

GUIDE TO GOOD PRACTICE: WELFARE AT SLAUGHTER

THE WELFARE OF ANIMALS AT THE TIME OF KILLING

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Preface

This document provides guidance on the humane treatment of animals prior to and during slaughter or killing in slaughterhouses and on premises other than slaughterhouses (e.g. on farm) in order to safeguard or improve welfare conditions for animals. It applies to the UK and complements, and does not replace, the provisions of the Welfare of Animals at the Time of Killing Regulations (England) 2015 (WATOK), which implements Council Regulation 1099/2009/EC on the protection of animals at the time of killing in England (similar legislation applies in the devolved administrations), and provides advice on how compliance can be achieved as well as giving additional guidance on best practice. Please refer to Appendix G for a full list of the legislation which applies.

Operators and staff should remain up to date with all changes in legislation and in recommended practices.

This guidance makes reference to transport regulations which came into force on 5 January 2007, but it does not fully cover the statutory requirements which apply to the transport of live animals.

Every effort should be made to spare animals any avoidable pain, distress or suffering during handling, stunning and killing. To this end, it is important that those who are responsible for, or who carry out, these operations are aware of the licensing and training requirements, correct procedures and also the consequences if they are not followed.

Everyone engaged in the operation of slaughterhouses should familiarise themselves with the regulatory provisions to ensure that they comply with the law. Copies of Acts of Parliament and Regulations may be obtained from The Office of Public Sector Information (OPSI) (www.opsi.gov.uk) or found online at www.legislation.gov.uk (see Appendix F for further contact details).

This guidance is intended to supplement and inform the practices of FBOs. It is not intended to replace thorough and ongoing good practice by an FBO on a site-by-site basis. If a FBO has any doubt or questions about good welfare practice then it must consult welfare experts such as Defra's Animal Welfare Core Team, an Official

Veterinarian of the Food Standards Agency (FSA) Operations group (for approved establishments) or the local Animal Health and Veterinary Laboratories Agency office (for any other establishments), the FSA helpline (see Appendix F for details), welfare NGOs, such as the Humane Slaughter Association, academic institutions such as university veterinary science departments or other private providers.

Key (but not all) legislative requirements are quoted in boxes. This reflects the [EU](#) legislation that is in force on the date of publication of this guidance and the domestic legislation. If you wish to familiarise yourself with all the legal requirements protecting the welfare of animals at slaughter then you should refer directly to the [EU Regulation](#) and the various UK pieces of legislation (there are individual regulations for England, Scotland, Wales and Northern Ireland). In the text boxes it is requirements from the draft England regulations that are quoted; there are minor differences between the WATOK Regulations of all four home nations, but as they are all based on the requirements of the Welfare of Animals (Slaughter or Killing) Regulations 1995 that go beyond the requirements of the EU Regulation they are all very similar. Be sure to familiarise yourself with the requirements of the legislation applicable to the country of your operation.

Readers should be aware that any of the legal requirements quoted may be subject to change – confirmation should be obtained from the Animal Welfare Team of the Department for Environment, Food and Rural Affairs (Defra) before making the assumption that this guidance reflects an accurate and complete statement of the law currently in force. You can check the DEFRA animal welfare team website to check for any recent changes www.gov.uk/government/collections/welfare-of-animals-at-the-time-of-killing. (see Appendix F for alternative address details).

We would like to acknowledge and thank the Humane Slaughter Association for the contribution of their diagrams throughout this Guide. The HSA produces a number of [their own guides to protecting welfare at slaughter](#) – their contact details are in Annex F of this guide.

This Guide to Good Practice has been produced by the British Meat Processors Association on behalf of UK red meat processors. It is open to review and change at any time. Comments or questions on the content should be directed to

info@bmpa.uk.com or **BMPA – 020 7329 0776.**

1. Introduction

1.1 The welfare of animals in a slaughterhouse is safeguarded by using a variety of management systems. These systems must prevent animals from being caused avoidable pain, distress or suffering. **The handling, stunning and slaughter of animals must comply with the statutory requirements of [EC Regulation 1099/2009 on the Protection of Animals at the Time of Killing](#) and **The Welfare of Animals at the Time of Killing Regulations (England) 2015 (WATOK)**.** A slaughterhouse, as defined by WATOK, means any premises (approved by the FSA or non-approved) used for the slaughter of solipeds (horses), ruminants, pigs, farmed game, including any associated facilities for moving or lairaging such animals. While this guide applies primarily to red meat slaughterhouses, WATOK also applies in a knacker's yard and any other premises where animals are slaughtered or killed. The guide refers to such activities where appropriate.

1.2 All references to the responsibilities placed on slaughterhouse operators under the WATOK regulations apply in both FSA approved and non-approved premises.

1.3 Procedures in slaughterhouses must be such as to ensure that animals are not caused avoidable pain, distress or suffering at any stage of the slaughter process. Animals must either be immediately killed outright or immediately rendered unconscious and insensible until death occurs. Stunned animals must remain unconscious until death occurs through bleeding or any other means. The design, construction and maintenance of a slaughterhouse must avoid unnecessary pain, suffering or distress being caused to animals that are being killed.

1.4 Animals may become distressed in unfamiliar environments such as a slaughterhouse. Stressed and excited animals can become difficult to handle and may consequently injure themselves and others.

1.5 Although animal welfare must be the primary concern, it should be remembered that poor welfare may also lead to down-grading of the meat. Each and every animal should be treated as an individual, sentient animal. All operations must be carried out in such a way that causes the least possible stress to animals from

their arrival at the slaughterhouse until their death. Animals should be treated in a calm, unhurried and sympathetic manner and systems should be adopted to minimise handling of live animals.

1.6 The attitude of staff to welfare when handling animals can be influenced by working conditions. Slaughterhouses should provide a good working environment and their facilities and operational procedures should reduce the physical effort required by personnel when handling animals. Adequate covered accommodation should be provided for the animals awaiting slaughter which is well-ventilated, draught-free, dry and hygienic. This will enhance the environment for both the animals and staff and will result in better animal welfare, meat quality and productivity.

2. Definitions

2.1 Regulation 1099/2009 gives a list of definitions, some of which define terms in new ways. An example is that 'slaughtering' means the killing of animals intended for human consumption.

2.2 The subject matter and scope of the Regulations is to set rules for the killing of animals bred or kept for the production of food, wool, skin, fur and other products as well as the killing of animals for the purpose of depopulation and for related operations. It is important to note the changes in definitions in the Regulation from those used in WASK 1995 of 'Killing', 'Stunning', 'Slaughtering', and 'Slaughterhouse'.

2.3 Regulation 1099/2009 and WATOK 2015

"Killing" means any intentionally induced process which causes the death of the animal.

"Stunning" means any intentionally induced process which causes loss of consciousness and sensibility without pain, including any process resulting in instantaneous death.

"Simple stun" is not formally defined in the Regulation but is used in Article 4 to mean any stun that does not result in the instantaneous death of the animal.

"Slaughtering" means the killing of animals intended for human consumption.

"Slaughterhouse" means any establishment used for slaughtering terrestrial animals which falls within the scope of Regulation (EC) No 853/2004 - this is key and means that where the term "slaughterhouse" is used the provisions referred to will only apply to approved establishments.

3. Staff and Training

Animal Welfare Officer

3.1 You must appoint an [animal welfare officer](#) (AWO) for each slaughterhouse within your company that is not designated as a low throughput premises (ie. processing more than 1,000 livestock units or 150,000 birds a year). The AWO should report directly to the business operator and should carry the authority to require any necessary action to be taken to ensure animal welfare.

3.2 The role of the AWO is to assist business operators in ensuring that the welfare of animals is protected and promoted at all times while they (the animals) are on the site. They have responsibility for reporting to the business operator on matters relating to the welfare of the animals and ensuring that all aspects of the Regulation are implemented by the business operator and followed correctly.

3.3 The AWO does not have to be a dedicated role, it may be someone who carries out other tasks in the slaughterhouse, but it should be someone who has experience of all stages of animals' time at the slaughterhouse from unloading through to bleeding and death. It should be someone who can easily access all the appropriate areas of the slaughterhouse. It could be the lairage manager, the technical manager or the slaughterhouse manager. Where a plant, for practical reasons, requires an additional AWO or AWOs that is permitted. For example, there could be one AWO for the lairage and all operations involving handling and restraint and another AWO for all activity in the slaughter hall. Each AWO must hold the CoCs for the tasks under their remit.

3.4 You must have a standard operating procedure (SOP) that clearly sets out the separate, specific duties and responsibilities of the AWO, the authority of the AWO, and who s/he reports to. All staff that are or could be directed by him/her should be aware of the SOP and the AWO's role, responsibilities and authority. A sample SOP form is available at Appendix B.

3.5 The AWO is required to hold a certificate of competence (see below for more detail about the certificates of competence) for all the stages and tasks of an

animal's time on the premises –handling and care of live animals, restraining, stunning, assessment of stunning, shackling sticking, and bleeding – for which they are responsible.

3.6 This means that the AWO must hold a certificate of competence for all tasks, species of animal and tools used in the slaughtering process in that slaughterhouse or their areas of responsibility. If a slaughterhouse processes several species and/or uses a variety of stun methods, the AWO will have to hold a certificate of competence for all species and all types of stunning methods used if they have AWO responsibility for all the stunning operations. The FSA will have responsibility for verifying compliance. OfQual can provide details of the certificates available.

3.7 The AWO has responsibility for keeping a record of action taken to improve animal welfare in their slaughterhouse. This record must be kept for a year and made available to the competent authority upon request.

3.8 The record of action taken to improve animal welfare will include the management checks and monitoring checks required under the Regulation (see section 5). As part of this record the AWO should keep details of all changes made to the standard operating procedures and to processes used in the slaughterhouse. **To clarify: there is no single AWO certificate of competence, the AWO will have to hold a number of them to cover all the tasks, species and methods of animal processing and welfare that they oversee.**

Certificates of Competence at Slaughterhouses (Slaughtermen Licensing)

3.9 An animal may only be handled by someone who is aged 16 or over, restrained, stunned, slaughtered or killed or bled by someone of 18 or over and who has been issued a certificate of competence by the FSA. The certificate of competence (CoC) is essentially a licence to operate. The certificate of competence will state:

- which species of animal the CoC covers;
- what type of equipment can be used for the procedure; and
- what operations the licence holder can carry out.

3.10 The CoC will be awarded by the FSA, as the competent authority, acting on behalf of Defra. To be awarded a CoC the operative must undergo formal training and, via formal assessment, demonstrate competence in the handling of live animals in those functions s/he carries out.

3.11 Anyone slaughtering animals by the Jewish method must also be licensed by the Rabbinical Commission. Training provided by the Commission is recognised for the purposes of Regulation 1099/2009 and registration with the Commission will allow a temporary Certificate of Competence to be issued by the FSA. When the Rabbinical Commission qualification has been completed the licence issued by the Commission must be sent to the FSA for registration. Following registration the FSA will issue a licence to operate.

3.12 The licence to operate is called a certificate of competence in the Regulation but is not an academic qualification. Every operative will be required to hold a CoC for any part of their job that involves live animals. This includes:

- lairage workers engaged in moving animals at unloading, around the lairage, along races and into the stunning areas and restraints,
- people who administer the stun,
- people who shackle and hoist animals,
- people who stick, and
- people who bleed.

3.13 If a person only ever works on one of these areas then they will only need a CoC for that task. However, if they work across two or more of these operations, then they will need separate training and assessment for each operation they cover and this will be listed on their CoC.

3.14 Certificates of competence issued in other EU Member States and all four home countries of the UK are valid in the UK home countries and must be considered as such. You may wish to ask for a translation of CoCs not in English to confirm that the holder has the correct authority to work.

3.15 Newly-employed operatives who do not yet hold a CoC and those training for a new task to add to their CoC will be issued with a temporary CoC that is valid

for 3 months. All training and assessment must be completed within that 3 month period as ordinarily a temporary CoC cannot be extended. Because a separate CoC is/can be issued for each operation it is possible for an operative to start studying for one area of competence and then move to a different one as the second task will prompt the issuing of a new, different temporary CoC that covers that work. For example, an operative starts work on 1 March with a temporary certificate to cover their work in the application of an electrical stun to pigs. By the end of 1 June they must have completed their training and passed a formal assessment to be able to continue working in that function. If the slaughterhouse also processes sheep and the worker will be needed to apply an electrical stun to them then the operative will need another temporary CoC for this work. The slaughterhouse may ask for that CoC to be valid from 1 March so the operative studies for the two assessments concurrently or they may request the temporary licence for the second task at any other time. Whatever the timings, the operative would be able to perform only those tasks for which they hold a temporary or full CoC.

3.16 A temporary CoC will be issued to an operative only once the individual has been enrolled on a recognised training course. They can only perform the listed operation while under the direct supervision of someone who already holds a full CoC for the specific activity (this could be the plant OV if no other operatives hold a full CoC for that specific equipment or activity) and must also make a written declaration that they have not previously been issued with temporary CoC for the same activity.

3.17 Once an operative has completed his or her training and passed a formal assessment he will then be awarded, subject to other checks and payment of a fee, the formal certificate of competence by the FSA. This is a licence to operate.

3.18 To avoid confusion, be aware that you might hear two types of certificate mentioned. If an operative studies for and passes 12 or fewer units in red meat processing they will be issued with an award. If they study for and pass 13 or more units then they will be issued a educational qualification certificate. These are solely educational qualifications. Production of these documents as proof of training will be part of what triggers the issuing by FSA of the official permission to operate – the certificate of competence.

3.19 The formal certificate of competence can be suspended or withdrawn by Defra/FSA if an individual no longer displays sufficient competence, knowledge or awareness of the tasks they perform for which the CoC was issued.

3.20 Training courses and assessments can be done in-house, but they will need to be verified by the awarding authority. Assessors in particular will need to be confirmed as not having any conflict of interest, having the appropriate experience and knowledge and subject to a continuous, demonstrable development process.

3.21 The units that staff need to be trained in and hold a qualification in are available on the [OfQual website](#). The units break down all the slaughterhouse activities involving live animals down into tasks, and an operative may study for as few or as many as appropriate. The awarding organisations, FDQ and RSPH, will have details of the authorised training providers.

3.22 You need to ensure that any operative has either a full or temporary certificate of competence for the specific tasks they undertake with live animals from the day they start that work.

3.23 If an employee needs a temporary CoC enrol them on a accredited training course. Ensure they work only under the direct supervision of someone who holds a full CoC for those operations and arrange the assessment for within the 3 month limit. It might be wise to have the assessment a few weeks within the time limit to give the operative time to be re-assessed if necessary. Remember, a person may only hold a temporary CoC for a specific task once. If they have not passed an assessment within that time they cannot be issued with a second temporary CoC unless they are able to demonstrate to the satisfaction of Defra/FSA that there were extenuating circumstances why they were unable to complete their assessment within the three month period.

3.24 The qualification awarding bodies – currently [FDQ](#) and [Royal Society for Public Health](#) – can give details on how to get approval of in-house training and assessment schemes.

Supervision and training

3.25 It is a requirement under WATOK that, at all times when there are live animals on the premises, a person is available who is competent, and who has authority to take whatever action may be necessary to safeguard the animals' welfare. This person could be the AWO or another individual who is sufficiently competent to undertake this role.

3.26 The training of staff should be recognised as being a continuing process, which should be monitored and reviewed on a regular basis, especially if there is a change of process, updated equipment or a change in scientific advice on protecting the welfare of animals..

4. Standard Operating Procedures

4.1 In order to ensure appropriate action is taken with regard to animal welfare, you are required to draw up **Standard Operating Procedures** (SOPs) for killing and all operations relating to live animals, which must take into account the recommendations of the stunning equipment manufacturer; the key parameters for each stunning method (see Appendix E) and corrective actions. You will need to have an SOP for each species and each stunning method you use.

These operations are:

- Animal arrival and unloading – to avoid unnecessary delay
- Lairaging
- Movement of animals to the stunning pen
- Handling of animals into, and use of, all types of restraining equipment
- Stunning and assessment of stunning
- Shackling and hoisting
- Sticking (including time from stunning to sticking)
- Bleeding and assessment of the live animal
- Monitoring of restraining and stunning

Plus the SOP for the duties of the AWO (see section 2).

Also recommended is an SOP for basic management procedures

- Maintenance of restraining and stunning equipment
- Contingency planning for emergencies

The aim of requiring SOPs is to protect animal welfare, so when devising your procedures and writing the SOPs you should think about how they do this. You now have a legal requirement to ensure that all the operational practices and procedures on your premises protect the welfare of animals during their time there.

4.2 The standard operating procedure in place for each of the above operations must be tailored to your own business procedures and contain at least (where appropriate) the following key points:

- Responsible person (does the task)

- Accountable person (person with authority for ensuring any corrective action is taken)
- Description of the operation/task, including details of the expected speed of the operation
- Description of the checks in place to ensure high levels of welfare
- Frequency of the checks
- Corrective action to be taken when necessary
- Date of issue and date of last review

4.3 These procedures may exist in a variety of formats – such as training documents, manuals or work instructions. The key point is that they clearly define the procedure as set out above. When considering whether to produce separate SOPs you might like to consider that the SOP will be a key control document for enforcement purposes and must be made available to the FSA upon request (probably at audit), which might be easier if they are stand alone documents. Having stand alone documents may also facilitate review where a single operation changes.

4.4 There are example SOPs at Appendix B. At Appendix D there are policies/standards that should be incorporated into an SOP.

4.5 When writing the SOPs, you might find it useful to first write an animal welfare policy that reflects plant operations. This would then be a useful starting point for the development of the SOPs. An example animal welfare policy is included at Appendix B(a).

5. Management Checks of Restraining and Stunning Procedures

5.1 You must also implement monitoring procedures to ensure that checks on restraining and stunning are being carried out on each slaughter line.

5.2 The monitoring procedure should contain at least the following information:

- The person responsible for the monitoring procedure
- Frequency of monitoring
- The number of animals to be included in each sample checked during monitoring
- The circumstances (e.g. immediately after application of the stun) and/or time when the monitoring must take place
- The tests of consciousness and the criteria for determining consciousness
- What the corrective action should be if stunning fails

5.3 Checks should be carried across the restraining equipment, the stun box and the stunning equipment before operations start and during operation.

Appendices C & D give a suggested programme and frequency of checks. All checks should be recorded and kept for analysis and action by the site management team. The European Food Safety Authority has developed a tool to assist you in deciding the appropriate sample size. [See para 4.2 of the document.](#)

5.4 Each slaughter line for each species needs a specific and dedicated monitoring procedure.

5.5 When establishing the frequency of the checks, you need to include checks at times of staff changeovers or changes in size of animals to ensure that the correct equipment and procedures are being used.

5.6 Where non compliance is identified, appropriate action shall be taken. This may include revision and amendment of the SOPs, production being slowed down or stopped, retraining of staff or an increase made in the frequency of checks.

5.7 We recommend that you have effective procedures that allow the AWO or appropriate managers to be able to inconspicuously observe stunning and slaughter

operations at any time; such arrangements may include an aperture or window into the stunning area or the use of CCTV by the FBO for welfare monitoring and management purposes.

6. Basic Management Procedures

It is recommended that you have written and publicised procedures in place on site for each of the following and that each one has reference to the tasks and personnel involved with animal handling, particularly where it may have an impact on animal welfare:

- Training Policy – the site training policy should cover training of personnel in animal welfare where their job requires it (lairage, unloading, handling and moving of animals to slaughter, restraint, stunning, assessment of stun, shackling, bleeding).
- Cleaning – state the individual site-cleaning tasks, schedules and monitoring process of lairage, stun race, stun box and slaughtering line.
- Maintenance – restraint and stunning equipment (including manufacturer recommendations) lairage facilities (including unloading bays, pens, walkways and water bowls) and lighting are all part of the site Preventative Maintenance Schedule. A pre-start audit should be carried out in these areas before operations begin.
- Contingency Planning – ensure night staff have easy access to emergency phone numbers. Include plans for situations such as power outages or lack of water, and contacts and arrangements to slaughter animals elsewhere. Don't forget hygiene requirements and how they fit in to the treatment and protection of animals.

7. Operations

Arrival and Unloading

7.1 The AWO or someone reporting directly to them must systematically assess the welfare conditions of each consignment of animals on their arrival at the slaughterhouse and prioritise those animals with specific welfare needs and then take any measures that need to be taken. This would include bringing welfare issues on the transport vehicle to the attention of the OV.

7.2 Your slaughterhouse must have facilities that are of a suitable height and design for unloading animals from any size of vehicle directly into a lairage. In many cases, the most suitable arrangement to accommodate varying tail-board heights, and to avoid the animals having to climb down a steep slope, would be an unloading dock. This means that the dock is level with the lorry floor, or slopes up slightly, and the animals can walk through an offset entrance into the lairage area.

7.3 Any fixed ramp, adjustable loading bay or other equipment that you use in the unloading area should have a non-slip surface. If you use a stepped ramp, it should be suitable for the animals you are unloading. Animals will often be unsteady on their feet at the end of a journey, and you will need lateral (side) protection - such as solid sides, side rails or gates - on the unloading equipment to prevent animals falling or jumping off the ramp. The side gates should be solid to prevent animals from being distracted and must be fixed to prevent animals from escaping. There must be no sharp edges or protrusions that the animals may come into contact with. You will also need to fit battens (metal or wooden bars), or something similar, so that the animals can get a proper foothold. Steep slopes and unstable or slippery unloading equipment may cause them to baulk (stop and refuse to move) or fall, so you should avoid using them.

7.4 You may have problems when you unload animals from multi-tier vehicles (those that have more than one deck). Where possible:

- you should fit tail lifts; or
- hydraulically - operated decks to these vehicles; or

- use adjustable unloading bays.

7.5 The unloading area must be designed so that the animals are protected from the weather, and have enough ventilation. To keep delays and stress during unloading to a minimum, you should make sure that there is enough room in the unloading area to handle even the largest load of animals (and the largest size of animals) expected. You should also make sure that natural and artificial lighting in that area is bright enough (but not directed into the animal's eyes) to encourage the animals to leave the vehicle, and allow the unloading to go ahead safely and efficiently. Animals prefer to move from a dark area into a brighter one.

7.6 You must unload animals from vehicles as soon as possible after they arrive. If you cannot unload them (for example, if all the unloading docks are currently in use) you must follow the statutory duties to protect animals in transit from injury or suffering. These duties relate to:

- protecting the animals from the weather (such as very high or low temperatures);
and
- giving them enough ventilation (air), feed, water and bedding.

This might include providing fans, or keeping the transporter moving to encourage a constant flow of air.

7.7 You should unload animals carefully from vehicles, calmly and slowly, so that they are not unsettled or excitable when they are later handled for slaughter. Usually, if you give the first two or three animals time to move forward themselves, the others will follow. Operators should make sure that the unloading is done by a member of staff with an appropriate CoC in a secure (for example, penned or fenced) area so that if there are any problems during unloading, none of the animals escapes. Hauliers or farmers do not need a Regulation 1099/2009 CoC to undertake the unloading.

7.8 If you find that, when it arrives at the slaughterhouse, an animal is injured or unfit for any reason - and you cannot unload it from the vehicle without causing it pain - it must be humanely killed or slaughtered on the vehicle immediately, using an appropriate emergency method. Under **no** circumstances should you force such an

animal off the vehicle. The phone number of the duty slaughterman should be clearly displayed at the unloading point. If the carcass will go for human consumption then the OV will need to carry out an ante mortem inspection, but, as stated above, do not delay the killing or slaughter of an injured animal or force it to move off the vehicle.

See paragraphs 7.31-7.34 for more information on emergency killing.

Summary - unloading animals from vehicles

- Animals should be carefully unloaded from vehicles, in a calm, unhurried manner.
- Steep slopes, and unstable or slippery unloading equipment, may cause animals to balk or fall, and so must be avoided.
- Operators should make sure that the unloading is done by a competent person.
- If an animal has been injured during transportation, it must be humanely killed or slaughtered on the vehicle, using an appropriate emergency method.

Lairages

7.9 Each slaughter premises must have a suitable lairage where animals can rest when they arrive. Animals can be lairaged either in a covered, purpose-built lairage, an uncovered lairage area or in a field with appropriate protection from adverse weather conditions where necessary. There must be provision of water and feeding facilities. Water must be provided at all times and animals which have not been slaughtered within 12 hours of arrival must be fed.

Lairage facilities

7.10 Purpose - built lairages should be designed so that they can be cleaned thoroughly. The walls and floors in slaughter premises should be hard-wearing, waterproof, and easy to clean and disinfect. You should also make sure that the animals are securely penned (shut in), and cannot escape from the lairage.

7.11 The lairage should have a ventilation system (airflow) that is designed and constructed to constantly ensure the welfare of the animals. This would be draught-free and able to adapt to the expected different range of weather and temperatures at the site. A ventilator grille, which is always open, may be enough to extract stale air from the whole lairage. But you may need forced ventilation in some circumstances (for example, during very hot weather). Adjustable, wall-mounted air inlets, or extraction with the control of ventilation based on temperature and humidity monitoring fitted above the animals, can provide a draught-free flow of air. If mechanical ventilation is used there will need to be an alarm and emergency back-up facilities in case the system breaks down.

7.12 Ventilation needs to be sufficient, at the very least, to prevent build-up of carbon dioxide and noxious gases such as ammonia. The smell of ammonia is sufficient to indicate that minimum ventilation rates are not being achieved. Health and Safety maximum permitted exposure for humans is 25 ppm in the UK and this is a guideline maximum for livestock.

7.13 You should do what you can to control vermin (such as rats and mice).

7.14 Pens, passageways and races must be designed so that they allow animals to move freely in the required direction using their natural behaviour characteristics and without distraction. Pigs and sheep should be able to walk side by side except when in the race leading to the restraining equipment.

7.15 Floors on which the animals have to walk should be non-slip, and ideally have a cross-ridged or diamond pattern, or have a non-slip coating. If possible, you should use the same non-slip flooring from the lairage through to the stunning box. If you change the flooring, it can make animals balk or panic; as can grids over drains and gullies.

7.16 Whichever floor pattern you choose, you must make sure that it cannot injure animals' feet. You must keep the lairage and equipment clean, and in good working order. Every animal you keep in the lairage must have:

- enough space to stand up, lie down and turn around;
- shelter from the weather; and

- plenty of fresh, clean water.

7.17 You should make sure that any slatted or mesh floors are clean and well looked after, and that there are no gaps in which animals could catch their feet.

7.18 When deciding how many and what type of pens you will have in your lairage, you should take account of the following:

- how many animals you expect to hold at any one time;
- the size of the groups of animals to be penned together;
- the size and species of the animals to be penned together;
- the materials you will use to build the pens;
- how well ventilated the lairage is;
- the behaviour and handling needs of the species of animals to be kept, and
- the size and shape of the lairage.

7.19 Pens should be built to hold animals securely. They should be made from materials that do not need much maintenance, and that do not tend to corrode (such as galvanised-steel piping or concrete). The materials you use to build the pens should also be easy to cleanse and disinfect. We would not recommend porous material, like wood, for building pens.

7.20 For pigs, we recommend rectangular pens with solid walls. Rectangular pens offer more wall space for the pigs to lie against than square pens of the same area. The pen wall should be at least as high as the head of the largest animal to be penned. For cattle, calves and sheep, we recommend square pens made from galvanised-steel piping. As before, the height of the pen should be at least as high as the height of the largest animal's head, but even then some animals may try and escape.

7.21 Where a lairage has pens with high, solid sides, combined with a low roof and poor ventilation, ammonia can build up. In lairages like this, you should consider providing additional ventilation because the build-up of ammonia will harm both animals and staff who will experience physical distress such as breathing difficulties.

7.22 If you keep any animals in the lairage for longer than 12 hours, you must make sure that they have bedding (such as straw), or equivalent material (such as rubber slats), suitable to the species of animals, their number and what they are accustomed to. The material should guarantee the efficient drainage or absorption of urine and faeces. If possible, all the animals you keep overnight should have a solid, dry lying area so that they can rest more comfortably.

7.23 If you are involved in lairaging animals, you must make sure that:

- animals of one species are penned separately from animals of another species;
- fractious animals (those likely to injure other animals) are slaughtered immediately, and if that is not possible, they are each penned separately;
- horned cattle are kept apart from each other and from other cattle, unless the horned cattle have been reared together;
- horse lairages should have at least one loosebox, which is built so as to minimise the danger of any horse injuring itself or any other animal kept in that lairage; and
- any horse from the following list is kept separately from other horses:
 - a stallion;
 - a cryptorchid (rig);
 - a heavily pregnant female (pregnancy in the third trimester);
 - a female with a foal at foot; or
 - a horse whose hind feet are shod.

7.24 To prevent fighting, you should pen adult boars and mature bulls individually, unless separating them from the group with which they have been kept, or from females with which they have been kept, is likely to cause greater stress or injury.

7.25 You should keep animals in their own social or transport group, as mixing animals from different groups may lead to fighting. In particular, we recommend that you do not mix unfamiliar groups of pigs together. We also recommend that bull - beef (bulls which have been raised for slaughter at an earlier age) are sent to be slaughtered as soon as they arrive at a slaughterhouse. Where bull beef have to be penned, you should keep them in their rearing or transport group.

7.26 You must not leave fodder (animal feed) in the lairage pens, unless it is in racks, mangers or other suitable feeding equipment. This feeding equipment must be at the right height for all species of animals in that pen to reach easily and placed where it will not be fouled. You should regularly check that all animals in the lairage have clean water easily available at all times of their stay in the lairage, and that water troughs or drinkers are clean and in working order. You do not need to feed any animal that will be slaughtered within 12 hours, but any animal that has been on site for 12 hours or more must be fed and then given moderate amounts of food at suitable intervals.

7.27 Each animal in the lairage must have enough space to stand up, lie down and, except for cattle kept individually, turn around. Ensure that the number of animals in a pen is not too high to make this difficult for the animals.

7.28 Animals must be kept securely in the lairage in pens that are sufficiently robust to prevent the animals escaping. Each pen must have a visible sign showing the time and date of the animals' arrival. You must also display on each pen the maximum number of animal that may be kept in there. Pens used to keep cattle individually do not need to display the maximum number of animals.

7.29 You must never tie animals by their horns, antlers or nose rings. Their legs should never be tied together. When animals need to be tethered use ropes or tethers that are strong enough to not break and long enough and positioned so that they permit the animals to still eat, drink and lie down. You should ensure that any rope or tether used does not risk strangling or injuring the animal and also allows the animal to be quickly and easily released.

7.30 Lighting in all parts of the lairage should be bright enough so that animals can be inspected at any time. The lighting should not distort natural colours (for example, avoid lighting that is too bright or coloured), and the animals should be able to see without being dazzled. If you are keeping animals overnight, you should be able to switch the lighting on and off, or dim it.

7.31 You must immediately slaughter any animal that is in acute pain for any reason. This must be done before any other animals are slaughtered. Animals that

are unable to walk must be killed where they are. To help identify animals in acute pain, staff should look out for:

- increased noise;
- unwillingness or inability to move or stand up when they are encouraged to do so;
- difficulty in moving; or
- any other behaviour that sets an animal apart from the others.

7.32 You must immediately slaughter any animal that is too young to take solid food. You must also prioritise over healthy animals the slaughter of lactating dairy animals and animals that gave birth during the journey. If you cannot move an animal from the lairage without suffering or pain, you must kill or slaughter it on the spot where they lie.

7.33 Report any instances of receiving pregnant animals or newborns on arrival or in lairage to the OV as the Transport Regulations forbid the transport of animals likely to give birth during transport.

7.34 Your slaughterhouse should have a standard operating procedure for carrying out emergency killing or slaughter at any time, which means that contact details for slaughtermen are available at all times. However, if you cannot contact a licensed slaughterman quickly, any competent person may use an appropriate method of slaughtering or killing an animal in an emergency - as long as the animal does not suffer any avoidable excitement or pain. You should make sure that all your staff are aware of their responsibilities in an emergency. For example, if an animal gets badly injured in a fight with other animals and it is in pain, the animal will have to be immediately killed or slaughtered.

7.35 You must arrange to milk lactating (milk-producing) cows once at least every 12 hours, because udders that are too full are likely to cause cows pain or suffering.

7.36 If an animal gives birth on the journey or in the lairage you must ensure she and the newborn(s) are given suitable housing and space to move and suckle while waiting to be slaughtered. Their slaughter should be prioritised.

7.37 You must isolate (separate) any animal showing signs of illness or injury or in need of specific care from all other animals until its slaughter, and you need to provide suitable penning for this purpose. An isolation penning area should always be set up, ready to use, each day the abattoir is in operation which should:

- be close to the unloading point; and
- where possible, be close to the slaughter area.

7.38 Care should be taken with injured animals to not move them and cause unnecessary pain, distress or suffering. The best option may be to create an isolation pen around them where they are. Injured animals should be killed immediately. **Animals that are unable to walk must not be dragged anywhere, and must be killed where they are.** You may move an injured animal on a trolley to a place of slaughter, but only if doing so will not cause the animal any unnecessary pain or suffering.

7.39 For pigs, we recommend that you have an end wall or gate that you can push forward, on runners, through the normal (not the isolation) pen. This allows the animals to move calmly out of the pen into the approach race (a walkway along which animals are moved) to the stunning area. Gates set in the corner of pens prevent the animals from bunching, and make it easier to drive them out of the pen.

7.40 If you need to cool pigs down to settle them, it may help if you use sprinklers, which provide a fine spray of water in the lairage. However, in cold weather these sprays may chill the pigs too much. In hot weather, if you use the sprays without enough ventilation, this can increase humidity levels and overheat or even kill the pigs. We recommend that you do not spray pigs non-stop if the surrounding temperature in the lairage falls below five degrees centigrade (5°C). If you see any of the animals shivering, you should stop spraying immediately.

7.41 You should have drainage in the lairage (apart from in isolation pens) right outside the pens. There must be grids over open drains, and these should not cause any danger or distraction to the animals. If the premises has slatted floors, you should make sure that the slats are put together so that you can clean, lift and replace them. You should replace wooden slats with slats made from a material that is easier to clean, such as plastic, as soon as possible. When you remove slurry

(animal urine and dung) from under slats, you need to take special care not to foul the air with dangerous gases (such as ammonia) that can harm humans and animals. It is important that the building is well ventilated during this process.

Field lairages

7.42 If you are using a field as a lairage, you must regularly check the condition of the animals. You must not use a field lairage if its condition (see paragraph 3.28), or the weather, is likely to cause the animals avoidable excitement, pain or suffering. Field lairages should be contiguous and part of the slaughterhouse and so easily accessible for inspection purposes.

7.43 You must provide shelter for the animals in extreme weather conditions (either too hot or too cold). The animals must always have plenty of water, and should have enough food when they arrive and twice a day after that. However, you do not need to feed an animal if it will be slaughtered within 12 hours of its arrival unless its welfare is likely to be compromised.

7.44 Where necessary, field lairages should have facility to restrain an animal for thorough inspection. See paragraph 7.28 for more detail about tethering. Please note that tethering is not recommended for goats of any age. The lairages should also have enough lighting (either fixed or portable) for the animals to be thoroughly inspected at any time.

7.45 You must maintain the field lairage in such a condition that it does not put the animals at any risk. You can do this through good grassland management (for example, rotating which paddocks you use to prevent the build-up of disease, and to prevent the ground being trampled on too much or compacted). Also, you should make sure that dung does not build up.

Summary - lairages

- Each slaughter premises must provide a suitable lairage where animals may rest when they arrive.
- Animals must be securely penned so that they cannot escape from the lairage.
- Water must be available in the lairage

- Floors over which animals are moved should be non-slip, and preferably finished with a cross-ridged or diamond pattern.
- Animals should stay in the lairage long enough for them to settle.
- Any animal which is in acute pain, for any reason, must be killed or slaughtered immediately.
- An isolation pen should be available and ready for use at all times.

Handling and moving animals

7.46 You may have to move animals more than once between them arriving and being slaughtered. To reduce the stress that this may cause the animals, the number of movements should be minimised as much as possible by good lairage management. Everyone involved should always handle and move animals calmly, and with as little force and noise as possible. The advice and recommendations in this section apply to handling and moving animals anywhere in the slaughter premises.

7.47 We recommend that you keep animals that were reared together in the same group, and do not mix them with other groups. When moving animals, you should take advantage of the natural instincts of cattle and sheep to follow a herd leader. You should not drive animals from a brightly-lit area (with either natural or artificial lighting) into a darker area, and you should not make them pass any shadows, direct sunlight, or shining or moving objects. If animals do have to cross shadows, staff should be aware of animals' general dislike of shadows. In these circumstances, staff should handle animals with the appropriate level of patience and understanding. Staff who handle animals should only handle the species they are licensed to work with.

7.48 You must never hit or kick animals. Neither must you prod or handle animals in a way that might cause them avoidable excitement, pain or suffering. You should never strike an animal on, or put pressure on, any particularly sensitive part of its body (such as the head, the anus, the genitals or the udders).

7.49 You must never twist, crush or break an animal's tail. Nor may you ever touch or grasp the eyes of an animal. You must not lift or drag an animal by its head, horns, feet, tail, fleece (wool) or any other part of its body or in any way that will cause it avoidable excitement, pain or suffering.

7.50 You may never use sticks or prods (for example, cattle prods) unless animals refuse to move even though the way is clear; and you should never use them more often, or with more force, than is necessary. You should only rarely need goads if you improve your facility's design where possible, and by having well-trained animal handlers. Where possible, you should use handling aids for all species which do not need contact with the animals. For example, we recommend guide boards, flags or slappers (hand-held equipment which, when waved, gives a loud slapping sound) for moving pigs. If you use electric goads, you should maintain them in good condition and only use them as a last resort. Remember, by law you can only use electric goads that are battery operated:

- only if other encouragement to move has failed;
- on the muscles of the hindquarters (rump) of adult cattle and adult pigs;
- if an animal is refusing to move forward when the way ahead is clear; and
- if the shocks last no longer than one second each;
- are adequately spaced;
- if they are not used repeatedly.

7.51 You must not lead or drive animals over any ground or floor on which they are likely to slip or fall (for example, where the ground or floor is slippery because of rain or ice). Where necessary, you should use straw, sand, grit or some similar material to stop the animals slipping.

7.52 You should keep noise at the premises to a minimum. For example, do not slam gates. Noises - like those from machinery and metal fittings, or other sudden loud or unfamiliar noises - will often cause animals to baulk or back away. High frequency sound from pneumatic venting is particularly disturbing and should be piped away from animals. Sound from the slaughter hall should be baffled to reduce the impact on animals in the lairage or stunning pen. Metal fixtures and equipment are used in many lairages and slaughterhouses because they are waterproof,

hardwearing and fairly easy to keep clean. However, they can make a lot of noise, so you should try to reduce this by:

- using hygienic, non-metallic alternatives; or
- padding self-closing metal gates, doors and fittings to deaden the sound.

Passageways and races

7.53 When you move an animal out of the lairage to take it for slaughter, you should let it move forward freely, in a calm, unhurried way, keeping the risk of injury and stress to a minimum. Passageways should be wide enough for animals to move in their natural instinctive manner and to permit pigs and sheep to walk side by side. The place where animals are slaughtered must be as close as possible to the lairage, so they are handled as little as possible between the pen and the point of slaughter. Lighting in passageways and races should be bright enough, and positioned (for example, above rather than in front) so that it encourages the animals to move forward - bearing in mind that animals prefer to move into a more brightly-lit area.

7.54 You should design your race so that, if necessary, you can easily remove animals from the race and take them back to the lairage. You must make sure that there are no sharp edges, or anything sticking out along passages, on which animals could injure themselves.

7.55 A curved approach race is better than a straight one because an animal's natural curiosity encourages it to walk around the curve without any persuasion.

7.56 Races should be designed so that animals cannot escape from them. The approach race to the stunning pen should have solid sides. This is so that each animal can only see the rear of the animal in front of it, and will not be distracted by what is happening outside the race. The race should not be wide enough for animals to turn around, but there should be enough space for a handler to deal with any emergency (see diagram 1).



Diagram 1: Cattle race design

7.57 In sheep or pig slaughterhouses, the approach race should be wide enough for two animals to walk side by side for as long as possible as this will help to keep them calm. Where the race becomes narrower, it should be done so that the animals do not bunch together (for example, you could have the sides stepped or shaped like a labyrinth instead of like a funnel).

7.58 The slope of an approach race into the stunning area is important. For example, a slightly upward slope **encourages** animals to move forward, whereas a downward slope will **discourage** them. So, it is recommended that the floor of the approach race should have a slight upward slope towards the stunning area.

7.59 You should not hold animals unnecessarily in a race or restrainer (a device that holds the animal in place during stunning) if there is a hold-up on the slaughter line, during work breaks, or for other reasons. The race should have an extra gate, or some similar arrangement, immediately before the stunning area, so that you can remove the animals from the race and take them back to the lairage. You may be able to back cattle carefully down the race. However, with sensible planning you should not normally have to do this.

Slaughterhouse waste

7.60 The slaughter premises must be designed so that blood and waste from the slaughter hall can be removed so that animals cannot see or smell it. You must not dispose of slaughter hall waste in, or allow it to flow into, the lairage.

Summary - handling and moving animals

- You should always handle and move animals calmly, and with as little force and noise as possible.
- When moving animals, you should take advantage of the natural instincts of cattle and sheep to follow a herd leader.
- You should not drive animals from a brightly-lit area into a darker area, and you should not make them cross any shadows.
- Where possible, you should use handling aids for all species which do not need contact with the animal.
- The place where animals are slaughtered must be as close as possible to the lairage.
- Passageways and races should be well lit, to encourage animals to move forward.
- Races should be designed and constructed so that animals cannot escape from them.
- A race designed with a slight upward slope encourages animals to move forward.
- Animals should not be held unnecessarily in a race or restrainer because of delays developing on the slaughter line.

Restrainers, stunning and stun-kill methods

7.61 Any method of stunning must cause an animal to lose consciousness immediately, and to remain unconscious until its death. You can stun an animal with a mechanical instrument (such as a captive bolt instrument), or with electricity. It is vital that the animal is properly stunned. If not, the animal could regain consciousness during the slaughter process, or be paralysed but still able to feel pain during the slaughter process.

7.62 As well as stunning-only methods, you can also use stun-kill methods. A stun-kill method is one where the process results in the death of the animal. You can do this with electricity or, for pigs, with carbon dioxide gas (CO₂). For horses, boar, deer and bovines you may use a free bullet.

7.63 In Appendix E you will find a table that show stunning equipment and what species it may be used on. Ensuring the correct equipment is used to both stun and

kill an animal is an essential part of protecting their welfare. Anyone who is stunning or killing must hold the relevant CoC for the species and the equipment.

7.64 You must not stun adult cattle in a slaughterhouse unless they are confined (held) in either a stunning pen or a restraining pen (both of which must be in good working order if they are used). This does not apply to animals that must be slaughtered on a vehicle, or in a lairage, because moving them would cause them pain. You must not stun an adult bovine animal (cattle) in a knacker's yard, unless the animal is confined in a stunning pen, or its head is held in such a position that it can be stunned without causing it avoidable excitement, discomfort, pain or suffering. When captive bolt stunning does not work properly, it is often because the operator has not, among other possibilities, selected the correct cartridge or has not held the instrument in the correct position or because of poor maintenance. In addition, it may be because the animal moves its head at the last moment, so that the impact of the bolt is off target. Cattle stunning pens must be designed to:

- prevent the animal moving too far forwards, sideways or backwards;
- limit movement of the animal's head, so that it can be accurately stunned;
- release the animal's head immediately after it has been stunned;
- let the person stunning the animal easily reach its forehead; and
- Permit a repeat shot to be applied if necessary even if the animal has lost posture.

7.65 An animal is more likely to move forward into the pen if it is well lit. Stunning pens must be designed to avoid injuring or distressing the animal confined in them. You should adjust the length and width of the stunning pen for each animal.

7.66 For sheep, goats, pigs and calves, you should find that automatic restrainers, or extra restraint when animals are held in a stunning pen, will improve stunning accuracy (whether it is done mechanically or electrically).

7.67 You should not leave animals waiting in stunning pens as this can cause them avoidable excitement, pain or suffering. You should be able to easily remove an animal from a pen if there is a hold-up on the line that will delay stunning and sticking. If you are using automatic restrainers, you should be able to easily remove the animal from the restrainer and the approach race.

7.68 You must not put an animal into a stunning pen unless the person carrying out the stunning is ready to do so immediately. They must not stun an animal unless it can be stuck immediately; and once an animal is stunned, it must be stuck straight away.

7.69 Whichever stunning method you use, you must always have suitable spare stunning equipment immediately available, and keep it in good working order for immediate use if the first stunning method did not work properly. This back-up stunning equipment should be appropriate for the type of animals being stunned, but does not have to be the same as the original method of stunning.

7.70 For captive bolt equipment you must ensure that you have a selection of equipment and cartridges appropriate to the size or sizes of bovines being stunned.

7.71 You must ensure that all equipment you use for restraining and stunning animals is maintained and checked in accordance with the manufacturer's instructions. This work should be done by people specifically trained to do this.

7.72 When animals are stunned in a group stunning pen, they should be handled in groups of a size that will allow stunning and hoisting to take place immediately. This should take into account the size of the pen area, the species and size of the animals to be stunned, how many operators there are in the pen and the original size of the group.

7.73 Animals should only be moved forward when there is space ahead. You should use calm handling techniques when moving animals. The walls of the pen should have no projections on which animals or operators may injure themselves. If swing doors are used to prevent animals escaping the stun pen, they should be baffled to reduced excess noise. Lighting should be sufficient to enable operators to see clearly across all of the pen and can be used to encourage animals to enter the pen.

7.74 A funnel system can be used to passively restrain animals as they are less likely to be easily moved around the pen as the number of animals with the pen reduces. Make sure there is suitable flooring and drainage to prevent slopping.

7.75 Do not leave animals unattended in the stunning pen for extended periods and if there is a significant delay in the slaughter process ensure the animals are returned to the lairage.

7.76 Where one person alone is dealing with a number of animals, one animal must be stunned, hoisted, stuck and fully bled out before the process can begin on the next animal.

Summary - restrainers, stunning and stun-kill methods (general)

- Stunning must cause the immediate loss of consciousness in an animal, and it must last until the animal's death.
- Animals must not be left waiting in stunning pens, as this can create avoidable excitement, pain or suffering.
- An animal must not be placed in a stunning pen unless the person who is to carry out the stunning, and the person bleeding, is ready to do so immediately.
- Spare stunning equipment must always be available and ready for use.

Captive bolt stunning

7.77 Captive bolt instruments stun animals by the bolt impacting on (hitting) the skull. They may be powered by blank cartridges or compressed air. It is important that you use the correct strength of cartridge or air pressure for the size of animal and instrument, to make sure that the stun is effective. Successful captive bolt stunning depends on:

- positioning the instrument correctly (refer to Annex E);
- using the correct calibre and strength of cartridge for the make and model of the captive bolt instrument, as well as for the species and size of the animal;
- the speed, weight and diameter of the bolt; and
- the instrument being regularly and carefully maintained.

See Appendix E for more detail on the positioning of the captive bolt on the differing species.

7.78 You should always follow the manufacturer's instructions when you use and maintain the instrument. You should regularly check it to make sure that it is in good working order.

Stunning by penetrative captive bolt instrument

7.79 Correctly used, penetrative captive-bolt instruments induce immediate insensibility by administering a heavy blow to the skull of the animal. There is a transfer of energy from the bolt to the mid-brain causing severe disruption to normal electrical activity resulting from a sudden, massive increase in intra-cranial pressure, followed by an equally sudden decrease in pressure. Physical damage caused by the penetration of the bolt may also help prevent recovery.

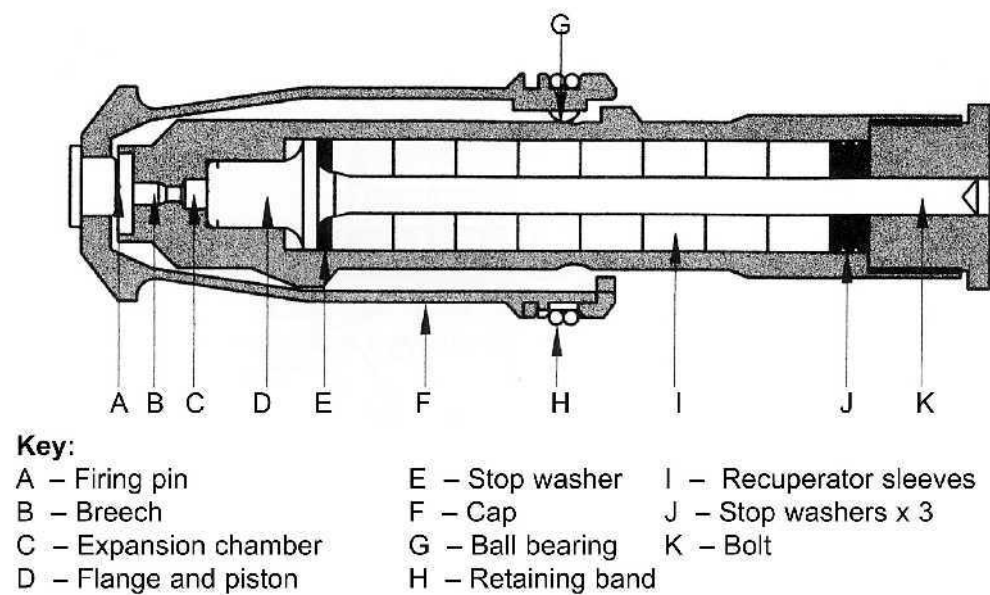


Diagram 2: Penetrative, contact-fired captive bolt stunner

Picture: Humane Slaughter Association

7.80 For all instruments follow the manufacturer's instructions closely. Different devices function differently and it is essential that they are used as intended to ensure an effective and efficient stun first time. For instruments which 'fire' on contact, you need to check that the instrument's muzzle is firmly applied to the animal's head, and that it is applied in the correct position. Additionally, If instructions advise to not place the instrument on the animal's head, take care not to do so as this will stop the animal becoming 'spooked' and unsettled by the muzzle touching its head before stunning.

7.81 It is particularly important to get the position right if the instrument is designed to fire as soon as it touches the head. An instrument with a bolt that is recessed (set back) into the muzzle before it is fired is likely to have a higher bolt speed when it hits the animal than an instrument with the bolt longer than the muzzle. The greater the bolt speed at the point of contact, the greater the amount of energy transferred to the animal's head. The greater the energy transferred (the greater the force with which the bolt hits the animal's skull) and the greater the chance of the animal being properly stunned.

7.82 If the instrument is not properly maintained, bolt speed can be slower. So, you should strip down and clean the instrument (in line with the manufacturer's instructions) at least at the end of each day's work, even if it has only been used once in that day. You should replace faulty, damaged or worn parts immediately, and regularly give the instrument a complete overhaul in accordance with the manufacturer's instructions. In addition, captive bolt guns should be returned to the manufacturer every 2 years for testing and reproofing.

7.83 A record must be kept of maintenance of stunning and restraining equipment and retained for at least one year. The competent authority can ask to see this record.

7.84 You must not stun bovines, at the back of the head. With sheep and goats the position at the front of the head should be used unless you cannot get the correct position because of the animal's horns. The recommended positions for captive bolt stunning are shown in Appendix E. It is not recommended that captive bolt guns be used on Water Buffalo, Bison or Vietnamese Pot Bellied Pigs. It is recommended that a free bullet (e.g. a shotgun) is used to stun/kill these animals instead.

7.85 For older animals, we recommend that you consider other suitable methods (such as electrical stunning, free bullet or gas stun-killing for pigs), because older animals have thicker skulls and this may prevent them from being properly stunned.

Percussion stunners

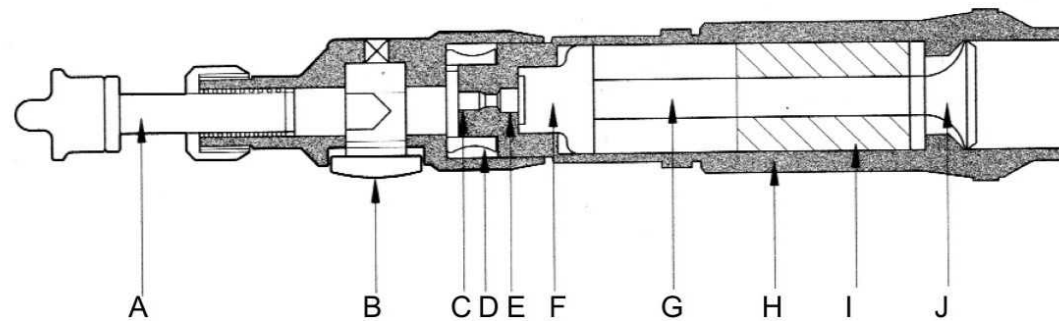
7.86 Percussion stunners (see diagram 3) deliver a massive blow to the skull (but not enough to penetrate it). You can use this instrument instead of the penetrative

captive bolt instrument, but it is permitted to use it only on ruminants less than 10kg liveweight.

7.87 We recommend that you should aim non-penetrating stunners 20mm above the recommended position for penetrative captive bolt stunners. Non-penetrating stunners may not be used for ruminants over 10kg.

7.88 We do not recommend the use of penetrative or non-penetrative captive bolt stunners for pigs because of the increased levels of post-stun kicking.

7.89 For older animals, we recommend that you consider other suitable methods (such as electrical stunning or free bullet), because older animals have thicker skulls and this may prevent them from being properly stunned.



Key:

- | | | |
|-----------------------|-----------------------|-------------------|
| A – Cocking mechanism | E – Expansion chamber | H – Barrel |
| B – Trigger | F – Flange and piston | I – Damper |
| C – Breech | G – Bolt | J – Mushroom head |
| D – Ejector | | |

Diagram 3: Non-penetrative, trigger-fired captive bolt stunner

Picture: Humane Slaughter Association

Checking for proper stunning

7.90 In the first instance, it is the slaughterman's responsibility to check that each animal he deals with is properly stunned. If, at any time, the slaughterman believes that an animal is not properly stunned, he must take appropriate action (such as re-stunning the animal immediately). The slaughterman must then identify why the

stunning failed, and correct the problem before stunning any more animals. The AWO should (as mentioned in section 5) also:

- check a number of times each day that animals are being properly stunned, and are unconscious during the slaughter process; and
- take immediate action to correct the situation if they are not.

7.91 These checks are not to replace the regular checks made by Official Veterinarians of the Food Standards Agency. Instead, these checks should become part of the slaughterhouse's normal working practices and should be detailed in the relevant SOPs.

Recognising a proper stun by captive bolt or percussion stunner

7.92 If an animal has been stunned properly, it will collapse immediately with its body and muscles rigid (the tonic phase - forelegs extended, neck arched and hind legs flexed into the abdomen (apart from pigs that can kick violently immediately after stunning). The animal will not attempt to stand up. Its normal, rhythmic breathing will have stopped, and its eyes will be fixed (in other words, staring straight ahead). If an animal does not show these signs or begins to breathe rhythmically, it should be re-stunned immediately. For this, you should use a back-up captive bolt stunner and a more powerful cartridge. **Do not** use the same position to re-stun an animal as you used on the first attempt. If you used the recommended stunning position, but the animal does not show the signs of being stunned, you should re-stun it immediately by aiming the stunner 10mm above the recommended position, and 5mm either side. If you need to make a third attempt, you should aim 10mm above the recommended position and then 5mm to the opposite side you used last time. If you used the wrong position on the first attempt, you should use the correct position to re-stun the animal. In order to re-stun an animal that has not been properly stunned in a stunning pen, we recommend that you have a facility that allows you to reach the animal at the base of the pen. You should clean and maintain the primary captive bolt instrument before you use it again.

EFSA (the European Food Safety Authority) has produced [a chart](#) which gives a clear list of the indicators to use when confirming unconsciousness after captive bolt stunning of bovines.

Summary - captive bolt stunning

- Captive bolt instruments stun by the impact (force) with which the bolt hits the skull.
- Penetrative captive bolt instruments penetrate (enter) the skull, and damage part of the brain. This damage means that the animal is unlikely to recover consciousness.
- Effective stunning by captive bolt mainly depends primarily on the speed but also on the angle of the bolt.
- If a stun is effective, the animal's normal rhythmic breathing will have stopped, and its eyeball will be fixed.

Electrical stunning and killing

7.93 Electrical stunning is the most common method of stunning pigs and sheep, and it is also used for stunning calves and goats. Electricity is also used for stunning cattle, sheep and pigs.

For more detail on electrical stunning and killing see Appendix E.

7.94 To stun an animal properly, you must make sure that:

- the voltage is high enough to deliver sufficient current;
- the equipment is in good working order;
- the electrodes are clean and correctly positioned; and
- you apply the correct current and tongs pressure to make sure that the animal is unconscious during the slaughter process.

Unless you meet **all** these conditions, the animal will not be properly stunned.

7.95 You should regularly check electrical stunning equipment (including any control panel) to make sure that it is in good working order and delivering the required amount of current. You must repair any faults in the stunning equipment immediately. You should also have the equipment calibrated regularly by a qualified electrician. Also, you must keep the spare equipment available and in good working order, in case your usual equipment fails to stun the animals properly.

7.96 Electrical stunning equipment must have a device that the operator can hear and see, so that they know how long they have been stunning a particular animal. The device should also display and record the details of the current, the voltage and the frequency. These records must be kept for at least one year and should be shown to the competent authority upon request.

7.97 The device must give a visible and audible alarm if the length of exposure falls below the required duration. The operator needs to check this device regularly to make sure that the stunning equipment is working properly.

7.98 Operators should be provided with a test resistor so that they can test the equipment prior to use on animals.

7.99 You must only use electrical stunning equipment for stunning an animal. You must not use it to goad, catch or paralyse animals so that they can be hoisted and stuck without being properly stunned.

7.100 You must make sure that an animal does not get a painful electric shock from the electrodes through incorrect application.

Head-only stunning

7.101 At present, there are two basic types of head-only stunning tongs: fork tongs or scissors tongs (see diagrams 4 and 5). Where you position the electrodes is vital. You should place them **firmly** between the eye and ear on each side of the animal's head, so that the brain is directly between the two electrodes (see diagrams 6-9). The operator needs to apply the electrodes firmly, so that they do not slip off the animal's head at any time. If you cannot apply the electrodes in the correct position (for example, on the head of horned sheep or goats), you should use a captive bolt instrument instead.



Diagram 4: Fork tongs

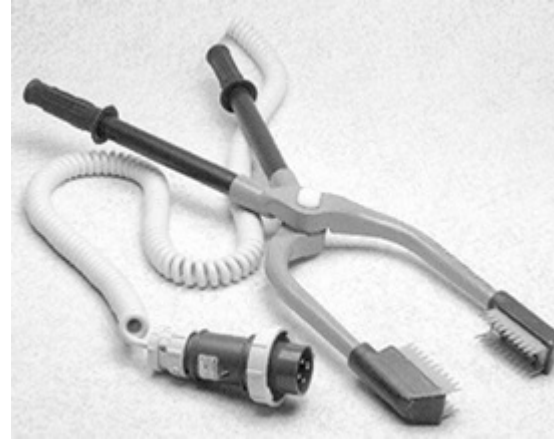


Diagram 5: Scissors tongs

Photos: Humane Slaughter Association

7.102 You should **not** apply electrodes behind the ears, or on each side of the neck, because this could paralyse the animal without causing unconsciousness, and the animal could suffer severe pain.

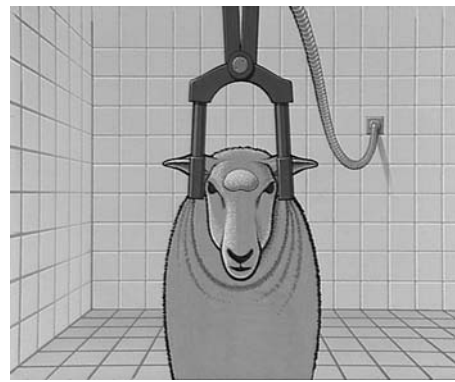


Diagram 6 and 7: Head-only stunning of sheep

Photo and picture: Humane Slaughter Association

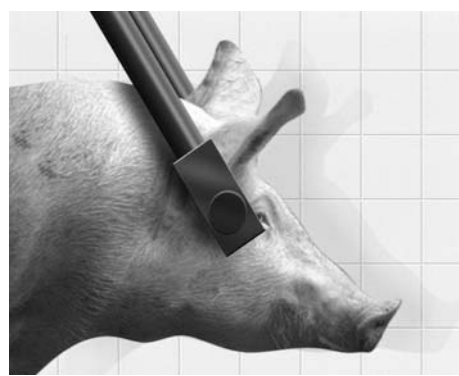


Diagram 8: Electrode Placement for Pigs



Diagram 9: Alternative electrode position for pigs

Photos: Humane Slaughter Association

7.103 Please note, however, that because of the shape of a pig's head, you may find it difficult to use the recommended stunning position. Instead, you could put the tongs just below the pig's ears, or diagonally below one ear and above the opposite eye (see diagram 10).



Diagram 10: Diagonal electrode positions for pigs

Picture: Humane Slaughter Association

7.104 You should make sure that you apply the electrodes correctly first time, so that you do not need to stun the animal a second time.

7.105 You need to be careful when stunning sheep and goats, because wool acts as an insulator - which means that it blocks the flow of current to the brain. To avoid this problem when you stun long-wool breeds, you should use electrodes that are designed to penetrate the wool and make contact with the skin. We recommend electrodes that have two parallel rows of sharp teeth, or multipoint electrodes. It is important to regularly clean electrodes and keep the electrode teeth sharp so that you can maintain good contact.

7.106 The minimum currents shown (see table 1) are those required for head-only stunning, using high-voltage equipment (this means over 250 volts). You should set the equipment to deliver no less than these currents, in line with the manufacturer's instructions. Best practice is that you need to apply the electrodes firmly to the animal's head for at least three seconds. If the electrodes are applied correctly and appropriate contact between the electrode and the animal's head for sufficient time achieved, these currents will produce unconsciousness that will last for the whole shackling and bleeding process - as long as this is done immediately (see table 2 for a description of the indicators for each stage seen with electrically stunned animals,

and see table 3 for details of how long each stage should last following head-only electrical stunning). See table 4 for a head-only stunning check list.

Table 1 - Head-only stunning

Species	Minimum required current (amps)
Cattle (6 months or older)	1.28
Calves	1.25
Sheep or goats	1.0
Pigs	1.3

Table 2 - Phases seen with electrical stunning of animals

Phases	Physical symptoms of an epileptic fit
Tonic	Animal collapses and becomes rigid No rhythmic breathing Head raised Forelegs extended, and hind legs flexed into the body
Clonic	Muscles gradually relax No rhythmic breathing Paddling or involuntary kicking (can be severe at times) Eyeballs roll in their sockets Bowel or bladder movements (or both) Excessive salivation
Recovery	Normal rhythmic breathing starts again Response to painful stimuli Becomes visually aware Attempts to stand

EFSA (the European Food Safety Authority) has produced a [chart for sheep](#) (head only) and a [chart for pigs](#) which give a clear list of the indicators to use when confirming unconsciousness after electrical stunning.

Table 3 - Expected approximate duration of each phase following head-only electrical stunning

Species	Tonic	Clonic	Recovery
Pigs	10-20 secs	15-45 secs	37-60 secs
Sheep			30-60 secs
Goats			30-60 secs
Cattle	5-20 secs	10-60 secs	45-90 secs
Calves	8-14 secs	8-28 secs	40-70 secs

Please note that these times are from the moment the electrodes are applied.

Table 4: Electrical stunning checklist (head-only stunning) for sheep and pigs

PHASE	DURATION	VISIBLE SIGNS	ACTION
TONIC	10 to 20secs	<ul style="list-style-type: none"> • animal is rigid • no rhythmic breathing • head raised • hind legs flexed into body 	<ul style="list-style-type: none"> • stick during this phase if possible
CLONIC	15 to 45secs	<ul style="list-style-type: none"> • involuntary kicking or paddling • no rhythmic breathing • relaxation 	<ul style="list-style-type: none"> • stick immediately

RECOVERY	30 to 60secs	<ul style="list-style-type: none"> • resumes normal rhythmic breathing • responds to painful stimuli • becomes visually aware • attempts to stand 	<ul style="list-style-type: none"> • stun with captive bolt, and stick immediately
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Low-voltage systems

7.107 Recent research, carried out for Defra on pigs, has shown that an animal's resistance to current flow depends on the voltage used. The work has shown that at 50 Hz and 250 volts or above, the speed and effectiveness of the stun is much improved.

7.108 In light of these important findings, we now recommend that all stunning should be carried out with at least 250 volts at 50 Hz and at least 350 volts at 1500 Hz. This will make sure that the animal does not suffer.

Head-to-body stunning and killing

Sheep, goats, pigs and calves

7.109 Proper head-to-body stunning and killing means applying electrical currents to the animal's head and its body (over its heart) simultaneously. This causes immediate unconsciousness, followed by cardiac arrest (a heart attack). Both sets of electrodes must be firmly applied as this gives good electrical contact. You must make sure that the front electrodes are in the correct position so that the current flows through the brain, and the animal does not suffer a painful cardiac arrest before unconsciousness. In head-to-body stunning and killing, one set of electrodes is placed on the forehead, and the other set is placed behind the position of the heart, about where the last two ribs are (see diagrams 11).

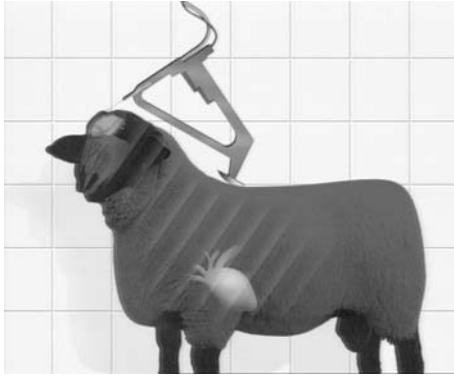


Diagram 11: Head-to-body stunning equipment for sheep

Picture: Humane Slaughter Association

7.110 You can use head-to-body and head-to-brisket electrode positions to stun and kill the animal with a cardiac arrest. (Brisket is the breast of four-legged animals.) You need to wet the electrodes, and the areas on the animal's body where you will attach them, to get good electrical contact (particularly in sheep and goats). The electrodes need to be positioned for at least three seconds (while the current is flowing), and we recommend the following minimum levels of current (see table 5). Wetting the electrodes excessively may cause arcing of electricity. You should avoid this.

Table 5 - Head-to-body stunning and killing

Species	Minimum recommended current (amps)
Calves	1.0
Sheep or goats	1.0
Pigs	1.3
Cattle	1.5

7.111 High-voltage stunning (especially head-to-body) can cause injury (for example, to the animal's shoulders and back) due to sudden muscular contractions caused by high-voltage stimulation. In some cases, you can reduce this risk of injury by lifting the animals off the floor. For example, by turning the animal off its legs when applying the tongs while the animal is being stunned, or by placing the animal in a V-restrainer before stunning

Electrical stunning and killing of adult cattle

7.112 During electrical stunning and killing, adult cattle must be confined in a stunning pen. Electrical stunning and killing of adult cattle is brought about by firstly passing a current of 2-4 amps for approximately 3 seconds through the head, using nose-to-neck electrodes, which renders the animal unconscious, followed immediately by a current of 2-4 amps which is passed for approximately 20 seconds between the nose and brisket electrodes to cause cardiac arrest and death (see diagram 12). A final cycle (not included in the diagram) causes spinal depolarisation in the animal - this means that the animal loses its ability to make any reflex actions, making it more manageable in the next stage of the process. It is essential that, during use, the electrodes are regularly inspected and kept clean to make sure that they work efficiently.

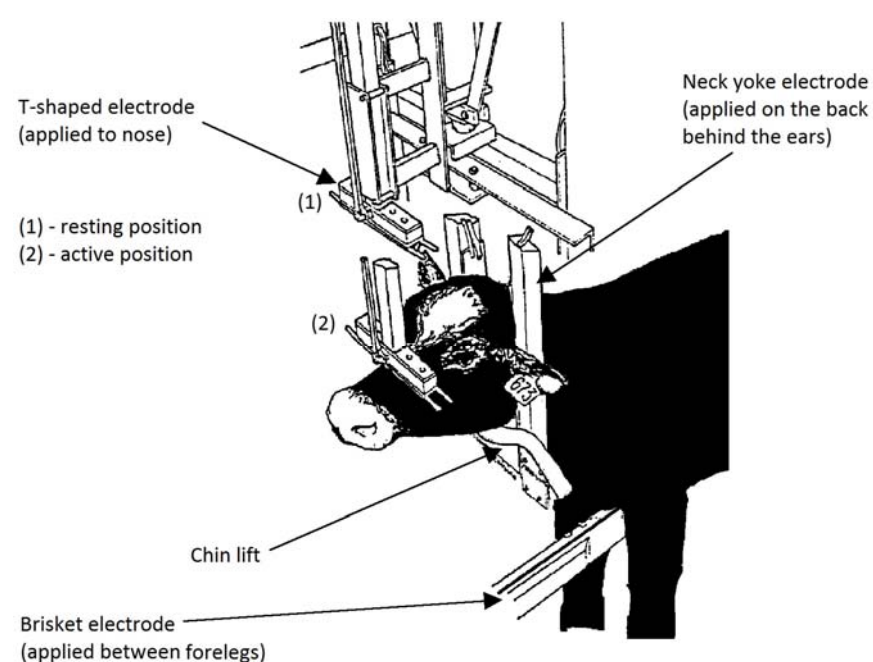


Diagram 12: Head-to-body stun-kill cattle equipment

Picture: Humane Slaughter Association

How to recognise a proper stun or stun-kill using electricity

7.113 You will recognise a proper head-only electrical stun by ensuring that the electrodes are correctly positioned and checking that the animal demonstrates the first stage of an epileptic fit. While the electrodes stay in contact with the animal:

- its whole body will become rigid;
- it will stop breathing rhythmically;
- its eyes will become fixed (staring straight ahead);
- its head will become raised; and
- its hind (back) legs will be flexed into its body.

The animal's forelegs (front legs) may also be bent at first, but they usually straighten out, which is a sign of the tonic stage (see table 2). This stage will last 10 to 20 seconds or so. After that, the animal's reflexes, such as kicking (in the clonic stage), will begin and following the clonic stage, the animal will start to breathe normally again (in the recovery stage). This is why it is particularly important that an animal stunned by the head-only method should be shackled and bled quickly.

7.114 The early signs that you see with animals that have had proper head-to-body stun-kill with cardiac arrest are similar to those you see with a proper head-only stun. The only difference is that with the stun-kill method, the animals may not show a clonic phase and they will not show any signs of recovery, such as starting to breathe normally again. If you do see any signs of recovery, you should re-stun the animal immediately with a captive bolt (which you should keep on hand for such occasions), and it should be stuck and bled straight away. See table 2 for a description of each stage involved in electrically stunning animals

7.115 If an animal does not seem to have been properly stunned, you should not leave it; instead, you should re-stun it immediately using a captive bolt stunner.

Summary - electrical stunning and killing

To make sure that the animal is effectively stunned, it is essential that:

- the equipment is in proper working order;
- the electrodes are positioned correctly and firmly;
- the electrodes are clean and well maintained; and
- the correct current is applied.

You can recognise an effective electrical stun by the following signs:

- the animal's whole body will become rigid; and rhythmic breathing will stop and will not resume before the animal is dead.

Stun-killing of pigs by exposure to carbon dioxide gas (CO₂)

7.116 Pigs may be killed by exposing them to one of several gas mixtures. It is not permitted to simply stun animals by this method, gas mixtures must be used to kill. WATOK-permitted mixtures are given in Annex I of the EU Regulation and Schedule 1 of WATOK is also relevant. This system is becoming more commonly used in the slaughter industry. Please note that the longer the pigs breathe in these permitted gas mixtures, the more of them will be killed.

7.117 The gas stunner you use must have the means of measuring continuously and displaying and recording the gas concentration and the time the batch of pigs inside have been exposed to the gas. It also must have both audible and visible warning signs if the gas inside the chamber falls below the required level. If this happens, or if there is any other problem with the chamber, you must stun any pigs still alive with either a mechanically-operated instrument (such as a percussion or a penetrative captive bolt stunner) or with electricity.

7.118 You should not load more pigs into the chamber at any time than can lie down without lying on top of one another.

Recognising an effective kill after using carbon dioxide gas

7.119 When it leaves the chamber, each pig will be lying down and its body - including its legs and jaw - will be generally relaxed. The pig will not try to move or stand up, and it will not react to a pinprick on the nose. It will also not be breathing and will not display a positive corneal reflex.

Recommended Stunning to Sticking Times

7.120 A **maximum** stun-to-stick interval of **15 seconds** is recommended for all pigs, sheep and goats. This is a legal requirement where horned sheep or goats are stunned in the poll position. However, on the majority of cattle lines, where the carcass must be hoisted to a bleed area, **maximum** stun-to-stick intervals of 60

seconds for the penetrative captive-bolt and 30 seconds for the non-penetrative captive-bolt are acceptable.

Shackling and hoisting

7.121 You must not shackle or hoist an animal unless it has been properly stunned or killed. Shackling an animal means attaching a metal chain to its leg. Hoisting means lifting the animal up (by the shackle), usually on a mechanical hoist, so that it hangs upside down. If one person is:

- stunning (apart from those operators using the CO₂ gas stun-kill method), shackling, hoisting and sticking a batch of animals single-handed; or
- carrying out more than one of these operations;
- they must complete each stage for one animal before moving on to the next animal.

This should make sure that animals are stuck as soon as possible after being stunned, so that they do not regain consciousness. (See paragraphs 7.124-126 for details about sticking procedures.)

7.122 You must not drag any animals that have been stunned or killed over any other animals, or leave them where they could be trampled on by other animals.

Free-bullet killing

7.123 In slaughterhouses, this method is generally used only on horses, large boars and Vietnamese pot bellied pigs, large sows, large bulls, water buffalo and bison. We do not recommend it for other animals. Correct positioning of the weapon is vital; the aim should be to shoot the animal through the frontal bone with the trajectory of the bullet aligned to travel down the spinal cord. You should take safety precautions to protect the person firing the weapon, and everyone else in the slaughterhouse or knacker's yard, before you use this method. When horses are killed, they cannot be killed within sight of another horse and must be killed in a separate stall.

Sticking and Bleeding

7.124 Sticking is when an animal's major blood vessels are quickly cut through while the animal is stunned and unconscious (so it cannot feel pain). These blood vessels must be severed quickly and accurately, so that the animal dies from rapid blood loss to the brain. If the animal has been simple stunned (i.e. is not dead at the time of sticking) then either its carotid arteries, or the vessels that connect them to the heart, must be severed. The knives you use should be clean and sharp, and the cut should sever all major blood vessels so that blood loss (and death) is quick. If you work on the slaughter line, you need to be able to recognise when an animal is recovering from the stun. If an animal is recovering from the stun, you need to stun it again immediately (appropriate stunning equipment, probably a captive bolt instrument, needs to be readily and easily available for this purpose).

7.125 You must not use any electrical stimulation (to reduce the likelihood of kicking after stunning), or any further dressing procedure (for example, removing the animal's hide), on an animal until the bleeding has stopped and death has been verified, and certainly not less than:

- 20 seconds after sticking sheep, deer, goats and pigs; and
- 30 seconds after sticking cattle and calves.

7.126 We recommend the following sticking methods. Thoracic bleeding methods should be used wherever practicable for unconscious animals.

For cattle, calves and horses: you should make an incision (cut) with a sharp knife in the jugular crease at the base of the animal's neck (see diagram 13). You should point the knife towards the chest so that you sever the major blood vessels coming from the heart (known as the anterior aorta and anterior vena cava). For hygiene reasons, you should use two knives: the first to cut open the skin, and the second to sever the blood vessels.

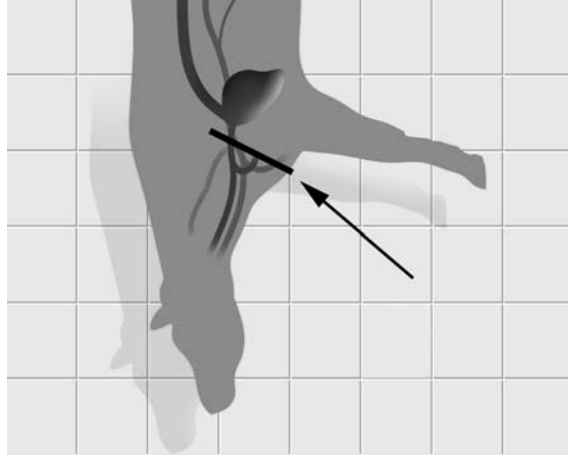


Diagram 13: Sticking cattle, calves and horses

Picture: Humane Slaughter Association

For sheep and goats: you can carry out the sticking procedure in a similar way as for cattle (as shown in diagram 14 at point 1), or you can make an incision with a sharp knife (the blade should be long enough to ensure that the blood vessels on both sides of the neck can be severed), close to the head, severing both of the carotid arteries (which come from the heart) and both jugular veins. You can only do this by cutting across the throat at point 2 on diagram 14. For hygiene reasons, you should do this with a stab incision through the side of the neck, and then cut outwards.

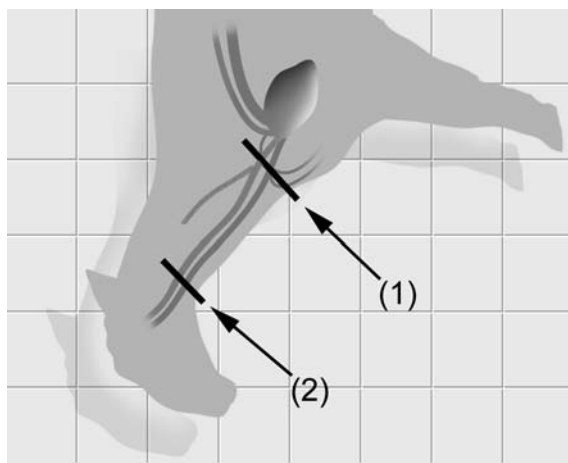


Diagram 14: Sticking sheep and goats

Picture: Humane Slaughter Association

For pigs: Hold a sharp knife (with a blade at least 120mm long) in the middle of the animal's neck, where there is a hollow in front of the breastbone (see diagram 15). You should lift the skin with the tip of the knife, using a gentle lifting movement. When you have cut through the skin, you should lower the knife handle so that the

blade is nearly vertical (straight up), and push the blade upwards to sever the major blood vessels (the anterior aorta and anterior vena cava). The wound should be large enough to allow effective (heavy) bleeding, while minimising contamination when the carcass enters the scald tank. The balance here between the welfare implications of ensuring a sufficient wound size and the hygiene implications of too large a wound size are critical as too small a wound could lead to a pig recovering consciousness during bleeding.

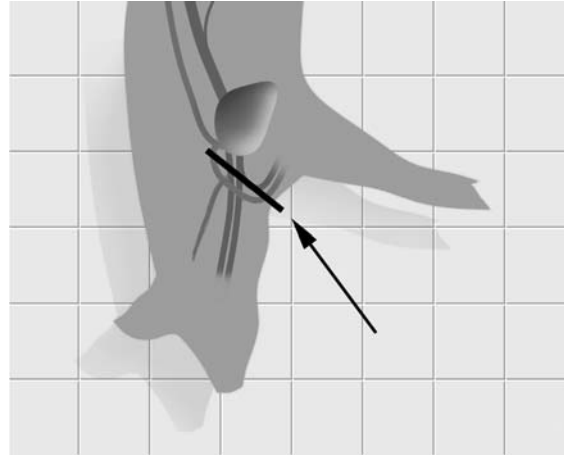


Diagram 15: Sticking pigs

Picture: Humane Slaughter Association

Summary - sticking procedures

- Effective sticking of the animal as soon as possible after stunning is essential.
- Knives should be clean and sharp, and the cut should sever all major blood vessels to make sure there is rapid blood loss.
- Electrical stimulation, or any further dressing procedure, must not be carried out on an animal until bleeding has ended, and until the necessary time periods have elapsed and once the absence of signs of life have been verified.

8. Slaughter without stunning

8.1 If you are slaughtering cattle using a religious method (such as the Jewish or Islamic method of slaughter without stunning first), you must restrain the animal upright in a pen which has been approved by the Food Standards Agency. Sheep, cattle and goats must be individually and mechanically restrained. Religious slaughter for any sheep, goat or bovine animal can only take place in an approved slaughterhouse. Only Muslims may slaughter using the Muslim method and only Jews may slaughter using the Jewish method.

8.2 To avoid causing animals avoidable excitement, pain or suffering, you must not put cattle in a restraining pen or other species, and calves, into a mechanical restraint until the person carrying out the slaughter is ready to make the cut immediately.

8.3 The cut you make during religious slaughter must sever both carotid arteries and both jugular veins. You must do so with the quick, uninterrupted movements of a sharp knife. You must inspect the knife before you slaughter each animal, to make sure the blade is not damaged, and that it is both large enough and sharp enough for the job.

8.4 After making the cut, you must not move any animals in any way, for:

- at least 20 seconds for sheep and goats; and
- at least 30 seconds for cattle;

and **not until the animal is unconscious**, whatever the species. **You must not dress the animals until absence of signs of life have been verified. (Annex III of EU Reg).**

EFSA (the European Food Safety Authority) has produced [a chart for non-stunned cattle](#) and [a chart for non-stunned sheep and goats](#) which give a clear list of the indicators to use when confirming unconsciousness and death in non-stunned animals..

8.5 You need to keep appropriate stunning equipment in good working order and ready to use:

- if a cut is not as accurate as described in paragraph 7.3 or if the animal is suffering pain or distress as a result; or for any other emergency.

Summary - religious slaughter

- Cattle must not be placed in an approved upright restraining pen until the member of staff is ready to slaughter the animal.
- For other species, animals may be moved individually into a mechanical restraint only once the member of staff is ready to slaughter the animal.
- The cut made during slaughter by a religious method must sever both carotid arteries and both jugular veins.
- Appropriate stunning equipment in good working order must always be available for use, in case a cut is not made efficiently.

Post-Pithing Ban Practices

1. Pithing is when an animal is killed by destroying its brain stem and other parts of its central nervous system. This is done by pushing a rod through the hole created by a penetrative captive bolt instrument, through the brain and into the top of the spinal column. However, from 1 January 2001 the European Commission Decision 2000/418/EC banned the pithing of any bovines (cattle), ovines (sheep) and caprines (goats) entering the human or animal food chain. To give slaughterhouses time to adapt their premises and procedures, the UK did not introduce the ban until 1 July 2001. The European Union has changed the law in this way as part of various measures to prevent the possible spread of BSE (commonly known as 'mad-cow disease'). This is because traces of brain material were found in the blood of pithed cattle, and BSE affects the brain in both humans and animals.
2. Following this ban, animal brain stems are left intact. This means that there is a risk that some animals may start to breathe again after stunning. To reduce this risk, operators must leave as little time as possible between stunning and sticking, or use a stun-kill method. Managers at the premises also need to consider the risk to the health and safety of their workers.
3. There is a ban on pithing any cattle, sheep, goats, bison or buffalo where the meat will or could go for human or animal consumption.
4. There are a number of things that the slaughter industry can do to improve animal and staff welfare, and these include:
 - making sure that the stunning is accurate;
 - making sure that captive bolt equipment and cartridges are powerful enough;
 - making sure that captive bolt equipment is maintained every day;
 - making sure that slaughterhouse staff always wear the proper protective clothing;
 - sticking animals immediately before they are shackled;
 - using a side stick, rather than a neck stick, for cattle;

- using electrical stimulation to reduce the likelihood of kicking after stunning (please note that for cattle, this can only take place 30 seconds after an animal has been stuck); and
- changing the layout or structure of the shackling and bleeding area, in the longer term (for example, installing a dry-landing grid on which animals can be bled, and raising stunning boxes so that it is easier to roll out the animals after stunning (see diagrams below)).

Standard Operating Procedure – Example 1

Movement of Livestock to Stunning Pen	
Authorised by: General Manager	<i>Issue Date / Version No.</i>

Responsibility and Authority

The person(s) responsible for carrying out this task is the *Lairage Operative*

The *Lairage Manager* ensures that this task is only carried out by trained operatives and addresses any non-compliance by the corrective action procedures outlined in this document.

Procedure

Do not move animals from the pens until the OV has signed off the Ante Mortem inspection.

Follow these basic rules when moving livestock:

- The way forward must be clear of obstacles, distraction and obstructions.
- Whistling & shouting may not always help; too much noise may panic some animals or unsettle animals in other pens.
- Work quietly and calmly around animals.
- Close gates quietly.
- Be patient.
- Always follow the goad usage requirements.
- Do not try to move too many animals in one go – move small lots e.g. no more than 10 pigs.
- Do not use the animals at the back to push the animals at the front forward.
- Exercise extreme caution when entering pens, some groups of animals may have had little or no contact with people and may become fractious or aggressive.
- Use common sense.

Arrange for emptied pens to be cleaned ready for the next batch.

For casualty animals that cannot walk to the slaughter area they must be killed where they stand or lie.

Monitoring

The Animal Welfare Officer will carry out regular checks, on the handling of livestock in the lairage as part of the Welfare audit.

Monitoring indicators

Are all the walkways and pens clear of pipes, obstacles and sharp projections?

Is livestock being handled as quietly and calmly as possible in the lairage?

Have any animals slipped and fallen?

How often are electric goads used?

Critical limits

No obstructions or obstacles in walkways and pens Livestock handled quietly and calmly.

- Goads not used unless absolutely necessary and then only as described in the legislation. [See Appendices C & D for monitoring guidelines.]

Frequency

At least every 4 hours.

Corrective action

Re-training of operatives to follow correct procedures.

Standard Operating Procedure – Example 2

Assessment of Unconsciousness in Cattle after Captive Bolt Stunning	
Authorised by: General Manager/AWO	Issue Date / Version No.

Objective

To assess unconsciousness from the stunning procedure until brain death due to bleeding.

Responsibility

Animal welfare officer (AWO) and operators working on the stunning, hoisting and bleeding procedures.

Procedure

The operators involved in the stunning procedure, hoisting and bleeding will assess signs of unconsciousness in all animals (100%), immediately after stunning, before hoisting and before and during bleeding.

The AWO (or the person designated by the AWO with certified knowledge on the assessment of unconsciousness) will assess the unconsciousness of at least 15% animals each day [though see the [EFSA tool](#) that will calculate the appropriate sample size by throughput], divided in two intervals. The assessment should last from the stunning application until brain death due to bleeding.

Control measures

By the operator

1. *Just after stunning and before being released from the box:*

- Immediate collapse
- Absence of righting reflex
- Absence of vocalizations
- Absence of rhythmic breathing

2. *Immediately before and during hoisting:*

- Absence of righting reflex
- Absence of vocalizations
- Absence of rhythmic breathing

- Absence of eye movements

3. *Immediately before and during bleeding*

- Absence of righting reflex
- Absence of vocalizations
- Absence of rhythmic breathing
- Absence of eye movements

By the AWO (or the person designated by the AWO with certified knowledge on assessment of unconsciousness)

Assessment of the following procedures:

a) Signs of unconsciousness from stunning application until brain death using the following indicators.

- Immediate collapse
- Absence of righting reflex
- Absence of vocalizations
- Absence of rhythmic breathing
- Absence of eye movements
- Absence of positive corneal reflex
- Absence of nose pinching response

b) Implementation of the SOP by the operator, and the skill and aptitude of the operator in assessing unconsciousness.

c) The records of the operators regarding insufficient stunning effect / re-stunning.

Corrective action

Operator

Any animal not showing all the signs of unconsciousness:

- The animal should be re-stunned immediately, using a back-up gun, a higher strength cartridge, 10 mm higher and 5 mm lateral from the correct shooting position (if it was correct) or in the correct shooting position, before reassessment and release from the stunning box, hoisting or bleeding.
- The ineffective gun should be checked if it needs maintenance before further use.

AWO

If one or more signs of unconsciousness are absent, and have not been detected by the operator, or although being detected by the operator no corrective action has been taken:

- Ask the operator to re-stun (immediately) using the above protocol.
- Assess stunning procedures.
- Retrain operator in the application of the SOP.
- Internal Audit (long-term).

Records (a written record should be maintained of the effectiveness of the stunning method)

Operator:

- Animals not showing signs of unconsciousness.
- Corrective measures taken.
- Records of regular gun maintenance

AWO:

From the at least 10 animals assessed daily:

- Number of ineffectively stunned animals.
- Number of ineffectively stunned animal not detected by the operator.

In addition the number of double stuns recorded by the stunning operator should be verified by an assessment of the double stuns on the skinned heads by the AWO.

Standard Operating Procedure - Proforma

Authorised by:	<i>Issue Date / Version No.</i>

Objective

Responsibility and Authority

Procedure

Control Measures

Frequency

Corrective action

Records

Example Welfare Policy Statement

The COMPANY is committed to maintaining high standards of animal welfare throughout its entire operation. All staff involved with the handling and slaughter of animals are appropriately trained in conjunction with legislative, company and customer requirements.

The scope of this policy is the unloading of livestock at the site and handling of the livestock on site, in the lairage and at slaughter.

The Policy is implemented by:

- Transport of livestock on AMB/QMS approved transport that complies with a high standard for this type of operation. All drivers to possess a certificate of competence.
- All procedures involving live or stunned animals are documented in the Company Standard Operating Procedures and are understood and followed by the relevant staff. Where procedures are amended, this change will prompt a revision to the Manual and re-training of staff.
- All staff working with animals will have relevant skills training and certificates of competence.
- All unloading of animals will take place under the supervision of a competent person; with a trained AWO available (on site or on call) should further assistance be required.
- It is our policy to slaughter all animals without causing unnecessary pain or suffering – where casualty animals are unable to walk to slaughter they will be slaughtered where they stand or lie.
- The lairage has been designed and developed with animal welfare and natural behaviour in mind, the animals being held securely and comfortably at all times within the lairage.

- All stunning/killing equipment in use is maintained regularly and checked daily when used to ensure effective operation, with back-up equipment available in case of mechanical failure.

Compliance with the policy is verified by audit (both by company representatives and by an accredited third party)

The policy is reviewed at least annually to ensure that improvements are incorporated where necessary.

This statement should be signed off by the business operator, site manager or AWO.

Management Checks Schedule

The purpose of management checks is to quickly identify and remedy things that may cause distress or harm to animals. Below is a table giving a list of suggested checks and their frequency. The final column shows where information should be recorded or suggests how a check should be carried out and used to improve problem areas.

Standard	Frequency	Key Point
The AWO has accountability for ensuring all checks are carried out.		<ul style="list-style-type: none"> - Where the check is not completed by the AWO, the AWO should counter sign the document and will remain responsible for its completion and availability if required for audit - If appropriate the individual identifier for an animal should be recorded i.e. Ear tag
<ul style="list-style-type: none"> - Stunning Equipment maintenance, include checks for signs of damage and for cleanliness - Daily Stun Record - AWO Check Sheet 	Daily	<p>This is a legal requirement – maintenance should be to meet manufacturer's recommendations</p> <p>EFSA has developed a tool to help you devised the sample size most appropriate to your throughput. See para 4.2 of the linked document.</p> <p>Include all details of animals being held overnight</p>
<ul style="list-style-type: none"> - Job Observations - Stun Accuracy and Effectiveness 	Daily	Irregularly but frequently
<ul style="list-style-type: none"> - AWO Check Sheet - Sites should hold regular internal meetings specific to welfare within the site 	Monthly	<ul style="list-style-type: none"> - Issues and concerns to be raised with the management team - Attendees and any actions should be

		recorded
<ul style="list-style-type: none"> - Slips and Falls - Vocalisation - Electric Goad Use - Feed and Bedding Stock - Out of Hours Check - Cleanliness and Clipping - Fabric and cleanliness of lairage 	Daily recording	<ul style="list-style-type: none"> - Audit monthly to identify trends, problems, etc. See Appendix D for the Farm Animal Welfare Council's (FAWC) recommended measuring systems.
<ul style="list-style-type: none"> - Transport Welfare Incident - Animal Incident - Livestock Transport 	As Required	<ul style="list-style-type: none"> - Full record should be kept of complaints/issues which relate, or may relate, to animal welfare raised by staff, external auditors, farmers or retail customers and the corrective actions taken - Inspect for stocking density, cleanliness and other welfare concerns, etc as required by assurance schemes.
In the event of a breach of animal welfare policy, a procedure of action and communication should be followed		<ul style="list-style-type: none"> - Where records indicate a breach of policy, the procedure for communication should be followed N.B. The AWO has authority to implement corrective or containing action where appropriate
Retention of Records		<ul style="list-style-type: none"> - Records to be kept as long as required by legislation (see text of this guide for detail)

Non-compliances should be reported, preferably on a form provided – this permits consistency of approach regardless of who is doing the checks. Action must be taken immediately in instances where animal welfare may be compromised and then recorded on the form. A summary of the audit results should be included at welfare/senior management meetings.

Animal Welfare at Slaughter - Monitoring and Assessment Systems

The Farm and Animal Welfare Committee has developed a number of measurements that are relatively quick and simple to carry out, and have practical applications and are in use in many abattoirs. These are described below.

Number of animals slipping or falling

This is a good indicator of the condition of the floor and evidence of the provision of a non-slip surface. Over zealous driving of animals may also be a cause. Scoring is most useful in critical areas of the system: at unloading, major passageways and turns within the lairage, crowd pens, pre-stun races, restrainer entrances, stunning boxes, and group stunning pens. This measure is relevant to all species. Several groups of animals should be scored at the same time, e.g. 50 cattle, 100 pigs or sheep. The scoring systems set out below are suggestions of best practice.

SCORE	DEFINITION
Excellent	No slipping or falling
Acceptable	Slipping of less than 3% of animals
Not acceptable	1% falling down (body touches the
Serious problem	5% falling down or 15% or more

Number of animals goaded or hit

Goad use is most prevalent within crowd pens, pre-slaughter handling races and at the entrances to a stunning box or restrainer/conveyer. The use of electric goads at unloading, within the lairage and on sheep should not be necessary. Use of goads may be indicative of poor handling design or habituation of staff.

Electric goad use for cattle

SCORE	Crowd pen or race	Entrance to stun box	Total
Excellent	None	5% or less	5% or less
Acceptable	5% or less	20% or less	25% or less
Serious problem			50% or more

Electric goad use for pigs

SCORE	Crowd pen or race	Entrance to stunner	Total
Excellent	None	10% or less	10% or less
Acceptable			25% or less
Serious problem			50% or more

Vocalisation of cattle and noise levels for pigs

Cattle have been shown to vocalise in response to an 'unacceptable' event, for example goading, slipping, restraint and separation from others. It is normal for cattle to vocalise within the lairage so this area should not be scored. It is important to score different groups of cattle from different producers.

Vocalisation levels of cattle in crowd pen, race stun box, restraining device or crush

SCORE	DEFINITION
Excellent	0.5% or less of cattle vocalise
Acceptable	3% or less of cattle vocalise
Not acceptable	4-10% of cattle vocalise
Serious problem	Over 10% of cattle vocalise

As pigs are by nature vocal animals a more objective measure is to record overall noise levels with a sound meter. Average noise readings recorded for pigs in the lairage are between 74-90 dB(A). In the handling system noise levels are between 88-99 dB(A). Maximum readings in handling systems have ranged from 105-120 dB(A). Levels of 90dB(A) require staff to wear appropriate ear protection at all times. Noise levels for pigs should be measured at set points in the system, over a number of producer batches and different times of the day.

Vocalisation scoring and noise level measurement are not useful welfare monitoring tools for sheep.

Behaviour of the animals

Assessing the behaviour of the animals is a more difficult technique and will take some time to get used to recording. Behavioural measures do help to identify those parts of the system which are effective and non-effective from the animals point of view, i.e. a general idea of how easily animals move through the system.

Choose a point within the system, such as a race way or entrance point to the stunning box or restrainer and record the events for each animal. This information can be combined with scoring slipping, falling, goading and individual vocalisation (cattle only) if the assessor is familiar with the techniques.

Effective behaviours indicate that the animals are moving well through the system and include walking forward, waiting, using steps, and slowing down.

Non-effective behaviours indicate that animals are not moving well through the system and include stopping, refusal, balking, jamming, reversing, jostling, pacing and turning.

Defecation or urination by animals in the handling system can also be noted as these are also indicators of potential distress in these areas.

Non-effective behaviours are usually displayed due to an 'hazard' in the handling area, for example animals may jam because a raceway is too wide, they may stop or refuse because of a solid surface or change in light patterns.

A high percentage of non-effective behaviours will identify a problem in the system that needs rectification. Any changes should be made one at a time followed by another assessment. In this way it is possible to make positive progress. Changing several design features at once carries a risk that if assessment shows no change then it is difficult to identify the changes that may have worked and those that did not.

Stunning and Sticking - Technical Information

Ensuring the correct equipment is used to both stun and kill an animal is an essential part of protecting their welfare. Only the methods of stunning for the species mentioned in the table below are permitted. This table is a replica of Annex 1 of Regulation 1099/2009. The notes 1, 4, 5, 7 & 8 below the table are numbered as they are in the Regulation.

Appendix E.1 Key Requirements of Stunning and Sticking

<i>Method</i>	<i>Permitted Species</i>	<i>Key Considerations to Implement</i>	<i>Information to Consider</i>	<i>Monitoring</i>
Penetrative captive bolt	All species	Position and direction of shot. Appropriate velocity, exit length and diameter of bolt according to animal and size of species	Manufacturer's instructions. Size and species of animals being slaughtered	Training and supervision Audit against written procedure
Non-penetrative captive bolt	Ruminants of less than 10kg live weight	Position and direction of shot. Appropriate velocity, shape and diameter of bolt according to animal and size of species	Manufacturer's instructions. Information on size and species of animals being slaughtered	Training and supervision Audit against written procedure
Head only electrical stunning	All species	Minimum current (A or mA) Minimum voltage (V) Minimum Frequency (Hz) Minimum time of exposure Maximum stun to stick interval (s) Frequency of calibration of the equipment Optimisation of the	Legislation – minimum requirements for current. See section 3 below Other – manufacturer's instructions When using head-only electrical stunning, electrodes must	Training and supervision Audit against written procedure and minimum requirements (these key parameters must be measurable i.e. by clear dial or display)

		<p>current flow</p> <p>Prevention of electrical shocks before stunning</p> <p>Position and contact surface of electrodes</p>	<p>span the brain of the animal and adapt to its size</p>	
<p>Head to back/body electrical stunning</p>	<p>All species except lambs or piglets less than 5Kg live weight, and cattle</p>	<p>Minimum current (A or mA)</p> <p>Minimum voltage (V)</p> <p>Minimum Frequency (Hz)</p> <p>Minimum time of exposure</p> <p>Frequency of calibration of the equipment</p> <p>Optimisation of the current flow</p> <p>Prevention of electrical shocks before stunning</p> <p>Position and contact surface of electrodes</p>	<p>Legislation – minimum requirements for current. See section 3 below</p> <p>Other – manufacturer’s instructions</p>	<p>Training and supervision</p> <p>Audit against written procedure and minimum requirements (these key parameters must be measurable i.e by clear dial or display)</p>
<p>Carbon dioxide</p>	<p>Pigs</p>	<p>Concentration</p> <p>Duration of Exposure</p> <p>Maximum stun to stick interval</p> <p>Quality of the gas</p> <p>Temperature of the gas</p>	<p>Legislation – at high concentration no animal shall show signs of consciousness after 30 seconds of exposure</p> <p>Legislation - minimum concentration of 80% CO₂ to be used</p> <p>Legislation – gas must never enter</p>	<p>Training and supervision</p> <p>Audit against written procedure and minimum requirements (these key parameters must be measurable i.e by clear dial or display)</p>

			the chamber in such a way that it causes burns or excitement by freezing or lack of humidity	
Inert gases	Pigs	Oxygen concentration Duration of exposure Maximum stun to stick interval Temperature of the gas	Manufacturer's instructions Legislation – gas must never enter the chamber in such a way that it causes burns or excitement by freezing or lack of humidity	Training and supervision Audit against written procedure and minimum requirements (these key parameters must be measurable i.e by clear dial or display)
Carbon dioxide associated with inert gases	Pigs	Carbon dioxide concentration Duration of exposure Maximum stun to stick interval Temperature of the gas Oxygen concentration	Manufacturer's instructions Legislation – gas must never enter the chamber in such a way that it causes burns or excitement by freezing or lack of humidity	Training and supervision Audit against written procedure and minimum requirements (these key parameters must be measurable i.e by clear dial or display)

Specific requirements for certain methods

1. *Non-penetrative captive bolt device*

When using this method business operators shall pay attention to avoid the fracture of the skull. This method shall only be used for ruminants of less than 10 kg of live weight.

4. *Head-only electrical stunning*

4.1. When using head-only electrical stunning, electrodes shall span the brain of the animal and be adapted to its size.

4.2. Head-only electrical stunning shall be carried out in accordance with the minimum currents set out in Table 1.

Table 1 – Minimum currents for head-only electrical stunning

Species	Minimum required current (amps)
Cattle (6 months or older)	1.28
Calves	1.25
Sheep or goats	1.00
Pigs	1.30

5. *Head-to-body electrical stunning*

5.1. Animals of the ovine, caprine and porcine species.

The minimum currents for head-to-body electrical stunning shall be 1 ampere for sheep and goats and 1,30 amperes for pigs.

7. *Carbon dioxide at high concentration*

In the case of pigs, the minimum concentration of 80 % of carbon dioxide shall be used.

8. *Carbon dioxide, use of inert gases or a combination of those gas mixtures*

Under no circumstances shall gases enter into the chamber or the location where animals are to be stunned and killed in a way that it could create burns or excitement by freezing or lack of humidity.

Appendix E.2 Additional rules for gas killing equipment for pigs

WATOK includes additional rules for the use of gas killing equipments in pigs: stunning shall take place in a gas stunner provided for that purpose and pigs should be exposed for long enough to ensure they are dead when exiting the chamber.

Gas stunning equipment shall be equipped:

- to maintain the required concentration of gas at the point of maximum concentration;
- with a means of visually monitoring pigs which are in the gas stunner;
- with means of flushing the gas stunner with atmospheric air with the minimum of delay; and
- with means of accessing any pig with the minimum of delay.

The gas stunner, including any equipment used for conveying a pig through the gas mixture, should be designed, constructed and maintained so as to:

- i. avoid compression of the chest of the pig;
- ii. enable the pig to remain upright until it loses consciousness;
- iii. enable the pig to see other pigs as it is conveyed into the gas stunner; and
- iv. ensure adequate lighting is provided in the gas stunner and the conveying mechanism to allow pigs to see other pigs or their surroundings.

No pig should enter the gas stunner if the displayed concentration of gas falls above or below the required level of concentration and no pig shall be passed through or allowed to remain in the gas stunner at any time when the visible and audible warning signals have been activated or when there is any defect in the operation of the gas stunner.

In the case of stunning pigs by exposure to gas mixture of carbon dioxide at high concentration, once a pig enters the gas stunner it must be conveyed to the point in the gas stunner of maximum concentration of the gas mixture within a maximum period of 30 seconds.

Appendix E.3 Recommended positions for captive bolt stunning

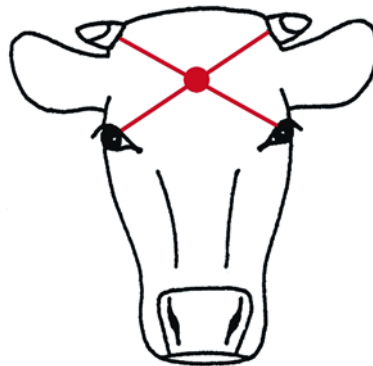
The positions we recommend for captive bolt stunning are shown in the following diagrams. If the animal is stunned properly, it will collapse immediately, and its body and muscles will be rigid (apart from pigs that can kick violently immediately after stunning). The animal will not try

to stand up, and it will have stopped breathing rhythmically. Its eyes will be fixed (in other words, staring straight ahead). If an animal does not show these signs or begins to breathe rhythmically, you should re-stun it immediately, in the recommended position. If you used the recommended stunning position but the animal still does not show these signs, you should re-stun it immediately by aiming the stunner above the original position and slightly to the left or right (see paragraph 7.92 for other information on re-stunning animals).

Bovines

Cattle (other than bulls and calves)

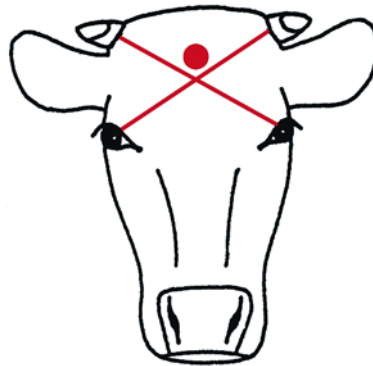
Penetrative captive bolt - aim at the point where imaginary lines between the eyes and the centre of the base of the opposite horns cross, and place the muzzle at right angles to the front of the animal's head.



Stunning position - penetrative

Picture: Humane Slaughter Association

Non-penetrative captive bolt - aim approximately 20mm above the position used for penetrative captive bolt. It is not permitted to use a non-penetrative captive bolt on stock above 10kg.



Stunning position - non-penetrative

Picture: Humane Slaughter Association

Please note - when you are stunning cattle without horns, instead of running the imaginary lines from the centre of the base of the horns to help position the stunning instrument (see above), run them from the area of the head directly behind the ears.

Bulls

Aim at the point halfway between the top of the head and the line between the eyes, and place the muzzle very firmly 10mm to either side of the ridge that runs down the centre of the face, and at right angles to the front of the animal's head.

Calves

Aim slightly lower than for adult cattle - as the upper part of the calf's brain is often under-developed - and place the muzzle at right angles to the front of the animal's head.

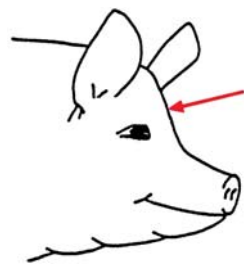
Water buffalo

Due to the thickness of water buffalo skulls, best practice is to stun water buffalo with free bullet.

Pigs

Pigs (other than boars)

Place the muzzle about 20-25mm above the level of the animal's eyes, in the middle of the forehead, aiming towards the tail and at right angles to the front of the animal's head.



Stunning position – pigs

Picture: Humane Slaughter Association

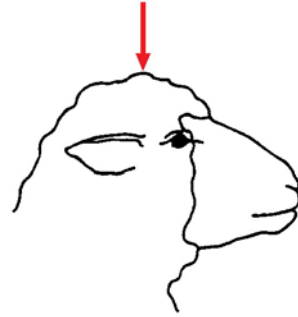
Boars

Place the muzzle about 50mm above the level of the animal's eyes, on either side of the ridge in the middle of the skull, and at right angles to the front of the animal's head.

Sheep

Hornless (polled) sheep

Use the highest point of the head, and aim towards the base of the tongue

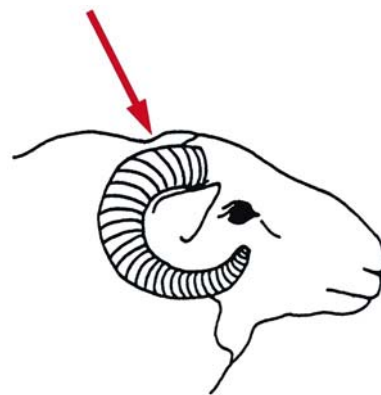


Stunning position – polled sheep

Picture: Humane Slaughter Association

Horned sheep (where the horns prevent the use of the top or front of the head)

Place the muzzle just behind the ridge that runs between the horns, and aim towards the base of the tongue. Bleeding must start within 15 seconds of the shooting.



Stunning position – horned sheep

Picture: Humane Slaughter Association

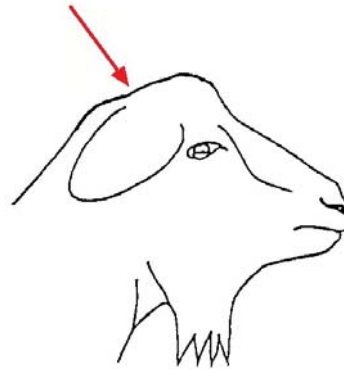
Goats

You should treat all goats as though they have horns.

Place the muzzle just behind the ridge that runs between the horns, and aim towards the base of the tongue. Bleeding must start within 15 seconds of the shooting.

Kids and lambs

Same as for hornless (polled) sheep.



Stunning position – goats

Picture: Humane Slaughter Association

Appendix E.4 Electrical Stunning

Electricity is used in the stunning and stun-killing processes in two ways:

- effectively stunning (known as **electronicarcosis**) an animal by passing an electric current through its brain; or

causing immediate unconsciousness, followed by death by cardiac arrest (heart attack) by applying electrodes on the animal's head and back and passing electricity across its brain and heart (known as **electrocution**).

Electrical stunning is commonly defined in terms of the voltage used but, although voltage is very important, it is the **amount** of electric current (measured in amps) passing through the brain that determines whether the animal is stunned. The relationship between the voltage

applied, the current delivered and the animal's electrical resistance (how resistant a part of the animal's body is to the flow of electricity) is given in the formula:

$$\text{Current} = \frac{\text{Voltage}}{\text{Resistance}}$$

The current that passes through an animal will vary directly with the animal's electrical resistance, so the voltage needs to be high enough, and stay the same, as high voltages help to break down the resistance more quickly. To achieve a similar current the voltage may need to be varied depending on the animal's resistance.

Useful addresses

The Department for Environment, Food and Rural Affairs (Defra)

Animal Welfare Core Team
Area 5E
Nobel House
17 Smith Square
London
SW1P 3JR

www.gov.uk/government/organisations/department-for-environment-food-rural-affairs

email: Animal.Welfare@defra.gsi.gov.uk

Tel: 08459 33 55 77

The Humane Slaughter Association (HSA)

The Old School
Brewhouse Hill
Wheathampstead
Herts
AL4 8AN

www.hsa.org.uk/

email: info@hsa.org.uk

Tel: 01582 831919

Food Standards Agency Operations Group (FSA)

Aviation House
125 Kingsway
London
WC2B 6NH

email vettec@foodstandards.gov.uk

email: helpline@foodstandards.gsi.gov.uk

Tel: 01904 455774

Health and Safety Executive (HSE)

Rose Court
2 Southwark Bridge
London
SE1 9HS

www.hse.gov.uk

Tel: 0845 345 0055

Meat and Livestock Commercial Services Ltd (MLCSL)

Stoneleigh Park,
Kenilworth,
Warwickshire,
CV8 2TL

www.mlcsl.co.uk

Tel: 0247 647 8620

University of Bristol (Division of Farm Animal Science)

Department of Clinical Veterinary Science
Churchill Building
Langford
Bristol
BS40 5DU

www.vetschool.bris.ac.uk

www.awtraining.com

Tel: 0117 9289295

Meat Training Council (MTC)

PO Box 141
Winterhill House
Snowdon Drive
Milton Keynes
MK6 1YY

www.meattraining.org.uk

Tel: 01908 231062

The Office of Public Sector Information

Admiralty Arch
North Side
The Mall
London
SW1A 2WH

www.opsi.gov.uk

Tel: 01603 621000

Accles & Shelvoke Ltd (Human Slaughter Equipment)

Selco Way
First Avenue
Minworth Industrial Estate
Minworth
Sutton Coldfield
West Midlands
B76 1BA

www.acclesandshelvoke.co.uk

Tel: 0121 313 4567

Animal Health Veterinary Laboratories Agency

C11 Government Buildings

Whittington Road

Worcester

WR5 2LQ

www.defra.gov.uk/ahvla-en

email: corporate.centre@ahvla.gsi.gov.uk

Tel: 01905 767111

Legislation list

- [Council Regulation \(EC\) 1099/2009 on the Protection of Animals at the Time of Killing](#)
- [The Welfare of Animals at the Time of Killing \(England\) Regulations 2015](#)
- [The Welfare of Animals at the Time of Killing \(Scotland\) Regulations 2012](#)
- [The Welfare of Animals at the Time of Killing \(Scotland\) Amendment Regulations 2012](#)
- [The Welfare of Animals at the Time of Killing \(Wales\) Regulations 2014](#)
- [The Welfare of Animals at the Time of Killing \(Northern Ireland\) Regulations 2014](#)
- [The Welfare of Animals \(Transport\) Order 2006 Statutory Instrument 2006 No. 1480](#)

Further information

- Wotton, S. *Sticking techniques and exsanguination in pigs, sheep and calves*. **Meat Focus, July 1996**.
- Daly, C.C., Kallweit, F., et al. *Cortical function in cattle during slaughter: Conventional captive bolt stunning followed by exsanguination compared with shechita slaughter*. **The Veterinary Record, 2 April 1998**.
- Humane Slaughter Association Guidance Notes 2, 3 and 4. Copies available from the Humane Slaughter Association (see appendix F for address details).
- Humane Slaughter Association & the Meat and Livestock Commission leaflet " *Handling Cattle at Slaughterhouses and Markets*". Copies available from the Humane Slaughter Association (see appendix F for address details).
- Humane Slaughter Association & the Meat and Livestock Commission leaflet " *Improved Handling Systems for Pigs at Slaughter*". Copies available from the Humane Slaughter Association (see appendix F for address details).
- Humane Slaughter Association leaflet " *The Future without Pithing*". Copies available from the Humane Slaughter Association (see appendix F for address details).
- Knowles, T.G., Brown, S.N., et al. *Ambient temperature below which pigs should not be continuously showered in lairage*. **The Veterinary Record, 21 November 1998**.
- Department for Environment, Food and Rural Affairs (Defra) booklet " *Guidance on The Welfare of Animals (Transport) Order 1997*". Copies available from the Animal Welfare Division of Defra (see appendix F for address details).
- Farm Animal Welfare Council " [Report on the Welfare of Farmed Animals at Slaughter or Killing, Part 1: Red Meat Animals](#)"