




Using the Ranger Blood/Fluid Warming System and Disposable IV Blood/Fluid Warming Sets

 Read the Ranger Blood/Fluid Warming System Operator's Manual and the Standard Flow and High Flow IV Blood/Fluid Warming Sets Instructions for Use before starting infusion.

Equipment needed: Ranger Blood/Fluid Warming System
Ranger Standard Flow IV Blood/Fluid Warming Set or
High Flow IV Blood/Fluid Warming Set
Standard Y blood administration set
Blood and/or fluids to be infused

WARNING: Do not administer fluids if air is in the tubing, as air embolism may result.

CAUTION: Do not exceed 300 mm Hg pressure during transfusion.

Set-up instructions

1. Slide the Ranger fluid warming cassette into the slot on the Ranger warming unit. It can fit in only one way. **NOTE:** Do not prime the warming set before sliding the cassette into the warming unit; the cassette must be empty and flat.
2. Remove excess air from blood or solution containers and connect the Ranger warming set to the blood/solution administration set.
3. Prime all tubing to purge air from the line.
4. **For Standard Flow IV Blood/Fluid Warming Set:**
 - a) Invert the bubble trap until it is full.
 - b) Turn the bubble trap right side up and prime the patient line.
 - c) Place the bubble trap into the holder on the warming unit. Continue with step 5 below.**For High Flow IV Blood/Fluid Warming Set:**
 - a) Invert the drip chamber and fill 2/3 full. Turn drip chamber right side up and continue priming the set.
 - b) Close the clamp below the bubble trap and allow lower chamber to fill. Tap the bubble trap against warming unit to expel any trapped air.
 - c) Place the bubble trap into the warming unit holder.
 - d) Open all clamps until the patient line is fully primed. Continue with step 5 below.
5. Close all clamps on the warming set.
6. Turn the Ranger warming unit ON. When the temperature display reads 41-42°C, the unit is ready for use.

NOTE: Pressure bags may be used with the Ranger warming unit.

Removing air from the warming set after it is primed or during infusion

For Standard Flow IV Blood/Fluid Warming Set:

1. Close the clamp between the injection port and the patient connection.
2. Remove the bubble trap from the warming unit holder and turn it upside down.
3. Insert a syringe into the injection port and aspirate until the bubble trap and IV line are free of air.
4. Place the bubble trap right side up in the warming unit holder.
5. Open the clamp and continue infusion.

For High Flow IV Blood/Fluid Warming Set:

The bubble trap is designed to continuously vent air from the patient line. Monitor fluid lines to make sure they are air-free. Tap bubble trap against warming unit to expel any trapped air.

Removing the warming set from the Ranger® warming unit

Standard Flow Set attached to IV bag

1. Close the roller clamp located below the bubble trap.
2. Squeeze the bubble trap continuously while closing the blue inlet clamp.
3. Release the bubble trap and allow fluid to drain from the cassette through the patient line (may take 2-3 seconds).
4. Remove the warming set from the warming unit and discard according to institutional protocol.

Standard Flow Set attached to patient

1. Close the blue inlet clamp.
2. Squeeze the bubble trap continuously while closing the roller clamp located below the bubble trap.
3. Release the bubble trap and allow fluid to drain from the cassette through the patient line (may take 2-3 seconds).
4. Remove the warming set from the warming unit and discard according to institutional protocol.

High Flow Warming Set

1. Close the blue inlet clamp proximal to the cassette and open all clamps and rollers distal to the warming cassette.
2. Allow fluid to drain from the cassette through the patient line (2-3 seconds).
3. Remove the warming set from the warming unit and discard according to institutional protocol.
4. Reconnect the patient IV line with fluid source to continue infusion without warming.

What to do in case of an alarm

An extreme change in flow rates may cause a temporary over-temperature condition, for example, from 500 ml/min to stop flow. If this happens, an audible alarm sounds and the display alternately flashes “HI” and a temperature of 43°C or higher. Open the flow to reduce the temperature. The alarm will stop when the display reads 41°C. The unit may continue to be used.

An over-temperature alarm will sound if blood or other fluids are prewarmed to above 42°C before being run through the warming unit. In this instance, turn off the Ranger warming unit and discontinue infusion. Do not prewarm fluid before infusing it through the warming unit.

Infusing very cold fluid at a very high flow rate can cause an under-temperature alarm. When this happens, the alarm sounds and the display alternately flashes “LO” and a temperature of 32°C or lower. The alarm should stop when the fluid temperature rises above 32°C.

If the alarm continues in these instances or if it sounds during conditions other than those described here, unplug the warming unit and discontinue use. See the Ranger Blood/Fluid Warming System Operator’s Manual for complete troubleshooting information.

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