

STANDARD OPERATING PROCEDURES
DIVISION OF COMPARATIVE MEDICINE
UNIVERSITY OF SOUTH FLORIDA

SOP#: 1160.1

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TITLE: JorVet Infusion Pump®
SCOPE: Research and Animal Care Personnel
RESPONSIBILITY: Facility Manager, Professional and Administrative Staff
PURPOSE: To Outline the Proper Procedures for Fluid Pump Use and Maintenance.

I. PURPOSE

1. This procedure outlines the use and maintenance of the JorVet infusion pump to administer intravenous (IV) fluids to animals.

II. RESPONSIBILITY

1. The Facility Manager ensures that equipment is appropriately cleaned, maintained in good working order, and available for research personnel as requested.
2. The veterinary professional, administrative, and managerial staffs ensure that all research and technical staff using this equipment are adequately trained and experienced.

III. BACKGROUND

1. The infusion pump delivers fluids at an infusion rate from 0.1 to 1200 mL/hr.
2. Infusion pumps may be used during survival procedures, acute non-survival procedures involving non-rodent mammals, and during anesthetic recovery.

IV. EQUIPMENT USE

1. Loading the administration set:
 - a. Use only IV sets for which the pump has been calibrated (e.g., Amsino IV administration set (10 drops/ml) ref#109602).
 - b. Connect the IV set to a medication bag. Manually prime line by allowing fluid to passively flow through line.
 - c. Lift the door latch to open the pump door.
 - d. Insert the IV tubing into the tubing guide, following the direction flow label located above the tubing slot. Insert the tubing from left to right, and avoid stretching or pulling the tubing. Check key is located in correct position.
 - e. Close the pump door. Press on the door to close firmly; ensure that the latch is correctly applied.
2. Instructions for use:

- a. Switch the pump on using the ON/OFF key.
 - b. If needed, flush the administration set by pressing the SYRINGE key, and confirm with START/OK.
 - c. Set the program to CONTINUOUS.
 - d. Select rate over volume administration.
 1. The pump will display the last set rate. Use the numeric keys to change, or press START/OK to confirm. When the rate is confirmed, the pump will display the last set volume (if the time option is set off). Use the numeric keys to change the volume, or press START/OK to confirm and start the program operation.
 2. During program operation, the pump will display the rate at which the program is operating.
 3. Note that, during operation, the pump allows rate titration by pressing a numeric or digital point key. The rate on the display will change during titration; however, operation rate will change only if the START/OK key is pressed within 10 seconds, confirming the rate change.
3. Changing the fluid container:
- a. Ensure the pump is not infusing by placing the pump in STOP mode or turning the pump OFF.
 - b. Remove the bag spike on the IV set from the empty/used container. Discard the empty/used container/bag.
 - c. Prepare a new container/bag and insert the spike into the new container.
 - d. Squeeze the drip chamber (if applicable) to fill approximately halfway with fluid.
 - e. Restart infusion.
4. After use:
- a. Turn the power off, and disconnect from AC power supply.
 - b. Wipe down external surfaces of the pump with a disinfectant such as Clidox or mild detergent with water and a soft cloth.
 - c. If storing for an extended period of time, fully charge battery. During storage, test battery every 3 months to ensure fully charged.

V. TESTING

1. Visually check the condition of the unit. Remove from service any unit which shows physical damage.
2. Perform tests annually when unit is in-service or prior to use if frequency of use is less than annually:
 - a. **Pump operation test**
 1. Click the pump into a charger connected to AC power. Verify that the charge indicator is on.
 2. Load an administration set in the pump.
 3. Switch on the pump pressing the ON/OFF key until the self-test screen appears.
 4. The pump will display "Self-Test," followed by the program selected and its status. During the self-test, a long beep will sound. This

procedure verifies that the pump's acoustic and visual features are working properly

5. Press the syringe key, followed by START/OK, to flush the administration set.
 6. The display will show a graph indicating the flushing operation.
 7. When flushing is completed, wait without pressing any key for two minutes. Verify that an audible alarm is activated and a "pump unattended" message appears on the display.
 8. Press the START/OK key to silence the alarm.
- b. **Air in line alarm test**
1. Load an administration set in the pump.
 2. Set the infusion rate at 500 mL/hr and the volume at 20 mL.
 3. Press the START/OK key to start operation.
 4. Turn the drip chamber upside down to allow an air bubble greater than 5 mm to enter into the administration set.
 5. Air alarm will be activated as soon as the air bubble enters the set segment located behind the pump door.
 6. Press the STOP/NO key to silence the alarm.
- c. **Door open alarm test**
1. Load an administration set in the pump.
 2. Set infusion rate at 500 mL/hr and the volume at 20 mL.
 3. Press the START/OK key to start operation.
 4. Open the pump door.
 5. Door open alarm will be activated immediately.
 6. Close the door.
 7. "Stop" appears on the display.
- d. **Down occlusion alarm test**
1. Load an administration set in the pump.
 2. Set the infusion rate at 500 mL/hr and the volume at 20 mL.
 3. Press the START/OK key to start operation.
 4. Occlude the administration set between the pump and the patient.
 5. After 10 seconds the down occlusion alarm will be activated.
 6. Press the STOP/NO key to silence the alarm.
- e. **Charge indicator test**
1. Click the pump into the charger. Connect the charger to power source and check the pump's battery is being charged (charger LED red for charging, green for full battery).
 2. Disconnect the power cord from the AC outlet.
 3. Verify the charge indicator is off.
 4. Connect the power cord to the AC power outlet. Verify the charge indicator is on.
3. **Verification of Calibration**
- a. This should be conducted prior to use of any new model of fluid line.
 - b. Load an administration set in the pump with the end of the line open in an empty receptacle.
 - c. Set the fluid rate to 500 mL/hr and the volume at 100 mL.
 - d. When infusion is completed, measure the fluid collected in the receptacle (e.g., 100 ml graduated cylinder).

- e. Verify the volume collected is within 5% of the volume administered (95-105 mL).
 - f. Record the pump number, brand/model information of fluid line, and the date test conducted on the hang tag, and provide to Facility Manager.
4. Record date, initial, and circle the appropriate maintenance interval on the equipment hang tag to indicate that all maintenance and testing for that interval were completed.
 5. Report any damage or malfunctions to the Facility Manager.
 6. Facility Managers are responsible for maintaining current records of Division-owned equipment inspections, calibrations, maintenance, non-routine repairs, and current inventory for their facility on the division's ***Equipment Maintenance Log (CMDC#192)***.
 7. For additional information, see manufacturer's operation manual.

Approved:

Date: