

Enteral Pump

Instructions for Use – Before initial use on battery power and after extended storage periods, the pump must be plugged into an AC power source for a minimum of 12 hours (pump may be operated during this time). Use AC power whenever possible. Plug in during storage to assure a fully charged battery for emergencies.

To Assemble

1. Attach pump to stand using pole clamp. Plug in cord if power is available. If using battery power do not let battery run down. **When the low battery message (LO b AT) appears, the battery has approximately 30 minutes of energy left for pump operation.**
2. Attach the Ross Patrol Pump Set securely onto a filled enteral nutrition container, if it is not pre-attached. Suspend container 20 inches above and to the side or behind pump.
3. Place sight chamber into drop detector and seat in place before priming.
4. **Remove cover** from adapter and discard or place into set cover holder on the pump pole clamp.

To Prime Set

1. With one hand on the blue connector of the pump set, **gently** pull until fluid flows.
2. Completely prime the set by allowing fluid to expel out from tubing.
3. Let fluid slowly enter sight chamber to fill line (1/4 full) **NOTE:** If sight chamber is filled above the line after priming (overfilled), invert container holding **all** tubing above sight chamber and container. With one hand on the sight chamber and the other hand on the blue connector, **gently** pull until fluid drains from tubing. Suspend container and reprime.
4. Grasp blue connector on the pump insert, loop the pump insert under the rotor (counterclockwise).
5. **Gently** pull up and then seat the blue connector in the slot above the rotor.
6. Confirm proper placement and function of enteral feeding tube.
7. Attach feeding set adapter to enteral feeding tube.

To Start Pump

1. Turn pump dial to **Set Rate**. Pump will initiate system self check procedure.
2. Select flow rate, from 1 to 300 ml/hr, by pressing the arrows and observing the entry on the display. Holding down an arrow will cause the numbers to scroll. Never use sharp objects such as pens, pencils, fingernails or paper clips to depress the keypad arrows.
3. If desired, turn dial to **Set Dose** and select dose by pressing the arrows. **NOTE:** Pump will operate without a **Dose** selected (SET DOSE at 0000).
4. Turn dial to **Run** to start feeding.
5. To see feeding volume delivered turn dial to **VOL FED**.

6. To clear the volume delivered turn dial to **CLEAR VOL**. (this occurs after four beeps).
7. When feeding is complete, turn pump dial to **OFF**. **NOTE:** If alarm sounds, turn pump dial to **HOLD**. Correct alarm condition indicated by visual display, then turn dial to **RUN** to restart feeding. For explanation of alarms, see pages 4 & 5.

PRECAUTION: The pump set and container should be replaced as needed, or at least every 24 hours, to avoid fluid contamination problems. For single patient use only. Do not store for prolonged period at extreme temperatures.

Control Dial Settings

<u>Dial</u>	<u>Function</u>
OFF/CHARGE	Stops all pump functions. Battery charges in all dial settings when pump is plugged in. The pump will retain current RATE , DOSE and VOL FED values indefinitely unless the pump is unplugged from an AC power source while in the OFF/CHARGE setting.
SET RATE	Allows flow rate to be set (1 to 300 ml/hr in 1- ml/hr increments) by pressing the key pad arrows when the pump is in the SET RATE mode. The up arrow increases the rate. The down arrow decreases the rate. Note: The LOC feature may be activated by depressing both arrows simultaneously when the dial is in the SET RATE position. Repeat procedure to deactivate. The SET RATE , SET DOSE and CLEAR VOL values cannot be changed while the LOC feature is activated.
SET DOSE	Allows dose to be limited (1 to 9999ml in 1 ml increments by pressing the keypad arrows when the pump is in the SET DOSE mode. The up arrow increases the dose. The down arrow decreased the dose. Completion of this dose triggers the dose FED alarm, NOTE: pump will operate without a DOSE selected (SET DOSE at 0000).
RUN	Only setting that activates feeding. Visual displays shows rate of flow in ml/hr and the dash on the left side of the display scrolls from top to bottom when pump is in RUN mode. NOTE: It is normal for rotor movement to be intermittent (eg, starts, stops start stops, ect) while in the RUN mode. This intermittent movement regulates the rate of flow, conserves battery life and does not affect the accuracy of the pump. The RUN mode should always be verified by the top to bottom scrolling bars on the left side of the display window.

- HOLD** Stops pumping action and audio alarms. **HOLD** is used when correcting an alarm condition or whenever pumping action is temporarily interrupted (such as when connecting a new feeding container). If pump is left on hold for more than 5 minutes, an alarm will sound and the message **SEL run** (select **RUN**) will be displayed.
NOTE: The **HOLD** timer may be programmed for duration of 1-90 minutes (in 1 minute intervals) by depressing the key pad arrows either up or down when the dial is in the **HOLD** position.
- VOL FED** Stops pumping action. The display will show the volume delivered. Pump accumulates volume delivered up to 9999 ml unless the volume is reset to zero by turning to **CLEAR VOL** (or the pump is unplugged while in the **OFF/CHARGE** mode). Upon exceeding the maximum volume allowed on the display, the value turns to zero 9 and a new accumulation begins. This is not accompanied by an alarm.
- CLEAR VOL** Stops pumping action and resets the volume fed to zero.
NOTE: The pump will “beep” four times before cleaning the volume to alert users that the dial has been turned to **CLEAR VOL**. The user must turn dial away from **CLEAR VOL** (to any other setting) before the fourth beep to avoid an unintended loss of accumulated volume.

Troubleshooting

The Ross Patrol Enteral Pump is designed to be highly reliable. As with any electromechanical device, however, problems may occur. Intermittent audio alarms are accompanied by messages on the front panel indicating the cause of the alarm for all conditions. The following tips will help correct problems that may arise.

VISUAL

CONDITION

EXPLANATION OR

DISPLAY	OR PROBLEM	CORRECTIVE ACTION
no FLO	Flow has stopped due to occlusion or empty container	Turn dial to HOLD Clear obstruction/check for kinked tubing or empty container. Refill container if necessary. Be sure sight chamber is not overfilled or covered with a film or product. Turn dial to RUN to start pump.
dose FED	Does complete VOL FED is equal to the SET DOSE	Turn dial to HOLD Turn dial to SET Dose and <ul style="list-style-type: none"> 1. Depress up arrow to increase dose OR <ul style="list-style-type: none"> 2. Depress down arrow to zero the dose setting OR <ul style="list-style-type: none"> 3. Turn dial to CLEAR VOL (after four beeps, volume fed will be cleared). Turn dial to RUN to start pump.
FrEE Flo	Free Flow Alarm	Remove from service immediately. Verify pump set is properly installed. Replace set if necessary. Confirm no drops fall when in HOLD .
SEL rAtE	Dial turned to RUN without selecting a rate	Turn dial to SET RATE . Enter a rate using the up or down arrow.
SEL run	HOLD timeout	Turn dial to RUN
E1-E9	Electronics error	Remove pump from patient immediately and contact Ross
LO bAt	Approximately 30 mins	Turn dial to HOLD then RUN . Plug power cord into

		AC outlet for 12 hours, then continue feeding. NOTE: After 30 mins, pump Alarms continuously for one minute and then shuts down.
H5	HOLD countdown	Turn dial to HOLD , if desired, program the HOLD Timer for 1-90 minutes by depressing the up or down arrow.
8888	Display test	All segments should be illuminated

Cleaning

There are no routine calibration or adjustment procedures required with the Patrol Pump. All servicing or adjustments should be referred to qualified technical personnel. For trouble-free operation, check the pump daily and clean immediately after spills occur.

While cleaning, pump should be turned off and unplugged. Do not submerge, autoclave, heat, steam, ETO or radiation sterilize the pump.

THE PUMP CAN BE CLEANED AS FOLLOWS:

Housing

- Do not spray water or cleaning solution into pump.
- Clean outside surface only. Use soft cloth and warm, soapy water.
- For general cleaning, use dishwashing detergent (nonchlorine-based) or isopropyl alcohol.
- For general disinfecting, use 70% concentration isopropyl alcohol.
- For disinfecting after exposure to AIDS or hepatitis, use 10% concentration of 5.25% sodium hypochlorite (household bleach). This solution may discolor the pole clamp. After exposure to tuberculosis, use 70% concentration isopropyl alcohol. These recommendations are not substitutes for official procedures that may differ among institutions.

Drop Detector

- Clean the drop sensors with a soft brush, soft lint-free cloth or cotton swab and warm. Then rinse the drop sensors with cotton swab and warm water. Be sure so soapy film or residue is left on lenses. Dry thoroughly. **DO NOT CLEAN WITH ALCOHOL.**

Rotor Assembly

- Clean the pump with a soft, lint-free cloth to avoid damaging the surface. Be especially careful with the operator's panel and drop detector area. If necessary, mild warm, soapy water may be used sparingly. Avoid the use of **all** strong solvents or cleaners as these will damage the pump.

- Detach the pump rotor from the pump by loosening the Allen screw. The pump rotor can then be immersed in mild warm, soapy water or detergent and rinsed under a faucet. Dry excessive moisture from the pump rotor before reassembly.
- After cleaning, plug the pump into an AC grounded electrical outlet to maintain battery charge.

Storage

- The pump should be stored away from excessive heat, cold or humidity.
- Be sure pump dial is in the **OFF/CHARGE** position.