Jorgensen Laboratories, Inc. announces an innovative concept in endotracheal tubes. JorVet has launched SAFE-SEAL ENDO TUBE, clearly changing the scope of safety in anesthesia procedures.

The new SAFE-SEAL ENDO Tube utilizes a series of silicone baffles to replace the inflation cuff. It eliminates the risks of over inflation, under inflation and leaky tubes. The soft, flexible baffles seal the trachea without pressure and cleanses the trachea of all fluids upon extubation.

Only 4 sizes of tubes are necessary for dogs weighing 10 to 200 pounds. The ET tube’s one piece construction of medical grade silicone is autoclavable.

Safety, longevity and cost effectiveness place the SAFE-SEAL ENDO TUBE in a world apart from the others.

How does the Safe Seal Endo Tube work:

Almost all ET tubes used today depend upon an inflation cuff to seal the tube in the trachea, except the Safe-Seal™ ET tube featuring the Blaine Bafflex System. This technology uses a series of 6 silicone baffles with carefully engineered pattern and spacing to seal the trachea without pressure points. The flexible baffles allow an ‘o-ring effect’. The Safe-Seal ET tube lies in the trachea and the sealing baffles touch the tracheal wall leaning towards the larynx. Thus, when the patient inspires the silicone baffles are sucked against the trachea forming a tight seal.

The special design allows passage of pressure exceeding 20-30 centimeters of water in the patient’s lungs. If the pop-off valve is accidentally left closed, the excess pressure is released and no harm will come to the patient. If more than 20-30 centimeters of water pressure is desired, the tube is merely withdrawn ½ inch causing the baffles to flip over and the tip will then face caudally thereby allowing as much pressure to be applied as deemed necessary.

These soft, flexible baffles are atraumatic to the tracheal surface due to the limited contact of the baffles. There is minimal contact with the tracheal wall when using the Safe-Seal tube as opposed to the large area of contact of inflation cuff tubes. This means the tube can be left in the same position for extended periods of time.

Another advantage is the “squeegee” effect when extubating, by sweeping the trachea clean of any fluids present. The Safe-Seal ET tube with the Blaine Bafflex System eliminates dangers of deflation or over inflation. The standard tubes used today are constructed of rigid, curved plastic. This shape and rigidity forces the tip of the tube against the tracheal wall when inflated, causing a point of pressure. The Safe-Seal tube’s baffles keep the tip of the tube centered in the trachea. It is ultimately safer to use and can cause no damage to the trachea.
Frequently Asked Questions

What makes this endotracheal tube better?
The Safe-Seal tube was developed to eliminate the problems associated with inflation cuff tubes. No danger of leakage, over pressurization, under inflation or need for replacement make this tube safer and cost effective. It cleanses the trachea upon extubation and isatraumatic to the tracheal mucosa.

What about sterilization and cleaning?
The medical grade silicone is autoclavable and resistant to cold disinfectants. Gas sterilization is safe. The durable silicone can be disininfected in the usual fashion. Method: Steam sterilize the product using the following parameters after removing all non-autoclavable protective packaging and labeling:

- **Cycle:** High Vacuum, Temperature 270 F (132 C) 4 minutes of exposure
- **Cycle:** Gravity, Temperature 270 F (132 C) 4 minutes of exposure
- **Cycle:** Vacuum, Temperature 270 F (132 C) 4 minutes of exposure

What range of tubes do I need?
Only 4 sizes of tubes are necessary for a small animal practitioner for dogs weighing 10 to 200 pounds. This makes the Safe-Seal Endotracheal tube very cost effective. However, it is important to choose the proper size of tube to ensure atraumatic insertion and optimal performance.

Will water or fluids leak past the tube during procedures such as dentals?
No. The tube is designed to seal with 20-30 centimeters of water pressure in the trachea. Unless positive pressure exceeding this amount is applied in the pharynx, no passage of fluid is allowed to enter the lungs.

What about “dead air space’ in small, brachiocephalic breeds?
The tidal volume of a dog’s lungs determines if dead air space is a problem. A 20 pound dog with a short nose has roughly the same tidal volume as a 20 pound Whippet with a long nose. The length of the nose is irrelevant. Use of a non-rebreather for small dogs is useful whether using the Safe-Seal tube or the conventional inflation cuff tubes.

Why do I hear air leakage sometimes when I first insert the Tube?
If a patient is “light” when first intubated, he may cough or forcefully expire. The baffles will release pressure exceeding 20-30 centimeters of water. So when first tubed, a “honking” sound of this pressure release is normal. When the patient is breathing normally, no leakage will occur. In either case, there will be no leakage during inspiration, so the patient will be receiving all the oxygen and anesthetic he requires.

Can positive pressure be applied?
Yes, 20-30 centimeters of pressure can be applied. If the operator desires more pressure, the tube is merely withdrawn ½ inch, and the baffles will flip over and as much pressure as deemed necessary is available.

Do I need to worry about the tube kinking?
The soft, flexible nature of the tube is an extreme advantage. Rotation of the patient will not cause harm to the trachea because the baffles rotate easily. As with all tubes, a right angle bending force could cause kinking. The operator should be aware that the tube should be securely attached to the snout and if using a nonrebreather apparatus, that it should be kept in front of the patient on the table. Kinking has not been a problem in the seven year clinical trials. When using the smallest tube, the tip of the tube is ¼ inch and is therefore more flexible. The shaft of the tube is 3/8 inch diameter and resistant to kinking. As long as the flexible tip is safely inside the trachea, it is not subjected to bending forces.

How does the tube prevent over pressurization of the lungs of my patient?
The carefully spaced and tapered baffles are designed to allow excess of 20-30 centimeters of water to bypass and escape. Thus, if the pop-off valve is accidentally left closed, the pressure will be released and no harm will come to the patient.

How do I determine the correct size of tube to use?
There is tremendous variation in the size of the trachea and larynx between different breeds of dogs. As a general guide line, the small tube will properly fit dogs ranging from 10 to 30 pounds. The middle size tube will usually work in dogs from 25 and up to 80 pounds and the large tube will work well in dogs from 70 to 200 pounds. A simple rule of thumb is if the tube feels too tight or too loose upon insertion, use the next size tube, smaller or larger as appropriate.

Why does the Safe-Seal tube cause no threat of damage to the Trachea?
There is minimal contact with the tracheal mucosa with the Safe-Seal ET tube and the pressure caused by the bending of the baffles varies between 1-3 centimeter of water. Inflation cuff tubes have a large area of tracheal contact and require up to 30 centimeters of water pressure to seal. If inadvertent movement of the tube occurs, the tube will rotate and not cause friction damage to the mucosa. The baffles keep the tip of the ET tube centered in the trachea at all times, thus not allowing pressure points typical of inflation cuff tubes.

What is the proper method of inserting the tube?
The stylet included with the tubes is necessary due to the flexibility of the tube. Insert the tube in the usual fashion and stop inserting while the tube is in a forward motion. This will insure the baffles will seal the trachea and allow excess pressure to escape. Remove the stylet and secure the tube to the snout in the usual ways.

Can positive pressure be applied?
Yes, 20-30 centimeters of pressure can be applied. If the operator desires more pressure, the tube is merely withdrawn 1/2 inch, and the baffles will flip over and as much pressure as deemed necessary is available.

Why does the Safe-Seal Tube cause no threat of damage to the trachea?
There is minimal contact with the tracheal mucosa with the Safe-Seal ET tube and the pressure caused by the bending of the baffles varies between 1-3 centimeters of water. Inflation cuff tubes have a large area of tracheal contact and require up to 30 centimeters of water pressure to seal. If inadvertent movement of the tube occurs, the tube will rotate and not cause friction damage to the mucosa. The baffles keep the tip of the ET tube centered in the trachea at all times, thus not allowing pressure points typical of inflation cuff tubes.

“I feel that I have to use too much pressure to insert the Tube, is this a problem?
No. After over 6,000 procedures, no problems have arisen to suggest that this is a problem. The pressure you feel while inserting the Tube is created by the bending of the baffles at the level of the arytenoid cartilages which are very tough. The needed pressure of the baffles (Blaines) is about 3 centimeters of water. An inflated cuff on traditional Tubes exerts 20-30 centimeters of water - which is about 10 times the additional pressure in a more sensitive area then the passage of the Blaines through the arytenoids. The amount of pressure or resistance that you feel is similar to the pressure you feel when passing a large stomach Tube down the esophagus. Lubrication of the baffles either with water or KY is beneficial in reducing the friction at the arytenoids.