

Vesco Q

ENTERAL FEEDING PUMP®



User Guide

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PRODUCT OVERVIEW

The Vesco Q Enteral Feeding Pump is an enteral infusion pump for the intermittent and continuous delivery of enteral fluids, intended for adult and pediatric (infant, child and adolescent) feeding therapy, in hospital and home care environments.

The Vesco Q Pump is engineered to deliver enteral fluids with an accuracy of $\pm 5\%$ at a rate of 125 ml/hr, designed to be ergonomic and portable with a user-friendly touchscreen interface. The pump has the ability to be mounted to an IV Pole with the attached pole clamp, or can be sat upright on a horizontal surface. The complete line of Vesco Q Feed Sets is designed for simple loading and unloading without a pump door.

Please follow the instructions given in the User Guide as enteral feeding therapy is a medical procedure.

INDICATIONS FOR USE

The Vesco Q Enteral Feeding Pump System is intended to be used by healthcare professionals, patients, and caregivers for the intermittent and continuous delivery of enteral fluids, for adult and pediatric (infant, child and adolescent) feeding therapy in hospital and homecare environments.

WARNINGS AND CAUTIONS

Warnings

- Only use the pump to deliver enteral fluids at settings appropriate for the patient prescribed by a licensed health care practitioner.
- Limit the volume of nutrition provided in the source container to the amount intended to be delivered in a single feeding period, considering the health status of the patient. Note it is important to consider the priming volume as outlined in Technical Information.
- Only use Vesco Q Feed Sets with the Vesco Q Pump. Vesco Q Feed Sets must be primed before connection to and use with the patient access device.
- Only use Vesco Q AC Adapter/Charger with the Vesco Q Pump per the charging instructions within this User Guide.
- Do not exceed the intended use time of the feed sets by programming a feeding regimen that exceeds 24 hours. The feed set must be replaced every 24 hours to ensure proper enteral fluid delivery and prevent bacterial growth.
- The battery capacity is an estimate that varies with use, flow rate, and run time. Charge before use if it is uncertain if the battery has enough capacity for use.
- Do not clean pump while the AC Adapter/Charger is connected to the pump or while the pump is on. Do not connect AC Adapter/Charger to an outlet after cleaning until it is dry.
- Do not modify this equipment. No parts of the Vesco Q Pump require calibration or are user-serviceable.
- Charge the Vesco Q Pump with the provided Vesco Q Power Adapter only. It is recommended when charging to not share the outlet in use with another electrical device. Do not charge with outlets that are controlled by a wall switch.

Warnings (cont.)

- The use of a surge protector is not required but is recommended. An external surge protector can provide additional safety, and will help avoid damage to the product if a surge exceeds the capability of the internal protection. Extension cords or ground fault interrupters should have no effect on the operation of the unit. If you observe any problems with the charger, you may change the connection to a different outlet or remove any extension cord that was in use. If problems continue obtain expert advice.
- Depending on the model of charger supplied with your unit the wall plug on the charger may not be compatible with your outlets. In the event an adapter is needed to connect the charger for the Vesco Q Pump i.e., travel to a foreign country, an adapter may be used. The charger is universal in accepting all frequency and voltage standards that are common around the world therefore the adapter may be a simple plug converter or a voltage level converter without problems in operation. It is the responsibility of the user to ensure the adapter has a rating of 15 Watts or more and supplies 110 to 240Vac at 50 to 60 Hz. Be sure to insert plugs fully into adapters to avoid exposed line voltage metal surfaces. If improper operation or charger overheating is observed the user must stop using the adapter and obtain expert advice.
- It is the responsibility of the user to contact TSA or whatever travel security agency for concerns bringing their medical device through security checks for travel.
- Delivering non-enteral fluids may result in serious injury.

Cautions

- The sale of this enteral infusion pump is limited by United States federal law to be only by the orders of the prescribing clinician.
- The clinician, caregiver, and patient if able should be trained in the use, care, cleaning, and proper disposal of the Vesco Q Pump, Feed Sets, and accessories.

- Properly dispose of used feed sets after 24 hours as required by local law. At the end of lifetime use for the pump, follow local e-waste disposal standards. It is the responsibility of the user to contact local authorities for the proper disposal of the pump and accessories at the end of use.
- Stop pump operation and disconnect the feed set from the patient if leaks are detected. Replace with a new feed set. Clean the pump per the steps outlined in Cleaning and Maintenance section before resuming pump operation.
- Ensure no spilled enteral fluids are on the outside of the feed set cassette when inserted to the pump, as it could interfere with pump operation. Clean spilled enteral fluids from the feed set cassette before insertion.
- The patient and feed set should be monitored while a feed is being delivered, especially in the case of patients who may not be able to inform their caretaker or clinician of their concerns or experience of the feeding.
- Ensure the speaker on back of pump case is clear so that audible alarms can be heard clearly.
- Do not use non-prescribed home-prepared, blenderized, or liquidized foods in the feed sets. Only use commercially available, prepared enteral feeding solutions and blenderized diets prescribed by the clinician.
- If no total dose is set or a continuous feed is programmed, monitor the volume of enteral fluids and use of the feed set to ensure the patient is receiving the appropriate nutrition and the feed set is being replaced.
- Set a total dose or limit the programmed continuous feed if the patient is sensitive to receiving air in the stomach. Refer to the prescribed dose and rate of feeding prescribed by the clinician.
- For use in a home healthcare environment, when not in use the pump should be stored in a way that prevents lint, dust, excessive light, pets, pests, or children from affecting pump operation.

Pediatric Considerations

- The Vesco Q Pump can be used for pediatric patients who are greater than 1 month of age. It is important to confirm that the flow rate range and accuracy are adequate for the prescribed enteral feeding therapy.
 - The flow rate range of the Vesco Q is 1 ml/hr to 600 ml/hr in increments of 1 ml/hr.
 - The pump is engineered to deliver enteral fluids with an accuracy of $\pm 5\%$ at a rate of 125 ml/hr while using Vesco Q feed sets.¹

Technical Information

- Vesco Q Feed Sets must be primed before connecting the feed set to the patient access device. It requires approximately 15 mL's of liquid to prime the Vesco Q Feed Sets. The Vesco Q Enteral Feeding Pump has options to manual prime or auto prime. Manual prime requires the user to hold the prime button down until the feed set tubing is filled. Auto prime will automatically run approximately 15 mL's of liquid through the feed set. This will vary slightly (no more than 1 mL) depending on liquid type setting and the liquid in the feed set at the time of priming. Vesco Q Feed Sets displace enteral fluid when priming. This remaining fluid in the disposable feed set should be accounted for in volume-sensitive patients by ensuring the pump set is filled with the desired volume of enteral fluids for feeding plus an additional 15 mL to account for any residual fluid.
- The user of the Vesco Q Pump includes the clinician, caregiver, and patient if able.
- All technical requests should be referred to the Vesco Q Pump Technical Service Line at 888-712-1905.

¹ The following factors may affect flow accuracy: ambient temperature, fluid temperature, pressure (e.g., head-height, backpressure, atmospheric pressure), fluid viscosity, or changes in flow rate or bolus delivery.

LED Indicator Light Key

Color	Flashing/ Solid	Indication
Red	Flashing	Failure to Power ON
Yellow	Flashing	System Warning of Medium Priority (corresponds with pop-up notification and 3 tone sound) Critically Low Battery, Shutdown
	Solid	General System Alarm of Low Priority (corresponds with pop-up notification and 2 tone sound)
Green	Flashing	General System Notifications, Successful Power On, Feed Therapy Running Without Error (pump screen on), Charger is Plugged in And Actively Charging (Pump screen on or off) *Note: This indication is overwritten by other notifications such as alarms or feed status
	Solid	Fully charged and charger is plugged in (pump screen on or off) *Note: This indication is overwritten by other notifications such as alarms or feed status
Cyan	Solid	System Reset
Magenta	Flashing	Feed Therapy Paused Without Error, Priming Complete
	Solid	Powering Up, Manual or Auto Priming, Feed Complete (corresponds with pop-up notification and sound)

PUMP COMPONENTS AND ACCESSORIES

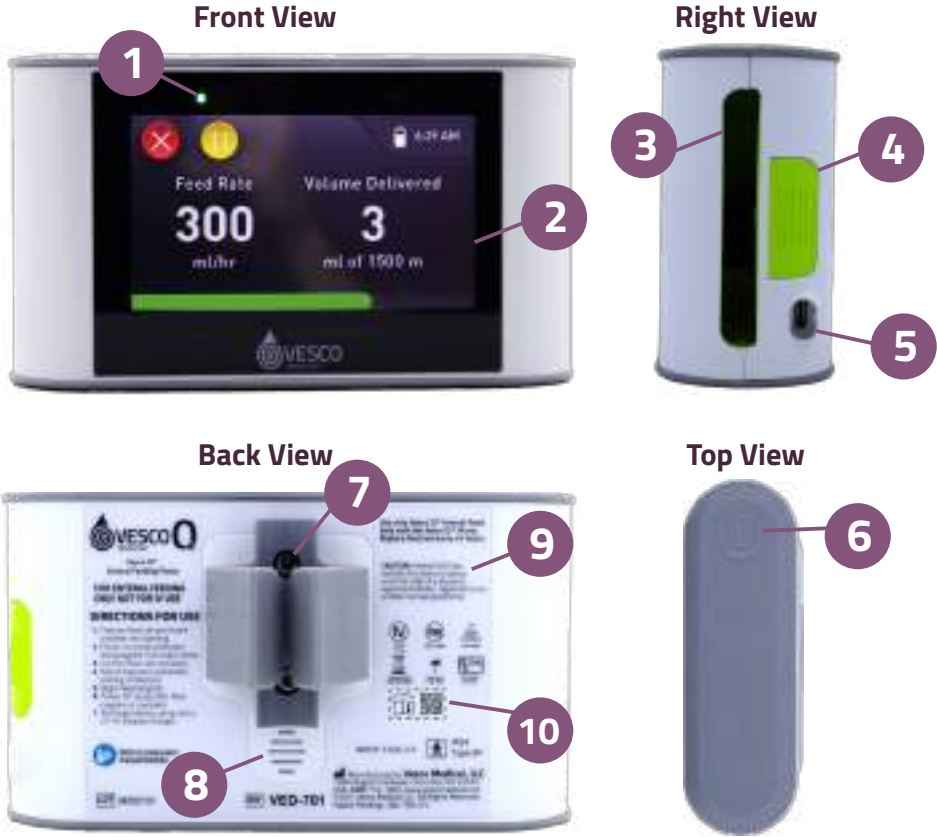


Figure 1.1. Vesco Q Pump

Front View

- 1. LED Indicator
- 2. Touch-Screen

Right Side

- 3. Cassette Opening
- 4. Cassette Eject Button
- 5. AC Adapter/Charger Connection

Top View

- 6. Power Button

Back View

- 7. Pole Clamp Attachment Site
- 8. Speaker
- 9. Pump Label Information
- 10. eIFU QR Code

Detail of Pump Label Information:

Vesco Q

ENTERAL FEEDING PUMP*

**FOR ENTERAL FEEDING
ONLY NOT FOR IV USE**

DIRECTIONS FOR USE

1. Prepare feed set and insert cassette into opening.
2. Power on pump and select feed program from main menu.
3. Confirm feed rate and dose.
4. Select manual or automatic priming of feed set.
5. Begin feed program.
6. Power off pump after feed program is complete.
7. Recharge battery using Vesco Q AC Adapter/Charger.



Refer to User Guide

REF

VED-701

LOT

MYYYDD

Use only Vesco Q Enteral Feed Sets with the Vesco Q Pump. Replace feed set every 24 hours.

CAUTION: Federal (USA) law restricts this device to sale by or on the order of a physician, registered dietitian, registered nurse, or other licensed practitioner.









IP24
Type BF

INPUT: 5 Vdc 3 A



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Patent Pending. LBL-700-3-02

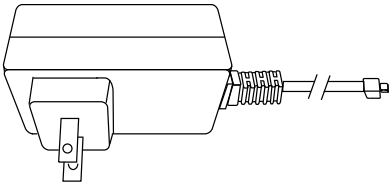
A line drawing of the Vesco Q AC Adapter/Charger. It features a rectangular body with a circular port on the front and a coiled cable extending from the side, ending in a standard two-prong electrical plug.

Figure 1.2. Vesco Q AC Adapter/Charger

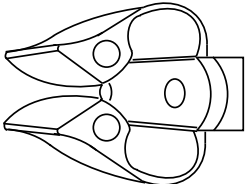
A line drawing of the Vesco Q Pole Clamp. It shows a pair of curved, pointed jaws with circular openings, designed to grip a cylindrical object like a feeding tube. A rectangular mounting bracket is attached to the back of the clamp.

Figure 1.3. Vesco Q Pole Clamp

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Symbol Key



Indicates a medical device that is not to be resterilized



Indicates that a medical device that should not be used if the package has been damaged or opened and that the user should consult the instructions for use for additional information



Indicates the date after which the medical device is not to be used



Indicates the need for the user to consult the electronic instructions for use



Indicates that caution is necessary when operating the device or control close to where the symbol is placed, or that the current situation needs operator awareness or operator action in order to avoid undesirable consequences



Indicates a medical device that has not been subjected to a sterilization process



DO NOT use this device in IV systems.



Indicates a medical device that needs protection from light sources



Indicates the medical device manufacturer.



Indicates the range of humidity to which the medical device can be safely exposed.



Indicates the temperature limits to which the medical device can be safely exposed.



(MR) unsafe, device poses unacceptable risks to the patient, medical staff or other persons within the MR environment.



Refer to instruction manual/booklet.



Indicates a medical device that needs protection from moisture.



Do not dispose of electronic products in the general waste stream.



Indicates the manufacturer's catalog number so that the medical device can be identified.



Indicates an alarm has been acknowledged. Audible portion of alarm paused until alarm is resolved.



EN 60601-1 Type BF degree of protection against electrical shock. No electrical connections to patient.



Indicates the range of atmospheric pressure to which the medical device can be safely exposed.



Indicates the date when the medical device was manufactured.



Indicates the manufacturer's batch code so that the batch or lot can be identified.



Indicates the manufacturer's catalog number so that the medical device can be identified.



The device is not made with a specified material (BOA, phthalates plasticizers, natural latex).

Display Key



Exit Current Program or Display



Start/Run/Resume Feed Program



Pause Feed Program



View Scheduled Feeds



Decrease (-) Value



Increase (+) Value



Return to Previous Display



Current Time



Battery Charge Remaining

Feed Set Types

Nutrition Source Container/ Connector Options

1. ENPlus Spike
2. 500/1000mL Bag
3. 40mm Screw Cap

Components:

Note: All sets come fully assembled with these common components

4. Transition Connector Cap
5. Transition Connector
6. ENFit Connector
7. Downstream Tubing
8. Feed Set Cassette
9. Upstream Nutrition Source Tubing
10. Bag Cap

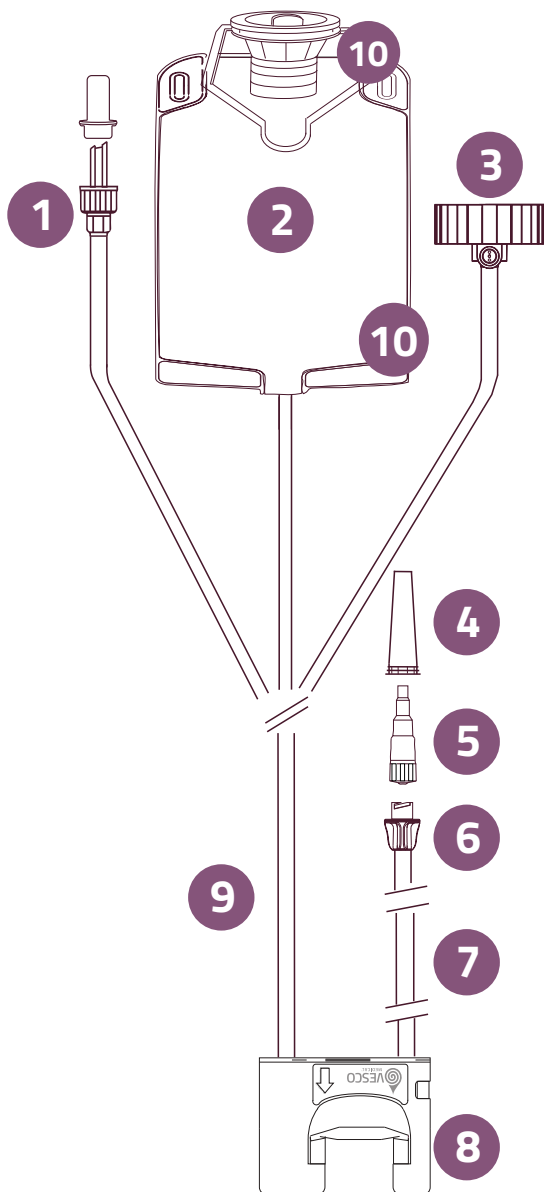


Figure 1.4. Vesco Q Feed Sets

DIRECTIONS FOR USE

Feed Set Preparation

Step 1: Fill bag, container, or securely connect prefilled container (*Figure 1.4*) with desired or prescribed amount of enteral fluids.

If using the 500mL/1000mL Bag Feed Set with ENFit® and Transition Connector: Open the cap and hold the bag upright while pouring in the enteral fluids. Secure the cap.

If using the 40mm Screw Cap Feed Set with ENFit® and Transition Connector: Secure the tip by screwing onto the enteral fluid container.

If using the ENPlus Spike Feed Set with ENFit® and Transition Connector: Insert the tip into the designated opening of the enteral fluid container. Secure the tip by screwing onto the enteral fluid container.

Step 2: Securely close and hang bag or container.

Step 3: Insert feed set cassette into the green opening on the right of the Vesco Q Pump (*Figure 1.1*) and click into place.

Step 4: Press the Power button on the top of the pump to power on. This will bring you to the main display. Pressing the power button again will power off the pump.

Step 5: After programming desired or prescribed feed, prime the feed set prior to connection with the patient access device. If the patient access device is a legacy product, use the ENFit transition connector.

Pump Operation

User Note: Follow the instructions given in the previous section titled Feed Set Preparation before beginning a feed program.

1. Starting Feed Program

- i. When first using the pump, there will be no Last Used programmed feeds available or Scheduled Feeds available to view/edit. Select the Start New Feed button on the main display (Figure 2.1).

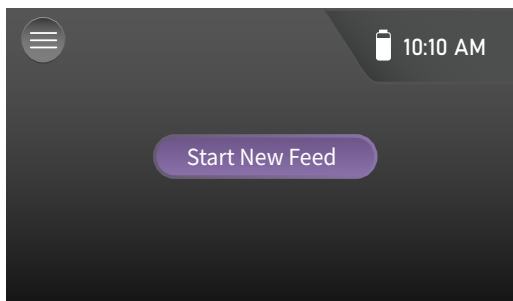


Figure 2.1. Initial Main Display.

- ii. If a Scheduled Feed is available, you may select the Calendar icon to view/edit Scheduled Feeds or select the Start New Feed button on the display (Figure 2.2).

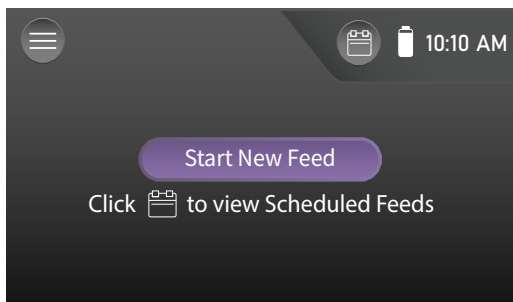


Figure 2.2. Main Display With Scheduled Feed Programmed.

- iii. This will open the Feed Programs Display (Figure 2.3). When first using the pump, the Last Used selection will be grayed out and the option to select it will not be available. Select a feed program option to continue.

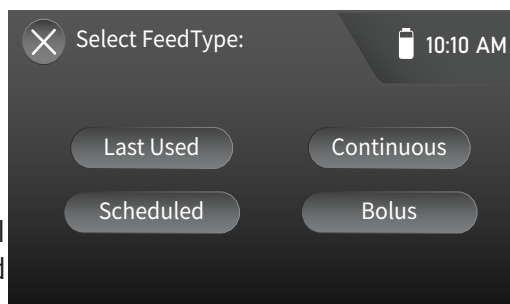


Figure 2.3. Feed Programs Display.

- iv. During the set-up of the feed program, at any point where there is an option to select the Plus (+) and Minus (-) buttons to increase or decrease a value, selecting the value directly using the touch screen interface will change the display to a keypad to manually enter the value (Figure 2.4).

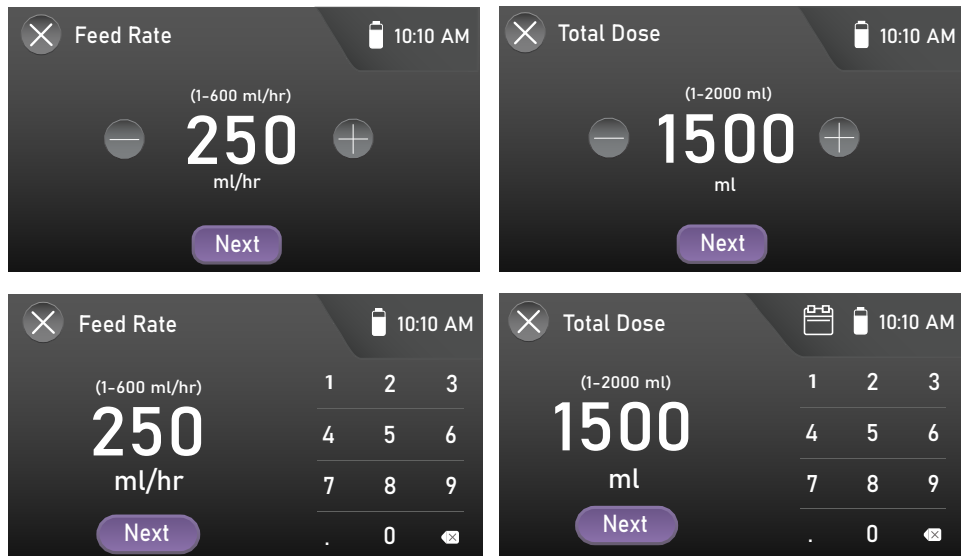


Figure 2.4. Selecting Value to Use Keypad. Selecting Feed Rate (upper left) Entering Feed Rate value after using the touch screen interface to select the feed rate value (lower left) Selecting Total Dose (upper right) Entering Total Dose value after using the touch screen interface to select the total dose value (lower right).

- v. From this point, see Step 2 for Continuous Feed, 3 for Bolus Feed, 4 for Scheduled Feed, or 5 for Last Used Feed.

2. Continuous Feed Program

- i. After selecting the Continuous Feed program option from the menu, the Feed Rate selection display will appear. Select the Plus (+) button to increase the rate and the Minus (-) button to decrease the rate (*Figure 2.5*) or select the value directly using the touch screen interface for a keypad (*Figure 2.4*).

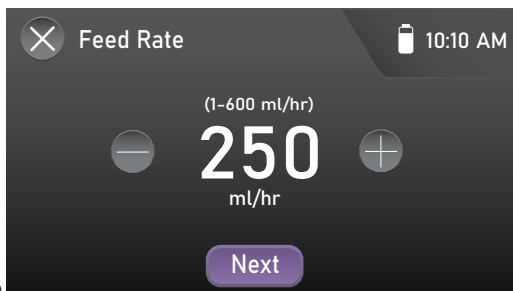


Figure 2.5. Selecting Feed Rate for Continuous Feed Program.

- ii. Select Next to continue

- iii. The Total Dose selection display will appear. Select the Plus (+) button to increase the dose and the Minus (-) button to decrease the dose (*Figure 2.6*) or select the value directly using the touch screen interface for a keypad (*Figure 2.4*).

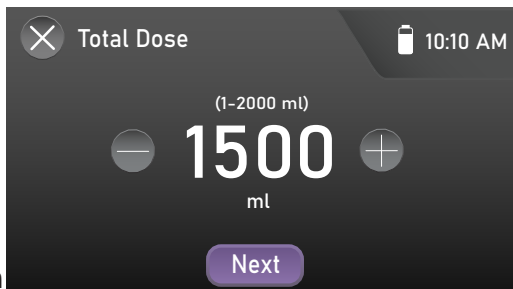


Figure 2.6. Selecting Total Dose for Continuous Feed Program.

- iv. From this point in the program, select Next to continue to Step 6.

3. Bolus Feed Program

- i. After selecting the Bolus Feed program option from the menu, the Total Dose selection display will appear. Select the Plus (+) button to increase the dose and the Minus (-) button to decrease the dose (*Figure 2.7*) or select the value directly using the touch screen interface for a keypad (*Figure 2.4*). Bolus Feed programs are automatically set to a Feed Rate of 600 ml/hr.
- ii. From this point in the program, select Next to continue to Step 6.

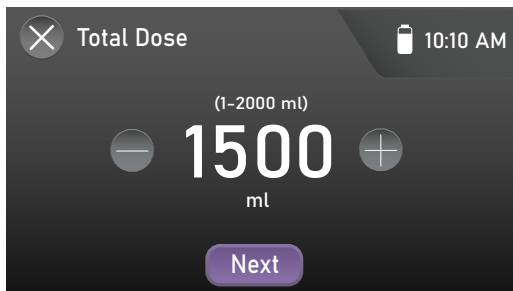


Figure 2.7. Selecting Total Dose for Bolus Feed Program.

4. Scheduled Feed Program

- i. Selecting the Calendar icon from the menu will display a Schedule Preview. To program a new Scheduled Feed, select the Scheduled option from the menu or the Add to Schedule button from the Schedule Preview display (*Figure 2.8*).

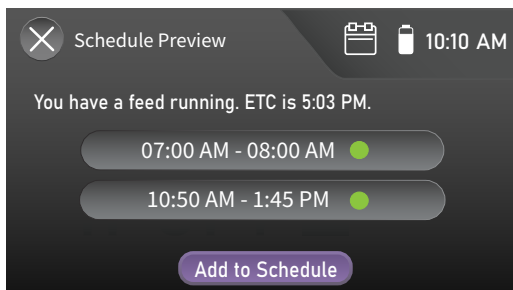


Figure 2.8. Schedule Preview from Selecting the Calendar Icon.

- ii. After selecting the Scheduled Feed program option from the menu, the Feed Rate selection display will appear. Select the Plus (+) button to increase the rate and the Minus (-) button to decrease the rate (*Figure 2.9*) or select the value directly using the touch screen interface for a keypad (*Figure 2.4*).

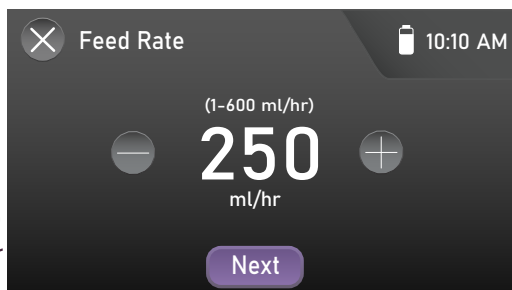


Figure 2.9. Selecting Feed Rate for Scheduled Feed Program.

- iii. Select Next to continue

- iv. The Total Dose selection display will appear. Select the Plus (+) button to increase the dose and the Minus (-) button to decrease the dose (*Figure 2.10*) or select the value directly using the touch screen interface for a keypad (*Figure 2.4*).

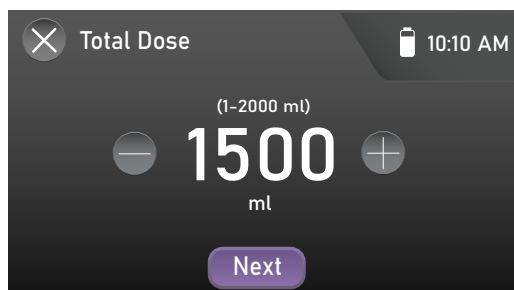


Figure 2.10. Selecting Total Dose for Scheduled Feed Program.

- v. Select Next to continue.

- vi. Scroll up or down to adjust the scheduled feed start time (*Figure 2.11*). Program the Start Time.

- vii. Select Next to continue to Review Settings.

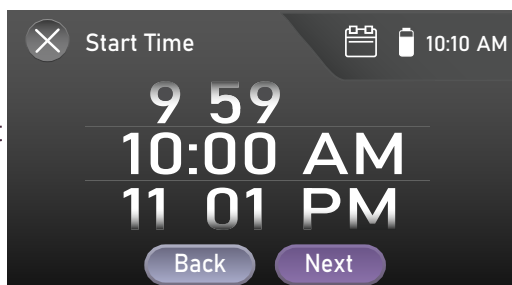


Figure 2.11. Selecting Start Time for Scheduled Feed.

viii. On the Review Settings display (Figure 2.12), select Back to return to programming the feed. Select Save Feed to add the scheduled feed to the schedule.

ix. To edit or delete a scheduled feed (Figure 2.13), select the Calendar icon to view the Schedule Preview (Figure 2.8), then select a specific feed program. Select Edit to return and change the programmed Scheduled Feed. Select Delete to remove the Scheduled Feed.

5. Last Used Feed Program

i. After selecting the Last Used program option from the menu, the display will prompt you to review the Feed Rate and Total Dose of the Last Used program. From this point, continue to Step 6.

6. Review Settings, Priming, and Running Program

i. After setting up a Bolus Feed, Continuous Feed, or Last Used program, and settings have been reviewed, select Start Feed on the Review Settings display to access priming methods (Figure 2.14).

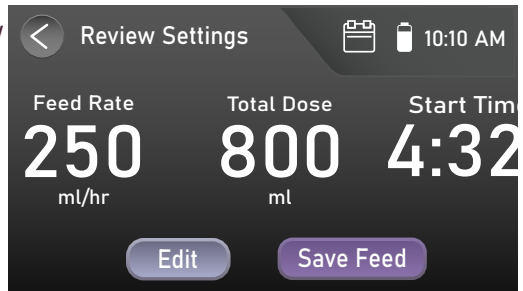


Figure 2.12. Review Settings for new Scheduled Feed.

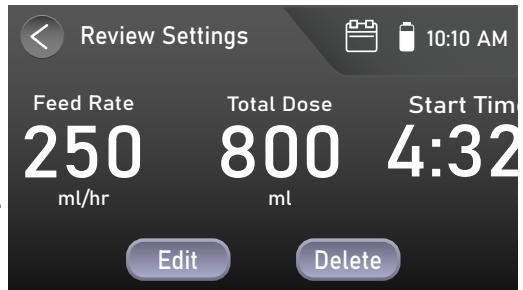


Figure 2.13. Review Settings to Edit or Delete Scheduled Feed.

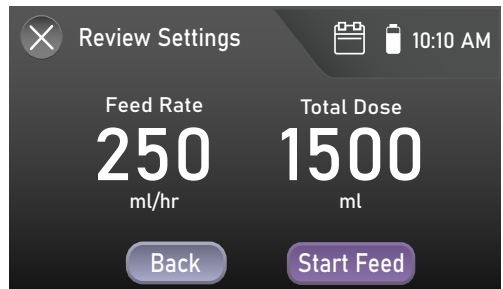


Figure 2.14. Review Settings Before Feed

- ii. The feed set must be primed before use. From the Priming Method display, select Skip to skip priming, select Manual to manually prime, or select Auto for the pump to automatically prime the feed set (*Figure 2.15*).

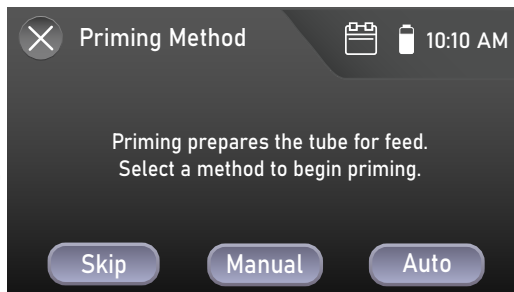


Figure 2.15. Selection of Priming Method to Start Feed

- iii. From the Manual Priming menu, Press and Hold to Prime, primes the feed set (*Figure 2.16*). From the Auto Priming menu, select Pause to pause the priming or Done to finish the priming (*Figure 2.16*).

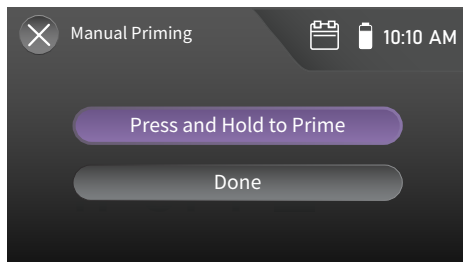
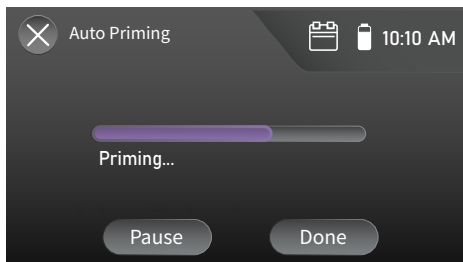


Figure 2.16. Manual Priming and Auto Priming Displays

- iv. When the priming is complete, connect the feed set to the patient access device, with the ENFit end or with the transition connector, and select Start Feed to begin (*Figure 2.17*).

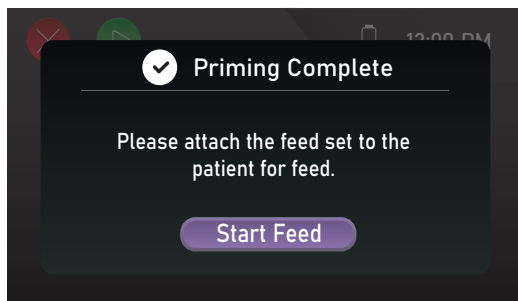


Figure 2.17. Priming Complete Display

- v. The display will show the progress of the feed until it is complete (*Figure 2.18*). At the end of the feed, the user will be redirected to the beginning feed program selection menu. Disconnect the feed set from the patient access device to replace every 24 hours.

If the Pause button is selected during the feed, the display will show options to resume the program by selecting Play or to cancel the feed program by selecting Exit (*Figure 2.19*).

If the Calendar icon is selected during the feed, the Schedule Preview display will appear with a notice that there is a current feed in progress (*Figure 2.20*).

After any feed has successfully completed, the Feed Complete screen will appear (*Figure 2.21*). The data has been saved to the feed history log, which can be accessed from the main display. Press "OK" to go back to main display screen.

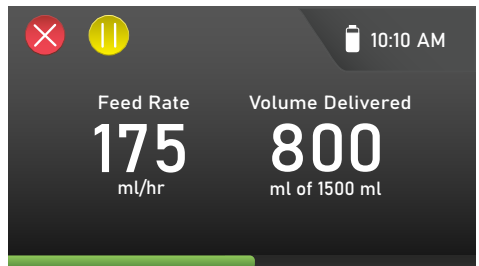


Figure 2.18. Running Feed Display

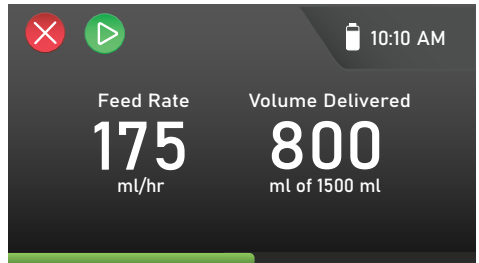


Figure 2.19. Paused Feed Display

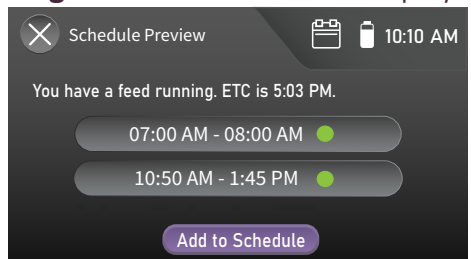


Figure 2.20. Selecting the Calendar Icon during a Running Feed

ETC stands for 'Estimated Time of Completion'

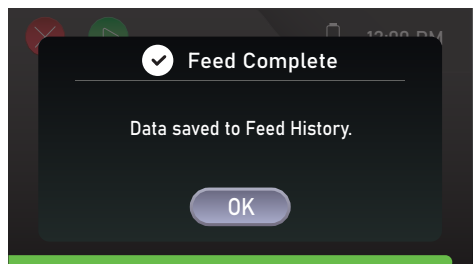


Figure 2.21. Feed Complete Display

System Settings

Click on the menu button on the top left of the main display (Figure 3.1) to see menu options.

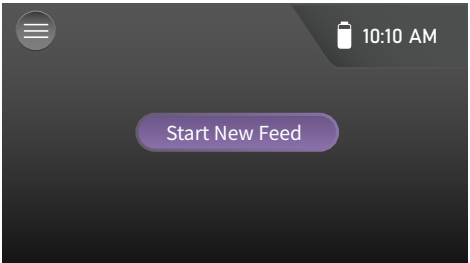


Figure 3.1. Main Display.

From the menu display (Figure 3.2) System Settings, Liquid Type, Feed History and Screen Lock can be accessed. Click on the System Settings option at the top of the screen.

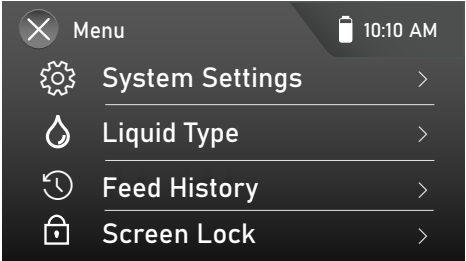


Figure 3.2. Menu Display.

In the system settings display (Figure 3.3), the following can be accessed/adjusted:

- Schedule Overlap
- Time & Date
- Brightness & Sound
- About

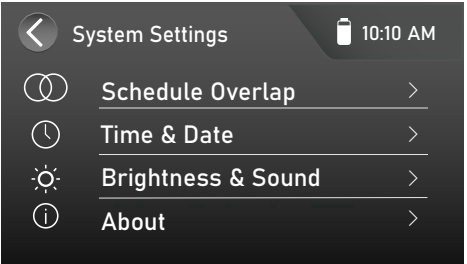


Figure 3.3. System Settings Display

Schedule Overlap

The Schedule Overlap display (Figure 3.4). allows the user to prioritize either the scheduled feed or the feed currently being programmed in the event that an overlap occurs. Press the Back Arrow on the top left of the screen to go back to the System Settings display.

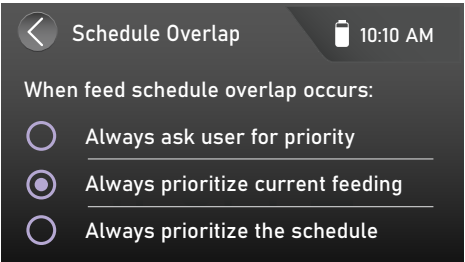


Figure 3.4. Schedule Overlap Display

Time and Date

The Time & Date display (*Figure 3.5*), allows the user to set/adjust the time and date. Press the Back Arrow on the top left of the screen to go back to the System Settings display.

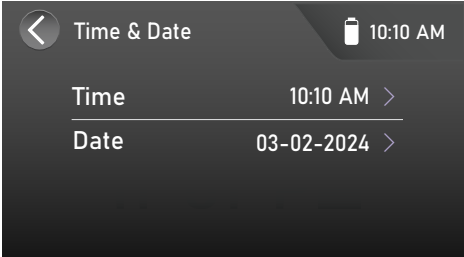


Figure 3.5. Time & Date Display

Brightness and Sound

The Brightness & Sound display (*Figure 3.6*), allows the user to adjust screen brightness and the volume for pump sounds. Press the Back Arrow on the top left of the screen to go back to the System Settings display.

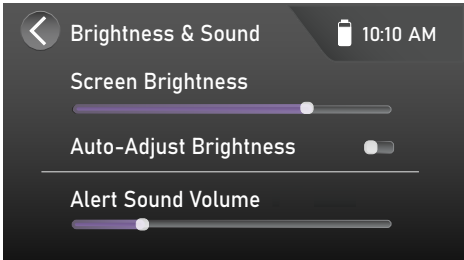


Figure 3.6. Brightness & Sound Display

Note: The pump does offer an Auto Adjust Brightness option. The brightness slider bar must be positioned all the way to the left in the dimmest position and the auto adjust slider must be on for auto adjust to work properly (*Figure 3.7*). The volume can be adjusted between four levels from a low setting to a high setting, but can NOT be set to silent.

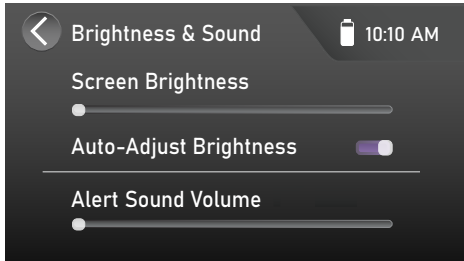


Figure 3.7. Auto-Adjust Activated

The About display (*Figure 3.8*), provides information for where to access further instructions, contact information for servicing needs, and software version of the pump. Press the Back Arrow on the top left of the screen to go back to the System Settings display. Press the Back Arrow on the top left of the screen once more to return to the Menu Display.

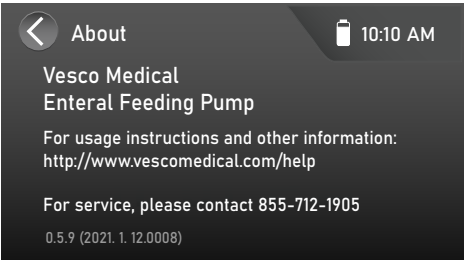


Figure 3.8. About Display.

Liquid Type Selection

User Note: The pump will remember the Liquid Type setting for all future use. The next time a different liquid type will be used, the liquid type setting should be changed accordingly.

From the menu display (Figure 3.2) click on the Liquid Type option in the middle of the screen.

The Liquid Type selection screen (Figure 3.9) has 3 options to choose from; Water/Breast milk, Standard Nutrition and Blenderized Diet. Choose the option that best describes the liquid type that will be used.

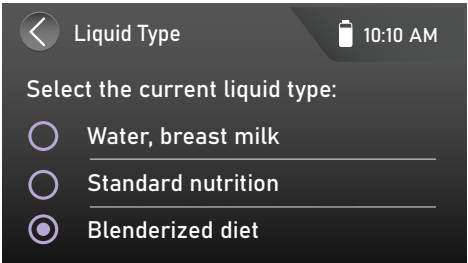


Figure 3.9. Liquid Type Selection Display.

Press the Back Arrow on the top left of the Liquid Type selection screen to go back to the Menu Display (Figure 3.2). Press the X on the top left of the Menu screen to go back to the Initial Display (Figure 3.1).

Feed History

From the menu display (Figure 3.2) click on the Feed History option. The Feed History screen (Figure 3.10 and 3.11) shows the following information for completed feeds:

- Date
- Start Time
- End Time
- Feed Type
- Feed Rate
- Total Dose

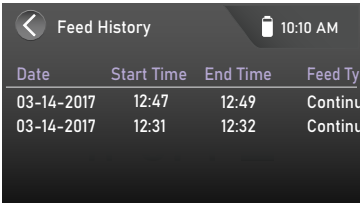


Figure 3.10. Feed History Display scrolled left.

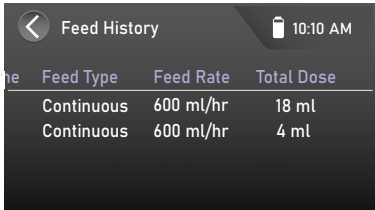


Figure 3.11. Feed History Display scrolled right.

User Note: The user can scroll left and right on the Feed History Display to see all the data saved for completed feeds. The history log will store up to 72 feeds. If the history buffer is full then oldest event will be replaced by newest event.

Screen Lock

From Menu Display, select **Screen Lock**.

Whenever the pump is powered down or in sleep mode, user will have to enter a pin to reaccess screen function.

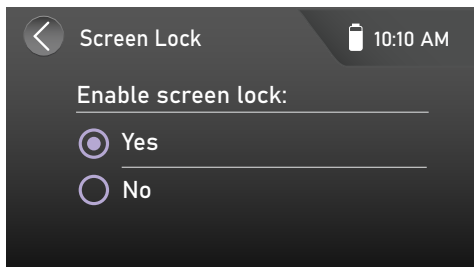


Figure 3.12 Screen Lock.

To access the Screen Lock Display, user must enter the pin number. The Screen Lock Display allows the user to enable/disable the screen lock based on their preference.

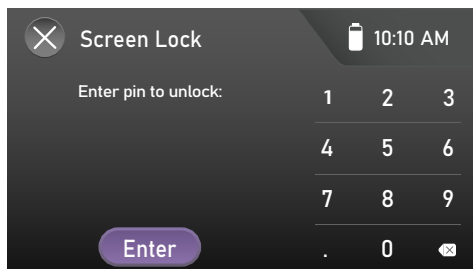


Figure 3.13 Enter Pin to Unlock

Battery Charging and Power

The Vesco Q Pump will run 24 hours at a rate of 125 ml/hr on a full battery charge. To charge the Vesco Q battery, insert the AC Adapter/Charger (Figure 1.2) into the connection on the right side of the pump (Figure 1.1) and then plug the AC Adapter/Charger into a power outlet. The pump will charge when off, on, or running a feed program.

Fully charge the Vesco Q Pump before first use. A depleted battery at 0% charge takes approximately 6 hours to fully recharge (3 hours to accommodate a full day's use).² The battery symbol in the upper right corner of the display will indicate battery charge

²Battery life is approximated based on a full battery running at 125 ml/hr. The Vesco Q pump will run 24 hours at a rate of 125 ml/hr. Varied use more or less intensive than 125 ml/hr will use up more or less of the battery charge, respectively. Battery life will reduce over the lifetime of the pump.

TROUBLESHOOTING ALARMS

LOW PRIORITY ALARMS (SOLID YELLOW INDICATOR)

The Vesco Enteral Feeding Pump utilizes sensors to detect scenarios that require an alarm. Sensor readings are monitored through buffers to filter out any miniscule spikes therefore smoothing out data. If data presents multiple or consistent outliers over a period of approximately 6 seconds then a decision is made to initiate an alarm. Once this decision is made the corresponding alarm signals are presented both audibly and visually within 100 milliseconds (the refresh rate of the LCD screen).

Insert Feed Set Cassette to Begin.

Follow the Feed Set Preparation instructions on Page 14 to prepare and attach a feed set for a feed program.

Note: After user selects Retry, the audible alarm will pause, but the LED indicator will remain until the feed set is inserted and feed is resumed by pressing the "Start (triangle)" button.

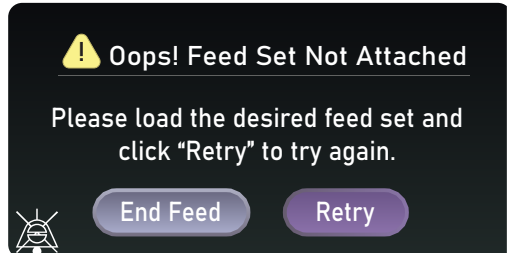


Figure 4.1. No Feed Set Attached.

Quit or Continue With a New Feed Program.

Selecting Exit (X) at any point during feed setup displays the Quit Feed Setup notification. Selecting Quit Setup will exit the feed setup and return to the Main Display. Selecting Cancel will return to the feed set up screen present when Exit (X) was selected.

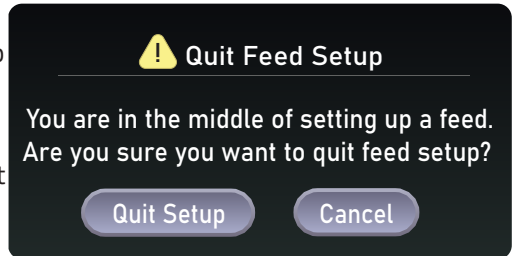


Figure 4.2. Quit or Continue Feed Setup.

Enter a Feed Rate Within the Pump Range.

The value entered was beyond the maximum feed rate limit of 600 ml/hr. Enter a value at or below 600 ml/hr.

Note: After user selects Retry, the audible alarm will pause, but the LED indicator will remain until the feed rate is set within the limits and "Next" button pressed OR "X" is pressed to return to "-/+ " setting screen.

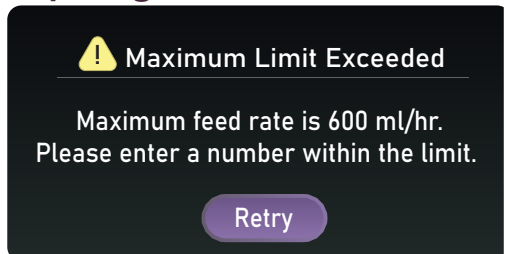


Figure 4.3. Maximum Rate Exceeded.

Enter a Total Dose Within the Pump Range.

The value entered was beyond the maximum total dose limit of 2000 ml. Enter a value at or below 2000 ml.

Note: After user selects Retry, the audible alarm will pause, but the LED indicator will remain until the feed rate is set within the limits and "Next" button pressed OR "X" is pressed to return to "-/+ " setting screen.

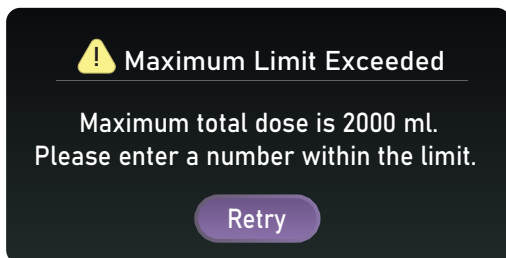


Figure 4.4. Maximum Dose Exceeded.

Enter a Feed Rate Within the Pump Range.

The value entered was less than the minimum feed rate limit of 1 ml/hr. Enter a value at or above 1 ml/hr.

Note: After user selects Retry, the audible alarm will pause, but the LED indicator will remain until the feed rate is set within the limits and "Next" button pressed OR "X" is pressed to return to "-/+ " setting screen.

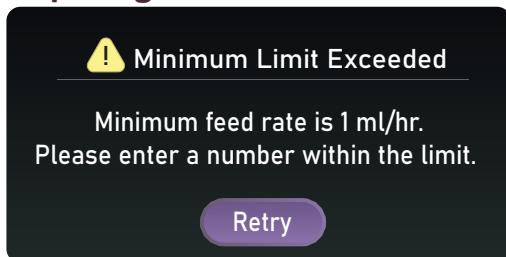


Figure 4.5. Minimum Rate Exceeded.

Enter a Total Dose Within the Pump Range.

The value entered was less than the minimum total dose limit of 1 ml. Enter a value at or above 1 ml.

Note: After user selects Retry, the audible alarm will pause, but the LED indicator will remain until the feed rate is set within the limits and "Next" button pressed OR "X" is pressed to return to "-/+ " setting screen.

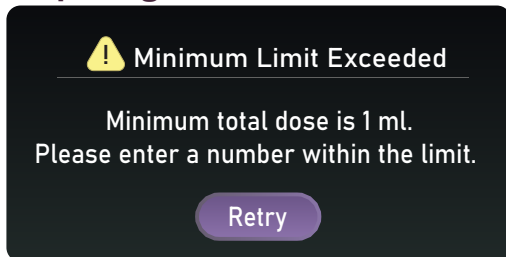


Figure 4.6. Minimum Dose Exceeded.

A Feed Program is about to Begin.

This scheduled reminder appears when a scheduled feed program is about to begin.

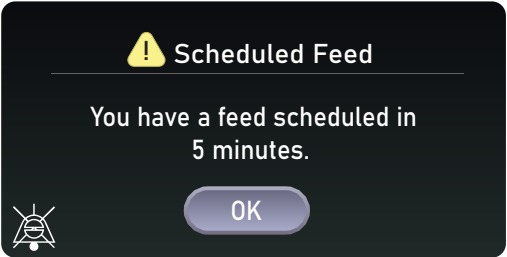


Figure 4.7. Scheduled Feed Reminder.

Feed Program Paused For 20 Minutes With No Action.

Dismiss the alert with Cancel or take action on the feed program by selecting End Feed.

Note: After user selects Cancel, the LED indicator will remain until the feed resumes.

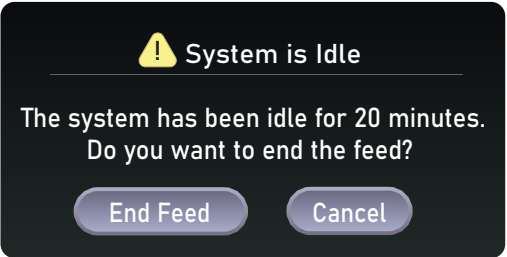


Figure 4.8. System Idle.

Battery is Low.

Appears when the battery state-of-charge is at 20%. Connect the pump to the AC Adapter/Charger to replenish power supply soon.

Note: The feed continues with alarm. After user selects Close, the audible alarm will pause, but the LED indicator will remain until the AC Adapter/Charger is connected or device transitions to sleep mode.



Figure 4.9. Battery Low (20%).

An Occlusion has been Detected.

Evaluate input and output of enteral feeding system to determine the cause of occlusion, then follow the instructions.

Note: When user selects Continue, the audible alarm will silence. The LED indicator will continue to flash until user resumes feed using “Start (triangle)” button.

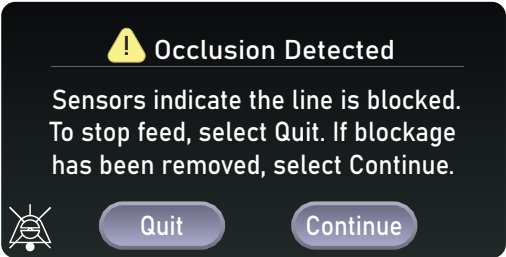


Figure 4.10. Occlusion Detected.

Air has been Detected in the Feed Set Line.

Check enteral fluid volume and tube connections. If this alarm occurs more than 2 consecutive times, the alarm will prompt a mandatory prime of feed set.

Note: When the user selects OK, the audible alarm will silence and the LED indicator will continue to flash until user resumes feed using “Start (triangle)” button.

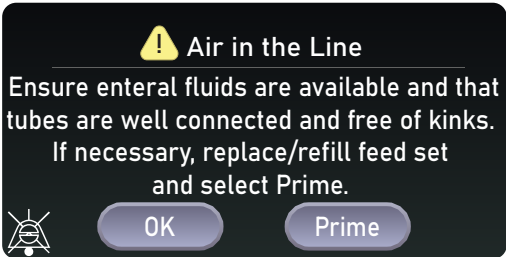


Figure 4.11. Air in Line Alert.

Feed Set should not be Connected to Patient while Priming.

This alarm appears before manual or automatic priming of the pump set.

Note: When the user selects OK, the audible alarm will silence and the LED indicator will continue to flash until user begins to either manual prime via “Press and Hold to Prime” button OR automatically canceled if prime method is “Skip” or “Auto”.

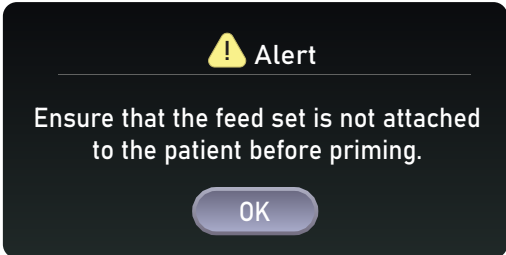


Figure 4.12. Pre-Priming Alert.

Check Before Deleting a Feed from the Schedule.

Selecting Delete on the Review Settings display for a scheduled feed displays this notification to confirm the Delete with Delete or to Cancel the action.

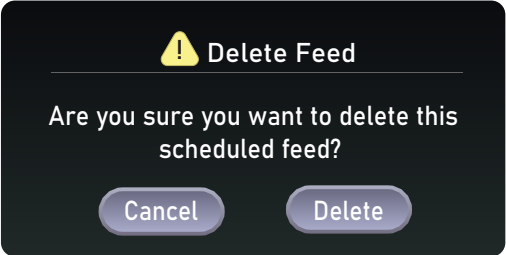


Figure 4.13. Delete Feed Confirmation.

Current Feed Program Overlaps with the Schedule.

Choose to proceed with the current feed programming despite the overlap or edit the feed program settings.

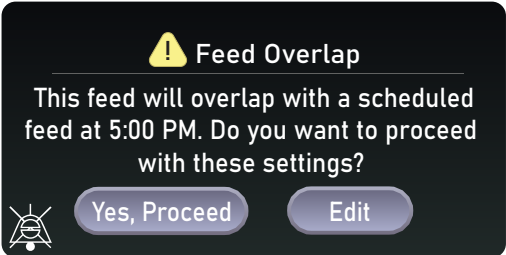


Figure 4.14. Feed Overlap Notification.

Feed Program is Ready to Begin.

This scheduled reminder appears when a scheduled feed program is ready to begin.

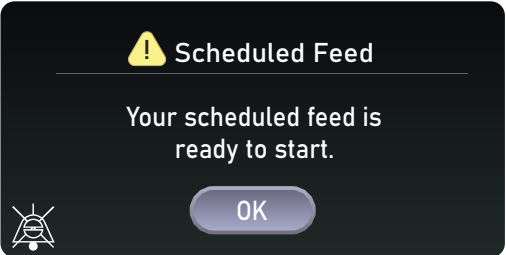


Figure 4.15. Scheduled Feed Ready.

End or Continue With Current Feed Program.

Selecting Exit (x) during the feed program run displays this notification to confirm the Exit with End Feed or to return to the feed with Cancel.

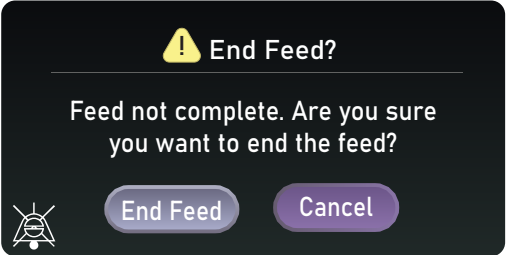


Figure 4.16. End a Running Feed.

Battery is Very Low.

Appears when the battery state-of-charge is at 5% (15 minutes or less of remaining run time). Connect the pump to the AC Adapter/Charger to replenish power supply.

Note: The feed will continue when the alarm pops up. When user selects Close, the audible alarm will pause but the LED will remain until the power adapter is inserted or the device shuts down. The time to battery depletion will be quicker for feeds of higher flow rates and more viscous fluids.



Figure 4.17. Battery Low (5%).

A Critical System Error has Occurred.

Record the error code in the lower right-hand corner for your service technician. Contact the Vesco Medical Technical Service Line.

Note: When the user selects OK, the audible alarm will pause but the LED indicator will remain. If 30 seconds pass and the alarm is not retriggered, the LED will pause.

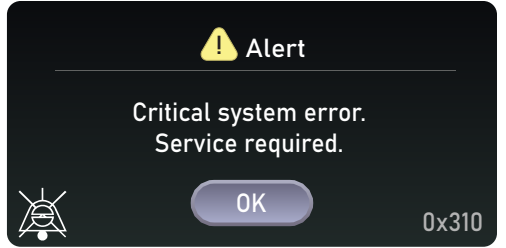


Figure 4.18. Critical System Error.

CLEANING AND MAINTENANCE

WARNING: The pump and AC Adapter/Charger are not designed to be immersed underwater. Do not immerse the pump or AC Adapter/Charger in water or other cleaning solutions. Failure to follow the cleaning procedures described herein could result in hazards to users, patients, and clinicians. Care must be taken to prevent liquid from entering the pump and AC Adapter/Charger to avoid electrical shock hazard, fire hazard, or damage to electrical components.

Do not clean pump while the AC Adapter/Charger is connected to the pump or while the pump is on. Do not connect AC Adapter/Charger to an outlet after cleaning until thoroughly dry.

The use of cleaners and disinfectants other than the ones described here may cause significant damage to the pump or AC Adapter/Charger and may void warranty.

Cleaning

Cleaning Chemicals:

A mild, common dish washing liquid detergent should be used for general cleaning. This detergent should be used with a 20:1 ratio water to detergent mixture.

Cleaning Frequency:

It is recommended that the pump be cleaned after each feeding set use for a minimum duration of 30 seconds, to prevent bacterial contamination of the pump.

Wipe down the pump with a paper towel, cloth or sponge moistened with the mild detergent, removing all visible soil. Use a brush to remove soil from small or hard to reach crevices. For difficult to clean areas, it is permissible to wash the pump under slow running water. Avoid submerging the pump or washing with high pressure nozzles, which exceed the water proof rating of the pump. The pump casing has a water proof rating of "Protects from splashing water, no matter the direction."

After cleaning, visually inspect the entire pump to verify that any nutrition or soil has been removed and that the pump is free from cracks or damage. If any soil is detected, repeat the cleaning procedure until the pump is thoroughly clean. If the inspection reveals any damage to the pump, remove it from use and send it for service.

The AC Adapter/Charger should not require cleaning. If necessary, wipe the surface of the AC Adapter/Charger with a damp cloth when the charger is disconnected from both the pump and power outlet. Dry completely before use.

Disinfecting

Disinfecting Chemicals:

Avoid harsh chemical cleaners and disinfectants. The following cleaning products have been assessed on pump surfaces for functionality and found to be acceptable cleaning/disinfecting solutions when used according to their labeling:

Acceptable Alternative Cleaning/Disinfecting Solutions	
Diluted Isopropyl Alcohol (100:1)	Wex-Cide
Diluted Bleach (0.55% NaOCl)	CaviCide
Cidex 14 Day Solution	

The pump can be disinfected by wetting their surfaces with solutions listed above. To wet the devices, use at least two solution wetted lint-free wipes and wipe as necessary to maintain visual wetness. Visual wetness should be maintained for a minimum duration of 10 minutes for the pump. To rinse the devices, use at least two water dampened lint-free wipes and wipe all surfaces in both an up and down vertical motion and a left and right horizontal motion. To dry the devices, use at least one lint-free dry wipe and wipe all surfaces in both an up and down vertical motion and a left and right horizontal motion. Visually inspect the devices for complete dryness. Repeat as necessary.

Always visually inspect the devices after disinfection for cracks or deformation in the material. If cracks or deformation result from disinfecting, contact Vesco Q Technical Support for guidance on device maintenance or discard options.

Disinfecting Frequency:

It is necessary to clean and disinfect the pump after each use when these devices are used for multiple patients. This is to prevent spreading bacteria, viruses, and other germs between patients that interact with the same pump.

Maintenance

WARNING: Do not modify this equipment. No parts of the Vesco Q Pump require calibration or are user-serviceable.

No calibrations, adjustments, or servicing are required for the Vesco Q Enteral Feeding System. All technical requests should be referred to the Vesco Q Technical Service Line.

Vesco Q Technical Service Line: (888) 712-1905

Q Technical Service Email: techsupport@vescomedical.com

PRODUCT SPECIFICATIONS

Size	Pump Dimensions: 6.5" x 2" x 3.5", 16.5 cm x 5 cm x 8.9 cm Pump Weight: 1.1lbs 499g
Battery	Type: Lithium Ion Nominal Voltage: 3.6V Charge Voltage: 4.2V Maximum Charge current: 1000mA Maximum Discharge current: 1000 mA Nominal Capacity: 5200 mAh Full Charge Capacity: 24 hours at 125 mL/hr Charge Time: 6 hours (3 hours for full day's use) Critically Low Battery Level (5%): minimum 1 hour at 125 mL/hr Charge Level Indicator on Display
Power Supply	AC Adapter/Charger Input: 100-240V~50-60Hz 0.32-0.19A Output: 5V-3A
Display	Capacitive Touch Screen
Operating Orientation	Accuracy in Upright Orientation
Flow Rate	Range: 1 mL to 600 mL/hr Increments: 1 mL/hr
Accuracy	±5% for all delivery rates no matter the type of feeding set. The bottom of the feed bag should be at a starting height of 6" (15.24 cm) above the top of the pump. For more information on pump accuracy, see Additional Technical Information.
Dose	Range: 1 mL to 2000 mL Increment: 1 mL or keypad
Volume Display	Current Dose Status Accumulated
Scheduled Feed	Scheduled Feed Alert Scheduled Feeds Available to View

PRODUCT SPECIFICATIONS (cont.)

Classification Information	Vesco Q Enteral Feeding Pump with internal battery Type BF Applied Part Vesco Q AC Adapter/Charger – Class II
Expected Service Life	Pump and Accessories: 3 Years. Remove pump from service and contact Vesco Medical for disposition.
Program Memory	Retained when Pump is On or Off
Pediatric Use	Yes, greater than 1 month in age
Prime	Yes, Manual and Automatic
Feed Set Features	Anti-Free Flow
Notifications	Auto or Manual Priming: Solid Magenta LED Indicator Priming Complete: Confirmation Flashing Magenta LED Indicator Feed Complete: Confirmation Plugged in and Actively Charging: Flashing Green LED Indication Plugged in and Fully Charged: Solid Green LED Indicator Powering Up: Solid Magenta LED Indicator Successful Power On: One Flash Green LED Indicator System Reset: Solid Cyan LED Indicator Failure to Power On: Flashing Red LED Indicator
Low Priority Alarms (Solid Yellow LED Indicator)	No Feed Set Attached: Feed set not connected to pump Quit or Continue Feed Setup: Confirmation Maximum Rate Exceeded: Programmed rate cannot exceed 600 mL/hr Maximum Dose Exceeded: Programmed dose cannot exceed 2000 mL Minimum Rate Exceeded: Programmed rate cannot be less than 1 mL/hr Minimum Dose Exceeded: Programmed dose cannot be less than 1 mL Scheduled Feed 5 Minute Reminder: Confirmation System Idle: Feed program paused for 20 minutes Battery Low (20%): Prompt to connect to power Minimum of 50 dBA at 1 meter in maximum volume orientation

PRODUCT SPECIFICATIONS (cont.)

Medium Priority Alarms (Flashing Yellow LED Indicator)	Occlusion Detected: Troubleshoot prompt Downstream Occlusion: Detected when 2 consecutive polling cycles display increase in motor current peaks ≥ 10.9 mA [≤ 6 sec. detection time] Upstream Occlusion: Detected when 3 consecutive polling cycles display peak to peak motor current waveform ≥ 5.0 mA [≤ 6 sec. detection time] Air In Line Alert: Troubleshoot prompt [≤ 6 sec. detection time] Pre-Priming Alert: Feed set should not be connected to patient access device during prime [≤ 6 sec. detection time] Delete Feed Confirmation: Confirmation Feed Overlap: Review to correct error Scheduled Feed Ready: Confirmation End a Running Feed: Confirmation Battery Low (5%): Prompt to connect to power Critical System Error: Contact Vesco Medical Minimum of 55 dBA at 1 meter in maximum volume
Accessories	AC Adapter/Charger Pole Clamp
Warranty	24 Months
Operating Environment Pump	Temperature: 41 °F to 104 °F (5 °C to 40 °C) Humidity: 30%-95% Non-condensing Pressure: 0.7-1 atm (71-101 kPa) (10-14.696 psi)
Storage Environment Pump	Temperature: -4 °F to 140 °F (-20 °C to 60 °C) Humidity: 10%-95% Non-condensing Pressure: 0.7-1 atm (71-101 kPa) (10-14.696 psi) If stored near the minimum or maximum storage temperatures, allow 30 minutes to pass for the pump to acclimate to ambient operating temperature before use.
Electrical Protection	EN 60601-1 Type BF degree of protection against electrical shock. No electrical connections to patient.
Drop Resistance	Drop from any angle from height of 3 feet shall not damage pump operation.

ADDITIONAL TECHNICAL INFORMATION

Optimizing Pump Accuracy

The Vesco Medical Q Pump has the ability to deliver the most accurate amounts of volume if the specifications of the pump meet delivery requirements for the patient.

The Vesco Medical Q Pump requires adequate ventilation to provide accurate delivery of enteral fluids. If using a safety screw spike connector pump set or a screw cap pump set, ensure adequate ventilation. If adequate ventilation is not present, the pump could underdeliver enteral fluids.

The pump and pump sets are accurate to deliver $\pm 5\%$ per volume for flow rates 1–600 mL/hr, under the following conditions:

- Fluid head height should align above (6 inches) the top of the pump

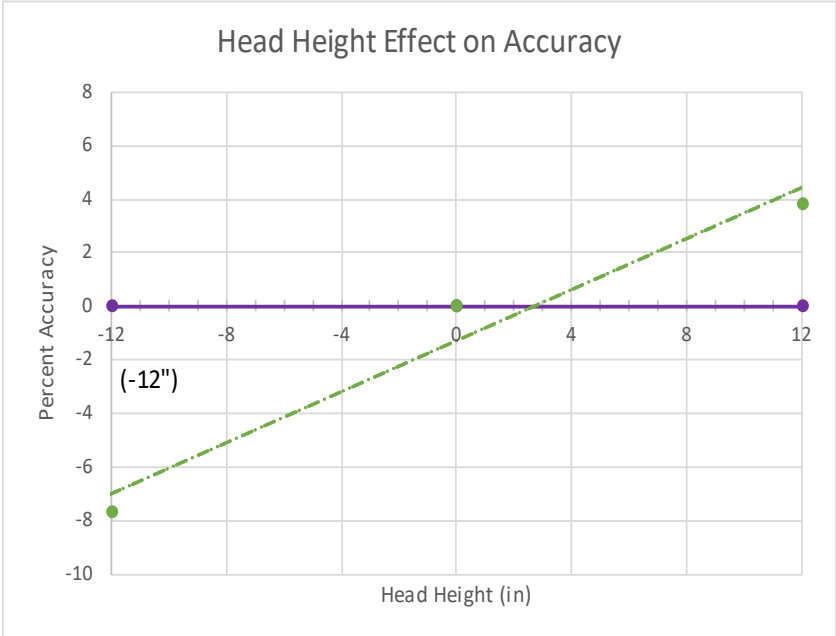


Figure 5.1. Head Height Effect On Accuracy.

Optimizing Pump Accuracy (cont.)

- The nutrition used is delivered at room temperature or slightly below room temperature
 - If the nutrition is removed from the fridge, it is suggested to wait a minimum 1 hour before beginning feed.
 - If the nutrition is noticeably warm, it is suggested to cool the nutrition to room temperature before beginning feed.

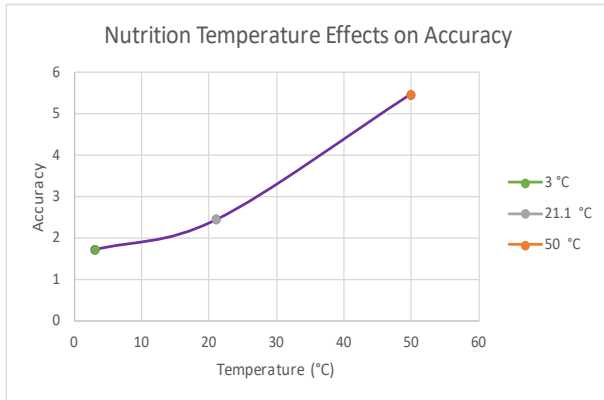


Figure 5.2. Nutrition Temperature Effects on Accuracy.

- The back pressure for a feed does not exceed 0.789atm.

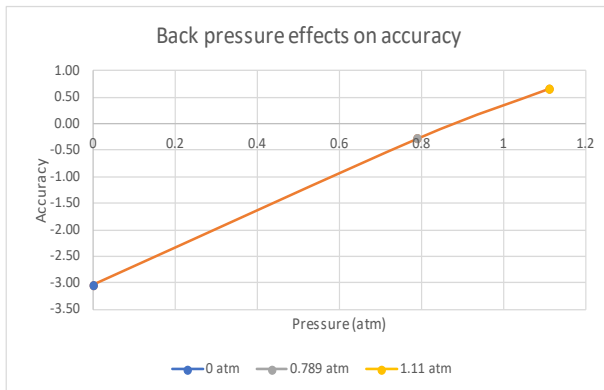


Figure 5.3. Back Pressure Effects on Accuracy

These conditions were determined through thorough performance testing and data analysis. Failure to meet these conditions may result in inaccurate doses and should be verified before continuing with feedings.

ELECTROMAGNETIC EMISSIONS/ INTERFERENCE INFORMATION

The operation of any electronic device, including medical electrical devices like an enteral infusion feeding pump, can be affected by electromagnetic emissions. The Vesco Medical Q Pump has been designed to work in most environments without being affected by electromagnetic emissions. However, it is important to note that some electromagnetic fields produced by personal communication equipment, household appliances, or occupational tools could cause electromagnetic interference (EMI) which can affect the normal intended pump operation. Cellular phones, cordless telephones, microwave ovens, anti-theft/security systems, blenders, and high-powered tools are some possible sources of electromagnetic interference with electronic medical devices. Check the pump regularly if/when operating near sources of electromagnetic emissions is unavoidable.

Warnings:

- 1* Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.
- 2* Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.
- 3* Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the ME equipment, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Manufacturer's Declaration – Electromagnetic Emissions

The Vesco Q Enteral Feeding Pump is intended for use in the electromagnetic environment as specified below. It is the responsibility of the customer and user to ensure that the Vesco Q Enteral Feeding Pump is used in the appropriate environment.

Emissions Test	Compliance
RF emissions CISPR 11	Group 1
RF emissions CISPR 11	Class B
Harmonic emissions IEC 61000-3-2	Class A
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Clause 5

Manufacturer's Declaration – Electromagnetic Immunity

The Vesco Q Enteral Feeding Pump is intended for use in the electromagnetic environment as specified below. It is the responsibility of the customer and user to ensure that the Vesco Q Enteral Feeding Pump is used in the appropriate environment.

Immunity Test	IEC 60601 Test Level	Compliance Level
Conducted RF IEC 61000-4-6	3 V 0.15 MHz to 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz	3 V 0.15 MHz to 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz
Radiated RF IEC 61000-4-3	10V/m 80 MHz to 2.7 GHz	10V/m

Manufacturer's Declaration – Electromagnetic Immunity

The Vesco Q Enteral Feeding Pump is intended for use in the electromagnetic environment as specified below. It is the responsibility of the customer and user to ensure that the Vesco Q Enteral Feeding Pump is used in the appropriate environment.

Immunity Test	IEC 60601 Test Level	Compliance Level
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines
Surge IEC 61000-4-5	± 0.5 kV, ± 1 kV line(s) to lines ± 0.5 kV, ± 1 kV, ± 2 kV line(s) to earth	± 0.5 kV, ± 1 kV line(s) to lines ± 0.5 kV, ± 1 kV, ± 2 kV line(s) to earth
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % UT; 0.5 cycle at 0° , 45° , 90° , 135° , 180° , 225° , 270° and 315° 0 % UT; 1 cycle and 70 % UT; 25/30 cycles Single phase: at 0° 0 % UT; 250/300 cycles	0 % UT; 0.5 cycle at 0° , 45° , 90° , 135° , 180° , 225° , 270° and 315° 0 % UT; 1 cycle and 70 % UT; 25/30 cycles Single phase: at 0° 0 % UT; 250/300 cycles
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m

NOTE: UT is the a.c. mains voltage prior to application of the test level

Manufacturer's Declaration – IMMUNITY To Proximity Fields From RF Wireless Communications Equipment

The Vesco Q Enteral Feeding Pump is intended for use in the environment as specified below. It is the responsibility of the customer and user to ensure that the Vesco Q Enteral Feeding Pump is used in the appropriate environment.

Immunity Test	IEC60601 test level				Compliance Level
	Test Frequency	Modulation	Maximum Power	Immunity level	
Radiated RF IEC 61000-4-3	385 MHz	**Pulse Modulation: 18Hz	1.8W	27 V/m	27 V/m
	450 MHz	*FM+ 5Hz deviation: 1kHz sine	2 W	28 V/m	28 V/m
	710 MHz 745 MHz 780 MHz	**Pulse Modulation: 217Hz	0.2 W	9 V/m	9 V/m
	810 MHz 870 MHz 930 MHz	**Pulse Modulation: 18Hz	2 W	28 V/m	28 V/m
	1720 MHz 1845 MHz 1970 MHz	**Pulse Modulation: 217Hz	2 W	28 V/m	28 V/m
	2450 MHz	**Pulse Modulation: 217Hz	2 W	28 V/m	28 V/m
	5240 MHz 5500 MHz 5785 MHz	**Pulse Modulation: 217Hz	0.2 W	9 V/m	9 V/m

NOTE 1: As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

NOTE 2: The carrier shall be modulated using a 50 % duty cycle square wave signal.

WARRANTY

The Vesco Q Enteral Feeding Pump has a Warranty Period of 24 months from the buyer's original purchase date. Complete warranty details are available through a contractual agreement between the buyer and Vesco Medical, LLC. The warranty covers repair and replacement of components proven to be defective in material or workmanship. The warranty does not include normal wear and tear, any related accessories, or pumps operated without regard for the Instructions For Use or User Guide.

Vesco Q Technical Service Line: (888) 712-1905

Technical Service Email: techsupport@vescomedical.com

CONTACT INFORMATION AND NOTES

Healthcare Provider:

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