titration, or enter a new value and press **YES** to accept.

## Program Optional Loading Dose

**Note:** A loading dose can be given as the pump begins infusing. If you press **NO** to administering the loading dose, it cannot be given later.

The pump displays:

PROGRAM  
Loading Dose?

9. If you do not want to program a loading dose, press **NO**. To program a loading dose, press **YES**. The pump displays:

Loading  
Dose: XXX mg

10. Press **YES** to accept the displayed loading dose, or enter a new value and press **YES** to accept.

## Check Programmed Parameters

To allow you to check or change the values you programmed, the pump displays:

CHECK or CHANGE  
PCA VALUES?

alternating with:

```

Bag volume:
XX.XXmL/  XX.Xmg
    
```

11. To check or change values, press **YES**. The pump returns to the DELIVERY ROUTE screen. Advance through the programmed parameters and check or change as desired.

To continue without changing parameters, press **NO** and continue.

**Note:** You may also review parameter values at the Final Confirmation screen. See “Reviewing PCA Profile Parameters,” 4-51.

## Select Appropriate PCA Security Level

12. See Table 4-2 for available settings. Press **YES** or **NO** to select the appropriate security level.

```

SECURITY LEVEL 1
ALLOW CHANGES?
    
```

```

SECURITY LEVEL 2
ALLOW TITRATION?
    
```

```

SECURITY LEVEL 3
LOCKOUT CHANGES?
    
```

When you have selected the desired security level, the pump indicates that all values have been stored in the pump’s memory until they are changed by displaying the following:

```

READY
PCA LEVEL X
    
```

**Table 4-2 Security Level Parameters**

Level 1: Allow Changes	Level 2: Allow Titration	Level 3: Lockout Changes
The clinician or patient may start, stop and resume the infusion.		
The patient cannot access a different profile.		
The clinician or patient may change any PCA values, regardless of the maximum or minimum entered parameters, up to the limit established by the delivery route selected.	The clinician or patient may titrate the PCA values of the basal rate, bolus dose, bolus intervals, and bolus doses/hr. These values may be titrated up to the preprogrammed titration limiting values only.	The patient may administer only the base programmed values. <b>The YES/TITRATE key is not available even if titration parameters have been programmed.</b> The clinician may titrate PCA values of the basal rate, bolus dose, bolus intervals and bolus doses/hr via codes.
The clinician may administer a clinician bolus via codes.	The clinician may administer a clinician bolus and change titration parameters via codes.	

## Completing PCA Programming

- To begin the PCA infusion now, press **YES** and proceed to the Final Confirmation screen.

To turn the pump off for later delivery of the PCA infusion, press **ON/OFF PUMP**.

The pump displays the Final Confirmation screen:

RATE/hr (ml)	AMT
XX.X	XX.X

alternating with:

```

PCA LEVEL X 0m
Press Run
    
```

- PCA programming is complete. Press **RUN/HOLD** to begin the infusion, or press **NO/REVIEW** to review parameters.

## Titrating a PCA Infusion

**Note:** The infusion **will not** be interrupted while titrating. When the new values have been accepted, the pump will automatically switch to the new values for the present infusion.

**Note:** You may exit Titration Mode at any time without changing or saving any new values by pressing **RUN/HOLD**. In Titration Mode, if one minute elapses during which no keys are pressed, the pump automatically exits Titration Mode without changing or saving any new profile parameters, even if new values were added prior to the elapsed minute.

- To titrate during a PCA infusion in Security Level 1 or Level 2 with titration ranges established, press **YES/TITRATE**. The pump displays:

```

TITRATION?
    
```

Press **YES/TITRATE** again. The pump displays:

```

Basal
Rate:   XXXml/hr
    
```

- Press **YES** to accept the displayed basal rate, or enter a new basal rate, and press **YES** to accept.

If a Demand Bolus Dose **IS NOT** programmed in the current PCA profile infusion, the following is displayed after you accept a basal rate:

CHECK or CHANGE  
Parameters?

If a Demand Bolus Dose **IS** programmed in the current PCA profile infusion, the pump will give you the option of titrating bolus dose, bolus interval and/or bolus doses/hr in the following three screens:

Bolus  
Dose:        X mg

3. Press **YES** to accept the displayed bolus dose value, or enter a new value and press **YES** to accept. The pump displays:

Bolus        (Hr/Min)  
Interval:    HH:MM

4. Press **YES** to accept the displayed bolus interval value, or enter a new value and press **YES** to accept.

If the pump is programmed in Limit Number of Bolus Doses, the pump displays:

Bolus  
Doses/hr:    XX

5. Press **YES** to accept the displayed number of bolus doses/hr, or enter a new value and press **YES** to accept. The pump displays:

CHECK or CHANGE  
Parameters?

6. Press **YES** to check or change the values again, or press **NO** to exit Titration Mode.

New values are saved in the pump's memory for the PCA profile being delivered.

## Giving a Demand /Remote Bolus

If the PCA profile was programmed for demand bolus doses, the patient may activate a demand bolus dose by pressing the **PRIME/BOLUS** key or, if connected, the button on the PCA cord.

Patient control over demand boluses is limited by one of the following settings:

- limits for the number of doses that may be given in an hour, or
  - a required time interval between demand bolus doses.
1. To give a demand bolus during the PCA infusion, press the **PRIME/BOLUS** key or the button on the remote PCA cord. The pump beeps four times and displays:

BOLUS DOSE REQUESTED
-------------------------

2. When the bolus dose is finished, the pump resumes the current basal rate and displays the current screen.

The pump's data log shows the number of demand bolus doses given as well as the number of doses requested by the patient.

**Note:** If the patient requests a bolus but the mandatory interval between bolus doses has not elapsed or the number of doses allowed per hour have already been given, the requested bolus dose will not be given. The pump records the request in the PCA data log, displays **BOLUS DOSE REQUESTED** and beeps four times just as if a dose is being given.

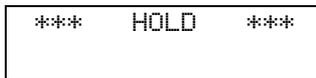
## Giving a Clinician-Activated Dose

You can deliver a clinician-activated bolus dose at any time during a PCA infusion, and at any level of security. The function is accessible via a numeric code.

After a clinician-activated dose is delivered, the cumulative volume infused reflects all volume infused, including the clinician-activated dose volume.

1. During a PCA infusion, press **RUN/HOLD** to pause the infusion.

The pump displays the current basal rate and cumulative volume infused, alternating with:



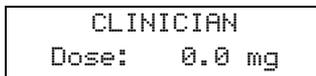
\*\*\* HOLD \*\*\*

2. To access the Clinician Dose function, enter the code:



5 1 1 5

The pump displays:



CLINICIAN  
Dose: 0.0 mg

3. Enter the desired clinician bolus dose and press **YES** to accept the entered dosage.

**Note:** If you enter or accept a dosage of 0.0, the Clinician Dose function is canceled. If you make an error, press **NO** to change your entry.

When you press **YES** to accept an entered dosage parameter, the pump displays the Clinician Dose confirmation screen:

```
CLINICIAN
Dose:      XX mg
```

alternating with:

```
***  HOLD  ***
```

4. Press **RUN/HOLD** to begin the Clinician Dose.

**Note:** As the clinician dose is being administered, the displayed dosage decreases. When the bolus dose volume reaches zero, the pump continues the infusion at the current basal rate.

## Reviewing PCA Profile Parameters

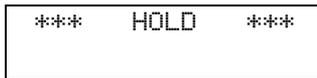
You have several options for reviewing PCA profile information:

- Review profile parameters, review PCA (bolus) data, clear volume infused display and review volume remaining while an infusion is on hold.
- Review PCA (bolus) information during an infusion.
- Review PCA (bolus) information after an infusion has completed.

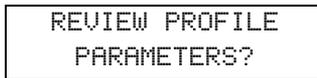
The way in which you access the information, and the screen displayed when you are finished, depends on the state of the infusion when you access the information. Perform the access procedure appropriate to your situation, then review the data as described in “Reviewing PCA Data,” 4-55.

### Accessing PCA Review Functions While on Hold

1. While pump is displaying:



press **NO/REVIEW**. The pump displays:



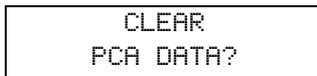
2. To review profile parameters, press **YES**. The pump displays all programmed parameters one by one.

**Note:** Press **YES** to advance the pump through the programmed parameters more quickly if desired.

3. Press **NO** to proceed directly to the following screen without reviewing the programmed parameters:



4. If you wish to review the PCA bolus dose data, press **YES**. The pump displays the number of bolus doses given, followed by the number of bolus doses requested. The pump then displays:



- To save the PCA data, press **NO**.  
To clear the data, press **YES**. The pump displays:

ENTER CODE

- To clear the PCA data, enter the code:  
**9 1 1**
- The PCA data is cleared and the pump displays:

CLEAR VOLUME  
INFUSED DISPLAY?

- To save the volume infused data, press **NO**.  
To clear the data, enter the code:  
**9 1 1**
- The volume infused data is cleared and the pump returns to the **HOLD** screen. Press **RUN** to restart the infusion.

## Accessing PCA Review Functions While Running

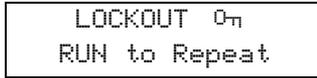
- While pump is running, press **NO/REVIEW**. The pump displays:

FOR PCA DATA  
ENTER CODE

- To review PCA data, enter the code:  
**9 1 1**

## Accessing PCA Review Functions After Completion

1. To review PCA data from the following screen:



LOCKOUT On  
RUN to Repeat

2. Enter the code:



9 1 1

The pump displays:



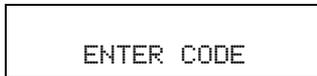
REVIEW  
PCA DATA?

3. To review the PCA bolus dose data, press **YES**. The pump displays the number of bolus doses given. Press **YES** to advance through the two PCA data items. The pump then displays:



CLEAR PCA DATA?

4. To save the PCA data, press **NO**. To clear the data, press **YES**. The pump displays:



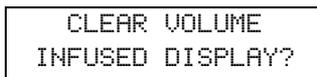
ENTER CODE

5. To clear the PCA data, enter the code:



9 1 1

The PCA data is cleared and the pump displays:



CLEAR VOLUME  
INFUSED DISPLAY?

- To save the volume infused data, press **NO**.  
To clear the data, enter the code:

9 1 1

The volume infused data is cleared and the pump displays:

```
LOCKOUT On  
RUN to Repeat
```

- Press **RUN** to repeat the infusion.

## Reviewing PCA Data

- After reviewing each displayed data item, press **YES** to advance to the next screen.

**BOLUS DOSES GIVEN:** shows cumulative number of demand bolus doses received. It does not include clinician or loading doses.

**BOLUS DOSES REQUESTED:** shows the number of times the bolus button or key was pressed.

The pump displays:

```
DISPLAY DOSES  
HOUR BY HOUR?
```

Decide whether you want to review data in an hour-by-hour summary or by each event.

- To view data in an hour-by-hour summary format, press **YES**. Press **NO** to display the Each EVENT prompt.
- Hour-by-hour review shows you the number of bolus doses requested and given for the most immediate hour. Press **YES** to see data for the previous hour, and so on until all data has been reviewed.

- Each event shows you the average time elapsed between bolus attempts, then displays for each attempt the time of the request, whether the dose was given, and the amount given (if any). Press **YES** to step through the screens until all data has been reviewed.

AVERAGE TIME OF  
REQUESTS: HH:MM

When all data has been reviewed in either format, the pump displays:

CLEAR PCA DATA?

- Press **NO** to let PCA data accumulate. Press **YES** to clear the PCA data. The pump displays:

ENTER CODE

- Enter the code:

9 1 1

The PCA data is cleared and the pump displays:

CLEAR VOLUME  
DISPLAYED?

- Press **NO** to let the PCA volume continue to accumulate. Press **YES** to clear the volume. The pump displays:

ENTER CODE

- Enter the code:

9 1 1

9. The data is cleared. If the pump is on hold, it displays the volume remaining in the infusion, then returns to the **\*\*\*HOLD\*\*\*** screen. Press **RUN/HOLD** to continue the infusion.
10. If the infusion is running, the pump displays:

PCA Level X	0m
X.X	X.X

11. If the infusion has completed, the pump displays:

LOCKOUT 0m
RUN to Repeat

## Changing Basal Rate and/or Bolus Parameters Without Losing PCA Data

In PCA Security Levels 2 and 3, programming changes to basal rate or bolus parameters during an infusion normally reset the PCA data. To change these parameters without losing accrued PCA data and volumes, use the following procedure:

1. While the infusion is running, enter the code:

**6 1 1 6**

2. The pump displays:

Change Profile Parameters?
-------------------------------

3. Press **YES**. The pump displays:

Basal Rate XX.X mg/hr
--------------------------

4. The current basal rate setting is displayed. Accept the value shown by pressing **YES**, or enter a new value and press **YES** to accept.

If bolus doses have been programmed into the current PCA delivery, the pump gives you the option of changing the bolus dose and bolus interval, then proceed to step 8.

If bolus doses have not been programmed, the pump will proceed directly to step 8. The pump displays:

```
Bolus
Dose   X.X mg
```

5. Press **YES** to accept the current value, or enter a new bolus dose and press **YES** to accept. The pump displays:

```
Bolus
Interval XX:XX
```

6. Press **YES** to accept the current bolus interval, or enter a new bolus interval and press **YES** to accept. If the pump is programmed in number of bolus doses per hour, the pump displays:

```
Bolus Doses/hr
X
```

7. Press **YES** to accept the current number of bolus doses in an hour, or enter a new value and press **YES** to accept.
8. The pump displays:

```
CHECK or CHANGE
Parameters?
```

Press **YES** to go through the list of parameters again, or press **NO** to return to the Running screen.

## Changing Preprogrammed Titration Limits or Medication Volume Limits During an Infusion

The pump allows changes to preprogrammed titration limits or medication volume limits during an infusion. You may also change basal rate and/or bolus parameters using this method.

The procedure you use to change titration limits depends on whether the pump was programmed for limiting the number of doses per hour, or for limiting by the total amount of medication. See “Choose Method of Limiting Amount of Medication,” 4-38 for more information on these methods.

### Changing Titration Limits When Medication is Limited by Volume

1. Press **RUN/HOLD**.
2. To access titration limits or medication volume limits while the infusion is on **HOLD**, enter the code:

**6 1 1 6**

3. The pump displays:

```
Medication Vol
Limit: XX.X
```

4. Press **YES** to accept the current value, or enter a new medication volume limit and press **YES** to accept.

If titration limits are programmed, the pump displays:

```
Set Titration
limits?
```

5. Press **YES** to change the titration limits. The pump displays:

```
Maximum Basal
Rate:   X.X ml/hr
```

6. Enter a new maximum basal rate value, then press **YES** to accept. The pump displays:

```
Maximum Bolus
Dose:   X.Xmg
```

7. Enter a new maximum bolus dose value, then press **YES** to accept. The pump displays:

```
Minimum Bolus
Interval: 00:00
```

8. Enter a new minimum bolus dose value, then press **YES** to accept. The pump displays:

```
Maximum Bolus
Doses/hr:   X
```

9. Enter a new maximum number of bolus doses per hour, then press **YES** to accept.

## Changing Titration Limits When Medication is Limited by Number of Doses per Hour

1. Press **RUN/HOLD**.
2. To access titration limits or medication volume limits while the infusion is on **HOLD**, enter the code:

**6 1 1 6**

If titration limits are programmed, the pump displays:

```
Set Titration
limits?
```

3. Press **YES** to change the titration limits. The pump displays:

```
Maximum Basal
Rate:    X.X ml/hr
```

4. Enter a new maximum basal rate value, then press **YES** to accept. The pump displays:

```
Maximum Bolus
Dose:    X.Xmg
```

5. Enter a new maximum bolus dose value, then press **YES** to accept. The pump displays:

```
Minimum Bolus
Interval: 00:00
```

6. Enter a new minimum bolus dose value, then press **YES** to accept. The pump displays:

```
Maximum Bolus
Doses/hr:    X
```

7. Enter a new maximum number of bolus doses per hour, then press **YES** to accept.

## Changing Medication Volume Limits During a PCA Infusion

1. Enter the code:

6 1 1 6

The pump displays:

```
CHECK or CHANGE
Parameters?
```

2. Press **YES**. The pump displays:

```
Basal
Rate:      mg/hr
```

3. Enter a new basal rate, then press **YES** to accept. The pump displays:

```
Bolus
Dose      XX mg
```

4. Enter a new bolus dose amount, then press **YES** to accept. The pump displays:

```
Bolus (Hr:Min)
Interval: 00:00
```

5. Enter a new bolus interval, then press **YES** to accept.

If medication is limited by number of doses per hour, the pump displays:

```
Bolus
Doses/hr      X
```

6. Enter a new value for the number of bolus doses allowed per hour, then press **YES** to accept.

The pump displays:

```
CHECK or CHANGE
Parameters?
```

7. Press **NO**. The PCA infusion resumes.

# Using Configuration Mode to Customize Available PCA Profile Options

## Overview

PCA Configuration Mode lets you not only customize the PCA options presented to the user but also limit the amount of medication that a patient may receive in a PCA profile infusion.

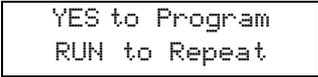
PCA Configuration Mode allows the options that are displayed in the PCA profile to be customized to meet the specific needs of your organization.

## Reviewing the Current PCA Configuration in Programmable Mode

To review the current PCA configuration settings:

1. Turn the pump on.

After the self-test, the pump displays:



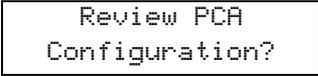
```
YES to Program
RUN to Repeat
```

2. Enter the code:



2 6 6 3

The pump displays:



```
Review PCA
Configuration?
```

3. Press **YES** to review the current configuration. The pump displays the current PCA option and limit settings.

**Note:** The display advances through the settings automatically, but you may move through them more quickly by pressing **YES** or **RUN/HOLD** as each value is displayed.

When all parameters have been displayed, the pump displays:

```
YES to Program
RUN to Repeat
```

## Changing PCA Configuration Settings

To change the PCA Configuration settings:

1. Turn the pump on. After the self-test, the pump displays:

```
YES to Program
RUN to Repeat
```

2. Enter the code:

**2 6 6 3**

The pump displays:

```
Review PCA
Configuration?
```

3. Press **NO** to change current configuration values. The pump displays:

```
Set PCA Features
and Limits?
```

4. Press **YES**. The pump displays:

```
Use Factory
Defaults?
```

5. Do one of the following:

- Press **YES**, to reset the settings to the factory default values. This exits the Configuration Mode, and returns to the following screen:

```

YES to Program
RUN to Repeat
    
```

- To program your own settings, press **NO** and proceed to step 6.
6. Set delivery type

There are two delivery types available during a PCA infusion:

- **Basal** allows constant delivery at the basal flow rate, with PCA boluses.
- **Bolus** allows only bolus doses with no basal rate delivery, or bolus doses along with a basal rate.

You may select one or both types to be available during programming. You must select at least one type.

If only one delivery type is selected, screens for the other delivery type will not be displayed during normal programming.

```

Delivery Types:
allow Basal?
    
```

```

Delivery Types:
allow Bolus?
    
```

7. To select available delivery types, press **YES** or **NO** to allow one or both delivery types. The pump then displays:

```

allow
Loading Dose?
    
```

8. If you want to allow a loading dose to be programmable during PCA programming, press **YES**. If not, choose **NO**, and the loading dose screen will not appear during normal programming.
9. Select delivery routes and parameters

The following three delivery routes are available for PCA infusions:

- Subcutaneous (Sub-Q)
- Epidural
- Intravenous (IV)

You may select one, two or all three of these routes to be available for programming. You must select at least one. For each delivery route you make available, you must then also program each of the delivery limits and parameters summarized in Table 4-3.

**Note:** The factory defaults displayed for the configurable PCA items shown in Table 4-3 are the highest allowed values.

**Table 4-3 Summary of Configurable PCA Limits**

Item	Intravenous	Epidural	Sub-Q
Basal rate limit	50.0 ml	25.0 ml	5.0 ml
Bolus dose limit	50.0 ml	25.0 ml	5.0 ml
Maximum loading dose limit	50.0 ml	25.0 ml	5.0 ml
Bolus flow rate	90 ml/hr 125 ml/hr Custom bolus rate	90 ml/hr 125 ml/hr Custom bolus rate	90 ml/hr 125 ml/hr Custom bolus rate
Delivery Units	ml, mg, µg	ml, mg, µg	ml, mg, µg

- 9.1 Select Available Delivery Routes and Set Route Parameters. When the desired delivery route(s) is displayed, do one of the following:
  - Press **YES** to select.
  - Press **NO** if you do not want the displayed delivery route to be available for programming.
- 9.2 Set basal flow rate limit according to the limits shown in Table 4-3.
- 9.3 Set bolus dose limit according to the limits shown in Table 4-3.
- 9.4 Set the maximum loading dose according to the limits shown in Table 4-3.
- 9.5 Set the bolus flow rate. You can select 125 ml/hr (the factory default setting), 90 ml/hr, or a custom bolus flow rate.
- 9.6 As the preset rates are displayed, press **YES** to enable, or **NO** to disable each one. If custom rate is desired, press **YES** at the **Custom Rate?** prompt. Enter the desired bolus rate, then press **YES** to accept.
- 9.7 Select delivery units. PCA profile can be programmed using three different units of delivery: ml, mg, or  $\mu\text{g}$ .

You may select one, two or all three units to be available during normal programming. The default is to allow all three delivery units.

You must select at least one unit by pressing **YES**.

As each delivery unit is displayed, press **YES** to enable it or press **NO** to disable it as appropriate.

**10. Set medication limit options**

Two options are available to limit further the amount of medication that may be received by a patient:

Limit Med. by  
# of Doses/Hour?

Limit Med. by  
Tot Med Allowed?

You may select one or both to be available during programming. You must select at least one. If only one is selected, that limitation is chosen automatically during normal programming.

**11. When the desired medication limit(s) is displayed, do one of the following:**

- Press **YES** to select.
- Press **NO** if you do not want the displayed limitation to apply.

**12. Set patient review methods**

Two options are available to review patients' doses:

DISPLAY DOSES  
HOUR BY HOUR?

DISPLAY DOSES  
BY EACH EVENT?

You may select one or both to be available during programming. You must select at least one.

If only one is selected, that display method is chosen automatically during normal programming.

**13. When the desired patient review method(s) are displayed, do one of the following:**

- Press **YES** to select.
- Press **NO** if you do not want the displayed method to be available to patients.

**14. Select security level**

There are three security levels available. In order of increasing restrictions, they are:

- Level 1 ALLOW CHANGES
- Level 2 ALLOW TITRATION
- Level 3 LOCKOUT CHANGES

You can make one, two or all three levels available under normal programming. You must select at least one level.

If only one level is selected, that security level is chosen automatically during normal programming and will display with the READY PCA screen.

**15. When the desired security level(s) is displayed, do one of the following:**

- Press **YES** to select.
- Press **NO** if you do not want the displayed security level to be available.

You have completed the PCA configuration process. The pump displays:

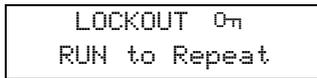
<p>YES to Program RUN to Repeat</p>
---

Proceed to “Programming PCA Infusions,” 4-36.

## Reviewing the Current PCA Configuration in Lockout Mode

The Configuration Mode is not accessible for review or configuring when the pump is in Lockout Mode with Continuous, Auto-Ramp<sup>®</sup> Profile, Intermittent and/or 25 Periods profiles locked out. When the PCA Profile is locked out, you may not configure, but you may review the current PCA configuration settings as follows:

1. Turn the pump on. After the self-test, the pump displays:



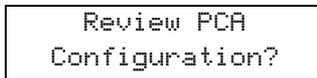
LOCKOUT On  
RUN to Repeat

2. Enter the code:



2 6 6 3

The pump displays:



Review PCA  
Configuration?

3. Press **YES** to review the current configuration. The pump displays the current option and limit settings.

The pump displays each screen automatically, but you may display them more quickly by pressing **YES** or **RUN/HOLD** as each value is displayed.

When all settings have been displayed, the pump returns to the LOCKOUT, RUN to Repeat screen.

---

## *Delivery Options and Advanced Functions*

### Overview

This chapter contains information on the following:

- “Shortcut Delivery of a Programmed Infusion,” 5-2
- “Resuming Delivery of an Interrupted Infusion,” 5-4
- “Clearing the Volume Infused Display,” 5-8
- “Clearing the Memory,” 5-9
- “Changing Concentration Without Affecting Programmed Rate,” 5-9
- “Making the Pump Profile-Specific,” 5-10
- “Setting Volume Accrual,” 5-13
- “Setting Date and Time,” 5-14
- “Entering the Patient’s Identification Number,” 5-15
- “Programmable Mode / Lockout Mode,” 5-16
- “Setting Infusion Data Parameters,” 5-20

## Shortcut Delivery of a Programmed Infusion

If the desired delivery profile has been programmed and is currently stored in the pump's memory, you can shortcut directly to the preprogrammed infusion.

**Note:** To deliver an infusion, its parameters must have been programmed and stored in the pump's memory. If the desired infusion is **NOT** currently in the pump's memory, you must program it before delivery is possible. Refer to the appropriate section(s) in Chapter 3 for complete information on programming infusion profile parameters.

## Shortcut Delivery in Programmable Mode

To start a previously programmed infusion when the pump is in Programmable Mode:

1. Press **ON/OFF** to turn on the pump. The pump displays:

YES to Program RUN to Repeat
---------------------------------

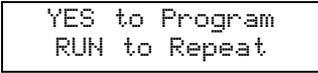
2. Press **RUN/HOLD**. The infusion rate and volume are displayed, alternating with the name of the profile last delivered or programmed.
3. Press **RUN/HOLD** again to start infusing the profile displayed, or press **NO** until your desired profile is displayed, then press **RUN/HOLD** to begin delivery.

## Shortcut Delivery in Lockout Mode

**Note:** In Lockout Mode, only the available profiles will be offered for delivery. If your desired delivery profile is not listed, you must return to Programmable Mode and add it to the lockout program. See “Programmable Mode / Lockout Mode,” 5-16 for complete information.

To start a previously programmed infusion when the pump is in Lockout Mode:

1. Press **ON/OFF PUMP** to turn the pump on. The pump displays:



YES to Program  
RUN to Repeat

2. Press **RUN/HOLD**. The pump displays **READY** (profile), where profile is the name of the last profile programmed or delivered.
3. Do one of the following:
  - Press **RUN/HOLD** to deliver the displayed profile as previously programmed.
  - Press **NO** repeatedly until the desired profile is displayed, then press **RUN/HOLD** to deliver the chosen profile as previously programmed.

**Note:** If the pump is locked out in PCA, the previously programmed PCA infusion cannot be started.

The infusion rate and volume are displayed, alternating with the name of the profile. This gives you an opportunity to reconfirm the infusion parameters.

4. Press **RUN/HOLD**. The pump displays:



DELAY DELIVERY?

5. To delay the start of the infusion, press **YES** and enter the desired delay time in hours:minutes. Press **YES** again to accept the delay time.

**Note:** If the pump is locked out in PCA, the option to delay delivery is not available.

6. If you want to begin infusion immediately, press **NO** at the prompt.

## Resuming Delivery of an Interrupted Infusion

If the pump is powered off during an infusion, when the pump is turned on again you may resume that infusion where it was interrupted, re-start that infusion from the beginning, or select or program a completely different infusion.

## Resuming an Interrupted Infusion

When the pump is turned back on after being interrupted during an infusion, it will display **RESUME?**, alternating with the name of the profile that was interrupted.

1. To resume an infusion where it left off, press **YES** at the **RESUME?** prompt.

The pump will then display the rate and cumulative volume infused values at the time the infusion was interrupted, alternating with the phase of delivery at the time of interruption (UP-RAMP, PERIOD 4, etc.).

2. Press **RUN/HOLD** to resume the infusion at the exact point where it was stopped.

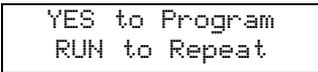
## Resetting an Interrupted Infusion to the Beginning

**Note:** This feature is helpful when you change the fluid bag.

### Programmable Mode

When the pump is turned on after being interrupted during an infusion, it will display **RESUME?**, alternating with the name of the profile that was interrupted.

1. Press **NO** at the **RESUME?** prompt. The pump displays



```
YES to Program
RUN to Repeat
```

2. Press **RUN/HOLD**.

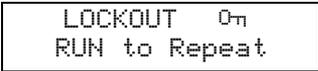
The infusion rate and volume are displayed, alternating with the name of the profile; this provides you with an opportunity to reconfirm the infusion parameters.

3. Press **RUN/HOLD** to start the infusion.

### Lockout Mode

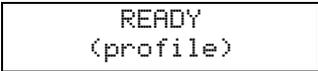
When the pump is turned on after being interrupted during an infusion, it will display **RESUME?**, alternating with the name of the profile that was interrupted.

1. Press **NO** at the **RESUME?** prompt. The pump displays



```
LOCKOUT On
RUN to Repeat
```

2. Press **RUN/HOLD**. The pump displays:



```
READY
(profile)
```

3. Press **RUN/HOLD**.

The infusion rate and volume are displayed, alternating with the name of the profile, providing you with an opportunity to reconfirm the infusion parameters.

4. Press **RUN/HOLD**. The pump displays:



5. If you want to delay the start of the infusion, press **YES**. If not, press **NO** and **the infusion will begin immediately**.

**Note:** Delay delivery is not available in PCA profile.

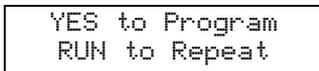
6. If you want to delay delivery, enter the delay time in hours:minutes and press **YES** when the desired delay time is displayed. The pump will count down the delay time, then automatically begin the infusion.

## Selecting or Programming a Different Infusion

### Programmable Mode

When the pump is turned on after being interrupted during an infusion, it will display **RESUME?**, alternating with the name of the profile that was interrupted.

1. Press **NO** at the **RESUME?** prompt. The pump displays:



2. Press **YES** to program a different infusion, or **RUN** to select a preprogrammed infusion.

3. Follow instructions in Chapter 3 to program a new infusion (Programmable Mode only), or see “Shortcut Delivery of a Programmed Infusion,” 5-2 to deliver an infusion currently in the pump’s memory.

### Lockout Mode

When the pump is turned on after being interrupted during an infusion, it will display RESUME?, alternating with the name of the profile that was interrupted.

1. Press **NO** at the RESUME? prompt. The pump displays:

LOCKOUT On  
RUN to Repeat

2. Press **RUN** to select a preprogrammed, locked out infusion. See “Shortcut Delivery of a Programmed Infusion,” 5-2 for more information.

In order to program a different infusion, you must exit Lockout Mode and place the pump into Programmable Mode.

3. Press **NO** at the LOCKOUT/RUN to Repeat prompt, then press **YES** at the PROGRAMMABLE? prompt.
4. Enter the code for Programmable Mode:  

9

1

1
5. Follow instructions in Chapter 3 to program a new infusion.

## Clearing the Volume Infused Display

You may reset the Volume Infused Display to zero while in Programmable Mode. This enables you to monitor volume infused from any point in time during an infusion.

1. Press **RUN/HOLD** to pause the infusion. The pump displays:

```
*** HOLD ***
```

2. Press **NO/REVIEW**. The pump displays:

```
REVIEW PROFILE  
PARAMETERS?
```

3. Press **NO** to skip the review. The pump displays:

```
CLEAR VOLUME  
INFUSED DISPLAY?
```

4. Press **YES** to clear the volume displayed to zero. The pump displays:

```
*** HOLD ***
```

5. Press **RUN/HOLD** to resume the paused infusion.

## Clearing the Memory

All programmed values stay in the pump's memory until they are changed (reprogrammed) or cleared using the following method. Clearing the memory erases all programmed delivery values and profile parameters. Only the infusion data parameters (audio volume, KO rate, pressure setting, display language, air detection setting and up occlusion) are not cleared.

1. At the YES to PROGRAM prompt, enter the code:

6 0 6 0

The pump displays:

MEMORY CLEARED

then displays:

YES to Program  
RUN to Repeat

2. To confirm that the memory has been cleared, press **RUN/HOLD** (the shortcut to begin a preprogrammed infusion).

The pump should display **RE-PROGRAM!** because there are no programmed profiles available for delivery.

## Changing Concentration Without Affecting Programmed Rate

When programming the pump in mg or  $\mu\text{g}$ , you must enter a concentration so the pump can calculate the equivalent in ml. If the concentration is changed, the pump automatically recalculates the infusion rate based on the new concentration value.

**For example**, if the programmed concentration is 10 mg/ml and the infusion rate is 10 mg/hr, and you change the concentration to 20 mg/ml, the pump will perform the necessary calculations and increase the rate of infusion to 20 mg/hr.

In some instances you may want to change the concentration while keeping the infusion rate at its originally programmed value.

**Note:** In order to change the concentration, the pump must be in Programmable Mode and at the YES TO PROGRAM screen. You cannot change the concentration after an infusion has started running.

To change the concentration setting without automatically recalculating the infusion rate:

1. At the YES to PROGRAM screen, enter the code:

**2 6 6 4**

The pump displays:

Set Global  
Features?

2. Press **YES**. The pump displays:

Maintain Rate  
w/ Conc. Change?

3. Press **YES**.

## Making the Pump Profile-Specific

The Profile-Specific function lets you restrict the profiles available for programming and delivery, even in Programmable Mode. Selecting **NO** for any profile makes that profile unavailable until the code is reentered and the profile allowed. The choices are listed in Table 5-1.

**Table 5-1 Profile Menus**

<b>Display</b>	<b>Enter by doing...</b>
Allow PCA?	<ul style="list-style-type: none"> <li>• Press <b>YES</b> to allow (enable) PCA profile and move to next profile choice.</li> <li>• Press <b>NO</b> to reject PCA and move to next profile choice.</li> </ul>
Allow 25 PERIODS?	<ul style="list-style-type: none"> <li>• Press <b>YES</b> to allow (enable) 25 Periods profile and move to next profile choice.</li> <li>• Press <b>NO</b> to reject 25 Periods and move to next profile choice.</li> </ul>
Allow INTERMITTENT?	<ul style="list-style-type: none"> <li>• Press <b>YES</b> to allow (enable) Intermittent profile and move to next profile choice.</li> <li>• Press <b>NO</b> to reject Intermittent and move to next profile choice.</li> </ul>
Allow AUTO-RAMP?	<ul style="list-style-type: none"> <li>• Press <b>YES</b> to allow (enable) Auto-Ramp<sup>®</sup> Profile and move to next profile choice.</li> <li>• Press <b>NO</b> to reject Auto-Ramp<sup>®</sup> Profile and move to next profile choice.</li> </ul>
Allow CONTINUOUS?	<ul style="list-style-type: none"> <li>• Press <b>YES</b> to allow (enable) Continuous profile and move to next profile choice.</li> <li>• Press <b>NO</b> to reject Continuous and move to next profile choice.</li> </ul>
ENABLE VOLUME ACCRUAL? (PCA and Intermittent profiles only)	<ul style="list-style-type: none"> <li>• Press <b>YES</b> to enable Volume Accrual for any profile selected. Pump display now advances to configuration entry for selected profile.</li> <li>• Press <b>NO</b> to reject Volume Accrual and move to next profile choice. Pump display now advances to configuration entry for selected profile.</li> </ul>

To select specific profiles:

1. Turn the pump on.
2. When the pump displays:

YES to Program  
RUN to Repeat

enter the code:

4 6 4 6

The pump displays:

SELECT ALLOWED  
PROFILES?

3. Press **YES**.
4. Press **YES** or **NO** in response to the pump's prompts to allow each of the five profiles. If you press **NO**, that profile will be unavailable for programming or delivery.
5. When you finish selecting profiles, the pump displays:

ENABLE VOLUME  
ACCRUAL?

**Note:** See "Setting Volume Accrual," 5-13 for information on the Volume Accrual feature.

6. Press **YES** or **NO**. The pump displays:

YES to Program  
RUN to Repeat

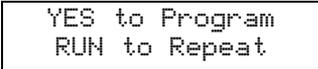
7. Continue with programming or turn the pump off. Your settings remain in effect until they are reset.

## Setting Volume Accrual

Volume Accrual allows total volume infused to accrue over repeated infusions in the Intermittent and PCA profiles. When enabled, it lets you monitor total volume/medication infused over the duration of a therapy. The Volume Accrual function is accessible from the profile-specific programming screen.

If Volume Accrual is not enabled, the volume infused is reset to zero with each infusion. To select Volume Accrual:

1. Turn the pump on.
2. When the pump displays:



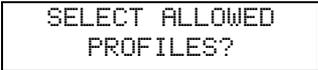
```
YES to Program
RUN to Repeat
```

enter the code:



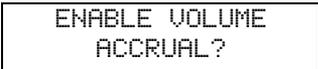
4 6 4 6

The pump displays:



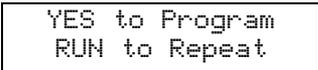
```
SELECT ALLOWED
PROFILES?
```

3. Press **NO**. The pump displays:



```
ENABLE VOLUME
ACCRUAL?
```

4. Press **YES** to enable volume accrual or **NO** to disable the feature. The pump displays:



```
YES to Program
RUN to Repeat
```

5. Continue with programming or turn the pump off. Your settings remain in effect until they are reset.

## Setting Date and Time

You can view and set the time and date used by the pump's internal clock. The clock uses 24-hour format. The date format is month/day/year (MMDDYY).

To set the time and date:

1. Power the pump on by pressing the **ON/OFF PUMP** key.
2. If necessary, set pump to Programmable mode as described in "Programmable Mode / Lockout Mode," 5-16.
3. When the pump displays:

YES to Program  
RUN to Repeat

enter the code:

**8 4 6 3**

4. Set date as follows:

06/05/00  
ENTER DATE

- 4.1 To keep currently displayed date and proceed to setting time, press **YES**. Go to step 5.
  - 4.2 To change date, enter date as follows:  
**MMDDYY**.  
Enter leading zeros for numbers less than 10.
  - 4.3 Press **YES** to accept date entered. Go to step 5.
5. Set time as follows:

15:31:04  
ENTER TIME

- 5.1 To keep currently displayed time, press **YES**.
  - 5.2 To change time, enter 24-hour time as 6-character string as follows: **HHMMSS**.
  - 5.3 Press **YES** to accept the time entered.
6. If desired, verify date and time setting by repeating steps 3 through 5.

## Entering the Patient's Identification Number

The pump maintains a history log of all programming and operational events. Some organizations prefer to have the patient's Social Security number entered into the pump so that the operational history may be related directly to that specific patient and his or her therapy regime. You may enter a Social Security number or other numerical ID up to 13 digits long.

To enter the patient's ID number:

1. At the **YES to PROGRAM** screen, enter the code:

**7 7 6**

The pump displays:

PATIENT ID?

2. Press **YES**. The pump prompts **ID:**.
3. Enter the patient's numerical ID. It may be up to 13 digits long.

**# # # # #**

4. Press **YES** to accept the entered value. The pump displays the **YES to PROGRAM** screen.

## Programmable Mode / Lockout Mode

When the pump is in Programmable Mode, all programming functions are accessible and can be changed.

In Lockout Mode, access is limited so that delivery profiles can be preprogrammed by the clinician, but cannot be changed by unauthorized users.

For example, you could limit the user's access to Continuous and Auto-Ramp<sup>®</sup> Profiles only, and prevent the preprogrammed parameters from being changed. When a profile is locked out, its parameters stay in the pump's memory without the need to reprogram or relock the pump between uses.

### Accessing and Programming Lockout Mode

You must enter a code to access the Lockout Mode from Programmable Mode. The pump will prompt you with each profile name – as each is displayed, press **YES** to lock it out and make it available for delivery, or **NO** to make the profile unavailable for delivery under Lockout Mode.

1. At the **YES to PROGRAM** screen, press **NO**.  
The pump displays:



LOCKOUT?

2. Press **YES** to accept.

3. At the ENTER CODE prompt, enter the code:

9 1 1

The pump displays:

Allow  
CONTINUOUS?

4. Press **YES** if you want the preprogrammed Continuous profile to be available for delivery. If you do not want it to be available, press **NO**.  
The pump displays:

Allow  
AUTO-RAMP?

5. Press **YES** if you want the preprogrammed Auto-Ramp<sup>®</sup> Profile to be available for delivery. If you do not want it to be available, press **NO**.  
The pump displays:

Allow  
INTERMITTENT?

6. Press **YES** if you want the preprogrammed Intermittent profile to be available for delivery. If you do not want it to be available, press **NO**.  
The pump displays:

Allow  
25 PERIODS?

7. Press **YES** if you want the preprogrammed 25 Periods profile to be available for delivery. If you do not want it to be available, press **NO**.

The pump is now in Lockout Mode. The pump displays:

LOCKOUT On  
RUN to Repeat

## Delivering a Programmed Infusion in Lockout Mode

When the pump is in Lockout Mode, you may deliver only preprogrammed profiles that have been locked out for inclusion in Lockout Mode. To deliver a different profile, or to change any delivery parameters, you must return to Programmable Mode.

When the pump is in Lockout Mode, it displays one of the following screens after completing its self-test:

```

LOCKOUT
    
```

**OR**

```

LOCKOUT 0n
RUN to Repeat
    
```

1. Press **RUN/HOLD** or **YES**. The pump briefly displays the current pressure setting, followed by:

```

READY 0n
(profile)
    
```

where (profile) is the first available profile locked out for delivery.

2. If the desired profile is displayed, press **RUN/HOLD** or **YES**. If not, press **NO** repeatedly until the desired profile is displayed, then press **RUN/HOLD**.

The pump displays the Final Confirmation screen:

```

(PROFILE) 0n
Press Run
    
```

alternating with:

```

Rate/hr(ml)  AMT
XXX          XX.X
    
```

3. Press **RUN/HOLD** to continue. The pump displays:

DELAY DELIVERY?

4. To delay the start of the infusion, press **YES**. If not, press **NO** and **the infusion will begin immediately**.
5. If DELAY DELIVERY was selected, enter the delay time in HH:MM and press **YES** to accept the value. The pump will count down the delay time, then automatically begin the infusion.

## Switching From Lockout Mode to Programmable Mode

To switch from Lockout Mode to Programmable Mode:

1. When the pump displays:

LOCKOUT  
RUN to Repeat

press **NO**.

2. When the pump displays:

PROGRAMMABLE?

press **YES**.

3. When the pump displays:

ENTER CODE

Enter the code:

9 1 1

The pump displays:

YES to Program RUN to Repeat
---------------------------------

You now have access to all Programmable Mode functions that are not profile-specific.

## Setting Infusion Data Parameters

The pump allows you to set parameters for several pump functions known collectively as infusion data. Accessible via the **INFUSION DATA** key on the keypad, these functions are:

- Audible Volume
- Pressure
- KO Rate
- Display Language
- Air Detection
- Upstream Occlusion

Any of these parameters may be changed while the pump is in Programmable or Lockout Mode. A numerical code is required to change Air Detection or Up Occlusion settings while in Programmable Mode, and in Lockout Mode the code must be entered to set any Infusion Data parameters except Audio Volume.

The pump also allows you to check the volume and time remaining in an infusion without interrupting delivery, and to review the total volume and total delivery time before an infusion begins.

## Infusion Data Parameters in Programmable Mode

In Programmable Mode, access the Infusion Data parameters by pressing **INFUSION DATA** from the \*HOLD\* screen, the YES to PROGRAM screen or any READY (Profile) screen.

**Note:** See Table 9-1 for a list of the parameter limits.

1. From a \*HOLD\*, READY (Profile) or YES to PROGRAM screen, press the **INFUSION DATA** key. The pump displays:

```
SET AUDIO VOLUME?
```

2. Press **YES** to review or change Audio Volume setting or **NO** to continue to Pressure. The pump displays:

```
SET AUDIO VOLUME
(1 TO 9)
```

3. Enter a number from 1 to 9 (9 is loudest). The pump sounds a tone at the chosen volume. When you hear the desired volume level, press **YES** to accept. The pump displays:

```
SET PRESSURE?
```

4. Press **YES** to review or change the pressure setting, or press **NO** to continue to KO rate.

**Note:** Options for downstream occlusion detection pressure are HI (20 psi  $\pm$ 5 psi) or LOW (8 psi  $\pm$ 5 psi).

5. Press **YES** to accept the current pressure setting, or press **NO** to switch to the other option, then **YES** to accept.

The pump displays the KO rate screen:

SET KO RATE?

6. Press **YES** to review or change the KO rate setting, or press **NO** to continue to Display Language.

The pump displays the KO rate screen:

KO RATE: X.X ml/hr

**Note:** KO rate can be set for 0.1 to 10 ml/hr.

7. Press **YES** to accept the rate shown, or enter a new rate and press **YES** to accept.
8. The pump displays:

SET LANGUAGE?

9. Press **YES** to review or change language setting or **NO** to continue to Air Detection.

**Note:** Language setting options are English or English/Spanish.

10. Press **YES** to accept the displayed language setting, or press **NO** to display the other language option and press **YES** to accept.
11. The pump displays:

SET AIR DETECTOR  
ENTER CODE

12. Enter the code:

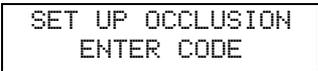
9 1 1

to review or change Air Detection setting or press **NO** to continue to Up Occlusion.

13. Press **YES** to accept the displayed Air Detection setting, or press **NO** to display other options, then **YES** to accept.

**Note:** Available air detection settings are 0.1 ml, 0.5 ml, 2 ml, or disabled.

The pump displays:



```
SET UP OCCLUSION
ENTER CODE
```

14. Enter the code:



9 1 1

to review or change setting or press **NO** to exit Infusion Data Settings.

15. Press **YES** to accept the displayed Up Occlusion setting, or press **NO** to display other options, then **YES** to accept.

**Note:** Options for upstream occlusion detection are Enabled or Disabled.

When you have reviewed or changed the parameter for the Up Occlusion setting, the pump returns to the screen from which you accessed Infusion Data.

## Infusion Data Parameters in Lockout Mode

In Lockout Mode, you can access the Infusion Data parameters from a \*HOLD\* screen, the LOCKOUT/RUN to REPEAT screen or the READY (Profile) screen.

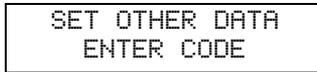
**Note:** In Lockout Mode, the code 911 is required to change any Infusion Data parameters except Audio Volume. Audio Volume may be changed without the code.

1. At SET AUDIO VOLUME?, press **YES** to review or change Audio Volume setting or **NO** to continue to other settings.



```
SET AUDIO VOLUME
<1 TO 9>
```

2. Enter a number (9 is loudest) and the pump sounds a tone at the chosen volume. When you hear the desired volume level, press **YES** to accept. The screen displays:



```
SET OTHER DATA
ENTER CODE
```

3. When in Lockout Mode, enter the code:



9 1 1

to change any Infusion Data parameters except Audio Volume.

When you enter the code, the pump displays the Infusion Data parameters, prompting you at each step to accept the value shown or enter new values.

**Note:** For a screen-by-screen presentation of the displays and options after the code has been entered, refer to “Infusion Data Parameters in Programmable Mode,” 5-21. Begin with step 4.

When you have reviewed or changed the parameter for the final setting, Up Occlusion, the pump returns to the screen from which you accessed Infusion Data.

If you press **NO** at the SET OTHER DATA, ENTER CODE prompt, the pump sequentially displays the current Infusion Data parameters, then returns to the \*HOLD\*, LOCKOUT/RUN to REPEAT or READY (Profile) screen.

**Note:** To step through the current Infusion Data parameter screens more quickly, press **YES** as each is displayed. You may also return to the \*HOLD\*, LOCK-OUT/RUN to REPEAT or READY (Profile) screen at any time by pressing **RUN/HOLD**.

## Displaying Volume and Time Remaining

You may display the volume and time remaining in the infusion from any Final Confirmation screen, or during an infusion without interrupting delivery.

To display volume and time remaining, from a Final Confirmation screen or while the infusion is running, press **INFUSION DATA**.

The pump displays:

```
VOLUME REMAINING:  
X ml (mg, µg)
```

followed immediately by:

```
TIME left: XX:XX
```

**Note:** In Intermittent, 25 Periods, or Auto-Ramp® profiles, the pump first displays the time left in the current phase, then time left for the total infusion. Time left is not displayed during a PCA infusion.



## Troubleshooting

This chapter provides information on how to troubleshoot the pump if an alarm or alert message occurs. The following information is provided:

- “Alarms,” 6-1
- “Alert Messages,” 6-6

### Alarms

An alarm notifies you that the alarm condition shown on the display has occurred and that corrective action must be taken to continue the infusion. Table 6-1 lists alarms, possible causes, and corrective action to take if the alarm occurs.

If a problem cannot be resolved using the methods in Table 6-1, have the pump serviced by an authorized Baxter service provider as soon as possible.

When an alarm occurs, the infusion stops, the pump beeps regularly, and the red indicator flashes, with the following exceptions:

When a **Low Bag** alarm occurs:

- The pump beeps four times every 10 minutes, starting 30 minutes before the programmed volume completion.
- The infusion does not stop.

When a Low Battery alarm occurs:

- The pump sounds a two-second tone every 10 minutes, starting approximately 60 minutes before the battery is too depleted to run the pump.
- The red indicator light flashes.
- The infusion does not stop.

If an alarm occurs, do the following:

1. Read the displayed alarm message.
2. Press **RUN/HOLD** to silence the audible alarm for two minutes. \*HOLD\* is displayed along with the alarm message.
3. Look up the cause of the displayed alarm message in Table 6-1.
4. Correct the alarm condition by following the directions in Table 6-1.
5. Press **RUN/HOLD** to restart the infusion.

**! WARNING !**

**Never open the pump's housing. Refer all servicing to an authorized technician.**

**Table 6-1 Alarm Messages**

Message	Cause	Corrective Action
AIR-IN-LINE	Air in tubing.	<ol style="list-style-type: none"> <li>1. Silence by pressing <b>HOLD</b>, then press <b>RUN</b> or expel air according to protocol.</li> <li>2. Remove the cassette, invert the cassette so that the patient end is up and tap cassette to expel air.</li> <li>3. Allow air to be dispelled through the air eliminating filter, or</li> <li>4. Disconnect from patient access device to purge air through the tubing.</li> </ol>
	Air-in-line sensor malfunction.	Turn the pump off, then on. If alarm persists, discontinue use and have pump serviced.
CASSETTE NOT INSTALLED	<p>Cassette not loaded in pump.</p> <p>Cassette sensor malfunction.</p>	<p>Install a cassette.</p> <p>Turn the pump off, then on. If the alarm persists, discontinue use and have pump serviced.</p>
CHECK INTERNAL 9V BATTERIES	<p>Only one battery is installed, or one of the batteries is not making full contact with the terminal guides.</p> <p>A fuse is blown.</p>	<p>Ensure that two good batteries at full capacity are installed and that both are properly seated. If the alarm persists, pump operating time will be significantly shortened.</p> <p>If alarm persists, discontinue use and have pump serviced.</p>
COMPLETE XXXX ML (MG OR µG)	Infusion is complete.	Turn pump off.
DOOR OPEN	Pump door not completely closed.	Close pump door fully.

**Table 6-1 Alarm Messages — continued**

<b>Message</b>	<b>Cause</b>	<b>Corrective Action</b>
DOWN OCCLUSION	Lower clamp is closed.	Open clamp.
	Kink in lower tubing.	Remove occlusion between the pump and the patient.
	Blockage in lower tubing filter.	Consider changing pressure sensor setting from LO to HI. Replace the set.
	Pressure build-up in cassette.	Open door, remove and replace cassette.
	Block in patient access device.	Check the access device according to protocol.
EMPTY BAG/UP OCCLUSION	Fluid bag is empty.	Replace with a full bag.
	Kink in upper tubing or fluid bag.	Remove occlusion between the fluid bag and the pump. Straighten the fluid bag.
	Pressure build-up.	Open door, remove and replace administration set.
	Blockage in upper tubing.	Replace the administration set.
EMPTY BATTERY	Batteries are depleted.	Replace the 9-volt batteries or connect pump to rechargeable external battery pack, or connect to a battery eliminator/charger.
*HOLD*	Pump has been on hold for more than two minutes.	Press <b>ON/OFF</b> to turn the pump off, or press <b>RUN/HOLD</b> to start the infusion.
LOW BAG	The programmed volume remaining to be infused will be complete within 30 minutes.	Prepare to disconnect the infusion and prepare the next fluid bag.

**Table 6-1 Alarm Messages — continued**

Message	Cause	Corrective Action
LOW BATTERY	There are about 60 minutes of battery power remaining.	Replace the 9-volt batteries or rechargeable external battery pack, or connect to a battery eliminator/charger.
MALFUNCTION	The pump has detected a system malfunction.	Turn the pump off, then on again. Restart the infusion. If alarm persists, discontinue use and have the pump serviced.
NICAD DEPLETED PLUG IN 24 HOURS	Internal NiCad/NiMH battery depleted.	Connect pump to battery eliminator/charger and plug the battery eliminator/charger into an active wall outlet for 24 hours to recharge internal NiCad/NiMH battery.
RELEASE/REMOVE PCA CORD	Remote PCA button is being continuously pressed.  Remote PCA Cord malfunction.	Release the pressure on the remote PCA button.  Remove or replace the Remote PCA Cord.
RE-PROGRAM!	A required numerical value has been programmed with either a zero value or a calculated value that exceeds the pump's delivery limits.	Reprogram the profile using valid parameters. The only parameters that can be set to zero are: <ul style="list-style-type: none"> <li>• delay delivery time</li> <li>• PCA basal rate</li> <li>• KO rate in the Intermittent profile</li> <li>• clinician activated dose.</li> </ul> If the cause of the alarm cannot be corrected, refer the pump to an authorized technician.
STUCK KEY	One or more keys are stuck in place, shorted, or malfunctioning.	Turn pump off, then on. If the alarm persists, refer the pump to an authorized technician.

## Alert Messages

An alert message notifies you of an event that requires your attention. Alert messages that may occur during programming are shown in Table 6-2, along with the cause and action you must take to clear the alert message and successfully program the infusion.

**Table 6-2** *Alert Messages*

<b>Message</b>	<b>Cause</b>	<b>Corrective Action</b>
ALERT Maximum Programmed Rate	In the PCA profile, some parameters can be titrated. During the programming sequence, the minimum or maximum levels of these parameters are identified so that during the titration process these levels cannot be exceeded. Occurs when user tries to increase the basal rate beyond the programmed maximum limit.	The pump returns to the titration basal rate screen with the maximum value displayed. The user may accept this value, or enter any number less than this value.
ALERT Maximum Programmed Dose	Occurs when the user attempts to increase the bolus dosage beyond the programmed maximum limit.	The pump returns to the titration bolus dose screen with the maximum value displayed. The user may accept this value, or enter any number less than this value.
ALERT Minimum Bolus Interval	Occurs when the user attempts to shorten the bolus interval below the programmed minimum limit.	The pump will return to the titration bolus interval screen with the minimum value displayed. The user may accept this value, or enter any number greater than this value.

**Table 6-2 Alert Messages — continued**

Message	Cause	Corrective Action
ALERT Maximum Bolus Doses/hr	Occurs when the user attempts to increase the number of doses/hr beyond the programmed maximum limit.	The pump returns to the titration bolus doses/hr screen with the maximum value displayed. The user may accept this value, or enter any number less than this value.
ALERT Program Basal and/or Bolus	When the PCA profile is programmed, you must program either a continuous basal rate or allow bolus doses to be administered. If you entered a zero basal rate and pressed <b>NO</b> at the DEMAND BOLUS DOSE? prompt, the pump displays this alert.	Program either a continuous basal rate, or allow bolus doses to be administered when programming PCA profile.
COMPUTED RATE EXCEEDS 400 ml/hr	Occurs when a profile has been programmed according to Time and the resulting computed rate exceeds the pump's maximum rate of 400 ml/hr.	Re-enter the time value or use rate to program the profile.
DOSE FREQUENCY UNDER 3 Hours	When programming the Intermittent profile, occurs when the number of doses requested for the entered infusion time results in a dose frequency of less than 3 hours.	Decrease the dose time or increase the total infusion time. There must be at least 2 hours between the end of one dose and the beginning of the next dose.
DOSE TIME EXCEEDS 9:59	When programming the Intermittent profile, occurs if you entered values that exceeds the pump's dose time limit of 9:59.	Re-enter the rate or use time to program the dose.

**Table 6-2 Alert Messages — continued**

Message	Cause	Corrective Action
DOSE TIME EXCEEDS TOTAL	When programming the Intermittent profile, occurs if a dose time is entered that is greater than the total infusion time.	Enter a dose time that is within range.
KO RATE EXCEEDS DOSE RATE	When programming the Intermittent profile, occurs if a KO rate is entered that is greater than the dose rate.	Enter a KO rate that is within range.
KO Time Computes Under 2 hours	In the Intermittent profile, there must be at least 2 hours between the end of one dose and the beginning of the next dose.	Press <b>YES</b> or <b>NO</b> to see the DELAY DELIVERY? prompt. You must either increase the total infusion time, decrease the dose time, or decrease the number of doses to allow at least 2 hours between doses.
MINIMUM DOSE (or RATE) IS XX	Occurs if the rounded dose (or rate) is below the minimum 0.01 ml equivalent. The minimum dose rate is 0.01 times the concentration when mg or µg are used.	Press <b>YES</b> or <b>NO</b> , then enter the desired value.
MINIMUM LEVEL RATE IS 10 ml/hr	Occurs during Auto-Ramp® Profile programming when you have entered an infusion time and volume that would require a level rate of less than 10 ml/hr.	Decrease ramp times, increase total infusion time, or use level rate as the programming value and let the pump calculate the length of time required for the level rate phase.

**Table 6-2 Alert Messages — continued**

Message	Cause	Corrective Action
<p>MINIMUM VOLUME IS XX</p>	<p>When programming the PCA profile, the medication limit volume must be a minimum of the volume delivered due to a basal rate over the time period entered plus at least one bolus dose (if bolus doses are programmed).</p>	<p>Press <b>YES</b> or <b>NO</b>, then enter the desired value.</p>
<p>MORE PRIME? accompanied by a beep</p>	<p>The maximum amount of fluid that can be pumped when priming is 6 ml. Occurs when 6 ml of priming fluid has been delivered, or more than 1 minute has elapsed since the <b>PRIME/BOLUS</b> key was pressed.</p>	<p>Continue priming if needed, or start the infusion.</p>
<p>RAMP TIMES TOO LONG</p>	<p>In Auto-Ramp<sup>®</sup> Profile, occurs if the up- and down-ramp times are too long.</p>	<p>Press <b>NO</b> to return to the <b>DELAY DELIVERY?</b> prompt, then make changes where necessary.</p>
<p>RATE COMPUTES LESS THAN KO</p>	<p>When programming any profile except PCA, occurs when the programmed rate is less than the pump's KO rate.</p>	<p>Re-enter the rate, or change the pump's KO rate.</p>
<p>RATE COMPUTES UNDER 0.1 ml/hr</p>	<p>Occurs when time is used as a programming parameter and the resulting computed rate is below the pump's minimum ability.</p>	<p>Re-enter the time value or program using rate instead of time.</p>

**Table 6-2 Alert Messages — continued**

<b>Message</b>	<b>Cause</b>	<b>Corrective Action</b>
RE-PROGRAM!	You tried to start an infusion with a parameter inappropriately set to a value of zero (for example, a Continuous delivery with volume set to 0 ml).	Press <b>YES</b> , then reprogram the profile with appropriate parameter values. The only parameters that may be set to zero are Delay Delivery time, PCA basal rate or bolus dose, clinician-activated dose, and KO rate in the Intermittent profile.
SELF-TEST...	Displayed while the pump performs its self-test when it is turned on.	If pump fails self-test or does not perform the self-test when first turned on, do not use the pump. Refer it to authorized service personnel.
TOTAL TIME EXCEEDS 999:59	This message will appear when rate is used as a programming parameter and the resulting computed time exceeds the pump's maximum ability.	Re-enter the rate value or use time to program the profile.
TotalTime: HH:MM	After you have entered the profile parameters, the pump automatically calculates the total delivery time for the profile, including any delay delivery time.	None
TOTAL VOLUME EXCEEDS 9999 ml	This message will appear when the total volume-to-be-infused exceeds the pump's maximum volume limit of 9999 ml.	Press <b>YES</b> or <b>NO</b> to return to the DELAY DELIVERY? prompt and make changes where necessary.

---

## Maintenance and Storage

### Overview

This chapter contains the following information on maintaining the pump:

- “Powering the Pump,” 7-1
- “Cleaning,” 7-10
- “Preventive Maintenance,” 7-12
- “Storing the Pump,” 7-12

### Powering the Pump

The pump can be powered by:

- Internal 9-volt batteries  
The pump contains two standard 9-volt alkaline (nonrechargeable) batteries. Recommended only for use when the Rechargeable External Battery Pack is unavailable or needs recharging. See “Using the Internal Batteries,” 7-2.
- Rechargeable External Battery Pack  
Recommended for use with large-volume infusions or extended hours. See “Using the Rechargeable External Battery Pack,” 7-5.

■ **Battery Eliminator/Charger**

An AC power adapter that can be used to power the pump directly or to charge the Rechargeable External Battery Pack. See “Using the Battery Eliminator/Charger,” 7-9.

## Using the Internal Batteries

The internal batteries power the pump whenever it is on but not connected to the Rechargeable External Battery Pack or the Battery Eliminator/Charger.

### Checking Internal and Backup Batteries

Perform this battery condition check to see how much capacity remains in the pump’s internal 9-volt batteries and the pump’s NiCad/NiMH backup battery.

**Note:** Before performing this check, you must disconnect the Rechargeable External Battery Pack or Battery Eliminator/Charger from the pump so the pump receives power from the internal 9-volt batteries.

To perform the battery condition check:

1. Disconnect the Battery Eliminator/Charger or Rechargeable External Battery Pack from the pump if necessary.
2. If the pump is not turned off, turn it off now.
3. Press the **ON/OFF PUMP** key.

**Note:** If the pump was recently powered by the Rechargeable External Battery Pack or the Battery Eliminator/Charger, allow the pump to run for approximately 3 minutes on internal batteries before performing the battery condition check.

4. While **SELF-TEST** is displayed, press and hold the **NO** key.

5. When PASSWORD is displayed, enter code:

2 2 8 8

and then press the **YES** key.

6. Battery voltages are displayed as shown below. (BATTERY is the 9-volt battery overall voltage, NI CAD is the NiCad/Nickel Metal Hydride battery voltage).

BATTERY	8.5
NI CAD	3.9

The approximate remaining capacity of the internal 9-volt batteries are indicated by the displayed BATTERY voltage and are as follows:

**Table 7-1 9-Volt Battery Capacity**

Displayed Voltage	Approximate Capacity Remaining
9.0	100%
7.8	75%
7.5	50%
7.1	25%

**Note:** Although the pump will function properly at the 8-volt threshold, this voltage indicates that battery reserve is almost depleted.

7. If the NiCad/NiMH battery voltage is less than 3.6 volts, recharge by connecting the pump to the Rechargeable External Battery Pack or Battery Eliminator/Charger for 16 to 24 hours.

If voltage remains less than 3.6 volts after recharging from the Battery Eliminator/Charger for 24 hours, have the NiCad/NiMH battery replaced by the Baxter service center.

## Changing the Batteries

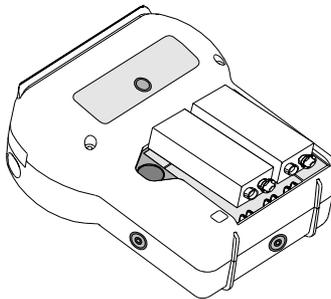
**Note:** You can change batteries while the pump is running. Remove and replace each battery one at a time so at least one battery remains in position to power the pump while you change the other battery.

**Note:** For maximum battery life, use only Duracell® replacement batteries. Table 8-1 lists recommended types.

1. Remove the battery door by turning the screw counterclockwise with finger pressure.
2. Remove the batteries, noting their orientation.

**Note:** Dispose of used pump batteries in accordance with local regulations on battery disposal.

3. Place two new 9-volt batteries into the compartment, matching the battery terminals with the pump's terminal guides as shown in Figure 7-1.



**Figure 7-1** Correct Battery Orientation

4. Replace the battery door by inserting the hinges into the compartment. Lower door onto the pump. Push and turn the compartment screw clockwise to secure the door in place.

## Using the Rechargeable External Battery Pack

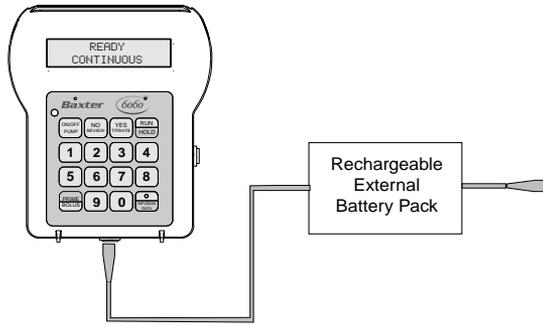
The Rechargeable External Battery Pack contains rechargeable power cells, and operates for about twice as long as the internal 9-volt batteries. When the Rechargeable External Battery Pack is used to power the pump, the internal 9-volt batteries are not used, saving their power for later use.

- Maintain Rechargeable External Battery Pack charge by keeping the Rechargeable External Battery Pack plugged into the Battery Eliminator/Charger when not in use.
- Always keep two 9-volt batteries installed in the pump.
- Store Rechargeable External Battery Pack in a cool place.
- Disconnect the Battery Eliminator/Charger from the Rechargeable External Battery Pack before unplugging the Battery Eliminator/Charger from the wall.
- Recharge immediately after use. If the Rechargeable External Battery Pack is repeatedly allowed to drain completely, its life will be shortened.
- The fast charge light on the Battery Eliminator/Charger indicates that it is in the high state charge mode. When the fast charge light goes off it **does not** indicate that the Rechargeable External Battery Pack is fully charged. Full charge time is 24 hours. Charging for 24 hours maximizes battery capacity and lifetime.

**Caution**

Never expose a discharged battery to freezing temperatures.

To connect the Rechargeable External Battery Pack, insert its plug into the **EXT POWER** connector on the bottom of the pump (see Figure 7-2).



**Figure 7-2 Connecting the Rechargeable External Battery Pack**

To disconnect the Rechargeable External Battery Pack from the pump, pull back on the textured metal collar closest to the pump to release the connector.

**Caution**

Do not pull the plastic covering or the wire, or the plug may be broken or damaged.

Recharge the Rechargeable External Battery Pack by plugging it into the Battery Eliminator/Charger (see Figure 7-3). The Rechargeable External Battery Pack will charge more quickly if it is disconnected from the pump or if the pump is turned off, but it will charge while the pump is operating. See “Using the Battery Eliminator/Charger,” 7-9.

To charge the Rechargeable External Battery Pack while the pump is running, connect it to the Battery Eliminator/Charger as shown in Figure 7-3.

**Caution**

Never connect the two connectors on the Rechargeable External Battery Pack to one another.

**Caution**

Do not pull the plastic covering or the wire, or the plug may be broken or damaged.

## Rechargeable External Battery Pack Alarms

When the pump is powered by the Rechargeable External Battery Pack, the **LOW BATTERY** alarm will occur when the pack is within one hour of depletion. The pump will continue infusing.

If the Rechargeable External Battery Pack's voltage falls below the minimum required to power the pump, the **EMPTY BATTERY** alarm will occur and the pump will stop infusing. To continue the infusion, do one of the following:

- Plug the Battery Eliminator/Charger into the Rechargeable External Battery Pack to recharge while continuing to infuse.

**Note:** The pump will not be powered by its internal 9-volt batteries until you disconnect the Rechargeable External Battery Pack.

- Disconnect the Rechargeable External Battery Pack from the pump so that the pump is powered by the internal 9-volt batteries.

## Charging the Rechargeable External Battery Pack

The Rechargeable External Battery Pack's batteries are recharging whenever it is connected to the Battery Eliminator/Charger, whether or not it is also being used to power the pump. Charge the Rechargeable External Battery Pack for 24 hours to ensure proper charge.

## Checking the Rechargeable External Battery Pack

To check the Rechargeable External Battery Pack:

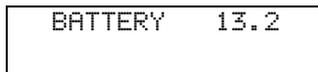
1. Connect Rechargeable External Battery Pack to pump.
2. If the pump is not turned off, turn it off now.
3. Press the **ON/OFF PUMP** key.

**Note:** If pump was recently powered from internal 9-volt batteries, allow it to run for approximately 3 minutes on Rechargeable External Battery Pack power before performing battery condition check.

4. When SELF-TEST is displayed, press and hold **NO**.
5. When PASSWORD is displayed, enter code:



then press **YES**. The pump displays a number corresponding to approximate capacity remaining. (See Table 7-2.)



**Table 7-2 Rechargeable External Battery Pack Capacity**

Displayed Voltage	Approximate Capacity Remaining
13.2	100%
12.7	75%
12.2	50%
11.8	25%

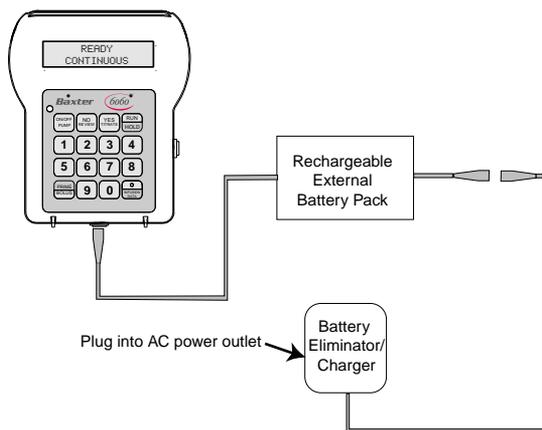
6. Recharge the Rechargeable External Battery Pack if the voltage is 12.2 volts or less.

## Using the Battery Eliminator/Charger

The Battery Eliminator/Charger is an adapter that plugs into an AC wall outlet. The Battery Eliminator/Charger can be used to power the pump directly, or to charge the Rechargeable External Battery Pack. The Battery Eliminator/Charger can recharge the Rechargeable External Battery Pack alone or while powering the pump, or may be connected directly to the pump.

Use the Battery Eliminator/Charger whenever possible or convenient, or if pump batteries are low.

- To connect the Battery Eliminator/Charger, insert its connector into the pump's **EXT POWER** connector. (See Figure 7-3).



**Figure 7-3** Connecting the Battery Eliminator/Charger

- To disconnect the Battery Eliminator/Charger from the pump, pull back on the textured metal collar closest to the pump to release the connector.

### Caution

Do not pull the plastic covering or the wire, or the plug may be broken or damaged.

## Cleaning

The exterior of the pump may be cleaned with a soft cloth, sparingly dampened with any of the cleaners listed below. **Do not spray cleaners directly into the pump's connectors, cassette chamber, or battery compartment. Do not use hard instruments for cleaning.** Follow the manufacturer's dilution instructions for concentrated cleaners. Always clean/disinfect the pump after each use. For a pump that has been in an Isolation Area, select those agents from the list below that both clean and disinfect.

Contact the Baxter Service Center for assistance immediately if fluid enters the cassette chamber. The chamber should be cleaned as soon as possible by authorized service personnel to minimize potential difficulties caused by fluid pooling and drying on the mechanism.

## Recommended Cleaners

- Clean soapy water
- Metracide Plus 30<sup>®</sup>
- Cidex<sup>™</sup>
- Kleen-aseptic<sup>®</sup> b
- Allstar<sup>®</sup> Lemon Dis
- Dispatch<sup>®</sup>
- Cavicide<sup>®</sup>
- Up to 10% solution of household bleach (1 part household bleach to 9 parts water)
- pHisoHex<sup>™</sup> (diluted), by Winthrop Laboratories

**Caution**

Do not clean, disinfect, or sterilize any part of the pump by autoclaving or with ethylene oxide gas. Doing so may damage the pump and void the warranty. Only external parts of the pump should be disinfected.

**Caution**

Do not use the following chemicals on the pump, as they will damage the front panel: acetone, acetaldehyde, ammonia, benzene, hydroxytoluene, methylene chloride, and ozone. Do not use cleaners containing n-alkyl dimethyl ethylbenzyl ammonium chloride unless they appear in the list of recommended cleaners above.

**Caution**

DO NOT steam autoclave or immerse the pump in liquid or it will be damaged. To avoid possible electrical shock, turn the pump off and disconnect it from the power line before cleaning.

**Caution**

Do not attempt to clean the pressure sensors. If the pressure sensors accidentally become wet, dry carefully with a lint-free cloth.

**Caution**

Do not use bleach or bleach solution on the pump's bare metal surfaces. Discoloration may result.

## Cleaning Procedure

1. Wipe the exterior of the pump and its accessories clean with a soft clean cloth dampened with clean soapy water or recommended sanitizing solution.

**Note:** Follow the sanitizing solution manufacturer's instructions for diluting concentrated solutions.

2. Rinse by wiping with a soft clean cloth dampened with water, then wipe dry.
3. After cleaning the air-in-line sensor, dry it thoroughly with a soft, clean lint-free cloth.

## Preventive Maintenance

Table 7-3 contains a schedule of basic maintenance tasks that should be performed on the pump. If the pump cannot be cleaned using the methods described earlier or components are missing or damaged, discontinue use and notify the appropriate authorized service personnel. See “Service Information,” 10-2.

**Table 7-3 Preventive Maintenance**

Check	Action
<b>Perform as required but recommended after every use.</b>	
Housing	Clean housing and front panel as recommended in the cleaning instructions in this section. Check for cracks or chips.
Labels	Clean as recommended in the cleaning instructions. Check for scratches, cuts or obliterated words.
Optional PCA cord	Verify that the cord is undamaged over its entire length and that the PCA button is intact and functional.
Rear housing	Verify that there are no loose or missing parts and that connectors and accessories are undamaged.

## Storing the Pump

1. To prevent exposure to dust and moisture, store the pump in its shipping carton in a clean, dry environment with air quality equivalent to or better than normal warehouse air.
2. Store at -28.8° C to 60° C (-20° F to 140° F), 10% to 95% humidity (non-condensing), 50 kPa to 106 kPa.
3. Remove the internal 9-volt batteries before storing the pump for long periods.

# Technical Specifications

**Table 8-1** Technical Specifications

Item	Characteristic
Catalog code number	2M9832
Description	Volumetric infusion pump, rotary peristaltic
Dimensions	Approximately 119 mm x 99 mm x 58 mm (4.7" H x 3.9" W x 2.3" D)
Weight	<ul style="list-style-type: none"> <li>Approximately 0.368 kg (13 oz.) without batteries</li> <li>Approximately 0.454 kg (16 oz.) with batteries</li> </ul> (Does not include accessories)
Administration sets	2L9000 2L9003 2L9004 2M9856 2M9857 2M9858 2M9859 2M9860 2M9861
Power requirements	12 to 18 VDC, 50 mA maximum
<ul style="list-style-type: none"> <li>Internal battery</li> </ul>	<p><b>Note:</b> For optimum performance, Baxter recommends you use only batteries manufactured by Duracell Corporation.</p> <p>Two 9-volt single use standard alkaline (DURACELL® 9V No. MN1604 or PROCELL® No. PC1604) or lithium batteries (ULTRALIFE® Power Cell 9V No. U9VL)</p>
<ul style="list-style-type: none"> <li>Rechargeable External Battery Pack</li> </ul>	Rechargeable external lead acid battery pack (equivalent to 12 volts) 1.3 Ah. Rechargeable with appropriate Battery Eliminator/Charger
<ul style="list-style-type: none"> <li>AC Power</li> </ul>	AC powered using Battery Eliminator/Charger connected to <b>EXT POWER</b> connector on pump.

**Table 8-1 Technical Specifications — continued**

Item	Characteristic
• Battery life	<ul style="list-style-type: none"><li>• 25 hours at 125 ml/hr and low pressure (internal alkaline)</li><li>• 45 hours at 125 ml/hr and low pressure (internal lithium)</li><li>• 40 hours at 125 ml/hr and low pressure (Rechargeable External Battery Pack)</li></ul>
Backup audio power	Internal NiCad or Nickel-Metal Hydride battery
Audible alarm	45 to 85 dB
Keep Open (KO) rate	Selectable between 0.1 to 10.0 ml/hr in 0.1 ml increments; Intermittent profile KO rate selectable between 0.0 to 10.0 ml/hr in 0.1 ml increment
Range of programmable flow rates	0.1 to 99.9 ml/hr in increments of 0.1 ml/hr, and 100 to 400 ml/hr in increments of 1 ml/hr
Volume	<ul style="list-style-type: none"><li>• 0.1 to 999.9 ml in increments of 0.1 ml</li><li>• 1000 to 9,999 ml in 1 ml increments</li></ul>
Volume accuracy	$\pm 6\%$ at 15° to 32.2°C (60° to 90° F), 0 to 55.1 kPa (0 to 8 psi) back pressure $\pm 10\%$ at 40° to 100° F, 9 to 18 psi back pressure
Priming rate	6 ml priming volume at 200 ml/hr <b>Note:</b> Not to be used when pump is connected to the patient.
Air bubble setting (alarm thresholds)	When enabled or disabled, selectable at the following limits: <ul style="list-style-type: none"><li>• 0.1 ml</li><li>• 0.5 ml</li><li>• 2 ml</li></ul>

**Table 8-1 Technical Specifications — continued**

Item	Characteristic
Downstream occlusion detection time:	
<ul style="list-style-type: none"> <li>• Flow rates above 10 ml/hr:</li> </ul>	Less than 4 minutes
<ul style="list-style-type: none"> <li>• Flow rates between 1 and 10 ml/hr:</li> </ul>	Less than 20 minutes
Upstream occlusion detection time:	
<ul style="list-style-type: none"> <li>• Flow rates above 10 ml/hr:</li> </ul>	Less than 4 minutes
<ul style="list-style-type: none"> <li>• Flow rates between 1 and 10 ml/hr:</li> </ul>	Less than 20 minutes

## Dose Limits

**Table 8-2 Factory Rate/Dose Limits for Delivery Routes**

Route	Basal (ml/hr)	Bolus (ml)	Loading Dose (ml)
Intravenous	50	50	50
Epidural	25	25	25
Subcutaneous	5	5	5

---

## Accessories

Use only the accessories listed in Table 8-3 with the pump.

**Table 8-3 Accessories**

<b>Product Code</b>	<b>Description</b>
2L9353	Lock Box for 100 ml pre-attached bag set
2L9354	Lock Box for 100 ml or 250 ml pre-attached bag set
2L9363	Generic Lock Box for up to 250 ml container - Top Hinge
2L9357	Locking Clamp
2L9358	Non-Locking Clamp
2L9359	Remote PCA Cord
2M9833	Pump Holder and Pole Clamp
2M9834	Backpack for up to 3,000 ml container capacity
2M9835	Battery Eliminator/Charger
2M9836	Fanny Pack strap extension
2M9837	Fanny Pack up to 500 ml container capacity
2M9838	Rechargeable External Battery Pack
2M8939	Slim Pack up to 100 ml container capacity
2M9847	Durable Carrying Case

## Operating Environment

Table 8-4 lists the environmental requirements for operating the pump.

**Table 8-4 Operating Requirements**

Temperature	4.5° C to 37.7° C (40° F to 100° F)
Humidity	20% to 95%, non-condensing
Barometric pressure	70 kPa to 106 kPa

## Storage Environment

Table 8-5 lists the environmental requirements for storing the pump.

**Table 8-5 Storage Requirements**

Temperature	-28.8° C to 60° C (-20° F to 140° F)
Humidity	20% to 95%, non-condensing
Barometric pressure	50 kPa to 106 kPa

---

## Applicable Standards

The pump has been designed in accordance with but not restricted to the following standards:

- *NFPA 99. Standard for Health Care Facilities*; National Fire Protection Association, dated 2/12/93 ANSI/NFPA 99.
- *UL2601-1. Medical Electrical Equipment, Part 1: General Requirement For Safety*, 24 October 1997.
- CAN/CSA C22.2 No. 601.1-M90. Medical Electrical Equipment, Part 1, General Requirements For Safety, A National Standard of Canada.

## Recommended Practices

- Connections of this pump to the same patient line with other infusion systems or accessories may alter the system performance. Consult the infusion system or accessory manufacturer's instructions for use before proceeding.
- To ensure that pump performance is maintained, the pump should be inspected by authorized service personnel in accordance with the 6060™ Multi-Therapy Pump Service Manual.

In the U.S., inspections should be performed in accordance with the JCAHO (Joint Commission on Accreditation of Healthcare Organizations) procedures.

## Summary of Configurable Settings

This chapter contains the following summary information about the pump's configurable settings and options:

- “Parameter Limits,” 9-1
- “Summary of Factory Default Settings,” 9-3
- “Summary of Numeric Codes,” 9-4

**Table 9-1** *Parameter Limits*

Parameter	Limit
<b>All Profiles</b>	
Delay Delivery Time (HH:MM)	0:00 to 99:59 (except PCA)
KO Rate (delay, at complete)	0.1 to 10.0 ml/hr (except Intermittent and PCA)
Concentration	0.1 to 99.9 mg/ml, or 0.1 to 1000 µg/hr
Flow Rate	0.0 to 400 ml/hr (0.0 to 39,960 mg/hr, 0.0 to 400,000 µg/hr)
Time (HH:MM)	00:01 to 99:59 (except Intermittent)
Volume	0.1 to 9,999 ml
<b>Auto-Ramp® Profile</b>	
Up-Ramp Time (HH:MM)	00:01 to 09:59
Down-Ramp Time (HH:MM)	00:01 to 09:59

**Table 9-1 Parameter Limits — continued**

<b>Parameter</b>	<b>Limit</b>
<b>Intermittent Profile</b>	
Other Total Time (HH:MM)	00:01 to 72:00 for a single dose 3:00 to 72:00 for multiple doses
Number of Doses	1 to 24
Dose Time (HH:MM)	00:01 to 09:59 (up to 72:00 if number of doses is 1)
Intermittent KO Rate	0.0 to 10.0 ml/hr (0.0 to 999 mg/hr, 0.0 to 9,000 µg/hr)
<b>PCA Profile</b>	
PCA Basal Rate and Bolus Dose Limits:	
Intravenous Route	0.0 to 50 ml/hr (0.0 to 4,995 mg/hr, 0.0 to 50,000 µg/hr)
Subcutaneous Route	0.0 to 5 ml/hr (0.0 to 499 mg/hr, 0.0 to 5,000 µg/hr)
Epidural Route	0.0 to 25 ml/hr (0.0 to 2,497 mg/hr, 0.0 to 25,000 µg/hr)
PCA Bag Volume	0.1 to 999 ml
Bolus Dose Interval (HH:MM)	00:01 to 01:00; or 00:01 to 12:00
Bolus Doses/hr	0 to 60
Medication Time Limit	1 to 12 hours
Medication Volume Limit	Basal rate/hr plus 1 bolus dose = 999 ml

**Table 9-2 Summary of Factory Default Settings**

<b>Option</b>	<b>Available Settings</b>	<b>Factory Setting</b>
Audio volume	1 to 9	9
KO rate	0.1 to 10.0 ml/hr	0.1 ml/hr
Downstream Occlusion Pressure	<ul style="list-style-type: none"> <li>• HI (<math>124 \pm 34.5</math> kPa; 20 PSI <math>\pm</math> 5 PSI)</li> <li>• LO (<math>55.1 \pm 34.5</math> kPa; 8 PSI <math>\pm</math> 5 PSI)</li> </ul>	HI
Display language	English English/Spanish	English
Air Detection	<ul style="list-style-type: none"> <li>• 0.1 ml</li> <li>• 0.5 ml</li> <li>• 2.0 ml</li> <li>• Disabled</li> </ul>	2.0 ml
Upstream occlusion detection	Enabled/disabled	Disabled
Volume Accrual	Enabled/Disabled	Enabled
Time	HH:MM	Local Time

**Table 9-3 Summary of Numeric Codes**

<b>Code</b>	<b>Function</b>
776	Entering patient's ID number (see "Entering the Patient's Identification Number," 5-15).
911	Required whenever ENTER CODE is displayed.
2288	Checking remaining battery life (see "Checking Internal and Backup Batteries," 7-2).
2663	PCA Configuration Mode (see "Using Configuration Mode to Customize Available PCA Profile Options," 4-63).
2664	Global Configuration (see "Changing Concentration Without Affecting Programmed Rate," 5-9).
4646	Profile Specific Pump/Volume Accrual (see "Making the Pump Profile-Specific," 5-10).
5115	Clinician-Activated Dose (see "Giving a Clinician-Activated Dose," 4-50).
6060	Clear pump memory (see "Clearing the Memory," 5-9).
6116	Change profile parameters while in PCA Lockout security level 2 or 3 (see "Changing PCA Configuration Settings," 4-64).
8463	Set the 24-hour clock (see "Setting Date and Time," 5-14).

## Warranty and Service Information

### Warranty

Baxter warrants that the equipment shall be free from defects in material and workmanship when delivered to the original purchaser. Baxter's sole obligation shall be to repair or replace the product (excluding batteries), at Baxter's option and expense, for a period of one year following the date of initial delivery. The warranty period for the internal NiCad or NiMH battery is limited to a period of six months following the date of initial delivery.

The warranty extends only to the original purchaser and is not assignable or transferable, and shall not apply to auxiliary equipment or disposable accessories. There are risks associated with using anything other than the recommended Baxter designated administration sets with this device. Baxter's warranty to repair or replace the product will be null and void if this product is used contrary to the directions for use contained in the labeling or if used with non-recommended sets. Baxter will assume no responsibility for incidents which may occur if the product is not used in accordance with product labeling.

THERE ARE NO OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY AND ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT AND THOSE EXPRESSLY

**SET FORTH IN ITS LABELING.** In no event shall Baxter be responsible for incidental, consequential or exemplary damages. Modification, alteration, recalibration, or abuse, and service by other than a Baxter authorized representative may void the warranty.

## Service Information

While under Baxter's warranty, Service Agreement (optional), or lease agreement, the instrument must not be opened by unauthorized personnel.

For service and repair information for this product, call the authorized Baxter service center listed below.

### **Andover Service Center**

In the U.S.: **1-800-343-0366**

Outside the U.S.: **01-978-691-4100**

Shipping costs for all pumps returned to Baxter shall be paid for by the customer. The pump must be packed in its original container or in another Baxter approved container that will provide adequate protection during shipment. To ensure prompt return, a Baxter authorized service representative must be notified before shipping any pump for repair. When calling for service, please be prepared to provide code number and serial number of the pump. A brief written description of the problem should be attached to the pump when it is returned for service.

Baxter will not be responsible for unauthorized returns or for pumps damaged in shipment due to improper packing.

# Appendix A

## Spanish-English Display Text Translation

The Spanish translations for all of the pump's display messages are provided below.

Spanish	English
AIRE-EN-LINEA	AIR-IN-LINE
AJUSTE DE INFUSION?	TITRATION?
ALERTA DOSIS DE BOLSA MAXIMA/HR	ALERT MAXIMUM BOLUS DOSES/HR
ALERTA DOSIS MAXIMO PROG	ALERT MAXIMUM PROGRAMMED DOSE
ALERTA INTERVALO DE BOLSA MINIMO	ALERT MINIMUM BOLUS INTERVAL
ALERTA RITMO MAXIMO PROG	ALERT MAXIMUM PROGRAMMED RATE
AUTO-RAMPCA	AUTO-RAMP
BATERIA BAJA	LOW BATTERY
BATERIA VACIA	EMPTY BATTERY
BOLSA BAJA	LOW BAG
CASSETTE NO INSTALADO	CASSETTE NOT INSTALLED
CEBAR MAS?	MORE PRIME?

<b>Spanish</b>	<b>English</b>
CEBAR SET?	PRIME SET?
CEBANDO VOLUMEN	PRIMING VOLUME
CERRADO O PULSE ANDAR	LOCKOUT OR PRESS RUN
COMPLETO XXXX	COMPLETE XXXX
CONTINUR	CONTINUOUS
DETECTOR DE AIRE XX ML	AIR DETECTION XX ML
DETECTOR DE AIRE DESACTIVADO	AIR DETECTION DISABLED
DETECTOR DE AIRE ENTRE CONDIGO	SET AIR DETECTOR ENTER CODE
*DETENIDO*	*HOLD*
DEMORA	DELAY
DEMORA ENTREGA?	DELAY DELIVERY?
DOSIS COMPLETO	DOSE COMPLETE
DOSIS DE BOLSA	BOLUS DOSE
DOSIS DE BOLSA SOLICITADA	BOLUS DOSE REQUESTED
DOSIS XX	DOSE XX
EMPEZAR DOSIS XX?	BEGIN DOSE XX?
ENTRE CODIGO	ENTER CODE
ENTRE CODIGO PCARA DATOS PCA	FOR PCA DATA ENTER CODE
FALLO XX	MALFUNCTION XX
FIJAR IDIOMA?	SET LANGUAGE?

Spanish	English
FIJAR PRESION?	SET PRESSURE?
FIJAR VOLUMEN DE AUDIO?	SET AUDIO VOLUME?
FIJAR RITMO KO?	SET KO RATE?
FIJAR OCLUSION SUP	SET UP OCCLUSION
INGLES/ESPCANOL	ENG/SPANISH
INTERMITENTE	INTERMITTENT
INTERVALO DE BOLSA	BOLUS INTERVAL
KO DOSIS XX	KO DOSE XX
AUTO-RAMPCA LISTO	READY AUTO-RAMP
CONTINUO LISTO	READY CONTINUOUS
INTERMITENTE LISTO	READY INTERMITTENT
LISTO PCARA CEBAR	READY TO PRIME
LISTO PCA NIVEL X	READY PCA LEVEL X
LISTO XX PERIODO(S)	READY XX PERIODS
NIVEL X DE SEGURIDAD	SECURITY LEVEL X
OCLUSION INF	DOWN OCCLUSION
OCLUSION SUP	UP OCCLUSION
PCA NIVEL X	PCA LEVEL X
PERIODO XX DE XX	PERIOD XX OF XX
PRESION: ALTA	PRESSURE: HI
PRESION: BAJA	PRESSURE: LO
PROBANDO	SELF-TEST...

<b>Spanish</b>	<b>English</b>
PUERTA ABIERTA	DOOR OPEN
RAMPCA BAJADA	DOWN RAMP
RAMPCA BAJADA ANTES DE TIEMPO?	EARLY DOWN-RAMP?
RAMPCA SUBIDA	UP-RAMP
RECALIBRAR!	RECALIBRATE!
REPCASAR PERFIL?	REVIEW PROFILE?
RITMO	RATE
RITMO BASICO	BASAL RATE
RITMO CONSTANTE	LEVEL RATE
RITMO MAXIMO ES:	MAXIMUM RATE IS:
RITMO REBASA LIMITES MICROSET	RATE EXCEEDS MICROSET LIMITS!
RITMO REDONDEADO A:	RATE ROUNDED TO:
SIGUIR?	RESUME?
SEGUIR DOSIS XX?	RESUME DOSE X?
SEGUIR KO DOSIS XX?	RESUME KO DOSE XX?
SOLTAR/QUITAR CORDON PCA	RELEASE/REMOVE PCA CORD
TECLA PEGADA	STUCK KEY
T-RESTANTE:	TIME LEFT:
T-RESTANTE EN INFUSION	TOTAL INFUSION TIME LEFT
T-RESTANTE EN DOSIS XX	TIME LEFT IN DOSE XX
T-RESTANTE EN KO DOSIS XX	TIME LEFT IN KO DOSE XX

Spanish	English
T-RESTANTE EN PERIODO XX	TIME LEFT IN PERIOD XX
T-RESTANTE RAMPCA BAJADA	TIME LEFT IN DOWN-RAMP
T-RESTANTE RAMPCA SUBIDA	TIME LEFT IN UP-RAMP
T-RESTANTE RITMO CONSTANTE	TIME LEFT IN LEVEL RATE
25 PERIODOS	25 PERIODS
VERIFICAR O CAMI\BIAR PROG	CHECK OR CHANGE TITRATION
VOL REDONDEADO A:	VOLUME ROUNDED TO:
VOLUMEN MAXIMO ES:	MAXIMUM VOLUME IS:
VOLUMEN RESTANTE	VOLUME REMAINING

A



## Glossary

**AutoClamp™** — A feature on the cassette that helps prevent free flow when the pump door is opened and when the cassette is removed from the pump's cassette chamber.

**Cassette** — The cassette is the portion of the administration set that rests in the cassette chamber. The standard cassette supports flow rates of 0 to 400 ml/hr. The cassette contains the AutoClamp™ (see above).

**Delivery Profile** — One of five programmable infusion options available with the pump. These include Continuous, Auto-Ramp®, Intermittent, 25 Periods and PCA. They differ from each other primarily in their methods of delivering infusion rates over time.

**Demand Bolus** — In the PCA delivery profile, a Demand Bolus is a patient-controlled dose at a preset amount and rate, available at preset intervals. The dose may be requested via the **PRIME/BOLUS** button on the keypad or via the Remote PCA button.

**Final Confirmation Screen** — This screen immediately follows the Ready screen. It displays the fluid bag volume and rate, alternating with the name of the profile ready to be delivered. This screen is also displayed when you use Shortcut Delivery. It allows you to check the programmed parameters before proceeding with delivery.

---

**Infusion Data Parameters** — Pump-wide settings that control the way the pump’s displays and performance. The Infusion Data Parameters include: audio volume, pressure, KO rate, display language, air detection and up occlusion. See Table 9-2 for complete information.

**KO Rate** — The KO (Keep Open) rate is a reduced infusion rate administered during delay delivery phases and at the completion of infusions. The Intermittent delivery profile has a separate, profile-specific KO Rate that is delivered during KO periods of an Intermittent infusion.

**Lockout Mode** — Mode of pump operation in which only predetermined and preprogrammed delivery profiles are available for delivery. A user may not alter existing programs or create new programs in Lockout Mode. See “Programmable Mode,” B-3.

**PCA Configuration** — A pump mode, accessible through a password, that lets you set features and limits for the PCA profile. PCA Configuration lets you enable or disable options available in the PCA profile, and set limits on parameters such as basal rate, loading dose and bolus dose rate.

**Profile Parameters** — The collective name for the data elements programmed into a delivery profile. For a given program, the parameters may include infusion rate, infusion time, volume-to-be-infused, KO rate, number of doses, etc. The parameters required for each delivery profile are described in the profile’s programming section.

**Profile-Specific** — Advanced programming feature in which you may restrict the profiles available for delivery to specific profiles of your choosing. This feature is more restrictive than Lockout Mode alone, for any profiles excluded from your profile-specific program remain inaccessible even in Programmable Mode.

**Programmable Mode** — Mode of operation in which all delivery profile parameters and other programming options are accessible for review or change. You must be in Programmable Mode to change an existing program or to create a new program.

**Programmed Infusion** — An infusion profile for which all parameters have been set and saved in the pump's memory. A programmed infusion remains ready for delivery until parameters for that specific profile are changed or memory is cleared.

**Ready Screen** — In Programmable Mode, this screen confirms that all profile parameters have been completely and correctly entered, and that the infusion profile is ready for delivery. In Lockout Mode, this screen indicates that the profile shown is available for delivery under the Lockout conditions.

**Titration Mode** — Titration Mode allows the delivery rate and/or the volume-to-be-infused to be changed during a Continuous profile infusion, and the basal rate, bolus dose, bolus interval and/or number of bolus doses per hour to be changed during a PCA infusion. See the profile programming sections for details.

---

**Volume-to-be-Infused** — An accumulation of all the volumes scheduled to be delivered during a programmed infusion. It may represent a single volume, as in a Continuous profile infusion, or the sum of many volumes, as in an Intermittent profile infusion that contains a volume for each dose plus a KO volume for each period between doses.

---

# Index

## Numerics

100 ml lock box.....	3-5
25 periods profile .....	3-12
programming.....	4-28
programming by rate.....	4-30
programming by time.....	4-32
repeating.....	4-35
250 ml lock box.....	3-7
product code.....	3-7
60601-1 .....	1-4

## A

accessories.....	1-8, 8-4
accrual	
volume.....	5-13
administration set	
clamp.....	2-8
filter.....	2-8
loading.....	3-3
administration sets.....	1-6, 3-2, 8-1
air-in-line alarm.....	6-3
alarms	
air-in-line.....	6-3
cassette not installed.....	6-3
check internal 9V batteries.....	6-3
complete listing .....	6-1
door open.....	6-3
down occlusion .....	6-4
empty bag.....	6-4
empty battery.....	6-4
external battery pack .....	7-7
hold.....	6-4
low bag.....	6-1, 6-4
low battery.....	6-2, 6-5
malfunction .....	6-5
NiCAD depleted.....	6-5
release/remove PCA cord.....	6-5
re-program.....	6-5
stuck keys.....	6-5
alerts	
audible.....	4-26
complete listing .....	6-6
computed rate exceeds	
400 ml/hr.....	6-7

dose frequency under 3 hours ....	6-7
dose time exceeds 9:59 .....	6-7
dose time exceeds total .....	6-8
KO rate exceeds dose rate.....	6-8
KO time computes under	
2 hours .....	6-8
maximum bolus doses/hr .....	6-7
maximum programmed dose ....	6-6
maximum programmed rate.....	6-6
minimum bolus interval .....	6-6
minimum volume.....	6-9
minumum dose.....	6-8
minumum level rate is	
10 ml/hr.....	6-8
minumum rate .....	6-8
more prime.....	6-9
program basal and/or bolus.....	6-7
ramp times too long .....	6-9
rate computes less than KO .....	6-9
rate computes under	
0.1 ml/hr.....	6-9
re-program .....	6-10
self-test.....	6-10
total time exceeds 999:59 .....	6-10
total time HH:MM .....	6-10
total volume exceeds	
9999 ml .....	6-10
ambient light detector .....	2-2
Andover service center .....	10-2
attachment rails .....	2-4
audible alerts	
KO rate.....	4-26
AutoClamp™	
definition .....	B-1
description.....	2-8
illustration .....	2-8
Auto-Ramp® Profile	
programming.....	4-10
programming an early	
down-ramp.....	4-16
repeating .....	4-9
repeating an infusion.....	4-16

<b>B</b>		confirmation screen ..... B-1
back light .....	2-2	connectors
batteries .....	7-9	EXT POWER .....
9-volt, changing.....	7-4	PCA/COMM.....
checking.....	7-2	continuous profile
external .....	8-1	programming .....
external battery pack		titration.....
alarms .....	7-7	
charging.....	7-7	<b>D</b>
checking.....	7-8	date.....
using .....	7-5	definitions
initial charging time.....	1-4	warning and caution statements..
internal.....	8-1	delay
life.....	8-2	programming .....
location .....	2-4	range .....
specifications.....	8-1	delivery
storage .....	7-12	delayed.....
types.....	8-1	general notes .....
using .....	7-2	in lockout mode .....
battery eliminator/charger .....	7-9	delivery profiles
bolus dose		25 periods .....
alert.....	6-7	Auto-Ramp® Profile .....
limiting during PCA profile .....	4-38	continuous.....
bolus interval alert.....	6-6	definition.....
bolus, demand.....	B-1	intermittent.....
		overview .....
<b>C</b>		PCA .....
cassette.....	2-8	types.....
cassette not installed alarm.....	6-3	demand bolus
definition .....	B-1	definition.....
release/load buttons .....	2-4	dimensions, pump.....
caution statements .....	1-8	display.....
change record page.....	i	display text translation.....
changing 9-volt batteries .....	7-4	displaying time remaining .....
changing infusion parameters.....	3-8	door open alarm .....
changing previously programmed		dose frequency under alert.....
parameters .....	3-9	dose limits.....
charging external battery pack.....	7-7	dose time exceeds alert.....
check internal 9V batteries alarm...	6-3	dose time exceeds total alert.....
checking batteries .....	7-2	down occlusion alarm .....
checking external battery pack.....	7-8	
clamp .....	2-8	<b>E</b>
cleaning .....	7-10, 7-11	eliminator
clearing memory .....	5-9	battery .....
clearing volume infused display.....	5-8	empty bag alarm .....
clock		empty battery alarm .....
setting .....	5-14	English-Spanish display
codes .....	9-4	translation .....
compartment, batteries .....	2-4	entering infusion parameters .....
computed rate exceeds alert .....	6-7	environmental specifications .....
concentration		epidural infusion warning.....
changing .....	5-9	EXT POWER connector.....





setting infusion data		front view .....	2-3
parameters .....	5-20	multi-therapy .....	1-1
setting volume accrual .....	5-13	opening door .....	2-4
using the pump to prime .....	3-4	part number .....	8-1
product code .....	8-1	power requirements .....	7-1
administration sets .....	8-1	unpacking .....	3-1
product features .....	1-2	warranty .....	10-1
product overview .....	1-1		
profile		<b>R</b>	
Auto-Ramp® programming .....	4-10	ramp times too long alert .....	6-9
25 periods programming .....	4-28	rate computes less than KO alert ...	6-9
continuous programming .....	4-1	rate computes under 0.1	
definition of parameters .....	B-2	ml/hr alert .....	6-9
intermittent programming .....	4-18	rate of flow .....	8-2
overview .....	3-10	ready screen .....	3-16
PCA programming .....	4-36	definition .....	B-3
restricting availability .....	5-10	rear panel	
types .....	3-10	description .....	2-4
profile parameters		rechargeable external battery	
reviewing .....	3-17	pack .....	7-5
profile-specific		recommended cleaners .....	7-10
definition .....	B-3	recommended practices .....	8-6
program basal and/or bolus alert ...	6-7	release/remove PCA cord alarm ...	6-5
programmable mode .....	5-16	removing power .....	3-17
definition .....	B-3	repair .....	10-2
infusion data parameters .....	5-21	re-program alarm .....	6-5
shortcut delivery in .....	5-2	re-program alert .....	6-10
switching to lockout mode .....	5-19	requirements	
programmed infusion		power .....	8-1
definition .....	B-3	resetting an infusion to	
programming		the beginning .....	5-5
25 periods profile .....	4-28	resuming delivery of	
Auto-Ramp® Profile .....	4-10	interrupted infusion .....	5-4
changing concentration .....	5-9	reviewing profile parameters .....	3-17
delayed delivery .....	3-15	revision history .....	i
early down-ramping during		RUN/HOLD key .....	2-1
Auto-Ramp® Profile .....	4-16		
general notes .....	3-8	<b>S</b>	
infusions .....	3-13	safety	
intermittent profile .....	4-18	definition of warnings	
making profile specific .....	5-10	and cautions .....	1-5
patient ID .....	5-15	IEC classification .....	1-4
PCA profile .....	4-36	screen	
reviewing profile parameters ...	3-17	final confirmation .....	3-16
setting date and time .....	5-14	illumination .....	2-2
setting volume accrual .....	5-13	ready .....	3-16, B-3
protecting the fluid bag .....	3-5, 3-7	selecting or programming	
pump		a different infusion .....	5-6
accessories .....	8-4	self-test alert .....	6-10
battery .....	8-1	serial communications .....	2-4
code numbers .....	9-4	serial number format .....	1-6
dimensions .....	8-1	service	
features .....	1-2	information .....	10-2

return shipping.....	10-2	time and date	
warranty.....	10-1	setting.....	5-14
sets		time remaining	
administration.....	3-2	displaying.....	5-25
settings		titration mode	
factory default.....	9-3	definition.....	B-3
infusion data parameters.....	5-20	total time exceeds 999:59 alert .....	6-10
parameter limits.....	9-1	total time HH:MM alert.....	6-10
time and date .....	5-14	total volume exceeds	
shortcut delivery .....	5-2	9999 ml alert.....	6-10
in lockout mode.....	5-3	tracking requirements, U.S. ....	1-9
programmable mode.....	5-2	turning pump off.....	3-17
Spanish-English display			
translation .....	A-1		
specifications		<b>U</b>	
battery .....	8-1	unpacking the pump.....	3-1
environmental .....	8-5	using batteries to power the pump..	7-2
operating .....	8-5	using external battery pack .....	7-5
product.....	8-1	using the battery eliminator .....	7-9
storage .....	8-5		
technical.....	8-1	<b>V</b>	
standards.....	8-6	volume accrual.....	5-13
IEC 60601-1 .....	1-4	volume infused display	
status indicator LEDs .....	2-1	clearing .....	5-8
storage .....	7-12	volume-to-be-infused	
environment.....	8-5	definition.....	B-4
stuck keys alarm .....	6-5		
		<b>W</b>	
<b>T</b>		warnings.....	1-6
tamper prevention.....	3-5, 3-7	warranty .....	10-1
technical specifications.....	8-1	weight .....	8-1
temperature requirements .....	8-5		
threaded lock box adapter.....	2-4	<b>Y</b>	
		YES/TITRATE key	
		description .....	2-2



This manual was printed on paper stock created with 20% de-inked post-consumer waste fiber and a total of 100% recycled fiber.



***Baxter***

**Baxter Healthcare Corporation**

Deerfield, IL 60015 USA



\* 0 7 1 9 1 2 3 5 3 V \*

Authorized Representative:

**Baxter S.A.**, B-7860

Lessines, Belgium

© Copyright 2000, Baxter Healthcare Corporation. All Rights Reserved.