



BOVINE DYSTOCIA SIMULATOR

BOVINE DYSTOCIA SIMULATOR

> CONTENT

1. Bovine Dystocia Simulator.....	3
1.1 Care, Handling, and Maintenance	3
1.2 Bovine Body.....	3
1.3 Birth Canal.....	3
1.4 Perineum Panel	3
1.5 Calf Support System.....	4
1.6 Milking System	5
1.7 Tail	5
1.8 Calf Pulling	5
1.9 Storage	5
1.10 General.....	5
2. Dystocia Calf Model.....	6
2.1 Care, Handling and Maintenance	6
2.2 Warranty, Care, Use	7
3. Bovine Milking System.....	7
3.1 Overview.....	7
3.2 Filling the Tank	7
3.3 Removing and Cleaning the Tank	7
3.4 Removing and Cleaning the Tank Continued.....	8
4. Bovine Perineum Panel Replacement.....	8
Contact Information.....	9

BOVINE DYSTOCIA SIMULATOR

➤ 1. BOVINE DYSTOCIA SIMULATOR

1.1 Care, Handling, and Maintenance

This document has been created to describe the care and maintenance of the medium-fidelity VSI Bovine Dystocia Simulator, to avoid misuse and damage, and to increase longevity of use. This document deals strictly with the bovine model and its accessories. Handling of the VSI calf, which accompanies the bovine, is dealt with in a separate document.

1.2 Bovine Body

This bovine model has been entirely hand-crafted which may result in minor inconsistencies between models form, fit, and finish. The material used to create the bovine is fiberglass infused with an epoxy resin. This resin has been chosen for its durability and environmentally friendly characteristics, providing safety during its use and curing process. Although UV resistant, it is sensitive to high temperatures, and not intended to be exposed for long periods under hot sunlight where it may suffer deformation, most evident with the fit of the body hatch. Your model is intended for indoor use. Should your model deform under unusually high temperature conditions, the material can be brought back to its original shape. Achieving this is best handled through direct communication with a VSI technician. Built-in guides and registers are meant to help in fitting the body hatch, but care should always be taken with its removal and replacement. The bovine model is best cleaned with mild soap and water with a low-pressure washer, and never with harsh solvents or abrasive tools.



1.3 Birth Canal

A replica pelvis cast in resin and an inflatable 3 chambered bladder, which is fit between the pelvis and inside wall of the bovine, create the birth canal of the bovine. The pelvis and bladder may be removed for cleaning and to exchange or replace the perineum panel. The bladder is held in place merely by friction. The pelvic bone structure is seated in supports on the body wall of the bovine and attached to a flat support via a single bolt through the pelvic floor. This bolt needs to be removed in order to remove the pelvic bone structure. The pressure of the bladder can be adjusted for the desired "feel" via the single valve on the corner, with the provided hand pump, and should be inflated only with a hand pump in order to control the inflation and avoid damage. Over-inflation may result in deformation of the pelvic structure.



1.4 Perineum Panel

The soft perineum panel has been designed with flexibility and durability in mind, with an oversized vulva or anal opening, depending on the style of model. This component will wear and possibly tear, but can be repaired with the silicone adhesive. Any tears should be repaired as soon as they are discovered. To repair the soft material, clean the damaged area thoroughly with isopropyl alcohol, apply the adhesive, set the tear, and avoid use for at least 12 hours. A good repair can be as strong as the original cast material. This panel is a replaceable part.

The flexible panel is attached to a rigid ring flange which fits inside the bovine, locked in place with plastic turn-locks. To remove the flange with panel, first remove the pelvis. The pelvic bone structure is seated in supports on the body wall of the bovine and attached to a flat support via a single bolt through the pelvic floor. This bolt needs to be removed in order to remove the pelvic bone structure. Lift the hook-bones from their mounts and the pelvis will be released. Now, the perineum panel can be released by turning the twist-locks to a free position, and by carefully tugging and flexing the rigid perineum mounting flange until it is free. The soft panel can now be separated from the rigid ring/flange by removing the plastic fasteners attaching the soft panel to the mounting ring.



BOVINE DYSTOCIA SIMULATOR

The VSI bovine reproductive tract panels each have dedicated rigid installment rings to which they are attached, meaning they can be exchanged within the bovine model, dedicating the appropriate panel to a specific exercise. Water-based lubricant should always be used in conjunction with the VSI dystocia calf model or whenever the area is palpated. A small hole located near the bovine's navel area will allow any excess lubricating fluid to drain. This drain may eventually become clogged as lubrication fluid dries, and should be checked periodically for clearance.

1.5 Calf Support System

One large inflatable multi-chambered air bladder in the main body cavity of the bovine provides the uterine support system for the VSI calf model. The bladder has one large lower chamber and two smaller side bolsters which are all inflated separately via valves at the cranial ends of the chambers. Also attached to these side bolsters is a vinyl flap which should be hung over the edge of the hatch opening to protect the VSI calf model from abrasion during loading or unloading. Once the VSI calf is loaded into position inside the body, these flaps can be folded inside the cow body and the hatch installed. The uterine air support chamber is held in place by friction only and can be easily removed for cleaning.

A small hand-pump is provided in order to adjust the inflation to the desired levels. Use only the small hand-pump to inflate the air bladders in order to control the inflation and avoid damage. If the bladder becomes damaged it can be repaired with the vinyl repair kit or contact VSI.

A translucent vinyl bag represents a rudimentary uterus to contain the calf and the lubricant. This bag has a flange attached to the rigid ring of the perineum panel, via the same fasteners as the soft vulvar panel. This uterine bag has a dorsal opening to insert the calf and a Velcro closing. Grommets and short elastic cords with clips attach the vinyl bag dorsal to a central 'D'-ring on the body wall of the bovine, and anterior to two 'D'-rings on the bulkhead. These clips keep the uterine bag from prolapsing during the extraction exercise. A moderate amount of water-based lubricant is required to assure free movement of the calf, during in-utero demonstration, pulling, and when inserting the calf inside the bag.



NOTE: Moderate amounts of a water-based lubricant should be applied to the soft perineum panel of the bovine and to the calf, in order to avoid damage to any components. A diluted glycerin-based liquid soap will work as well or better than obstetrics lubricant, the operator should be suitably gloved as if performing tasks on a live animal.

BOVINE DYSTOCIA SIMULATOR

1.6 Milking System

The bovine's milking system includes a refillable storage tank, soft teats, removable hose connections, and a supplementary storage bottle. The system is best accessed with the calf support system removed from the bovine. The main storage tank can be filled by unscrewing the cap on the top of the tank and pouring through the top spout, without removing the tank from the bovine. The teats work by simply siphoning fluid from the tank. With the tank full, milk the teats, as one would on a live animal, until they are primed and full. Minor post-dripping may occur.

To remove the udder and tank for cleaning, first remove the plastic bulkhead panel by unscrewing the fastening knobs, then remove the tank and udder as one unit, leaving the hoses attached. The hoses are easily detached once outside the bovine, and should be removed from the tank, rather than the udder, unless the udder is to be replaced. The best method for cleaning the teats is to milk soapy water through them and to wipe them with isopropyl alcohol or mild detergent, but never with harsh chemicals.

The plastic bottle is provided to use in specific exercises as a mastic milk reservoir, and can be attached to any quadrant by replacement with a main tank access hose. Any of these parts can be replaced separately if they become damaged or faulty



1.7 Tail

The flexible tail is detachable. The tail is fastened via two acorn nuts inside the bovine, directly above the attaching system of the perineum panel. When these nuts are removed, the tail can be detached by pulling straight up at the tail root.

1.8 Calf Pulling

A modified Dr. Frank's Fetal Extractor and drop mat have been provided with the bovine model. Padding has been added to the jack base to avoid damaging the surface paint and texture of the bovine model. The puller should be used as it normally would be in alive animal to extract the VSI calf model. Use of any other form of extractors may cause damage to the surface of the bovine model.

When placed directly behind the bovine model, the mat creates a soft landing surface for the calf, should the calf be dropped during the extraction procedure. The mat should always be used when the potential exists to drop a calf during any procedure. The calf model should never be dropped on a hard surface.

1.9 Storage

The VSI bovine unit should always be stored indoors under moderate temperature conditions. It is appropriate to store the calf model inside the bovine, but only if the uterine air bladder of the calf support system are properly inflated. However, the calf should always be removed from the bovine for transportation purposes, and carried in the carrying bag provided, or a similar container.

1.10 General

The main body of the bovine model and its large components are best cleaned with a mild detergent and low pressure-washing system. No parts should ever be cleaned with harsh solvents or abrasive tools. The bovine model is painted with acrylic latex paints and coatings, and can be touched-up if chipping or other damage occurs through use. Many components can be easily replaced or repaired if they become damaged or faulty.

BOVINE DYSTOCIA SIMULATOR

➤ 2. DYSTOCIA CALF MODEL

2.1 Care, Handling and Maintenance

Veterinary Simulator Industries has developed this dystocia calf model to aid in the instruction and demonstration of various dystocia positions and remedies. A great deal of research and testing has been involved in producing the most durable simulator with the greatest flexibility and most natural movement. However, in order to create a product that is a close biological mimic, VSI has employed a soft skin and articulated skeleton that require care and supervision in handling. The VSI dystocia calf model should be used only for table-top demonstration or with the compatible VSI dystocia bovine model. In no instance should the calf model be used with any other manufacturer's simulators.

VSI provides warranty for any manufacturer defects, but can't provide protection against damage caused by misuse and unsupervised handling. The model is heavy, yet has a delicate nature and should be treated as such, similar to a real animal.

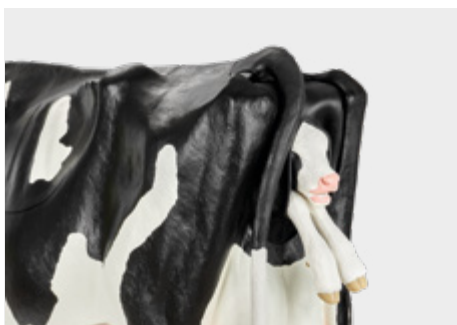
Although a real calf may experience trauma and rough handling during its birth, it only needs to endure this procedure one time. Your calf may experience the birthing procedure several times a day. These simple instructions are intended to provide guidance and awareness that will help your VSI dystocia calf model last for years of use.

We always recommend the VSI calf model be used only with a VSI bovine dystocia simulator model, or for table-top demonstration, and especially in conjunction with the VSI uterine bag, as other simulators may cause damage to the calf model. Loading the calf into the bag is a process greatly eased with the application of a moderate amount of lubricant.

Although the calf model has been designed for instruction on chaining legs and pulling with jacks, it is not intended to be unduly strained in pulling, or to be dropped on to surfaces from any height. Mishandling in this way or any other way can cause damage to the skin, hooves, and skeleton.



NOTE: When used with VSI bovine model and uterine bag, moderate amounts of water-based lubricants should be used on the calf model, inside the uterine bag and on the perineum panel to help create a realistic, slippery surface, and to limit resistance and friction that may cause damage to the soft skins.



The floor mat provided with the VSI dystocia bovine model should always be employed when there is potential danger of dropping the calf. Otherwise, a padded surface should be used in the event the calf is unduly released and is dropped.

When demonstrating use of the head-snare, only the soft VSI support piece should be used, as other snares may cause damage. The calf model should never be carried by the tail or ears, as this may result in damage.

The skin of the VSI calf model is composed of silicone, which can be difficult to repair with any materials other than the silicone adhesives recommended by VSI. When gluing tears, first thoroughly clean the damaged area with rubbing alcohol, never with harsh chemicals or solvents. Allow the glue to set and cure for at least 16 hours before use. Tears should be repaired as soon as they appear, in order to prevent further tearing and to close any openings that allow access to the body cavity.

For general cleaning, the entire calf model can be power washed or scrubbed with mild detergent and water and a soft cloth, but should not be immersed. If there are tears in the skin, care should be taken to avoid getting water inside the body. Repairs should be completed and cured before the model is given a general washing.

BOVINE DYSTOCIA SIMULATOR

The calf model is best stored in the VSI dystocia bovine model, supported by the air-support system, as long as the chambers of the support system are properly inflated. Otherwise, the calf is best kept in the provided storage bag. If the calf is stored in any other way, a padded surface and covering should be used. The soft skin, combined with the weight of the calf, can be permanently impressed by resting on a hard surface for long periods of time. The skin of the calf has a somewhat tacky nature which tends to attract dirt and other particles, therefore should be covered when not in use.

VSI continues research and development of techniques, design, and materials in an effort to improve all aspects our products, attempting to create the optimal educational and interactive tools. We invite feedback and suggestions in an ongoing collaborative effort between our manufacturing industry and our end-use clientele.

2.2 Warranty, Care and Use

VSI has invested significant time, energy, and resources into the design and development of this model. Real-world usage over an extended period has helped us determine its functionality, durability, and requirements. We have crafted pricing, purchasing, and warranty guidelines to best serve both VSI and our end-user clients, aiding in informed purchasing decisions.

The dystocia calf and bovine model were designed with specific parameters in mind, based on available technology and consultation with professional collaborators, including veterinary educators and practitioners. While the models have been used beyond these parameters in terms of frequency, environment, supervision, and expectations, attempts to adjust the design to accommodate broader use have often pushed them beyond their intended limitations.

The dystocia models are intended to demonstrate in-utero mal-presentation and subsequent manipulation to properly present the calf for extraction, under the guidance and supervision of qualified instructors. Extraction should be minimized to reduce strain and the risk of damage. When extracting the calf, it should be gently lowered to prevent damage, and a soft drop-mat should always be in place to cushion accidental drops.

These models are not intended for public demonstration unless all guidelines can be followed. They are heavy yet delicate and should be treated accordingly. Although a real calf may experience trauma and rough handling during its birth, it only needs to endure this procedure one time. Your calf may experience the birthing procedure several times a day. With proper care, clients have extracted the calf over 1000 times without major issues, but a single instance of mishandling can cause irreversible damage.

Detailed instructions on use, care, and maintenance are included with the models to ensure their longevity in educational environments, but common sense and good judgment are paramount.

VSI provides a 1-year warranty from the date of purchase for any manufacturer defects. This warranty does not cover damage caused by misuse, unsupervised handling, or defects that appear after the 1-year period. However, after the warranty period, the calf may still be repaired and refurbished by VSI for a fee plus applicable shipping charges.

We value the input, dedication, and collaboration of our educational partners in the continued development, improvement, and use of VSI simulation models. Practical models are essential to modern didactic systems, and we rely on the understanding and cooperation of professionals who utilize them in their programs.

3. BOVINE MILKING SYSTEM

3.1 Overview

The milking system for cows comprises several components designed for efficiency and ease of use. These include a refillable storage tank, soft teats, removable hose connections, and a supplementary storage bottle. To access the system effectively, it's recommended to remove the calf airbed support system from the interior of the simulator beforehand. This can be done by partially deflating the airbed and gently pulling it out of the bovine's interior (Image 1 & 2).

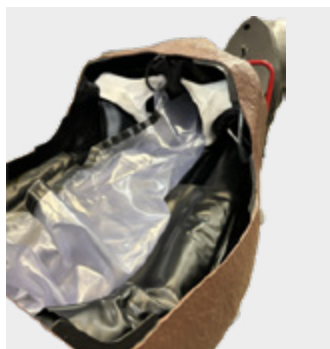
3.2 Filling the Tank

The main storage tank features a convenient refill method. Simply unscrew the cap located on the top of the tank and pour the milk through the designated spout, eliminating the need to remove the tank from the cow. Figure 3 shows the milking system in the model, figure 6 shows the top unscrewed.

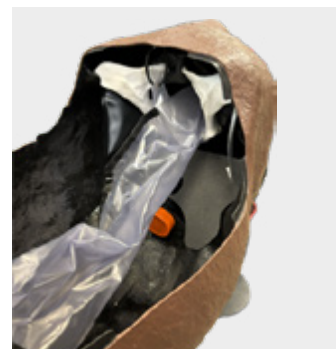
The teats operate by siphoning fluid directly from the tank. Once the tank is full, proceed to milk the teats until they are adequately primed and filled. Some minor post-dripping may occur during this process. Additionally, a plastic bottle is provided for specific exercises as a mastic milk reservoir. This bottle can be attached to any quadrant by replacing the main tank access hose.

3.3 Removing and Cleaning the Tank

For cleaning purposes, the udder and tank can be easily detached as one unit. Start by unscrewing the plastic bulkhead panel's fastening knobs (Image 3 & 4), then remove the tank and udder together while leaving the hoses attached.



(1)



(2)



(3)



(4)

BOVINE DYSTOCIA SIMULATOR

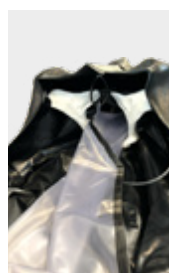
3.4 Removing and Cleaning the Tank Continued

Once outside the bovine, the hoses can be detached effortlessly. It's recommended to remove the hoses from the tank rather than the udder unless the udder requires replacement. Proper teat cleaning involves milking soapy water through them and wiping with isopropyl alcohol or mild detergent. It's important to avoid using harsh chemicals during this process. Each of these components is replaceable individually in the event of damage or malfunction

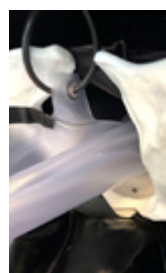
➤ 4. BOVINE PERINEUM PANEL REPLACEMENT

This panel is a part that can be replaced if needed, especially with regular use. It's a flexible panel connected to a sturdy ring flange, which is then inserted into the cow's body and secured with plastic turn-locks.

1. To remove this panel along with the flange, you'll first need to take out the pelvis. The pelvic bone structure is supported by the cow's body wall and connected to a flat support with a single bolt through the pelvic floor (Image 5). Removing this bolt allows you to detach the pelvic bone structure (Image 6).
2. Next, lift the hook-bones from their mounts to release the pelvis (Image 7). The inflatable bladder will now be visible, it is situated above/behind the pelvis. It is an inflatable piece of black vinyl material. It can be removed to allow access to the perineum panel, which should now be visible (Image 8).
3. The clear uterine bag that attaches to the perineum panel is held in place inside the body cavity by three plastic spring clips, which need to be released (Images 9 & 10).
4. With the pelvis removed, you can now remove the perineum panel. (Pay close attention to the orientation of the panel, the uterine bag, and the plastic fasteners in relation to the support ring. This is crucial for proper reassembly later on. If you're unsure about the orientation, take a photo before disassembling. This can serve as a helpful reference when replacing the birthing panel later on.) There are four turn locks that hold the panel in place. They are located on the respective corners of the panel: top left, top right, bottom left, and bottom right (Image 11). Turn the locks to loosen them. Once loosened, the panel can be removed. Apply moderate pressure while pulling and twisting the panel out of its orientation. It should come free relatively easily.
5. Begin by setting aside the birthing perineum panel. This will allow you to replace it with the palpation perineum panel. Align the palpation portion of the panel so that it faces outward from the bovine. Ensure that the vinyl cuff is facing the inside of the bovine. This is important for proper functionality and fit. Set the bottom of the panel on the bottom turn locks. Push or pull the top of the panel into place under the top turn locks. Finally, tighten the turn locks to ensure that the panel is securely in place. This will secure the panel in place. By following these steps, you can effectively replace the birthing perineum panel with the palpation perineum panel, ensuring proper alignment and secure attachment.
6. Then, reinstall the pelvic bladder and pelvis in the reverse order of how it was taken out. From here you can insert a Bovine Uterus and begin palpating (Image 12).



(5)



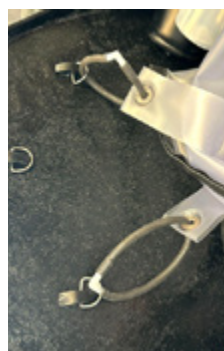
(6)



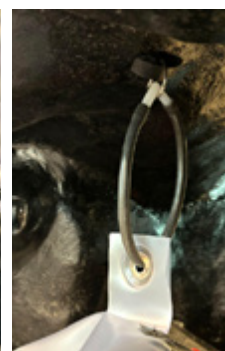
(7)



(8)



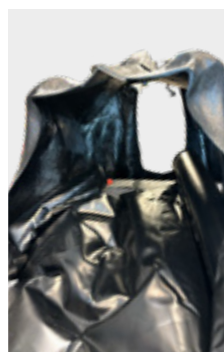
(9)



(10)



(11)



(12)



(13)



(14)



NOTE: If replacing with a palpation panel, do not forget to lubricate the panel before palpating. Do not lubricate with a latex or silicone based lubricant. A water based lubricant is recommended as silicone/latex lubricants may damage the perineum panel or the bovine uteri.

BOVINE DYSTOCIA SIMULATOR

> CONTACT INFORMATION



3B Scientific

A worldwide group of companies

3B Scientific GmbH

Ludwig-Erhard-Straße 20 • 20459 Hamburg • Germany
Phone: + 49 (0)40-73966-0 • Fax: + 49 (0)40-73966-100
3bscientific.com • info@3bscientific.com