Addendum

GemStar™ SP Infusion Suite Therapy Programming

For Use with Lists 13086/13087/13088-04/36-11+

Therapy Programming Tips

The following table explains how to use the keypad during programming:

Key	Function	Key	Function
[0] - [9]	Press the number key to select menu items and to enter numeric values. If desired option is 01, you must press [0] and [1]. Use the associated number key to select or deselect settings.	▼	The DOWN arrow toggles between units of measure when entering concentrations. Scrolls through program review and help messages.
YES ENTER	Accepts entries or continues when done viewing a display.	▲	The UP arrow inserts a decimal point in a numeric value.
HELP	Displays information during programming and alarm conditions.	BACK-UP	Returns to a previous display, exits the Options Menu, and exits the HELP mode.
CHANGE	Clears a numeric value (resets to zero) during programming.		

Pain Management Programming using GemStar™ SP

Notes:
1. Continuous Only, there will be pre-configured hospital defined limits on Continuous rate and Loading Dose.
2. Bolus only delivery, there will be pre-configured hospital defined limits on the Loading Dose, Bolus Dose, Amount, and Dose Limit.
3. Continuous + Bolus delivery, there will be pre-configured hospital defined limits on Continuous Rate, Loading Dose, Bolus Dose Amount, and Dose Limit.
4. In Continuous + Bolus Protocols, you can enter zero for either the continuous rate or the bolus dose when entering or changing a program. The continuous rate and the bolus dose cannot be zero at the same time. A dose limit is required.

1 Select PAIN MANAGEMENT from the Programming Menu.

2 Select PROTOCOL. Use the arrow down key to scroll and select the desired protocol by entering the number assigned to it (two numbers required).

- A confirmation message is displayed.

- Press $\left(\frac{YES}{ENTER}\right)$ or **NO**. If **NO** is selected, it will return to the protocol selection screen.

3 The concentration values will be displayed.

- Press $\left(\frac{YES}{ENTER}\right)$ to confirm as required.

4 Set the continuous delivery rate or press $\left(\frac{YES}{ENTER}\right)$ to confirm pre-programmed parameter.

- Pre-populated value can be set to zero by pressing the **CHANGE** key, then reprogram the continuous rate.

- A rate will be displayed.

- Press $\left(\frac{YES}{ENTER}\right)$ to confirm.

- If the rate is above the Upper Hard Limit, that limit will be displayed.

  You must press $\left(\frac{YES}{ENTER}\right)$ to edit the rate.

```
UPPER HARD LIMIT
IS

     10 mg/hr
  ENTER TO EDIT
```

5   Program a loading dose as required.

6   Program a bolus dose with lockout time and dose limit as required

OR Press $\left(\begin{smallmatrix} YES \\ ENTER \end{smallmatrix}\right)$ to confirm the hospital pre-configured parameter

Regarding a 1-Hour or 4-Hour Dose Limit: The hour dose limit is the maximum volume (continuous plus bolus or bolus only amount) that can be delivered over the selected period. When the programmed dose limit is reached, the continuous delivery stops and a new bolus is not allowed. As the oldest delivery amounts age out of the 1-hour or 4-hour dose limit record, the pump accepts bolus requests or resumes continuous delivery (if programmed).

Note: If a 1-hour or 4-hour dose limit is programmed, a bolus in progress will stop when the amount infused reaches the dose limit.

Loading doses are included in a 1-hour or 4-hour dose limit. A dose limit in effect could prevent the delivery of a loading dose.

7   If programmed in units of mcg or mg, the line displaying the units flashes. Confirm the protocols container size by pressing $\left(\begin{smallmatrix} YES \\ ENTER \end{smallmatrix}\right)$ or enter the container size in proper unit of measure.

Note: To enter the total in mL when programming a concentration, press $\left(\blacktriangledown\right)$ *to move to the mL line. Enter the mL value when* [mL] *flashes on the display.*

8   Select the air sensitivity, if required.

9   Review the program. Press $\left(\blacktriangledown\right)$ to begin review.

10   Press $\left(\begin{smallmatrix} YES \\ ENTER \end{smallmatrix}\right)$ to save the program.

11   If using the [PURGE] key to prime the pump set, press [PURGE] now.

WARNING: ALWAYS disconnect the pump set from the patient before priming or purging.

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*Note: For information on **Bolus Delivery, Loading Dose Delivery, and Changing a Pain Management Program**, see the complete System Operating Manual.*

To Titrate the Rate while the pump is infusing and the keypad lock is engaged:

1 Press 〔OPTIONS〕 to display options menu.

2 Select KEYPAD LOCK from the options menu.

3 Select the lock level to be unlocked.

- When the pump is locked under a particular level, a small lock symbol (🔒) appears next to the applied lock level.

4 Enter the Lock Sequence Number (Hospital defined 3-5 digits).

- Asterisks display as the numbers are entered.

5 In the RUN mode, press the number keys to new rate.

- Press 〔YES/ENTER〕.

6 NEW RATE displays with new volume.

- Press 〔YES/ENTER〕 within 10 seconds to accept the change to begin delivery.

- If 〔NO〕 is pressed, rate will default to the previously programmed rate.

7 Lock Pump.

- Pump will auto lock if Auto Lock feature is enabled.
- If manually locked, repeat steps 1 & 2, then select desired lock level.

Programming a Continuous Programming Delivery

1 Select CONTINUOUS from the Programming Menu.

2 Select PROTOCOL. Use the down arrow key to scroll and select the desired protocol by entering the number assigned to it. (two numbers required)

- A confirmation message is displayed.

- Press $\left(\frac{YES}{ENTER}\right)$ or ▐ NO ▌. If ▐ NO ▌ is selected, it will return to the protocol selection screen.

3 The concentration values will be displayed.

- Press $\left(\frac{YES}{ENTER}\right)$ to confirm as required.

4 Set the continuous delivery rate or press $\left(\frac{YES}{ENTER}\right)$ to confirm pre-programmed parameter.

- Pre-populated value can be set to zero by pressing the ▐CHANGE▌ key, then reprogram the continuous rate.

- A rate will be displayed.

- Press $\left(\frac{YES}{ENTER}\right)$ to confirm.

- If the rate is above the Upper Hard Limit, the limit will be displayed. You must press $\left(\frac{YES}{ENTER}\right)$ to edit the rate.

```
UPPER HARD LIMIT
IS
      12.⁵ mcg
  ENTER TO EDIT
```

5 Enter VTBI (Volume to be Infused) or press $\left(\frac{YES}{ENTER}\right)$ to accept the pre-programming VTBI.

VTBI is the default value on the CONTAINER display.

Note: If KVO is programmed, increase the container size to include the KVO delivery.

To enter the total in mL when programming a concentration, press ▼ to move to the mL line. Enter the mL size when mL *flashes on the display.*

6   Select air sensitivity, if required.

7   Review the program. Press ⊙ to begin review.

8   Press ⊙ to save the program.

9   If using the PURGE key to prime the pump set, press PURGE now.

WARNING: ALWAYS disconnect the pump set from the patient before priming or purging.

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*Note: For information on **Rate Titration**, **Piggybacking**, and **Changing a Continuous Program**, please refer to the complete System Operating Manual.*

Programming a Weight Dosed Delivery

1 Select WEIGHT DOSED from the Programming Menu.

2 Select PROTOCOL. Use the down arrow key to scroll and select the desired Protocol by entering the number assigned to it (two numbers required).

  • A confirmation message is displayed.

  • Press $\left(\frac{YES}{ENTER}\right)$ or NO . If NO is selected, it will return to the protocol selection screen.

3 Enter the patient weight (if required). Press $\left(\frac{YES}{ENTER}\right)$.

4 The concentration values will be displayed.

  • Press $\left(\frac{YES}{ENTER}\right)$ to confirm as required.

5 Set the continuous delivery rate or press $\left(\frac{YES}{ENTER}\right)$ to confirm pre-programmed parameter.

  • Pre-populated value can be set to zero by pressing the CHANGE key, then reprogram the continuous rate.

  • A rate will be displayed.

  • Press $\left(\frac{YES}{ENTER}\right)$ to confirm.

  • If the rate is above the Upper Hard Limit, the limit will be displayed. You must press $\left(\frac{YES}{ENTER}\right)$ to edit the rate.

```
UPPER HARD LIMIT
IS

     25 U/hr
ENTER TO EDIT
```

6 Enter VTBI (Volume to be Infused) or press $\left(\frac{YES}{ENTER}\right)$ to accept the pre-programming VTBI.

VTBI is the default value on the CONTAINER display.

Note: If KVO is programmed, increase the container size to include the KVO delivery.

To enter the total in mL when programming a concentration, press ▼ to move to the mL line. Enter the mL size when mL *flashes on the display.*

7 Review the program. Press ⬇ to begin review.

8 Press (YES/ENTER) to save the program.

9 If using the [PURGE] key to prime the pump set, press [PURGE] now.

WARNING:	ALWAYS disconnect the pump set from the patient before priming or purging.

*Note: For information on **Auto KVO, Rate Titration, VTBI Titration, and Changing a Weight Dosed Program**, see the complete System Operating Manual.*

Programming a Precedex® (dexmedetomidine hydrochloride injection) Delivery

If configured and used by your facility, you can program a Precedex® delivery while programming a Weight Dosed therapy.

Note: Titrate rate, loading dose, and titrate VTBI are available in Precedex® therapy.

To program a Precedex® delivery:

1 Select WEIGHT DOSED from the Programming menu.

2 Select PROTOCOL. Use the down arrow key to scroll and select Precedex® by entering the number assigned to it (two numbers required).

   • A confirmation message is displayed.

   • Press $\left(\frac{YES}{ENTER}\right)$ or **NO** . If **NO** is selected, it will return to the protocol selection screen.

3 Enter patient weight (if required). Press $\left(\frac{YES}{ENTER}\right)$.

4 The concentration values will be displayed.

   • Press $\left(\frac{YES}{ENTER}\right)$ to confirm as required.

5 Set the continuous delivery rate or press $\left(\frac{YES}{ENTER}\right)$ to confirm pre-programmed parameter.

   • Pre-populated value can be set to zero by pressing the **CHANGE** key, then reprogram the continuous rate.

   • A rate will be displayed.

   • Press $\left(\frac{YES}{ENTER}\right)$ to confirm.

   • If the rate is above the Upper Hard Limit, the limit will be displayed. You must press $\left(\frac{YES}{ENTER}\right)$ to edit the rate.

```
UPPER HARD LIMIT
IS
      25 U/hr
   ENTER TO EDIT
```

6 Enter VTBI (Volume to be Infused) or press (YES/ENTER) to accept the pre-programming VTBI.

VTBI is the default value on the CONTAINER display.

Note: If KVO is programmed, increase the container size to include the KVO delivery.

To enter the total in mL when programming a concentration, press ▼ to move to the mL line. Enter the mL size when mL *flashes on the display.*

7 The pump displays PROGRAM A LOADING DOSE? Press (YES/ENTER) to program a loading dose or NO to review the program.

8 If programming a loading dose, specify a dose, time, and rate using the ▼ key to toggle between the parameters, and then press (YES/ENTER).

9 Review the program. Press ▼ to begin review.

10 Press (YES/ENTER) to save the program.

11 If using the [PURGE] key to prime the pump set, press [PURGE] now.

WARNING:	ALWAYS disconnect the pump set from the patient before priming or purging.

12 Press (START) to begin the Precedex® delivery.

Programming Tips

Pain Management

This therapy allows programming of a continuous only, bolus only, or continuous with bolus delivery.

♦ In Continuous + Bolus protocols, you can enter zero for either the continuous rate or the bolus dose when entering or changing a program. The continuous rate and bolus dose cannot be zero at the same time.

♦ The default bolus delivery rate is 125 mL/hr.

Note: The delivery rate is administered in increments of .01.

♦ The maximum continuous delivery rate is 25 mL/hr.

♦ A loading dose may be set during programming, which can be delivered after programming and priming are complete. The default loading dose rate is 125

mL/hr. Rate, bolus dose, concentration can be programmed in increments of 0.01.

- Priming using $\boxed{\text{PURGE}}$ is only allowed before $\boxed{\text{START}}$ is pressed or after one of the following events occur:
  - Complete Review of New Program
  - New Container
  - Air-in-Line Alarm
- VTBI can be titrated.

CAUTION: **When using PCA vials (except in a lockbox with a spring assist mechanism), the system may underdeliver. System delivery accuracy could be reduced by as much as 5%.**

Note: New Container is allowed only when at least 1/2 of the container volume has been infused or 1 hour has elapsed since starting the infusion.

The use of a lockbox is recommended with pain management protocols. Refer to Chapter 15 Optional System Components, page 165, for instructions on using a lockbox with the GemStar® Pump.

Tip: The Programming Worksheet at the end of this chapter lists the minimum and maximum values allowed for this therapy. Use copies of the programming worksheet to record program values before programming the pump.

Continuous

This therapy allows programming of a continuous delivery.

- Optional KVO (Keep Vein Open) can be set during programming.
- The rate can be titrated while the pump is infusing.
- An optional secondary container can be "piggybacked" on the primary container during regular delivery using a GemStar® Piggyback Pump Set. Refer to *Piggybacking* in this chapter for more information.

Tip: The Programming Worksheet at the end of this chapter lists the minimum and maximum values allowed for this protocol. Use copies of the programming worksheet to record program values before programming the pump.

Weight Dosed

This therapy allows programming of delivery rate as a function of body weight.

- ♦ The air sensitivity in a Weight Dosed program is automatically set to ON. This setting can be changed through the Options Menu after programming is complete.

- ♦ The pump automatically delivers KVO (Keep Vein Open) after the programmed VTBI (Volume To Be Infused) has completed.

- ♦ The rate can be titrated while the pump is infusing.

- ♦ VTBI can be titrated.

Tip: The Programming Worksheet at the end of this chapter lists the minimum and maximum values allowed for this protocol. Use copies of the programming worksheet to record program values before programming the pump.

WARNING: When using a vented drip set, ALWAYS use an air-eliminating filter or set the air sensitivity to either ON or 2 mL.

CAUTION: When infusing short-half-life drugs (i.e., those dosed with units of mcg/kg/min) at very low rates (0.8 mL/hr or less) the rate may be too slow for that drug. Consider using a lower drug concentration with these drugs so a pump rate above 0.8 mL/hr can be used.