

## Improving Electrical Stunning with B&D Stunner

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In order to assure an effective electrical stun of pigs, sheep or goats, the following procedures and equipment modifications may be helpful. This procedure has been developed for small meat plants that utilize a head only stunner, then shackle and hoist using a hydraulic overhead lift. ***It is NOT meant for large plants that electrically stun the head only utilizing a restrainer and bleeding on a flat table, within 15 seconds of head stunning.***

The B&D (Best and Donovan Model ES) stunner was designed to be a “head only” electrical stun. The brain receives an electrical shock which causes a grand mal seizure. The process is reversible and usually, animals begin to regain consciousness as soon as 15 to 30 seconds after the stun. In small plants, the shackle and hoist equipment may be slow, which can result in animals waking up, prior to or during the bleeding process. In addition, the grand mal seizure can result in excessive involuntary kicking, which makes shackling and hoisting difficult and a possible safety issue for employees. According to the USDA Humane Slaughter Act, animals must remain in a state of surgical anesthesia after stunning.

To improve stun efficacy, the following equipment modifications can be incorporated.

### Stun Wand Design and Operation:

- Always wet animals, prior to stunning. This will improve electrical conductivity.
  - It is best to wet animals prior to entry into the restrainer or stun box. This will reduce the potential for electrical grounding due to a wet restrainer.
- For all animals, make sure the stun wand star wheels (spurs) are situated inward, to assure penetration of the hair or hide.
- For today’s larger animals such as heavy market pigs, boars and sows, it is essential to extend the stun wand contacts and add additional star wheels. (See figure 1) This will increase the surface area of the electrical penetration. **B&D sells wand extensions: Item 9600017 and additional star wheels (spur and collar): Item 9603900.**  
Contact Karen Proctor at B&D: 1-800-553-2378 Ext 3737
- The benefits of installing the wand extensions and additional spurs are:
  - This one time installation will make it possible to stun smaller pigs such as roasters and larger pigs (heavy market, sows and boars) with the same wand. (Depending upon the pig weight, stunner electrical settings will vary, but the modified wand should accommodate a variety of animal sizes).
  - The longer wand extensions make it easier to “lock” on to the correct stunning location on the pig head, without slipping or loss of wand contact during stun.
  - The additional wand surface area helps to assure a more effective head stun.
  - The same tongs can also be utilized for the heart stun, to prolong insensibility, prior to hoisting and bleeding (exsanguination).
- Assure that the wand is properly placed, behind the upper ½ of the ear and as close to the base of the ear as possible. (See figure 3).

- The minimum Amperage should be 1.25 Amps for a 200 lb. pig. 1.6 Amps for larger market pigs, 2.0 Amp for large sows and boars.
- Target 320-360 Volts for a typical market hog with weight of 250-280 lbs. Follow B&D voltage settings based on pig size and weight.



Figure 1: Extend wand length and add star wheels. B&D Extensions added on to wand.

#### Stun Box Design:

- Many times, the stun itself will initiate muscle contractions which can result in the animal losing balance or falling, and the electrical stun may be disrupted.
  - For electrical head stunning, it is best to have some type of restraint in the stunning box or restrainer, to prevent the stun from being disrupted during muscle contraction and to keep the pig from falling.
  - Many plants utilize the same stun box for beef and small livestock. An insulated swing gate can be added, to minimize the space for animal movement and to prevent the animal from falling during the stun. (See Figure 2)



Figure 2: Example of a wood swing gate for restraint during electrical stunning.

- It is best to utilize a non-conductive material for the swing gate or insulate the walls of metal stun box, to prevent grounding, during stunning. Ideally the surface is non-conductive, but also smooth and slightly slippery.
- Plastic “delron” type cutting board can be used.



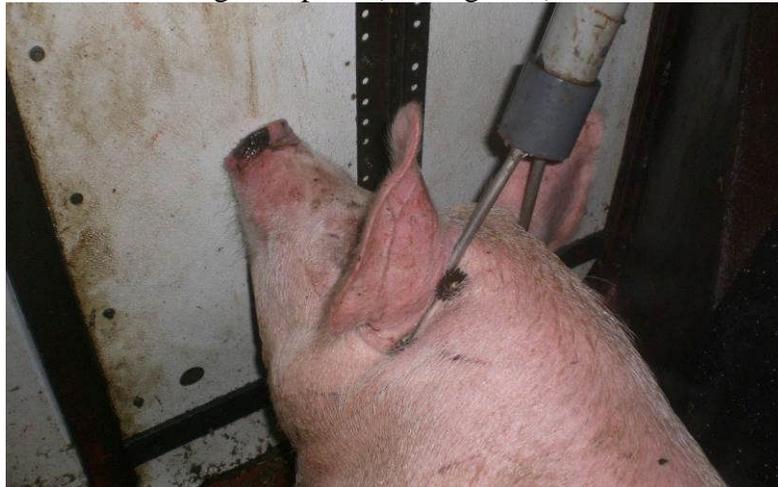
**Figure 3: Example of a stun box with plastic “delron” insulation installed.**

- Metal can be covered with pvc, wood, rubber or a plastic coating to insulate.
- If rubber is used, it may cause friction which can result in blood splash when stun contractions occur. Insulation material works best when it allows the animal to move during the contraction.

Alternative “Head/Heart” Stunning:

To facilitate a longer stun to bleed interval, a “head/heart” procedure can be implemented.

1. Stun the head for 3 seconds, using the stunner settings (Volts or Amps) appropriate for the size of animal being stunned. (See Figure 4)
2. After the animal falls, stun the heart for approximately 3 seconds. The heart is located in the chest area, near the front leg “armpit”. (See Figure 5)



**Figure 4: Example of head stun using B&D Stun Wand.**

Benefits for “head/heart stun:

- Animals do not usually begin to regain consciousness for at least 1 minute, compensating for a slower shackle and hoist.
- The heart stun “depolarizes” the spine. This can reduce seizure kicking, which facilitates shackling and can also reduce blood splash.



**Figure 5: Example of heart stun using B&D stun wand.**

Signs of an effective stun (insensible animal):

- Blank stare or glassy looking eyes, no natural blinking
  - (Note: Uncoordinated seizure blinking may be present as well as a mild corneal reflex, even when the stun is acceptable and the pig is insensible)
- Animal is not breathing
- Tongue may be hanging out, loose and floppy
- Muscle movements are uncoordinated
- Floppy head (after hanging and bleeding)

Signs of an ineffective stun (animal showing signs of return to sensibility or sensibility):

- Natural blinking (as though out in a field)
- Eye tracking or conscious eye movement
- Rhythmic breathing
- Righting reflex (animal attempts to right itself, lifts head, coordinated movements)
- Vocalization

B&D Stunner Training Information for Employees and Plants

- Is available at [www.VoogdConsulting.com](http://www.VoogdConsulting.com)