



Using the Sigma Spectrum Infusion Pump

Expanded Scope Protocol for Interfacility Transfer
Intravenous Infusion Pump Use During Interfacility
Transfers

Using the Sigma Spectrum Infusion Pump

Objectives:

- Able to identify the MMC EMS Expanded Scope of Practice regarding the use of IV pumps
- Able to verbalize/demonstrate loading and unloading of IV tubing set
- Able to verbalize/demonstrate programming and initiating medication infusions
- Able to titrate an infusion
- Able to stop an infusion
- Able to identify alarms and troubleshoot problems with the pump

Memorial EMS – Expanded Scope of Practice

- Permits intravenous infusions during facility-to-facility transfers of critically ill patients.
- Under the expanded scope, medics can maintain the infusion of the following medications:
 - ✓ Heparin Sodium
 - ✓ Nitroglycerin
 - ✓ Dopamine
 - ✓ IV Fluids with Potassium Chloride (KCl) added
 - ✓ Amiodarone
 - ✓ Cardizem
 - ✓ Antibiotics
 - ✓ tPA
 - ✓ Levophed
 - ✓ Protonix
 - ✓ Dobutamine
 - ✓ N-Acetylcysteine
 - ✓ Blood Products
 - ✓ Multivitamin Banana Bag
 - ✓ Octreotide
- Dopamine and nitroglycerin can be titrated en route.
- Any drip can be stopped at any time.

Using the Sigma Spectrum Infusion Pump



- Loading and unloading the IV tubing set
- Programming/initiating a medication infusion
- Titrating an infusion
- Stopping an infusion
- Pump alarms/troubleshooting

Sigma Infusion Pump Tubing

CLEARLINK System
CONTINU-FLO Solution Set
112' (2.8 m)
2 Luer Activated Valves
Male Luer Lock Adapter

Fluid path is sterile, nonpyrogenic.
Cautions: Do not use if tip protectors (1) are not in place. Do not place on sterile field.

Directions: Use aseptic technique.
Close regulating clamp (7). Insert spike (2) into solution container. Fill drip chamber (3) to fill line. Open regulating clamp (7). If flow does not start, squeeze plastic container. Insert and tap check valve (4) to purge air during priming. Prime set, purge air. Close regulating clamp (7) until roller meets bottom of frame. Attach male Luer adapter (8) to vascular access device using a firm push and twist motion and then engage the Luer lock collar to prevent accidental disconnection. Ensure downstream clamp is open. Swab Luer activated surface with preferred antiseptic prior to first use and before every subsequent connection. Access Luer activated valve (5) by firmly pushing male Luer of connecting device directly against Luer activated surface and rotate until connection is secure.

To properly set flow, always close regulating clamp (7) until roller meets bottom of frame, then reopen to establish flow rate. Repeat procedure if adjusting clamp from fully open position.

Caution:
Do not allow air to be trapped in set. Puncturing set components may cause air embolism. Do not swab Luer activated surface (5) when downstream clamp is closed or valve is recessed. Ineffective swabbing may result. Replace set if valve remains recessed. Do not access Luer activated valve with needles or cannula. Attempting such access will render the product damaged, replace immediately. Use of Luer lock connection is recommended. If Luer slip connection is used, insert into valve using a firm push and twist motion. Do not leave Luer slip unattended. Trace lines before connection. Do not connect any compressed gas device to intravenous injection sites.
Rx Only. Single use only. Do not resterilize.

Notes:
This product does not contain natural rubber latex. This product contains DEHP. To stop flow without disturbing regulating device (7), close slide clamp (6). Flush Luer activated valve (5) after injection to prevent inadvertent mixing of incompatible medications/fluids. Flush Luer activated valve after blood infusion. If valve cannot be cleared of blood, replace immediately. For secondary medication administration, use upper Luer activated valve (5) only. See directions for use with secondary medication set. If intermittently disconnecting set from Luer activated valve, immediately cover male Luer of connecting device with a sterile replacement protector. Replace per CDC guidelines. Lengths are approximate. For Product Information 1-800-933-0303

Baxter
Manufactured by an affiliate of Baxter Healthcare Corporation Deerfield, IL 60015 USA Made in Costa Rica 07-36-47-050

263519s
10 drops/mL Approx.



0 85412 04899 4

R13025055

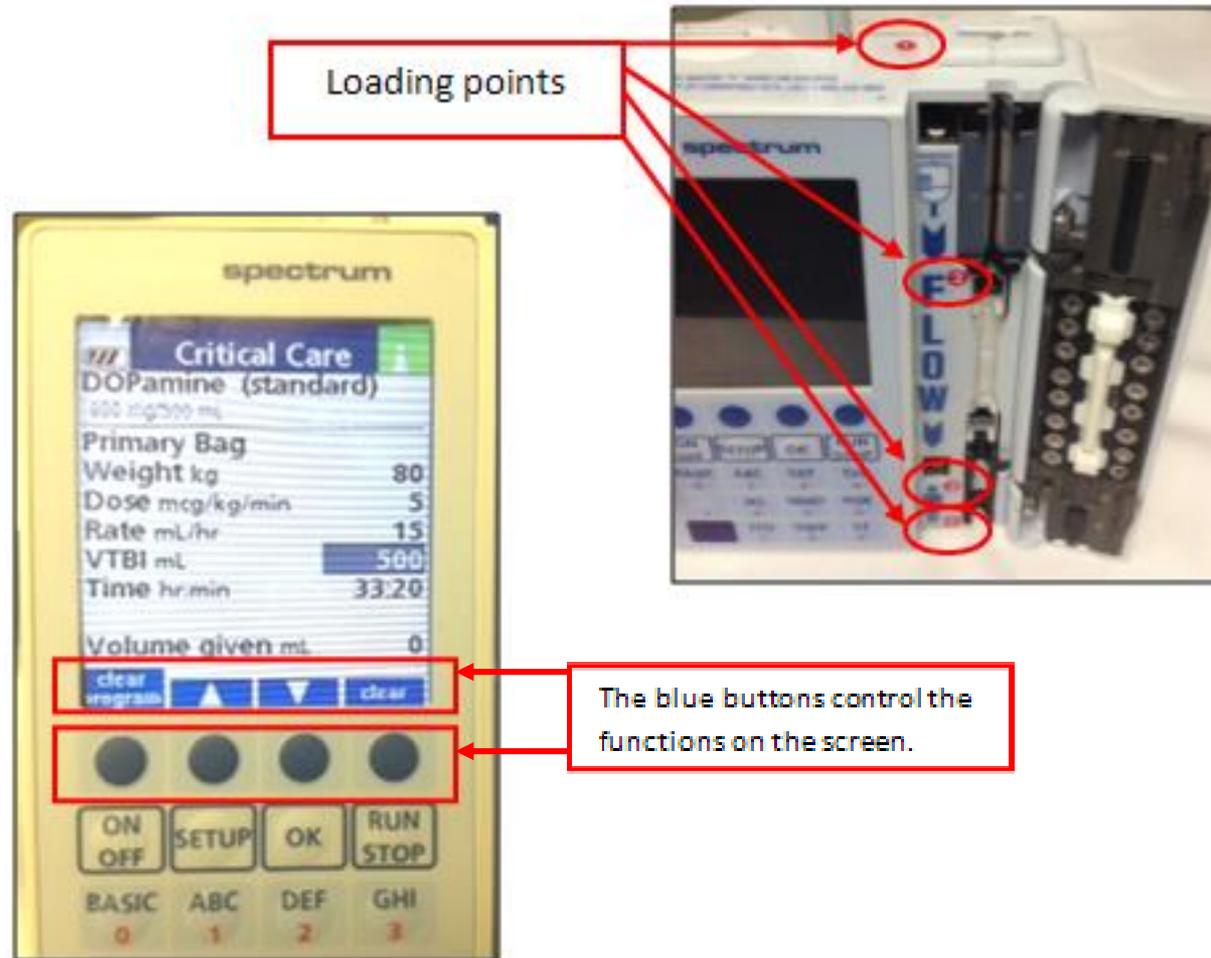


COMPATIBLE TUBING:

- Baxter Clearlink System Continu-FLO Solution Set
- 10 gtt/mL

Using the Sigma Spectrum Infusion Pump

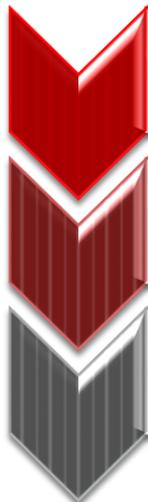
The Sigma Spectrum Infusion Pump



Loading the Sigma Spectrum Infusion Pump

- The MMC EMS Expanded Scope of Practice does not cover the initiation of medication infusions.
- Medications should already be spiked and primed.

Before loading the tubing into the pump, the medication should be:

- 
- Stopped
 - Clamped via the roller clamp **and** slide clamp
 - Disconnected from the patient

Loading the Sigma Spectrum Infusion Pump

Loading tubing into the IV pump:

After ensuring that the tubing is fully primed, hanging, and ready to continue infusion:

1. Insert the blue slide clamp into the keyhole (**loading point 1**).

The slide clamp looks like an arrow pointing downward as you insert it into the keyhole. It will only fit one way.

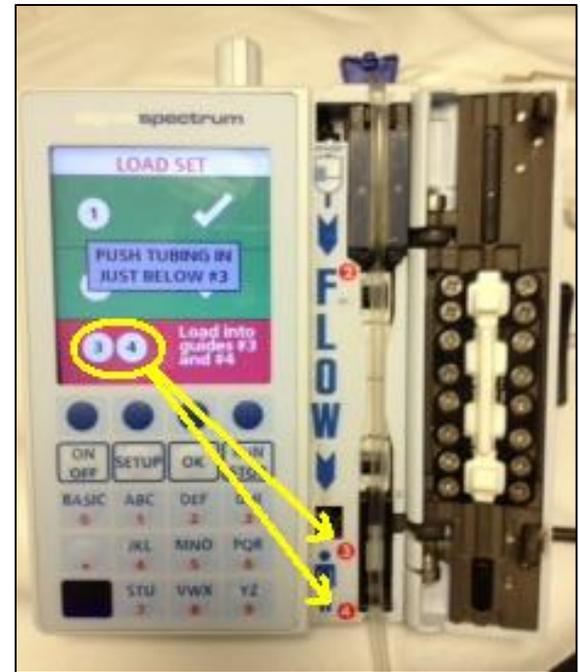


Loading the Sigma Spectrum Infusion Pump

As you insert the clamp, the door will open to load the tubing and the pump will automatically turn on.

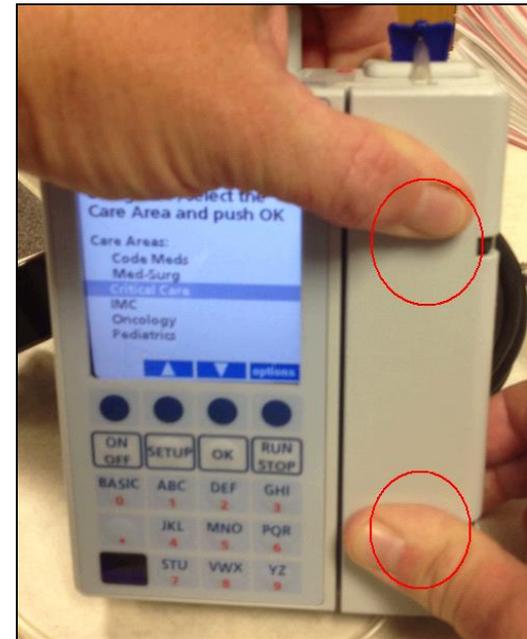
2. Pull the tubing down into the tubing channel.
3. Press the tubing into the channel at **loading points 2, 3 & 4.**

The pump will prompt you to press the tubing in at specific points if not inserted properly.



Loading the Sigma Spectrum Infusion Pump

- When all **loading points** are green checked, close the door.
 - Using two thumbs is the easiest way to close the door.
- Pull the blue slide clamp up.
 - If you don't pull the clamp out, the pump will prompt you to pull it out.
 - To remove or reposition tubing, reinsert the blue slide clamp into Point 1. The door will open.



Programming the Sigma Spectrum Infusion Pump

1

New Patient?

Is this a new patient?

Press 'yes' to clear current program.

yes

no

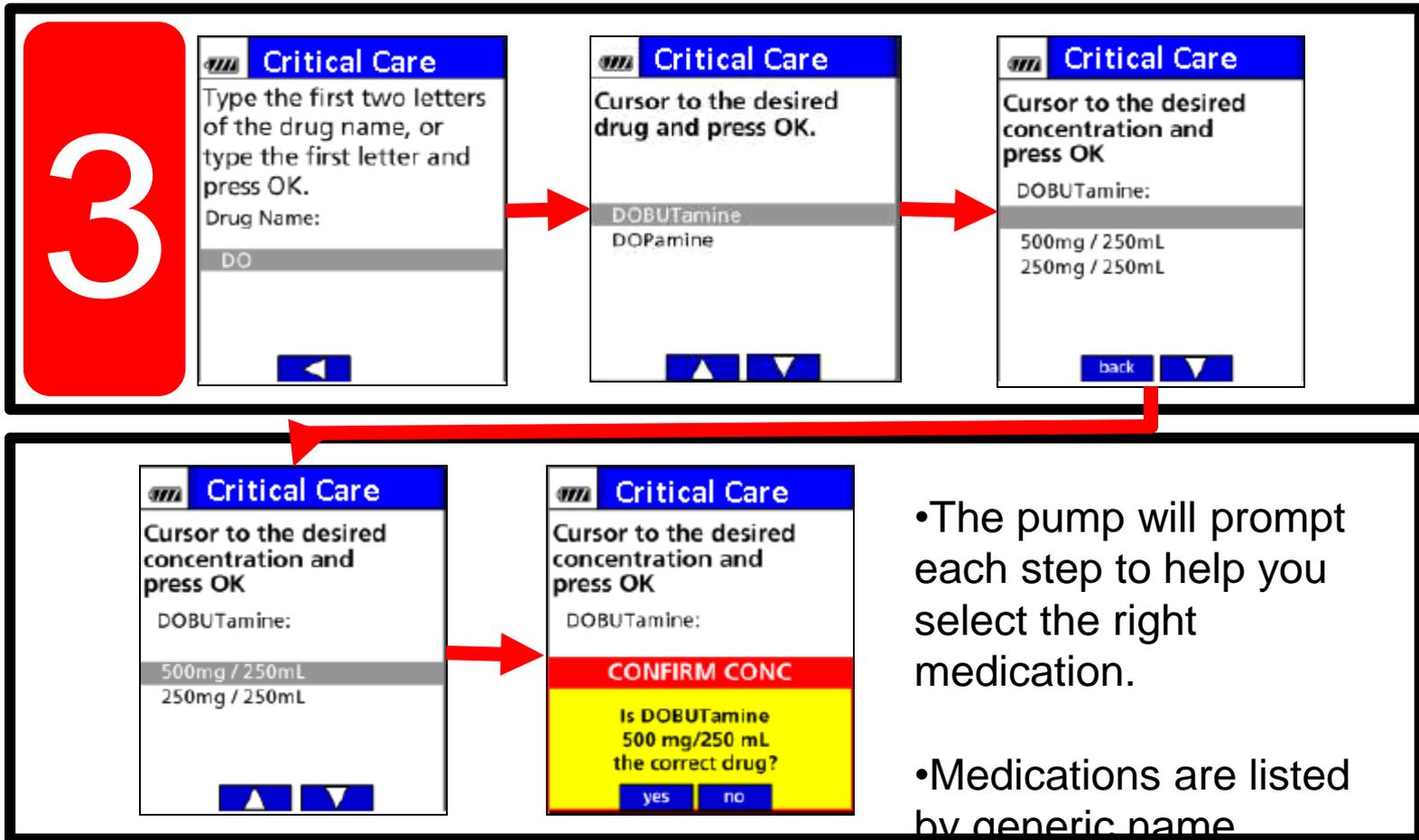
- Select “yes” to program a new infusion.
 - Selecting “no” will take you to the previously programmed medication.
 - Pre-programming medications before the IV set is loaded
 - Resuming paused infusions

2



- Use the blue buttons as labeled by the screen. These labels will change with each new screen.
- Select the “Critical Care” care area.

Programming the Sigma Spectrum Infusion Pump



Programming the Sigma Spectrum Infusion Pump

4

The image shows three sequential screenshots of the Sigma Spectrum Infusion Pump interface, illustrating the programming steps for DOBUTamine. A large red box with the number '4' is on the left. Red arrows indicate the flow from one screen to the next.

Screen 1: Critical Care
DOBUTamine
Primary Bag
Using ▲▼, select Primary or Secondary Bag and press OK
clear program ▲ ▼ clear

Screen 2: Critical Care
DOBUTamine
500mg / 250mL
Primary Bag
Weight kg 0
Dose mcg/kg/min 0
Rate mL/hr 0
VTBI mL 250
Time hr:min 00:00
Volume given mL 0
clear program clear

Screen 3: Critical Care
DOBUTamine
500mg / 250mL
Primary Bag
Weight kg 70
Dose mcg/kg/min 5
Rate mL/hr 10.5
VTBI mL 250
Time hr:min 24:21
Volume given mL 0
clear program ▲ clear

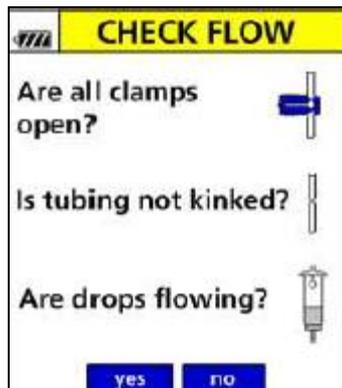
- The pump has some pre-programmed “hard stop” upper limits for medication rates.
- The pump will not allow you to exceed these limits.

Initiating the infusion

5

- Connect the tubing to the patient.
- Unclamp the roller tubing.
- Press  to initiate the infusion.

6



Observe the drip chamber for flow.



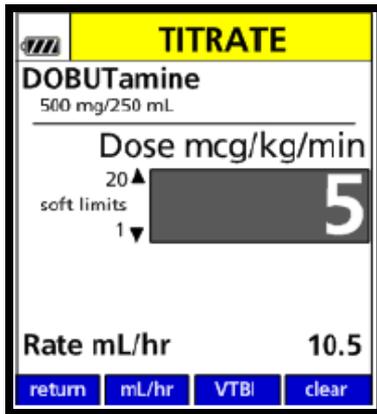
Titrating Infusions on the Sigma Pump

1



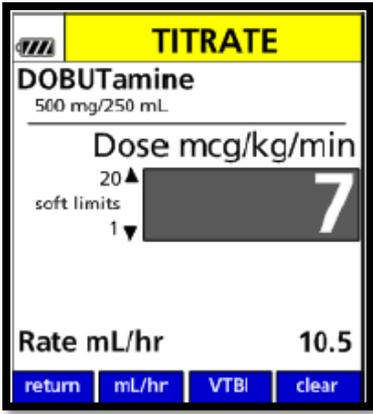
Critical Care
DOBUTamine
5
mcg/kg/min
review options titrate

- Select “titrate”
- The current dose will appear in a grey box. Dosage limits appear at the left of the box.



TITRATE
DOBUTamine
500 mg/250 mL
Dose mcg/kg/min
20▲
soft limits 1▼ [5]
Rate mL/hr 10.5
return mL/hr VTBI clear

2



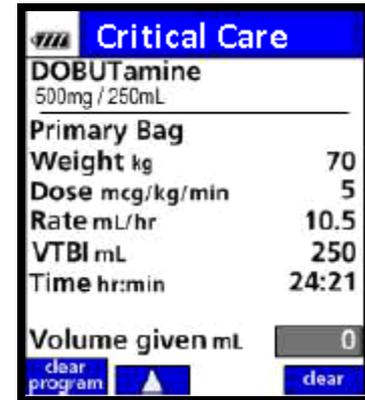
TITRATE
DOBUTamine
500 mg/250 mL
Dose mcg/kg/min
20▲
soft limits 1▼ [7]
Rate mL/hr 10.5
return mL/hr VTBI clear

- Use the number pad to select a new dose.
- Press “OK” to accept.
- If your selection exceeds soft limits, an alert will prompt you to accept the new value or return to the prior value.
- The pump will not allow you to exceed hard limits.

Additional Functions on the Sigma Pump



- Select “Review” to review:
 - current dose
 - rate
 - volume left to be infused
 - time left for infusion
 - volume given



- Selecting “options” will open the settings for alarm volume and display.
- The default settings should be kept for consistency.

Stopping an Infusion

- You can stop an infusion at any time by simply pressing “RUN/STOP”.
- If you need to stop an infusion to change to obtain additional IV access or for longer than two minutes:
 - Press “RUN/STOP”
 - Then shut off the pump by pressing “ON/OFF”
 - When you turn the pump back on, the pump will ask if this is a new patient.
 - Select “No” to resume the current programmed infusion.

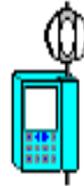
Alarms on the Sigma Pump



AIR-IN-LINE

Upstream occlusion may exist

Check for kinks and closed clamps above the pump



To advance air for aspiration from lower Y-site:

Press OK, then RUN

silence

AIR LIMIT EXCEEDED

Upstream occlusion may exist

Check for kinks and closed clamps above the pump



Aspirate air from lower Y-site or reprime set.

Press OK, then RUN

silence

Each alarm will tell you what the problem is and how to fix it.

Alarms on the Sigma Pump

UPSTREAM OCCLUSION

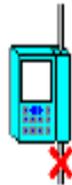
Open clamps and tube kinks above pump, then press RUN



silence

DOWNSTREAM OCCLUSION

Eliminate closed clamp, kinked tube, or clotted filter or catheter to restart pump.



silence

“DOWNSTREAM OCCLUSION”

Additional causes:

- Antecubital IV line with arm bent
- Positional IV

• Will not alarm if IV is infiltrating!

BAG NEAR



EMPTY

PUMP IS RUNNING
< 30 minutes remain
Press OK to confirm

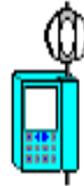
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Tips for Using the Smart Pump

- Always plug-in the pump when an outlet is available.
 - The battery takes a long time to recharge with enough power to hold during a transfer.
- Always select pre-programmed medications. Avoid basic mode.
 - Basic mode leads to greater risk of human error.
- Keep the roller clamp closed until you are ready to start your infusion.
 - When adjusting the tubing/pump, an open roller clamp can lead to an unintentional bolus.