

## PREPARING THE PUMP AND IV SETS



**WARNING:** Use the Specified Manufacturer's IV Set Type

- This label is located on the top of the pump and indicates the specific type of IV tubing that the pump has been calibrated for. The use of other manufacturer's brands or type tubing could produce pump inaccuracies that could be unsafe for patients.

1. Mount the pump on an IV pole.
2. Plug the pump's AC Adaptor into a powered outlet receptacle, if available.

*NOTE:* It is recommended that the Spectrum Pump's AC Adaptor be plugged into a powered outlet receptacle whenever possible.

3. Select a compatible IV set. See "Compatible IV Sets", beginning on page 72.

Select only IV sets made by the manufacturer listed on top of the pump. IV sets must be of standard stiffness and diameter. Performance can not be achieved using stiff, large, or small diameter tubing. Contact SIGMA for compatible standard IV set lists and for special SIGMA blood, nitroglycerin and lipid sets.

*NOTE:* Pumped-on tubing should not be re-loaded into the pumping channel (to avoid nuisance alarms and to maintain flow rate accuracy).

4. Prepare IV fluid containers and prime IV sets:
  - Fill drip chambers approximately halfway.
  - Use standard gravity IV set priming technique to purge air from sets and all Y injection sites.
  - Close the roller clamp 12" below the upper Y injection site.
  - Allowing IV solutions to warm to room temperature before use will reduce nuisance air-in-line alarms.

## Loading an IV Set



**WARNING:** Do Not Allow Uncontrolled Gravity Flow

When loading a primed IV set, ensure, before pump manipulation, that the roller clamp below the pump is in the closed position. To open the pump door, the IV set's slide clamp must first be closed (thus providing "set-based anti-free flow" protection). Do not open the slide clamp when the door is open or during and after IV set unloading. This can cause dangerous, uncontrolled free flow to occur. During IV container changes, always close the set's roller clamp. When the set is in the pump and the door is closed, the slide clamp can safely be opened. If gravity flow is to be used, the pump door will be open or the set will be outside the pump. Verify gravity flow is maintained at the intended rate whenever the pump door is open and when the set is outside of the pump.



**WARNING:** When the set's slide clamp is removed from the pump's keyhole, a fluid bolus will occur (maximum of 0.1 mL) in the IV set if the administration set is loaded in the pump.



**WARNING:** Load tubing directly from the slide clamp to the top of the tubing channel. Improper IV set loading will result in a no flow condition to the patient as well as possible back flow of blood from the IV set into the IV tubing and/or occlusion/air-in-line alarms.

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**CAUTION:** Accuracy

Refer to trumpet curves for flow rate accuracy as a function of short infusion durations. See "APPENDIX B - Flow Rate Accuracy", beginning on page 92.

The upstream occlusion detector may not detect partially occluded tubing. Always check to ensure the IV set's clamp is not closed above the Spectrum Pump and respond appropriately to all primary and secondary check flow prompts.

Small bore catheters or needles may cause excessive back pressure at high flow rates. Size the catheters according to expected flow rate and fluid viscosity.

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1. Inspect the IV set to be loaded into the pump and locate a section that is free of kinks, bends or creases.
  2. Position the slide clamp 6" to 8" below the upper Y injection site. Position the roller clamp 12" - 14" below the set's upper Y injection site.
  3. Press the ON/OFF key.
  4. Insert the slide clamp into the keyhole (loading point #1) at the top of the and press down until the door opens. Slide clamp must remain in the keyhole during set loading.
  5. Observe the Direction of Flow diagram, left of the pumping mechanism with the door opened.

6. Load the primed IV set tubing into the tubing channel:
  - Load the tubing from the top to bottom of the tubing channel. Confirm the tubing from the IV container enters the back of the slide clamp and exits the front of the slide clamp prior to loading the tubing section into the pump channel.
  - Make sure the tubing is taut.
  - Push the tubing into loading point #2 and then loading points #3 and #4.
7. The tubing is properly loaded when the screen displays three green bars and check marks for all four loading points.
8. Close the door by pressing the upper and lower corners near the door hooks.
9. Remove the slide clamp from the keyhole by pressing down on the tubing around the keyhole providing strain relief. Pull the slide clamp up and out of the keyhole and confirm slide clamp is open.
10. Open the lower roller clamp.
11. With all clamps open, confirm that no drops are flowing. Remove the pump from service if drops are seen.

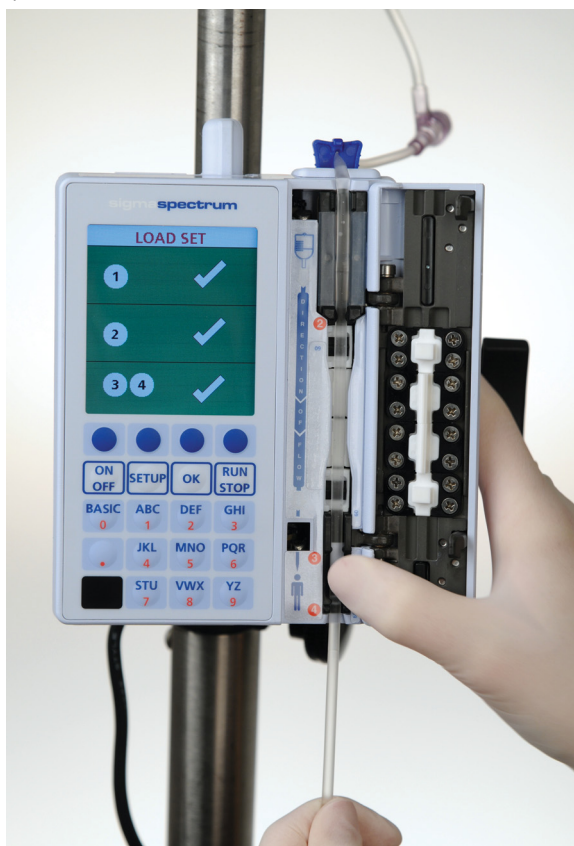


Figure 12. IV Set Loading.

## Unloading an IV Set

1. Close the roller clamp.
2. Push the slide clamp into the keyhole until the door opens.
3. Pull the tubing out from the bottom of the pump towards the top.

*NOTE:* Be sure to prevent free flow whenever the pump door is open and when the set is out of the pump. This is accomplished by having the set's slide clamp or roller clamp fully closed or by partially opening the roller clamp to achieve gravity flow.

*NOTE:* When changing IV sets or containers always keep the roller clamp fully closed (except when following standard gravity set priming procedures).

## Preparing the Pump for a Secondary Infusion

If the infusion is to include both a primary and secondary bag and IV set, set up the bags and IV using the following instructions:

1. Prepare primary and secondary bags and IV sets.
2. Use a primary set with an upper Y injection site and backcheck valve.

*NOTE:* Failure to prime/remove all air bubbles from backcheck valves in primary sets may cause the valve to malfunction, resulting in secondary fluid flow back up into the primary container.

3. Connect the secondary set to the primary set's upper Y injection site.
4. Using a hanger, lower the primary bag approximately 20" below the secondary bag to provide the secondary bag with a gravity advantage. This causes the primary set's backcheck valve to close, which allows secondary flow.
5. Confirm proper vent position, if applicable.