CAPTIVE BOLT GUNS & ELECTRICAL STUNNERS

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ONE OF THE MOST IMPORTANT PIECES OF EQUIPMENT IN PLANT

“We owe the animal a painless death because it’s the right thing to do.”
Overview

There are several manufacturers of captive bolt tools – this presentation is intended to provide guidance in regards to safety, cleaning, maintenance and testing procedures for all types of stunners. It is recommended that all users of captive bolt tools read and understand the specific manufacturers operators manual for their specific stunner equipment.
TYPES OF STUNNING

- Captive Bolt – Power load
  - All Species

- Pneumatic
  - Beef, Swine, Lamb

- Electrical
  - Single Step & Two Step Cardiac Stun
  - Head Only
    - Swine, Lamb, Fish, Poultry
CAPTIVE BOLT GUN STYLES

- **IN LINE**
  - PENETRATING BOLT
  - NON PENETRATING (CONCUSSION)

- **PISTOL STYLE**
  - PENETRATING BOLT
  - NON PENETRATING (CONCUSSION)

- **LONG HANDLE**
  - CONTACT FIRE
  - PENETRATING BOLT
TRAINING

- READ THE OPERATORS MANUAL
- SAFETY/HANDLING
  - USE MANUAL SAFETY IF AVAILABLE
  - SHARING TOOL WITH CO-WORKERS
- HOW TO USE
  - LOADING THE TOOL
  - UNLOADING SAFELY
  - MAKE READY TO FIRE
  - PROPER POWER LOAD SELECTION
  - TROUBLE SHOOTING TIPS
- CLEANING & MAINTENANCE
- TESTING/DOCUMENTATION
BOLT GUN SELECTION
AUTO RESET vs MANUAL RESET

- **Auto Bolt Reset**
  - Restricted Flight
    - Retracts Bolt
    - Less penetration
    - Multiple sleeves/washers

- **Manual Bolt Reset**
  - Free Flight
    - More penetration
    - Bolt may stick
PRIMARY FAILURES

- Improper Use
- No backup tool present
- Tool poorly maintained
  - Dull Penetrating bolt
  - Bolt retention system
  - Breech bore pitted
- Wet/Improper power loads
- Poor Training
- Pressure/Stress
  - Manager – Co-workers – Government Inspector
- Animal stressed/Ambulatory
PENETRATING BOLT

- Designed to cut
- Sharpen inside edge
- Never use
  - Grinder
  - File*
  - Emory Cloth
  - Sand Paper
Poor Maintenance

- Using Wrong tools
- Missing Parts
  - “O” Rings
  - Bumpers/Sleeves
- Not Inspecting Daily/Cleaning
  - Blood
  - Rust
  - Dirt/Debris
MAINTENANCE PERSONNEL

- Understanding of firearms
- Attention to Detail
- Multiple people trained
  - 1st shift – 2nd shift – barn
- Factory trained
  - minimum of once per year
- Reduce Turnover
MAINTENANCE TOOLS

- Gun cleaning solvent (no WD 40)
- Gun Oil
- Cleaning brushes
- Proper tools
- Sturdy workbench
- Spare parts inventory
  - In the maintenance area
- Good lighting
- Bench Vise
- Clean shop rags
POWER LOADS

- Use Proper power loads for application

- Storage
  - Long Term
    - Clean
    - Dry
    - Climate Controlled
    - First in First out
    - Lot number recorded
    - Don’t carry in pockets
  - Daily use
    - Keep dry
    - Small quantities
    - Container
POWERLOAD ISSUES

- **Pistol – Power load ejected**
  - Back pressure
    - exhaust port clear
    - Release pin spring weak

- **In Line Stunner**
  - Improper assembly
    - Barrel assembly/firing cap
    - Weak/worn breech locking cover
PERFORMANCE TESTING

- Air Fire?

- Tires/barrels/boards?
  - Dangerous
  - Premature damage to tool
    - No resistance on bolt
  - No data
STUNNER PERFORMANCE TESTER
ALL POWER LOAD FIRED CAPTIVE BOLT TOOLS

- Suggested information
  - Date & Time of test
  - Tool number
  - Serial #
  - Power load used
  - Service Technician ID
  - Bolt Speed
  - Download to any spreadsheet

**EXAMPLE:** Exportable data log for stun test tracking

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<th>Date/Time</th>
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MADE IN THE USA
REVIEW

- VERIFY TOOL OPERATION
  - BEFORE USE
- BACK UP TOOL AVAILABLE
- POWERLOAD SELECTION/STORAGE
- SPARE PARTS INVENTORY
- PROPER TRAINING
  - SAFETY – CLEANING – MAINTENANCE
- CLEANING & MAINTENANCE
- PERFORMANCE VERIFICATION
- DOCUMENTATION
OPERATOR SAFETY EQUIPMENT

- Knocker Vest
  - Chest Protection
  - Groin Protection
- Ear Protection
- Eye Protection
PNEUMATIC

Model USSS-1

Model USSS-1/2

Model USSS-2A
RECOMMENDATIONS

- Air compressor
  - 250 psi capacity
    - Drain water from tank
    - Verify pressure switch functioning properly

- Proper psi used
  - Fat cattle  180 – 190 psi
  - Cows  190 – 195 psi
  - Bulls  230 – 240 psi

- Oil the equipment
  - Oiler should be set at 1 – 2 drops per shot

- Clean air
  - Water filter
    - Water restricts velocity
ELECTRIC HOG STUNNERS
ELECTRIC STUNNING
Types of Control Boxes

- Amperage based system
  - Lower risk of carcass damage
  - Blood splash/broken backs
  - Cardiac arrest – single step
  - Dual Frequency
  - Higher up front cost

- Voltage Based system
  - High risk of carcass damage
  - Cardiac arrest – two step
  - Head Only (single step)
  - Lower up front cost
PRE-SHIFT START CHECK LIST

- Verification of system performance
  - Verify voltage
  - Verify amperage
  - Stunner settings confirmed
    - Amperage – voltage – frequencies – stun time
  - Verify infeed line voltage to Control Box
    - Idle
    - Operating

- Inspect all connections
  - Is there water in the outlet or plug?
  - Loose or frayed wires?
SPARE PARTS

- Maintain a critical parts inventory
  - Control Cards
  - Display Cards
  - Transformers
  - Fuses
  - Volt/amp meters

- Regular PM schedule
  - Replace Contactors – at least once per year
  - Replace male/female plugs – Weekly? Monthly?
  - Wiring from panel to restrainer/stunning area
STUNNER WANDS

- Use properly designed wand
  - Hog restraint required?
  - Wand extensions needed?

- *Clean and maintain* daily
  - Clean wand tips – volume dictates how often
  - Check wiring
  - Verify switch operation – replace if necessary

- Storage
  - Warm – dry environment
  - Drying cabinet is ideal
OPERATOR SAFETY

- Personal Protection
  - Gloves
  - Boots
  - Safety chaps or Apron

- Stunning area
  - Cover all metal
  - Animal restraint
  - Rubber mat on floor
  - Emergency shut off?
Create daily maintenance log sheet
   • Include control unit and wands
Make sure Stun Tracker software is operational (if available)
   • Print daily stunner log for file
QUESTIONS?

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Thank you!