

# **A GUIDELINE FOR THE USE OF PRODDERS AND STUNNING DEVICES IN ABATTOIRS**

## **GENERAL**

These comments are not intended as a drafting of legislation but as practical guidance for the Meat and Abattoir Industries, although these recommendations might be used as a basis for legislative change.

Many factors must be taken into account when deciding upon the best system for slaughtering stock at an abattoir. The principal consideration is the welfare of the animals but other factors include capital and running costs, workers safety and ease of handling animals and carcasses, and the effect of the method of slaughter on the quality and shelf life of the meat.

It should be mandatory for all persons involved in the handling and slaughter of livestock to receive adequate training in correct techniques and that further instructions be given whenever new techniques are introduced.

There are no serious conflicts of interest, aims or objectives between animal welfare organisations and the meat industry for there is a vast amount of evidence available which indicates that the majority of systems which are most humane are also the most cost effective and yield the most economically viable meat product.

## **OBJECTIVES**

To ensure responsible and humane handling of livestock at all times and in all situations so as not to cause unnecessary suffering;

To introduce reasonable operating norms to all persons involved in the movement and slaughtering of livestock;

To aim for positive preventative measures with a view to preventing the cruelty and financial loss associated with the mishandling or misuse of equipment used in the movement and slaughtering of livestock.

## **OBSERVATIONS**

It has been frequently observed that bruising, injuries and subsequent increased condemnations as well as attendant cruelty, avoidable stress and financial loss result from incorrect use of electric prodders and stunning equipments.

The practice of suspending shackled animals before they have lapsed into insensibility is cruel and cannot be condoned. It is essential that all persons involved in the slaughtering procedures are made fully aware of the fact that in terms of the Animals Protection Act such malpractice constitutes an offence punishable in law.

The applications of electric prodders, whether mains or battery operated, to the sensitive parts of the animals such as the muzzle, mouth, ears, eyes, vulva or rectum are similarly considered to be cruel practices.

Animals must be kept in restraint for the shortest possible period to prevent them from becoming agitated and fractious, which will prevent the accurate and swift application of the stunning apparatus. The stun box, restraining conveyor and the race leading thereto must therefore be used for its appropriate purpose and not for holding areas or procedures.

### **ELECTRIC PRODDERS**

Prodders, whether mains or battery operated, deliver a powerful and painful shock. They should therefore be used with discretion and considered intention: e.g. a handler cannot reasonably expect a bovine to move forward by poking him in the face with an electric prodder, neither can he expect the animal to move forward when it is jammed in and there is no clear path in which the animal can move. To make an animal move forward the handler must stand behind the shoulder and apply the prod to its rear quarters. It is also necessary that handlers realise that continued or indiscriminate application of the prod usually causes the animal to become excited, balk and recalcitrant.

Electric prodders must not be applied to sheep or pigs.

Handlers should be given the necessary training to understand the natural and instinctive behaviour of different species of livestock in order to move them with the least possible stress to both the animal and himself.

Nevertheless, intelligent use of electric prods to move animals, especially cattle, is preferable to beating or tail twisting.

### **STUNNING**

Whether stunning is to be achieved by means of electric or captive bolt apparatus, the apparatus concerned shall be examined and tested before use each and every day it is to be used, and at adequate intervals during the day.

Continued use of any stunning apparatus is very exhausting, often dangerous and consideration should be given to relieve the operator before a level of exhaustion is reached that he becomes indifferent, insensitive or careless.

Serious considerations should be given to providing the operator with effective ease of access to the animal to be stunned so as to reduce avoidable elements of danger or effort. It is obvious therefore that a restrainer conveyor system is far more efficient than stun boxes or other apparatus which allows excess movement of the animal's head and body. The apparatus should be such that stunning can be achieved with repeatable accuracy which requires that the operator can stand in safety close to the animal to reduce reaching and physical effort.

Operators must be made to understand that the stunning procedure whether electric or captive bolt renders the animal unconscious for only a very short period of time and that bleedout must be achieved whilst the animal is insensitive to pain and before it begins to recover consciousness. Therefore regardless of the system used the aim should be to ensure that both carotid arteries and jugular veins are cut and separated as expeditiously as physically possible.

Cutting both carotid arteries and jugular veins results in brain failure with consequent

unconsciousness, but when only one carotid artery is cut brain failure will not occur within approximately seventy seconds. If the carotids are missed altogether and only the jugulars are cut the animal can take as long as five minutes to die.

With electrical stunning, it is necessary that the operator be trained and supervised to ensure that the correct current flows for the appropriately calculated period through the correctly positioned electrodes placed across the brain in order to ensure the efficiency of electroplectic stunning. Similarly with the use of the captive bolt correct charge (grade of cartridge) in a suitable and efficiently maintained captive bolt pistol must be precisely and firmly applied to the head of the animal to be stunned.

### **PRACTICAL RECOMMENDATIONS**

Head only electrical stunning in sheep, goats and pigs.

<b>Species</b>	<b>Minimum current level during stunning</b>	<b>Maximum stun/stick interval</b>
Sheep	1 Amp (adult sheep and goats) 200 Volt0, 6 Amps (lambs and kids) 160 Volt	± 15 seconds ± 15 seconds
Weaner pigs	1,3 Amps 240 Volt	± 15 seconds
Grown out pigs	1,3 Amps 240 Volt	± 15 seconds

#### **Notes:**

1. Time of application of electrodes is 5 to 7 seconds at 250 volt and 7 to 10 seconds at 180 volt.
2. Electrodes must be placed so that they span the brain.
3. In order to ensure rapid brain death following exsanguination, it is imperative that both carotid arteries (or the blood vessels from which they arise) are severed.
4. An apparatus that produces a constant current is preferred to one that produces a constant voltage.
5. The apparatus must have a visible current sensor indicating current under load.
6. A suitable method or restraint which prevents movement offers advantages; these include more reliable stunning, worker safety and minimising carcase quality defects.
7. Where any difficulty is experienced in correctly applying the stunning tongs to heavily horned sheep and goats, the captive bolt pistol should be utilized.
8. All large boars should be stunned by means of the captive bolt pistol. (Cognisance must be taken that in this event PSE meat may result).
9. The contact points of the stunning tongs must be long and sharp enough to penetrate the wool to ensure proper contact with the skin of the animal being stunned.
10. Pigs should be wetted prior to electric stunning.
11. Electric prodders should not be used on pigs.
12. The contact points of the stunning tongs should be cleaned and serviced from time to time to ensure maximum current flow.

### **CAPTIVE BOLT STUNNING OF CATTLE, SHEEP AND GOATS**

Humane stunning and slaughter of animals using the captive bolt method depends on three factors:

1. the position of the shot on the animal's head,
2. the speed of the bolt on impact with the head, and
3. the stun/stick interval.

## **SHOOTING POSITION**

Heavily fleeced sheep and large boars should not be stunned with electric stunners but stunned with an appropriately charged captive bolt pistol.

### **Cattle**

The frontal position must be employed. This is the intersection of imaginary lines connecting the outer canthi of each eye with the opposite ear. The poll position, on the back of the animal's head, does not consistently offer an effective stun, and must be avoided.

### **Sheep and goats**

A shot aimed at the crown of the head and pointing straight down should be used in preference to the poll position. Where the poll position must be used because of the presence of horns, the shot should be placed immediately behind the base of the horns and aimed towards the mouth.

## **BOLT SPEED**

The bolt speed produced by captive bolt pistols will vary according to their design.

### **Cattle**

Incidences of poor stunning, not caused by inaccurate shooting can be attributed to insufficient bolt speeds. Assuming that the maximum strength cartridge is being employed and that the gun is in good working order, this can only be rectified by the use of a more powerful pistol. This problem becomes particularly evident when large animals such as bulls are being stunned. The manufacturer's recommendations regarding the appropriate cartridge strengths must be viewed as the minimum requirements from a stunning point of view. Exceeding the recommendations will only increase the likelihood of effective stunning.

### **Sheep and goats**

The bolt speeds produced by existing pistols exceed the minimum requirements. The prime consideration is therefore to ensure accuracy in the shooting, and proper maintenance of the gun.

## **STUN/STICK INTERVAL**

When the poll position is employed for stunning sheep, the stun/stick interval should be as short as possible, and in any case, not exceed 15 seconds. The captive bolt pistol should never be applied in the poll position on any animal unless absolutely necessary. The need must be confirmed by the Veterinary/Hygiene Officer or Abattoir Manager.

Effective stunning in the frontal positions in both cattle and sheep usually results in irreversible loss of sensibility. However, in order to prevent suffering and impairment to meat quality, the stun/stick interval should be kept to the absolute minimum for all animals.

Captive bolt stunning of porkers and baconers whilst being effective from a humanitarian point of view, can cause severe convulsions leading to carcase quality problems, and is not recommended, and therefore, electrical stunning procedures are preferable.

### **Recognition of effective stun**

An effective stun cannot be diagnosed solely on the grounds that the animal has collapsed. A well defined tonic phase, involving retraction of both front and back legs, followed by relaxation of the animal no less than 15 - 20 seconds following the stun, along with absence of breathing and a fixed position of the eye may be used to help recognise effective stunning.

### **Causes of reduced bolt speed**

Reduced bolt speed is a common cause of poor stunning. Bolt speed can be severely reduced when the requirements for gun maintenance are not met. Bolt speed is reduced wherever the combustion space behind its base is increased, as when the bolt fails to retract fully. Poor maintenance can be recognised by failure of the bolt to retract to its full extent following each shot.

It is essential that guns are stripped down and cleaned according to the manufacturer's recommendations at the end of each day's operation. Faulty or damaged parts must be replaced immediately. In plants using pneumatic stunners the compressor should be regularly maintained, and daily checks made on the air pressure to ensure that it is adequate.

### **Minimum bolts speeds**

A minimum bolt speed of 20 m/sec for sheep and 45 m/sec for cattle is recommended. However, these are only approximate guidelines, since it is the energy involved in the impact of the bolt with the animal's head which defines the effectiveness of the stun, and this energy is influenced by the gun's design.

### **Slaughter knives**

It is recommended that slaughter knives with a minimum length of 250mm and 180mm for cattle and sheep respectively, be used for "throat-cutting" purposes, and that such knives shall be kept suitably sharp.