

Kangaroo EPump Enteral Feeding Pump

Site Applicability

PHC Acute and Long Term Care settings

Practice Level

Basic Skill: RN, RPN, LPN

Need to Know

The Kangaroo ePump is designed to deliver enteral feeds over a broad range of infusion rates from one to 400 mL/hour. The pump can deliver feed only or a combination of feed and flushes.

When availability of pumps is less than demand refer to [Enteral Pump Prioritization](#) decision support tool.

Manual flushes: Current recommendation is for manual flushing of small-bore enteral tubes, as the pump does not deliver enough pressure to effectively clear the tube. See [Enteral Feeding: Small Bore Enteral feeding](#) protocol

Equipment and Supplies

- Kangaroo ePump
- Administration set (Open or Closed System)

Procedure

Steps

1. *Preparing the set:*

Open lid and pour required amount of prescribed formula into bag. If using the pump to flush the system add water to the second bag. Ensure you put the right liquid into the correct bag. Hang set on pole with the bottom of the bag(s) at least 18" (45 cm) above the top of the pump.

Turn pump on using the button on lower right hand of screen. PRIOR SETTINGS SCREEN will appear. Select to either keep or clear settings. LOAD SET screen will appear.

2. *Loading the set:*

Open the blue door on the right hand side of the pump. Hold the finger tab on the valve and insert valve down into the pocket on the left hand side of the rotor. Wrap flexible tubing counter-clockwise around the rotor. Lower black ring retainer (MISTIC) into the pocket on the right hand side of the rotor. Close the door. Display will read SET LOADED.

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3. *Prime the set:*

Press the PRIME PUMP button. Press the AUTO-PRIME button. For a feed bag or feed/flush bag you will get the auto-prime selection. There is also a HOLD TO PRIME FEED button and HOLD TO PRIME FLUSH button that allows you to prime the pump manually if desired. The auto-prime function may stop before the tubing is completely flushed through. To completely fill to the end of the tubing press and hold the HOLD TO PRIME button. Once prime is complete press the DONE button.

4. *Re-priming after bag empty:*

A pump set bag that has been emptied will trigger the FEED ERROR screen. The pump set bag can be refilled but you will have to re-prime the set. To do this, disconnect feeding line from patient, refill bag, press CONTINUE to begin the pump running, press HOLD, press ADJUST SETTINGS, press HOLD TO PRIME to prime the line.

5. *Program the pump:*

- To select continuous or intermittent mode select MORE on the opening menu to access the MORE OPTIONS menu. Select CONTINUOUS/INTERMITTENT under the MORE OPTIONS menu, then select continuous or intermittent mode from the SELECT MODE menu. Note that continuous is the default setting for the pump.
- For continuous feeds select ADJUST FEED option. Press FEED RATE. Press arrow buttons to program pump feed rate, anywhere from 1 to 400 mL/hr. Separate arrows control the hundreds, tens and ones. Press ENTER to exit the menu. Press VTBD to set the volume to be delivered. Press arrow buttons to program the desired volume. Separate arrows control the thousands, hundreds, tens and ones. Press ENTER to exit the menu. Press RUN to start the infusion.
- For continuous feeding mode with a feed & flush set loaded, to adjust the flush rate and timing, press ADJUST FLUSH button. Press FLUSH VOLUME to define the volume per flush occurrence. Press arrow buttons to program the flush volume in increments of 10 to 500 mL. Press ENTER to exit the menu. Press FLUSH INTERVAL to define time interval between starts of flushing. Press the arrow buttons to program the time interval from 1 to 24 hours in increments of one hour. Press ENTER to exit the program. **Note** refer to enteral feeding guidelines. Manual flush may be required to ensure adequate flush pressure.
- For intermittent feeds select the ADJUST BOLUS option in the opening menu. Press BOLUS RATE to define rate of delivery. Press ENTER to exit the menu. Press NUMBER OF BOLUSES to set total number of boluses to be delivered. Press ENTER. Press VOLUME PER BOLUS to define volume to be delivered in each bolus. Press ENTER. Press BOLUS INTERVAL to define time interval between starts of bolus deliveries from 1 to 24 hours in increments of 1 hour. Press ENTER. Press RUN to start infusion.

6. *Holding infusion:*

Pump operation can be paused by pressing HOLD while it is running. The status line will indicate HOLDING. Alarm will sound after 10 minutes.

7. *Clearing volume fed:*

Press CLEAR VOL to re-zero the mL FED output status on the right hand side of the screen.

8. *Adjust settings:*

Press ADJUST SETTINGS to return to the opening menu.

9. *Resume after specified time interval:*

Press RESUME IN ____ MIN to immediately input a time in minutes in which to resume operation. Can set up to a maximum of 240 minutes.

10. *Flush now:*

During running mode the pump can be diverted to immediately perform a flush (flush on demand) by pressing FLUSH NOW in the RUNNING menu. When FLUSH NOW is pressed, the screen will prompt for the volume to be immediately flushed. Setting the FLUSH NOW flushing volume is temporary and will not change the main/periodic flushing volume previously programmed.

11. *More options:*

- Press BUZZER in the MORE OPTIONS menu to access the buzzer screen and increase or decrease the buzzer alarm volume.
- Press HISTORY in the MORE OPTIONS menu to access the history screen. Press the ► buttons to set the time history of interest. The totals of FEED mL and FLUSH mL will be shown for requested history time.

12. *Lockout settings:*

- The lockout setting is to prevent setting changes in the biotech menu. To access the biotech screen, press the power button to start the pump and press and hold the top ► button while the startup sequence (the kangaroo icon hopping across the screen) executes. You must be pressing the ► button at the end of the sequence in order to gain access to the biotech menu.
- Press LOCK SETTINGS to get a check mark that will prevent unauthorized changes. Press LOCK SETTINGS again to remove check mark. The pump can be primed and set to run, or hold when settings are locked.
- To lockout the screen, which will prevent tampering such as putting the pump into hold, use the following procedure while the pump is in running mode. Press and hold the second ► button from the top for at least 2 seconds, then press and hold the third ► button from the top for at least 2 seconds, then press and hold the second ► button again for at least 2 seconds. A padlock will be displayed on the running screen. To unlock the screen, use the same procedure again.

13. *Cleaning:*

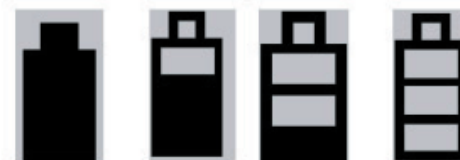
Do not immerse pump or power cord in water or other cleaning solution. Clean using a damp (not wet) sponge or cloth. A mild detergent may be used for cleaning and Cavi-wipes (ammonium chloride based solution) used for disinfection. Wipe off excess moisture with a dry cloth.

14. Battery:

There is an indicator on the pump that shows when the pump is receiving power from the wall socket. In the lower right hand corner there is an icon showing battery status. The battery will run for 15 hours if the pump is fully charged.

Battery Symbols

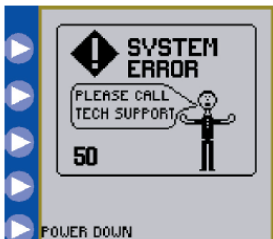
- Full charge
- 2/3 or less charge
- 1/3 or less charge
- Very low battery (15 minutes max.)

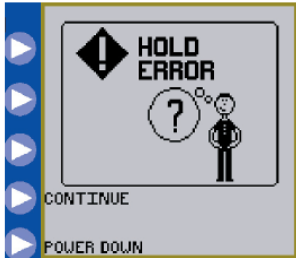
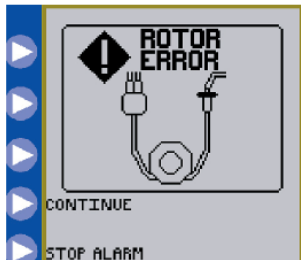
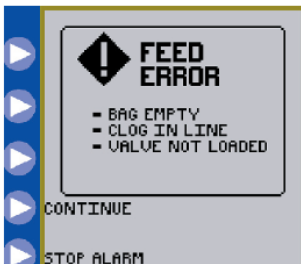
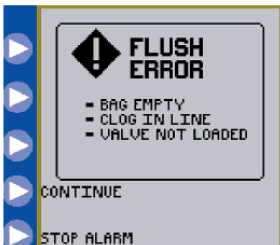


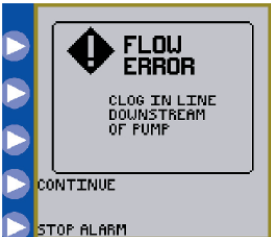
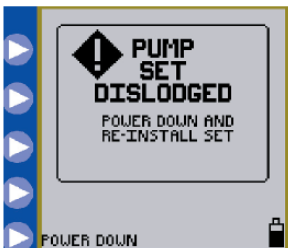
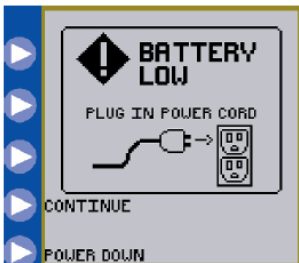

15. Alarms

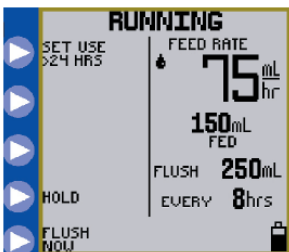
The following conditions will trigger error conditions and will activate audible and visible alarms.

- Feed or flush containers are empty
- Feed or flush tube becomes occluded between bag and pump
- Tube becomes occluded between pump and patient
- Battery low
- Unit is left in hold mode for longer than 10 minutes without input
- Pump set tubing improperly loaded around rotor
- System errors
- Feeding complete
- The MISTIC connector (on the retainer end) is removed during autopriming or running

Message	Probable Cause	Remedy
<p>System error</p> 	General form of error.	Take note of error number displayed on screen. Contact biomed.

Message	Probable Cause	Remedy
<p>Hold error</p> 	<p>Pump has been in hold, with no input, for more than 10 minutes.</p>	<p>Press CONTINUE to return to HOLDING screen, where settings can be adjusted, the pump can be set to run, or pump can be set to run in specified number of minutes.</p>
<p>Rotor error</p> 	<p>ROTOR ERROR screen appears when the pump has detected an unusual operating condition for the rotor. Generally results from a problem with the pump set tubing around the rotor.</p>	<p>Check that the pump set is not damaged and re-load the tubing around the rotor. Press CONTINUE to restart. If the error cannot be resolved press POWER to stop operation of pump and put a different pump into service</p>
<p>Feed error</p> 	<p>The FEED ERROR screen appears when the enteral formula is no longer being delivered because the bag is empty or because of a clog between the pump and the bag.</p>	<p>Check the feed line to find the occlusion causing the blockage. If the occlusion cannot be cleared, load a new pump set, prime it and press CONTINUE to restart.</p>
<p>Flush error</p> 	<p>The FLUSH ERROR screen appears when the flushing solution is no longer being delivered because the flush bag is empty or because of a clog.</p>	<p>Check the flush line to find the occlusion causing the blockage. If the occlusion cannot be cleared, load a new pump set, prime it and press CONTINUE to restart.</p>

Message	Probable Cause	Remedy
<p>Flow error</p> 	<p>The FLOW ERROR screen appears when either the feeding tube or the flushing system is no longer being delivered because of a clog.</p>	<p>Check the line to find the occlusion causing the blockage. If the error cannot be resolved, check the valve pocket in the pump set loading area for dampness or dirt, which may be a cause for a false error. Clean and dry the valve pocket. If the error still cannot be resolved, load a new pump set, prime it and press CONTINUE to restart.</p>
<p>Pump set dislodged error</p> 	<p>The PUMP SET DISLODGED screen appears if the black ring retainer (MISTIC) is not properly loaded in the MISTIC pocket in the pump set loading area.</p>	<p>Check and correct positioning of MISTIC retainer if possible. If error cannot be resolved, load a new pump set, prime it and press CONTINUE to restart.</p>
<p>Battery low</p> 	<p>The BATTERY LOW screen appears when the battery needs to be recharged. There is approximately 15 minutes of battery life remaining when this screen appears.</p>	<p>Plug the power cord in to begin recharging. The pump will automatically return to the screen that was active prior to the error. The battery will charge continuously whenever the pump is plugged into a wall outlet. Eight hours of charging is required to fully recharge the battery pack.</p>
<p>Feeding complete</p> 	<p>The FEEDING COMPLETE screen appears after the completion of the programmed feeding.</p>	<p>Press POWER DOWN to turn off the pump. Press CONTINUE to return to the SET LOADED menu.</p>

Message	Probable Cause	Remedy
<p>Pump set use over 24 hours warning</p> 	<p>The pump set usage warning indicator will blink on the RUNNING screen, where a feed and flush set has been used for 24 or more hours.</p>	<p>It is recommended to replace pump sets after this length of usage. This icon is only an informational message and does not require action.</p>

Documentation

Document total fluid intake (feed and flushes), feed type and rate in iView in Powerchart or on paper flowsheet.

Patient and Family Education

Provide patient and family education regarding tube feeding and pump as needed.

Related Documents

1. [B-00-13-10043](#) – Tube Feeding: Long Term Enteral Feeding
2. [B-00-13-10045](#) – Tube Feeding: Small Bore Enteral Feeding (Entriplex)
3. [BD-00-04-40108](#) – Enteral Pump Prioritization/Substitution and Gravity/Syringe Feeding
4. Training videos - <https://www.cardinalhealth.com/en/product-solutions/medical/enteral-feeding/resources/kangaroo-epump-enteral-feeding-pump-videos.html>

References

Covidien (2021) Kangaroo EPump Enteral Feed and Flush Pump Operating Manual. Accessed December 8 2021 at <https://www.cardinalhealth.com/content/dam/corp/web/documents/patient-recovery/Literature/kangaroo-epump-enteral-feeding-pump-operation-and-service-manual.pdf>

Persons/ Groups Consulted

General Nurse Educators

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