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Electric stunning tongs for pigs — Specification

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This African Standard was prepared by ARSO Technical Committee ARSO/TC 23, *Live animals.*

ARSO Central Secretariat
International House 3rd Floor
P. O. Box 57363 — 00200 City Square
NAIROBI, KENYA

Tel. +254-20-2224561, +254-20-3311641, +254-20-3311608

E-mail: arso@arso-oran.org
Web: www.arso-oran.org

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International House 3rd Floor
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Electric stunning tongs for pigs — Specification

1 Scope

This Committee Draft African Standard specifies classification, fabrication and performance requirements for pig electric stunners to ensure the welfare of live pigs during slaughtering process.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
blood splash
blood spots or clots formed on the muscle tissue

3.2
conveyor restrainer
type of pig restrainer that uses conveyor system for moving, restraining, stunning and dumping the pig to the sticking and bleeding area

3.3
hot wanding
charging of the electric prods prior to application of stunner

3.4
knurling
series of small ridges or grooves on the surface or edge of the prods to improve contact during application of the electric stunner

3.5
prod
tip of the electric stunner to which the revolving spur is attached

3.6
restrainer
slaughterhouse equipment used to secure and restrict the body movements of the pig in upright position prior to stunning

3.7
revolving spurs
spiked wheel attached to the head-only type electric stunner used to improve contact with the head of the pig to be stunned

3.8
stunner
device that is used to make a pig unconscious prior to sticking and bleeding

3.9
stunning
process of rendering a pig unconscious prior to sticking and bleeding

4. Classification

4.1 Manual application type

4.1.1 Head-only type

Type of electric stunner that allows current to pass through the brain of the pig rendering the pig unconscious.

4.1.1.1 Tong type

Tong type is as shown in Figure 1.

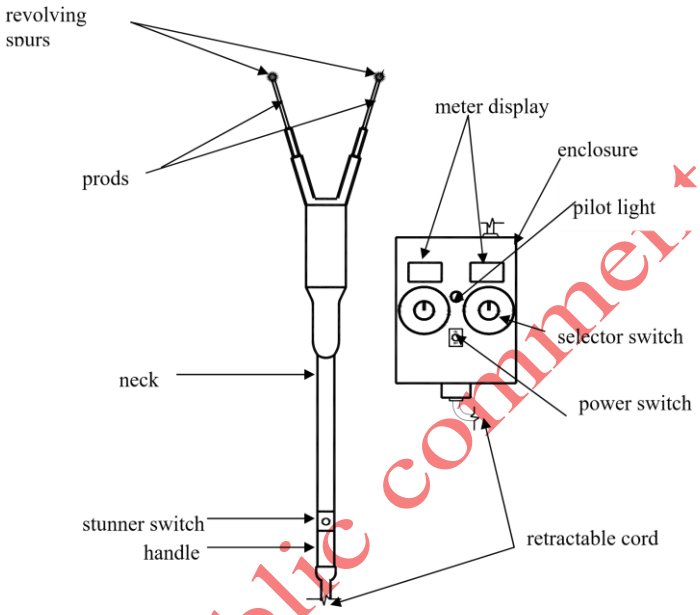

Figure 1 — Tong type head-only stunner

4.1.1.2 Calliper type

Calliper type is as shown in Figure 2.

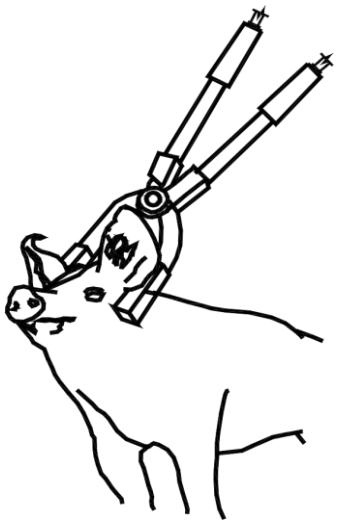

Figure 2a — Calliper type stunner

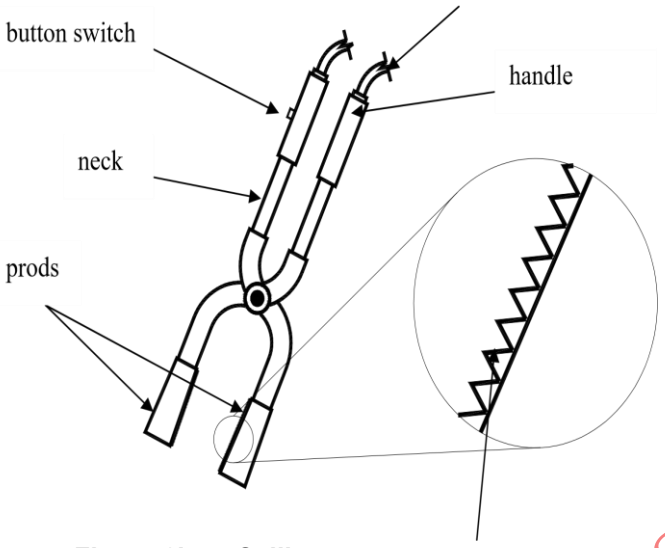

Figure 2b — Calliper type stunner parts

4.1.2 Head-to-back type

Type of electrical stunner in which one of the prods is positioned on the head and the other prod is positioned on the body of the pig (Figure 3).

Figure 3a — Head-to-back electric stunner

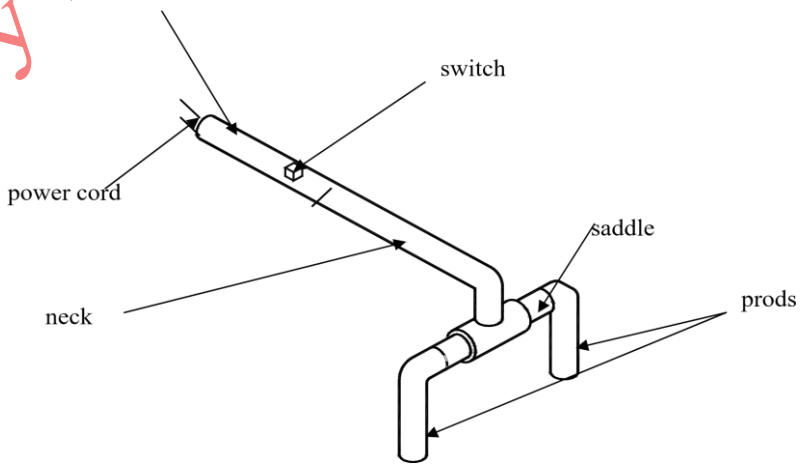

Figure 3b — Head-to-back electric stunner parts.

4.2 Automatic/head-to-foreleg type

Type of electric stunner integrated in the conveyor restrainer wherein the electrodes are made in contact with the forehead and forelegs of the pig (Figure 4).

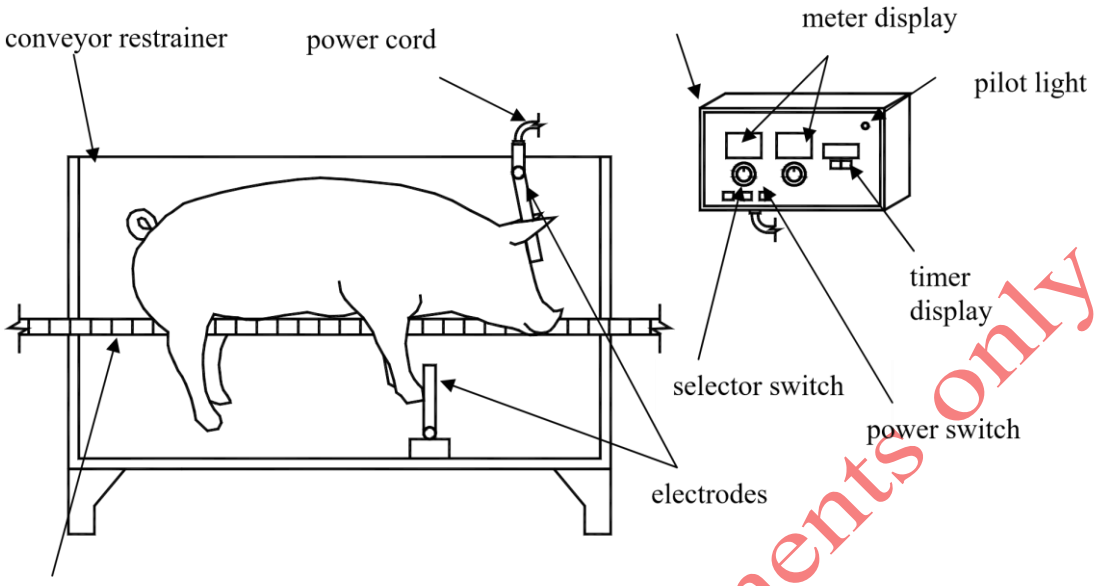

Figure 4 — Automatic stunner

5 Principle of operation

The pig shall be withheld inside a restrainer to restrict unnecessary movements. After positioning the pig, stunning shall follow immediately. This shall be done by using an electric stunner. The stunning process shall be done correctly to avoid inhumane stunning of the pig. The pig shall be unconscious after the stunning process.

6 Fabrication requirements

6.1 Manual application type

6.1.1 The electric stunner shall consist of power control panel (consisting of enclosure, built-in ammeter, built-in voltmeter, and voltage selector switches), power cord, handle and neck, prods and spurs (for tong type) and saddle (for head-to-back type).

6.1.2 The neck shall be made of hollow round tube that is a non-conductive and a non- corrosive material. The length of the neck shall be at least 700 mm to avoid electrocution of the operator while using the electric stunner.

6.1.3 The revolving spurs of tong type and the prods shall be made from copper or metal that is of good conductor of electricity. The distance between the prods of the electric stunner shall be sufficient to place the prods on the opposite sides of the head of the pig.

6.1.4 Voltage selector switch shall be provided for adjustments and shall have a corresponding voltmeter with calibration knob to set the proper voltage.

6.1.5 An ammeter shall be provided to indicate actual current usage.

6.1.6 Insulated button switch shall be installed for electric stunner to avoid hot wanding.

6.1.7 The size of the power cord shall correspond to the maximum power rating supplied by the stunner.

6.1.8 Pilot light and sound emitting device shall be provided for power signal notification.

6.1.9 The power control panel shall be designed such that it can be mounted on the wall.

6.1.10 Enclosure shall be splash- proof and shall be made of non-corrosive material (for example, stainless steel 316 or higher).

6.2 Automatic type

6.2.1 The automatic type shall consist of electrodes, power control panel (which includes power switch, timer, built-in voltmeter and ammeter, overload protector and preset selector switches for voltage settings) and enclosure.

6.2.2 The electrodes shall be integrated in the conveyor restrainer and shall be positioned such that it will be in contact with the forelegs and forehead. The electrodes shall be made of copper or other metals that are good conductor of electricity.

6.2.3 The enclosure shall be splash proof and shall be made of non-corrosive material (for example, stainless steel 316 or higher).

6.2.4 Pilot light and sound emitting device shall be provided for power signal notification.

6.2.5 Voltage selector switch shall be provided for adjustments and shall have a corresponding voltmeter with calibration knob to set the proper voltage.

6.2.6 The size of the power cord shall correspond to the maximum power rating supplied by the stunner.

6.2.7 The timer shall have variable settings expressed in seconds.

6.3 All welded parts shall be water- tight and/or air- tight and smoothly polished and it shall pass the visual inspection criteria for discontinuity of material.

6.3.1 There shall be no crack on welded area.

6.3.2 There shall be fusion between adjacent layers of weld metal and between weld metal and base metal.

6.3.3 All craters shall be filled to provide the specified weld size, except for the end of intermittent fillet welds outside of their effective length.

6.3.4 Welded profiles shall be in its acceptable form.

6.3.5 Welded joints shall not be less than 4 mm site fillet weld.

6.3.6 Undercut shall not exceed 2 mm (1/16 inch) for any length of weld.

7 Performance requirements

7.1 The stunner shall render the pig unconscious only. It shall render the pig insensible with a single application.

7.2 There shall be no blood splashes on the muscle tissue of the pig after stunning.

7.3 The electrical stunner shall operate at a constant frequency of 60 Hz (120 V).

7.4 The stunner shall operate at various settings for different size of pigs (within the limits specified by the fabricator) with a constant current of 1.25 amps (see Table 1).

Table 1 — Stunning voltage chart [a]

Pig weight (kg)	Voltage (V)
45.6 – 113.64	280
113.65 – 159.09	320
159.10 – 227.27	400
227.28 – 295.45	500
295.46 – 363.64	520
364.65 – 545.45	620

[a]Stunning voltage requirements from Koch Equipment - Best and Donovan Model ES Electric Stunners.

8 Safety, workmanship and finish

8.1 Manual application type

8.1.1 Parts that are in contact with the pig during the stunning process shall have provisions for cleaning and shall be free from foreign matters that may affect good contact.

8.1.2 The handle and the neck of the stunner shall be properly insulated to protect the operator.

8.1.3 The stunner shall be free from manufacturing defects.

8.1.4 Low voltage or control voltage shall be provided for the safety of the operator.

8.1.5 Double pole switch shall be installed to totally disconnect the stunner from the power source.

8.1.6 Prods shall not be painted.

8.1.7 The stunner shall have proper insulation and shall have provision for proper grounding.

8.1.8 The power control panel shall be mounted on the wall.

8.1.9 Safety fuse or power overload breakers shall be integrated in the power control system for safety.

8.1.10 Mechanism to warn the operator prior to actual introduction of voltage shall be provided.

8.1.11 Double insulations (e.g. royal cord) for cord shall be used.

8.2 Automatic type

8.2.1 All welded parts shall be fully weld to achieve water- tight and/ or air- tight fabrication and shall be smoothly polished.

8.2.2 The stunner shall be free from manufacturing defects.

8.2.3 Electrodes shall not be painted.

8.2.4 The stunner shall have proper insulation and shall have provision for proper grounding.

8.2.5 Power cord shall be connected to the power control panel using a twist-type plug such that it can be detached when not in use.

8.2.6 Safety fuse or power overload breakers shall be integrated in the power control system for safety.

9 Warranty of Construction

9.1 The stunner's construction shall be rigid and durable without breakdown of its major components within one (1) year from the date of original purchase.

9.2 Warranty shall be provided for parts and services within 1 year after installation and acceptance by the consumer.

9.3 The batch or code number of the product shall be provided.

10 Maintenance and operation

10.1 An operator's manual shall be provided.

10.2 Fabricator shall provide maintenance manual which includes calibration of voltmeter and ammeter, proper cleaning and checkup of the equipment.

10.3 Spurs or tips of the prods and electrodes shall be regularly cleaned for better contact with the pig.

10.4 The handle of the manual application type stunner shall have a sturdy and safe place to be hung. The hanger shall be insulated.

10.5 Parts shall be readily serviceable.

11 Testing

Testing of the pig stunner shall be conducted in the slaughterhouse during commissioning. Sampling shall be done in accordance of the agreement between the supplier and purchaser.

12 Marking and labelling

12.1 The pig stunner shall be marked in English with the following information using a plate, stencil or by directly punching it at the most conspicuous place:

a) brand name or registered trademark of the fabricator (optional);
b) model and/or serial number;
c) maximum weight capacity;
d) name, address and contact number of the fabricator; and
e) country of manufacture (if imported).

12.2 Other additional markings shall be provided and shall include the name and address of the importer, if imported (optional).

12.3 Safety/ precautionary markings shall be provided. Markings shall be stated in official language.

12.4 The markings shall have a durable bond with the base surface material. The markings shall be water and heat resistant under normal cleaning procedures, it shall not fade, discolour, crack or blister and shall remain legible.

Bibliography

Philippine Agricultural Engineering Standard, PAES 503:2007, *Slaughterhouse Equipment - Hog Electric Stunner – Specifications*