Laparoscopic AI in small ruminants

Due to the anatomy of their reproductive tract, pregnancy rates in sheep and goats are generally lower when insemination is carried out using conventional methods such as vaginal and transcervical insemination, because the sperm must pass the cervix.

Laparoscopic insemination overcomes the "cervical barrier" by intra-uterine deposition of the semen. Satisfactory fertility rates are achieved, while the number of spermatozoa per insemination is significantly reduced.

Why is Lap AI the method of choice?

- Due to anatomical reasons, cervical passage is rarely successful, especially in ewes
- Because semen is deposited directly in the uterus (closer to the site of fertilization), lap AI results in higher pregnancy rates, especially with frozen-thawed semen
- No surgical room required; animals are inseminated under sedation in their familiar environment
- Also used for embryo recovery, embryo transfer and oocyte aspiration

Laparoscopy requires insertion of a cannula/trocar through the abdominal wall, distension of the abdominal cavity with sterile air or CO_2, and visual examination of the abdominal organs with an illuminated telescope. In laparoscopic AI, the abdominal wall is perforated twice: first to visualize the abdominal content, then to deposit the semen in each uterine horn through the second cannula and by means of a semen applicator.

The success of laparoscopic AI is highly dependent on professional equipment. A new complete set of advanced products for performing laparoscopic AI in small ruminants is now available from Minitube.

Laparoscope (telescope)
used for visualization of the abdominal organs

CO_2 insufflator
inflates the abdomen (creates a pneumoperitoneum) to allow a better view on the organs and to reduce the chance of injury to organs

Trocars
used for penetration of the abdominal wall

Light source
attached to the laparoscope to illuminate the inside of the abdomen

Video camera
attached to the laparoscope to monitor the procedure on a screen

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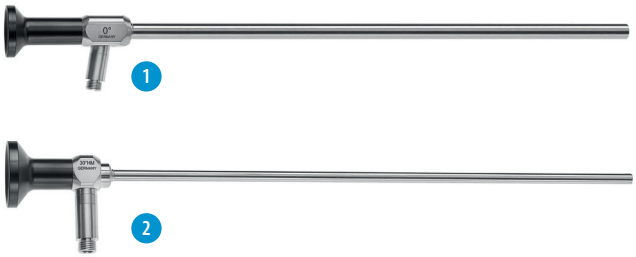
Laparoscopes

- 3-step light post adapters to connect the most common light cables directly to the endoscope
- Sapphire glasses ensure highest stability against damages of the lens system
- Optimized glass fibre arrangements ensure a uniform image brightness of highest quality
- Full HD pictures with very high detail resolution through newest CAD-designed rod lens systems
- Fully autoclavable at 134°C and 2.3 bar

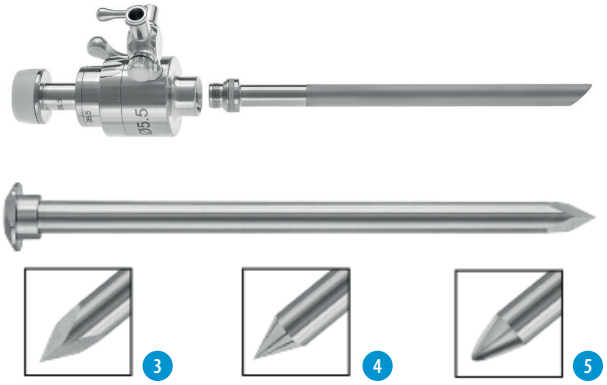
Laparoscope/telescope, Ø 5 mm, working length 300 mm	
0° [1]	23700/3050
30° [2]	23700/3053



Multiport trocar systems

- Consisting of oblique, smooth metal sleeve with automatic valve for CO_2 connection
- Reusable and autoclavable seals
- Easy opening by pushing the lever
- Stainless steel stopcock
- Ergonomic stainless steel housing
- Self-centering sleeves

Trocars, Ø 5.5 mm, working length 105 mm	
cutting pyramidal tip [3]	23700/3055
cutting conical tip [4]	23700/3056
atraumatic blunt ball tip [5]	23700/3057



Full HD cameras Z1 and Z2

- Z1: with controller, camera head, C-Mount adapter (f=25 mm)
- Z2: with controller, camera head, C-Mount adapter (f=25 mm), two remote control buttons and USB flash drive for storing images
- Both versions incl. S-Video cable, BNC cable, HDMI and HDMI-DVI cable

Full HD camera Z1 [6]	23700/3300
Full HD camera Z2	23700/3301

CO_2 insufflator

- User-friendly interface
- Highest safety standard
- Pre-insufflation mode for use with Veress needles
- High gas flow rates (20 l/min)
- Delivery contains: main unit, sterile filter, wrench set, CO_2 high pressure tube, standard silicone tube, mains cable, operating manual (CO_2 container not included)

CO_2 insufflator with high pressure tubing DIN-connection [1]	23700/3100

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LED light source

- Daylight quality
- 20.000 h lamp lifetime
- Manual or automatic light control
- Waterproof touch control panel
- Low heat conduction by improved LED technology
- Delivery contains: main unit, BNC cable, mains cable, operating manual

LED light source, 180 W [2]	23700/3200
Fibre optic light cable, Ø 3.5 mm, length 3000 mm [3]	23700/3250

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Optional accessories

Palpation probe, Ø 5 mm, graduated, working length 330 mm [4]	23700/3011
Martin grasping forceps, Ø 5 mm, multi-serrated, width 4.8 mm, working length 330 mm [5]	23700/3012
Babcock grasping forceps, Ø 5 mm, fine serrations, working length 330 mm [6]	23700/3016
Veress insufflation needle, Ø 2 mm, working length 120 mm [7]	23700/3017


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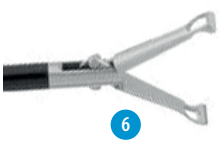
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Further equipment for laparoscopic AI in small ruminants

Robertson pipette and Lap AI Gun

Robertson pipette, non-sterile, 10/package, can be used with Lap AI gun or syringe [1]	
for standard laparoscopic insemination	23700/2200
for laparoscopic insemination especially in stimulated donor ewes with thicker uterine wall (longer needle)	23700/2201
Lap AI Gun, for use with Robertson pipettes and 0.25 ml straws [2]	23700/2205
Stylet, for removal of emptied 0.25 ml straw from Robertson pipette [3]	23700/2206
Inner catheter, for Lap AI Gun, 50/bag [4]	23700/2207

Cradle for laparoscopic AI

The cradle is used for several applications in sheep, goat, and deer when secure fixation of the animal is required, e.g., laparoscopic insemination, surgical procedures, or semen collection with electro ejaculation.

- The adjustable bed (152–175 cm) accommodates a wide range of animals
- The comfortable working height of 57 cm allows veterinarians to work ergonomically, improving accuracy and reducing fatigue during lengthy procedures
- Equipped with hydraulic lifter assists, the cradle allows for smooth, controlled adjustments of height and angle
- Rear swivel wheels with brakes provide easy movement and stable positioning
- Constructed from zinc-plated steel, the cradle offers a hygienic, corrosion-resistant surface that's easy to clean and sanitize between uses
- Dimensions: 152-175 x 45 x 57 cm (L x W x H)
- Weight: 45 kg

Cradle for laparoscopic AI [5]	23700/3000