



# Nebulizer Delivery Kit for Intubated Animals



## Includes:

- Nebulizer Control Module with Small VMD Nebulizer Unit
- Acrylic Nebulizer Adapter
- Endotracheal tube connector
- Delivery Tubing
- Assorted Fittings

## Setup:

1. Connect the Endotracheal tube connector's Inspiratory delivery tubing to either side of the nebulizer adapter.
2. Using the assorted fittings, connect the INSP and EXP delivery tubing to your ventilator.



3. Connect the Nebulizer Unit to the control module using the attached cable, and place inside the opening of the nebulizer adapter.
4. If required by your ventilator, calibrate deadspace with the Nebulizer Unit held firmly in place.

### **Instructions for Use:**

- 1) Fill the Nebulizer Unit with solution to be aerosolized. Use a prefilled ampoule or syringe to add liquid into the filler port of the nebulizer, and close the filler cap.
- 2) Anesthetize and intubate the animal per standard protocol.
- 3) Connect the endotracheal tube to the connector for anesthetic maintenance and start the ventilator.

Note: confirm adequate ventilation before moving forward.

- 4) Power on the Nebulizer Control Module to begin aerosol delivery.
- 5) When the aerosol delivery is complete, turn off power to the Nebulizer Control Module. Recover the animals and turn off the anesthesia system before removing the Nebulizer Unit.

### **Cleaning Instructions:**

To ensure proper aerosolization, clean the nebulizer unit between each use and after sterilizing.

To clean:

- 1) Disconnect the control module and cable from the nebulizer unit, and remove the filler cap.
- 2) Clean all parts with warm water and a mild liquid detergent. Rinse thoroughly and air dry.
  - a. Do not use abrasive or sharp tools to clean the nebulizer unit.

To sterilize:

- 1) Disconnect the control module and cable from the nebulizer unit, and remove the filler cap.
- 2) Wrap parts and autoclave using steam sterilization pre-vacuum cycle, 132°C -135°C
- 3) (270°F - 275°F) for 3 - 4 minutes with drying cycle.
  - a. Do not autoclave the control module, adapter, tubing, or cables.



## Troubleshooting:

<b>Problem</b>	<b>Possible Cause</b>	<b>Solutions</b>
The amber indicator light is illuminated on the Nebulizer Control Module, and the nebulizer is not aerosolizing.	<ul style="list-style-type: none"><li>• Nebulizer is disconnected or faulty connection.</li><li>• Nebulizer Unit needs to be cleaned.</li></ul>	<ul style="list-style-type: none"><li>• Check all connections.</li><li>• Clean the nebulizer unit following above cleaning instructions.</li></ul>
Aerosol is forming condensate in tubing.	<ul style="list-style-type: none"><li>• Insufficient airflow.</li><li>• Temperature variations in setup.</li></ul>	<ul style="list-style-type: none"><li>• Airflow is required to facilitate movement of aerosol from the Nebulizer unit to the animal. Increase air flow up to 0.25LPM as needed.</li><li>• Be sure temperature is stable across the delivery setup (avoid warming pads, surgical lights, etc.) and check that the solution to be aerosolized is at room temperature.</li></ul>
Liquid is not aerosolizing or is collecting at the bottom of the nebulizer adapter.	<ul style="list-style-type: none"><li>• Nebulizer unit needs to be cleaned.</li><li>• Solution to be aerosolized does not have sufficient surface tension to support aerosolization.</li></ul>	<ul style="list-style-type: none"><li>• Clean the nebulizer unit following above cleaning instructions.</li><li>• Verify proper solution. See included data sheet for more details.</li></ul>
Aerosolization is very slow, resulting in a longer than expected treatment time.	<ul style="list-style-type: none"><li>• Nebulizer unit needs to be cleaned.</li><li>• Nebulizer unit needs to be replaced.</li></ul>	<ul style="list-style-type: none"><li>• Clean the nebulizer unit following above cleaning instructions.</li><li>• Contact Kent Scientific.</li></ul>