MS Nitrogen Manual

3200105

MS Schippers

Passion for farming

NL Klantenservice	+31 (0)497 339 787
BE Klantenservice/Service Clientèle	+32 (0)14-820713
DE Kundenservice	+49 (0)2833-923630
DK Kundeservice	+45 89884187
IT Servizio clienti	035-4490369
ES Servicio al cliente	+34 931816433
UK Customer Service	+44 (0)01733592049
CA Customer Service	+1 866 995-7771
FR Service Clientèle	+33 (0)2 99 61 40 40
EX Customer Service Export	+31 (0)497 700 278

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I. Cover plate for cleaning
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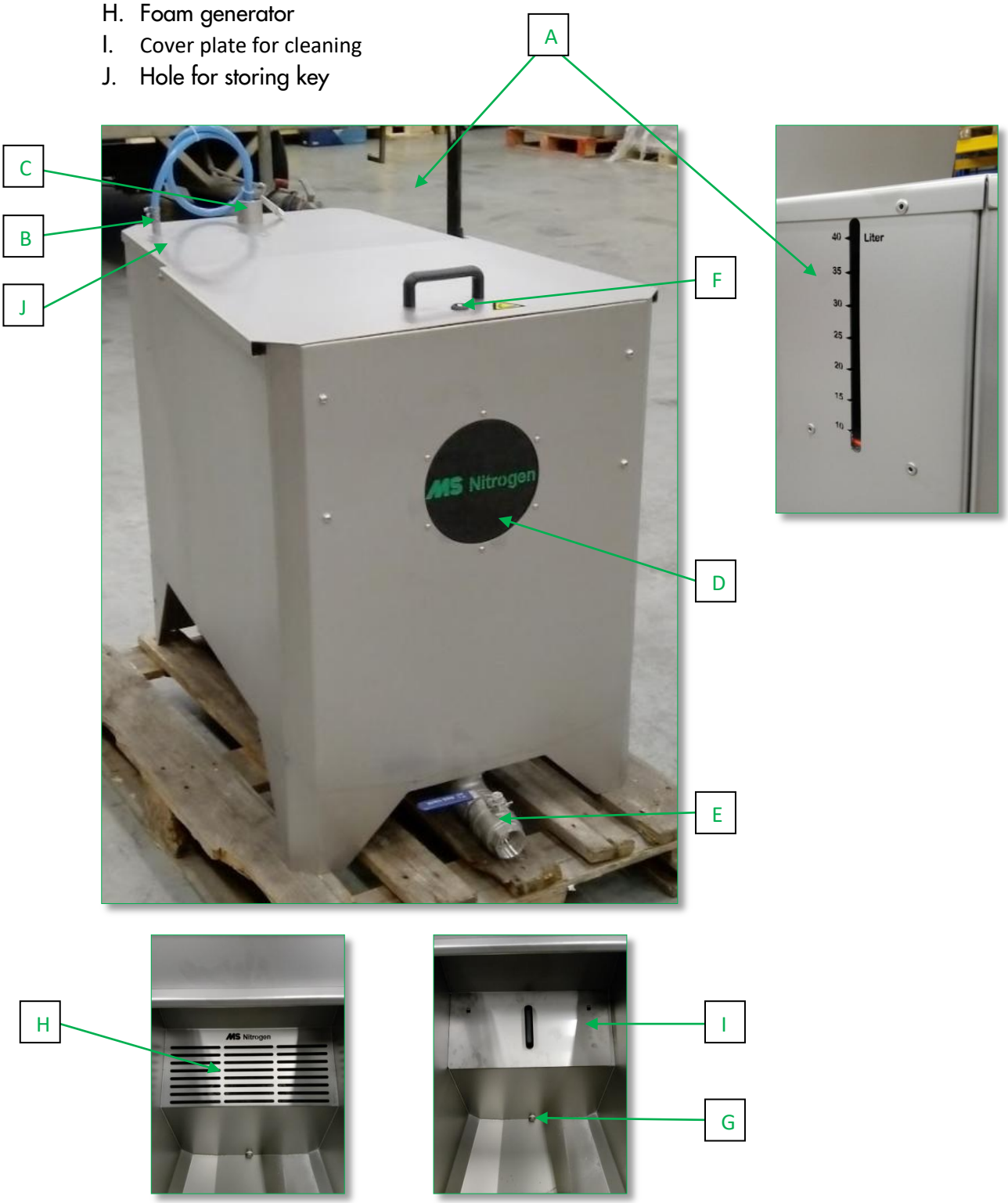


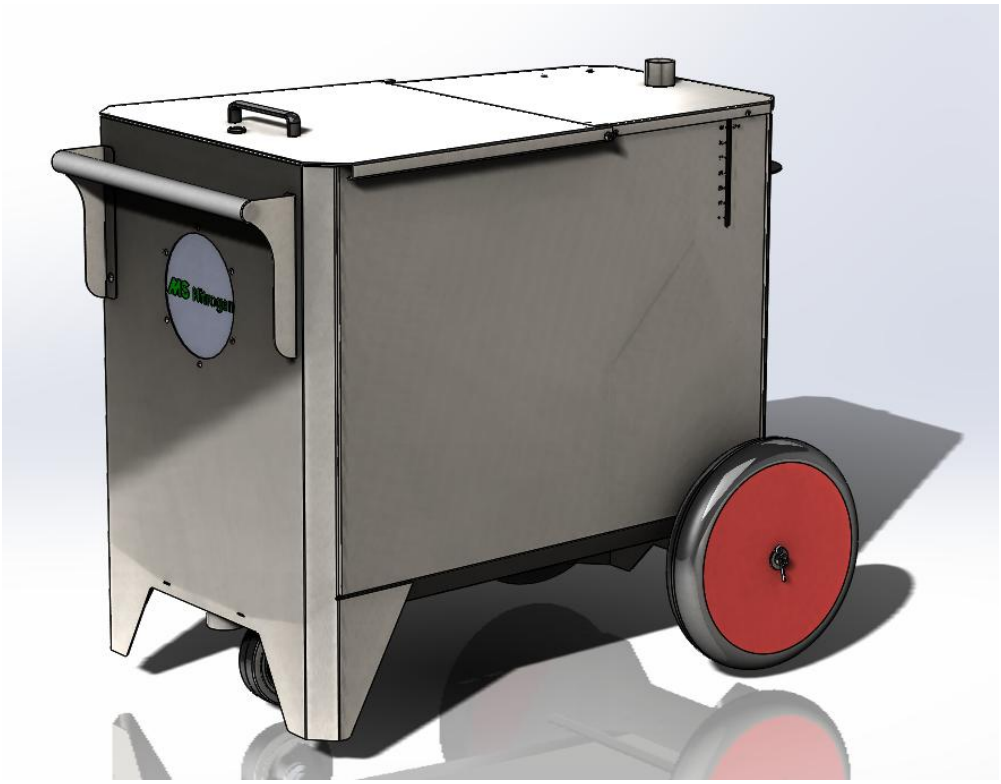
Installation

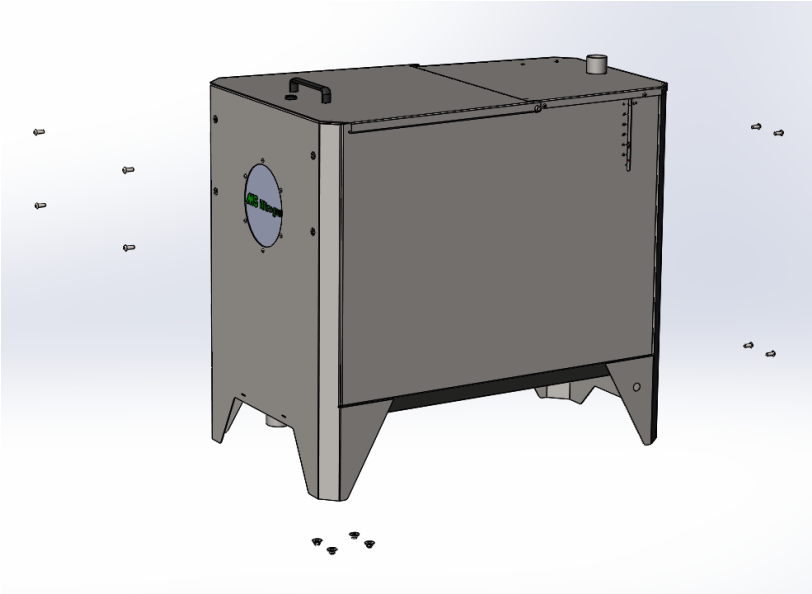
A) MS Nitrogen mobile

This section will explain how to assemble MS Nitrogen mobile correctly so that it works properly.

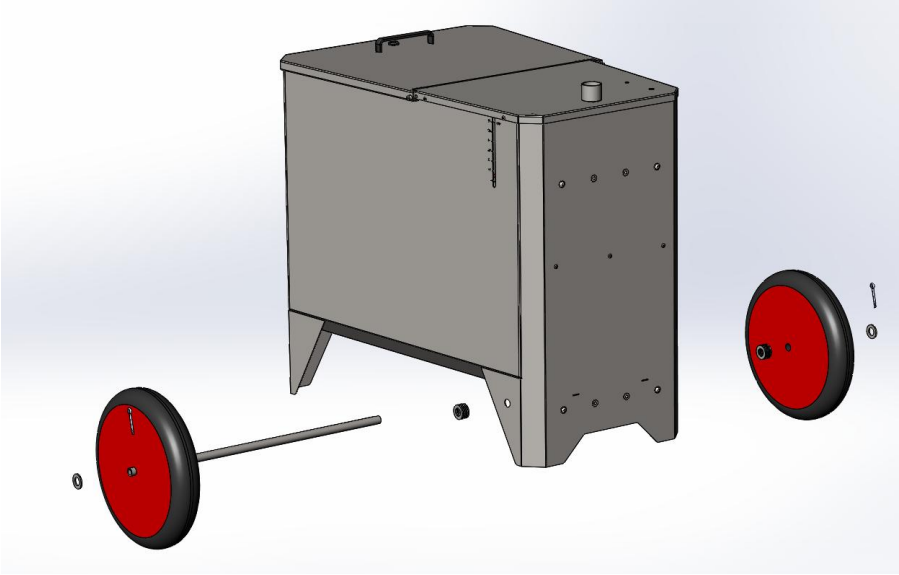
Required tools:

1. Ring or spanner 13
2. Allen key 5mm

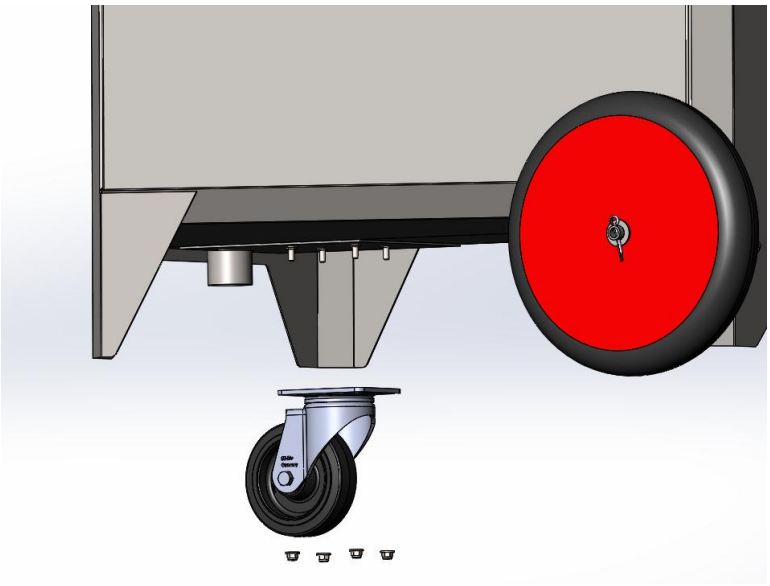




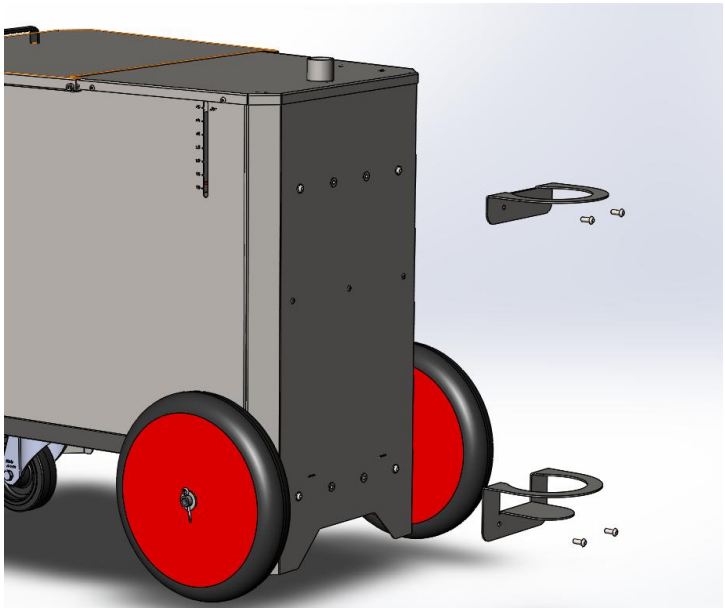
1. Loosen and put the specified bolts and nuts from the base unit in a safe place.



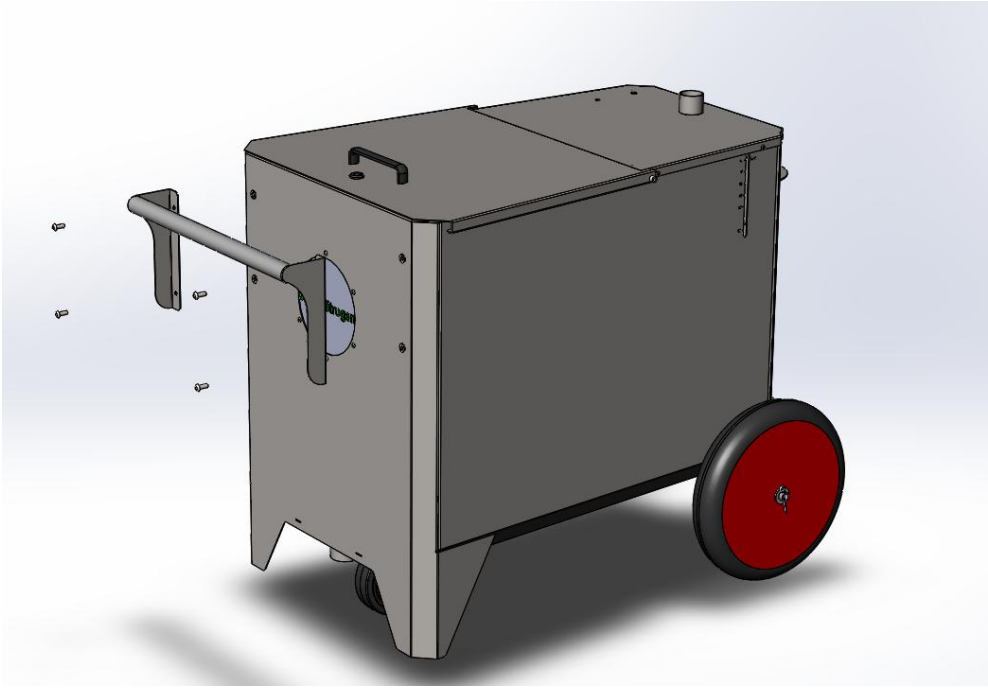
2. Slide the shaft through the holes at the rear. Fill the sides of the base unit with 7 x ring. Then place the wheels, ring and split pin. Bend the split pin open.



3. Place the swivel castor over the threaded ends in the base plate and secure with the washers and lock nuts using key 13.



4. Place the cylinder supports in the indicated positions. Go through the two middle holes if only 1 bracket set is used. In case of 2 bracket sets, they can be placed next to each other.



5. Place the handlebar at the indicated position and secure it with the pre-assembled socket M8 screws using a 5 mm Allen key.

You have now converted your MS Nitrogen to a mobile device.

B) MS Nitrogen stationary

Required tools:

- For concrete or stone: Drilling machine and suitable 10mm drill
- 13mm key.

1. Drill 4 x 10 mm holes on a horizontal line at 270 mm from the centre.
2. Insert the supplied plugs into the holes.
3. Place the bracket and tighten it with the supplied bolts using spanner 13.
4. Mount the supplied chains in the slots in the bracket.

C) Regulating valve

Required tools:

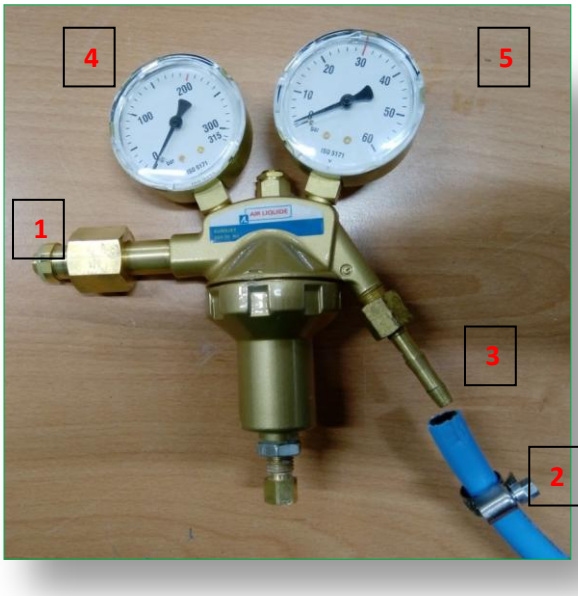
- Spanner 27
- Spanner 17
- Slot screwdriver

Step 1 Insert the gas cylinder into the wall bracket (stationary) or brackets (mobile) and secure with the chain (stationary).

Step 2 Mount the pressure reducing valve onto the gas cylinder using the screw fitting (1). Use an open-end spanner 27 for this. Check for a white sealing ring.

Step 3 Place MS Nitrogen on a stable and level surface near the gas cylinder. This way the design has a slope to the drain valve so that any liquid remaining after the process can easily be drained off.

Step 4 Make sure that a loose hose clamp is slid over the blue hose (B). Press the blue hose attached to MS Nitrogen over the hose sleeve (2) of the pressure reducing valve. Now tighten it using a slot screwdriver. **Tighten the coupling of the hose grommet (3) on the pressure reducing valve if this is not already the case!** Use an open-end spanner 17.



Before use

Step 1 Install the gas cylinder and the pressure reducing valve as described in the Installation section.

Step 2 Check the level of the foam solution (water + concentrate). If this is below the minimum level (10 L.), complete as described in **Step 3.**

Step 3 Fill the foam generator ***(H)*** through the filling tube at the back of MS Nitrogen ***(C)*** by pouring a bottle (1L) of foam concentrate into it. Add 20 litres of water to produce a foam solution of +/- 5%. *This can be read from the level indicator (A). Note: Do not replace the foam concentrate with another (home-garden-kitchen) foam. The specially developed foam concentrate provides a stable foam that is necessary for the euthanasia process to run properly.*

Step 4 The regulator is factory-set to the correct pressure, but to ensure correct operation it is important to check that the correct operating pressure is actually achieved. The pointer of the right clock **(5)** must be between the second and third line as shown below on the picture with the green dotted line.

Open the valve on the cylinder and check this setting. Also check the left clock (4) which indicates the filling. This should be between 25 bar and 200 bar (full) for a 10l cylinder. For a 50l cylinder between 15 bar and 200 bar (full).

Warning: The regulator is adjusted to this pressure to produce the right gas bubbles. Deviating from these values does not guarantee a proper effect of the euthanasia process.

User instructions

For good, pleasant operation it is important to take the following aspects into account:

- Use MS Nitrogen only at temperatures from 10 °C to 30 °C. Make sure that MS Nitrogen is frost-free and is never stored or used in the full sun.
- It is advisable to rinse the remaining foam from the euthanasia chamber with water after each euthanasia round. It is therefore useful to have a water hose and drainage point nearby so that the remaining foam can be washed away. By rinsing away the foam after each round, there is no accumulation of fine foam on the bottom.

Step 1 Check the gas and level foam solution as described in the previous section *"Before use"* and check that the pressure reducing valve is adjusted as described in the same section.

Step 2 Fill the box with the expansion foam by opening the gas cylinder until it is filled with expansion foam up to the lid. Slowly open the gas cylinder, opening too fast can cause damage to the pressure reducing valve. This will cause the device to malfunction and void the warranty.

Step 3 Check the quality of the expansion foam. The expansion foam should be homogeneous and have bubbles with a diameter of about 3 to 5 centimetres. Do not start the euthanasia process if there are too many small bubbles or the volume of the expansion foam collapses quickly. In this case, refer to the "FAQ" section to resolve the problem.

Step 4
Place the piglet(s) in the expansion foam and close the lid. Immediately open the gas supply to fill any holes in the foam layer with expansion foam. The table on the next page describes the guidelines of **how many animals per weight class** can be placed in MS Nitrogen.

Euthanasia policy
Warning: The way in which the piglets are selected for euthanasia should be described in the euthanasia policy of the farm and should be done in consultation with a veterinarian.

Step 5 Remain present during euthanasia and monitor the process (see next chapter "Monitoring the euthanasia process").
Warning: According to European legislation (EU 1099/2009 article 9.2) it is mandatory to have a back-up method for euthanasia available if the first method fails for any reason.

Step 6 After an average of 3 minutes, the euthanasia process is complete. To guarantee the euthanasia process, the animals should remain in the expansion foam box for at least 10 minutes.

Step 7 After a round, the box can be rinsed out (if this happens at a different location than euthanising, the gas cylinder must first be disconnected by taking off the hose). The expansion foam can be sprayed away with water (first open the drain tap).
*Attention! To clean the inside of MS Nitrogen, place the supplied lid **(I)** on the foam grid **(H)**. If there is no water and/or drainage available, you can also use P3-Alcodes between the euthanasia rounds (article no.* 2509928*) and a spray bottle (article no.* 2509928*).* 2509927*)*

to 'spray away' the expansion foam. Make sure that no P3-Alcodes get into the foam generator! Therefore, the supplied lid should also be placed on the foam grid!

The process can now be repeated again from step 1.

Weight class	**Exposure time**	**Max number of piglets at a time***
Piglets up to 1 kg	10 minutes in full box	15
>1 – 5	10 minutes in full box	3
5 – 10	10 minutes in full box	2
10-15 kg	10 minutes in full box	1

The table above serves as a reference for the correct use of MS Nitrogen. As a rule of thumb it can be assumed that up to max. 15 kg. of any combination may be euthanized simultaneously during each round. NB Never stack several piglets on top of each other.

The most important thing is to ensure that the expansion foam above the piglets remains intact. This way the gas remains trapped in the expansion foam. This can mean that for piglets of +/- 1 kg. it is not necessary to fill the box completely with foam. For large piglets, the amount of foam to fill the box with depends on the animals' vitality (mobility).

Maintenance

MS Nitrogen does not contain any parts that require special maintenance. Regular cleaning and disinfection is sufficient to keep the machine in good condition. Cleaning and disinfection can easily be done by disconnecting the gas cylinder and soaking the device with *MS Topfoam* and spraying it with high pressure and then disinfecting it with MS *Megades*. Please note that in the above process the lid is placed on the output grid. Additions in the foam generator will have a negative influence on the condition of the foam so that proper functioning can no longer be guaranteed.

Attention! Do not forget to remove the lid from the grid before starting a new euthanasia cycle.

In the unlikely event that the foam solution in the foam generator becomes so contaminated that it is of insufficient quality or no foam is produced, the tank can be drained by removing the plug from the drain **(G)**. Then rinse with water. When replacing the plug, ensure that it contains sufficient sealant (TEFLON-tape) to prevent the tank from emptying. Always let the fluid from the tank run out of the euthanasia compartment by opening the drain valve **(E)**.

Euthanasia with expansion foam - description of method

The method is based on displacing oxygen by letting the animals breathe in >99% noble gas/inert gas. The animals eventually die from this oxygen deficiency in tissues and organs. Because, for example, nitrogen is lighter than air, it must be trapped in the expansion foam. The bubbles burst because of the movement around the animal. The gas that is released during this process cannot evaporate through the blanket of foam that is still on top of it.

Nitrogen is present in nature in large quantities (>78%) in normal air. This is one of the reasons why euthanasia with nitrogen is more animal-friendly than, for example, applications with CO2. It is rare in normal air, and the body therefore reacts strongly to increasing amounts. Because oxygen deficiency in the body is monitored using CO2 receptors, you get the feeling of suffocating when the levels rise. CO2 also irritates the mucous membranes. These are some of the reasons why the use of CO2 is already under discussion in European legislation. These adverse effects are not the same for nitrogen, making the euthanasia process with this gas more animal-friendly and more future-proof. Other noble gases such as Argon can also be used. However, these have higher purchase costs and have no other advantages compared to nitrogen.

Monitoring the euthanasia process

European legislation (EU 1099/2009 article 5.1) requires structural monitoring of the stunning and euthanasia process.

MS Nitrogen has an inspection window. The euthanasia process can be described in different steps from the piglet's physiology.

1. The piglet loses its standing position - this is the sign that the animal is losing consciousness. This moment is usually audible and should occur after 10 to 40 seconds after placement in the expansion foam in the absence of oxygen, depending on the condition of the animal.
2. The piglet shows convulsions - this phase is also clearly audible outside the tank. First there are rhythmic movements that turn into periodic convulsions.
3. The piglet no longer moves - it takes a few minutes until the heart stops beating completely. Leave the piglet in the foam tank during this time.
4. The piglet no longer has a heartbeat - it no longer shows any signs of life and can be removed from the box.

When the piglets are removed from the foam after 10 minutes, the effectiveness of the euthanasia process can be checked by feeling if there is still a heartbeat and by testing the piglet's reflexes, such as the corneal reflex. If the piglet does not blink when getting closer to its eye, then death has occurred.

Safety

Risk of suffocation

- Never put your head into the euthanasia room!
- Always use MS Nitrogen in a well-ventilated area and make sure the gas cylinders are well-secured.
- Always place MS Nitrogen on a stable and level surface.
- Never move MS Nitrogen when it is still attached to the cylinder (in case of a stationary installation).
- Always lock MS Nitrogen when not in use and store the key safely.
- Keep the device out of the reach of children and unauthorised persons.
- Do not add elements to the box and do not drill holes in it. Any modification may cause anomailies in the operation and safety of the product.
- MS Nitrogen should only be operated by competent personnel.

The gas cylinders must be stored and moved in accordance with the supplier's instructions, which can be found in the safety data sheet to be supplied by the supplier concerned. Only move MS Nitrogen if no gas cylinder is attached to it and always close the cylinder completely after use. NB: the gas cylinders must be purchased from an external company. MS Schippers do not offer them.

FAQ

1. The quality of the expansion foam is not good (not homogeneous, small bubble size, not stable).
   Possible causes:
   a. The pressure reducing valve is not properly regulated. Check that it is set as specified in the "For use" section. Excessive gas supply can blow bubbles apart and reduce the stability of the foam.
   b. The gas cylinder is almost empty. Check the gauge on the left of the pressure reducing valve. Change the cylinder when it is empty.
   c. The foam solution is almost finished. Check the window on the foam unit and top it up if it appears to be almost empty.
   d. The foam solution has been at high ambient temperature for a long time. If the foam solution exceeds 25°C, this reduces the foam quality and stability. In order to ensure a good euthanasia process, the *foam unit* must be emptied by opening the outlet of the foam unit and the outlet of the box; after emptying, a new foam solution should be created with cold water.
2. Euthanasia of the piglets takes longer than indicated.
   Possible causes:
   a. There are air passages in the foam. After placing the piglet(s) in the foam, holes with oxygen may appear, causing the piglet to breathe oxygen. This should be kept in mind, especially for more active piglets. To prevent this from happening, fill up with foam immediately with the lid closed after placing the piglet.
   b. The piglet is too big.
   c. Too many piglets have been placed in the device at the same time.

Regulation

As mentioned earlier in this manual, there are certain regulations regarding performing euthanasia. Below is a summary of the relevant rules in this area:

EU Regulation 1099/2009

Article 3.1
When killing animals and related operations, care shall be taken to avoid causing animals any avoidable pain, distress or suffering.
Article 5.1
Business operators shall ensure that persons responsible for stunning or other personnel designated for that purpose carry out periodic checks to ensure that the animals do not show any signs of consciousness or sensibility during the period between the end of the stunning process and their death.
Article 6.2.c
In the case of stunning, the standard operating procedures
specify the measures to be taken if the checks referred to in Article 5 indicate that an animal has not been adequately stunned or that an animal still shows signs of life after it has been slaughtered in accordance with Article 4(4).
Article 7.1
Killing and related operations shall be carried out only by personnel who have the appropriate level of competence to do so without causing animals any avoidable pain, distress or suffering.
Article 9.1
Business operators shall ensure that all equipment used for restraining or stunning animals is maintained and checked in accordance with the manufacturer's instructions by persons specifically trained for that purpose. Business operators keep a maintenance register. They shall keep this register for at least one year and make it available to the competent authority upon request.

Article 9.2
Business operators shall ensure that appropriate back-up equipment is available immediately and on site during stunning activities, to be used in the event of a breakdown of the stunning equipment initially used. The backup method may differ from the method used at first.

Warning: The regulations in case of emergency slaughter may differ from the above rules.

Any national legislation and regulations/exceptions must be observed.

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