

Effective stunning of CATTLE

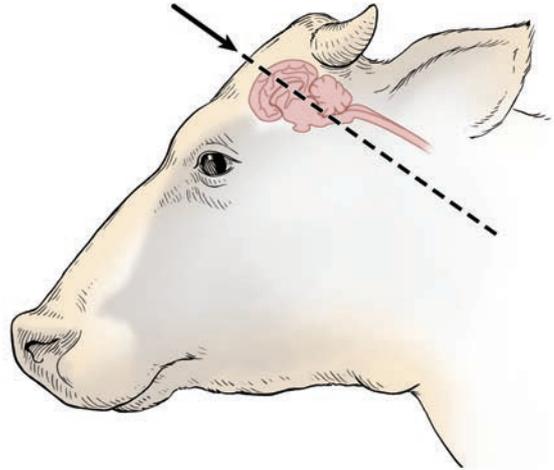
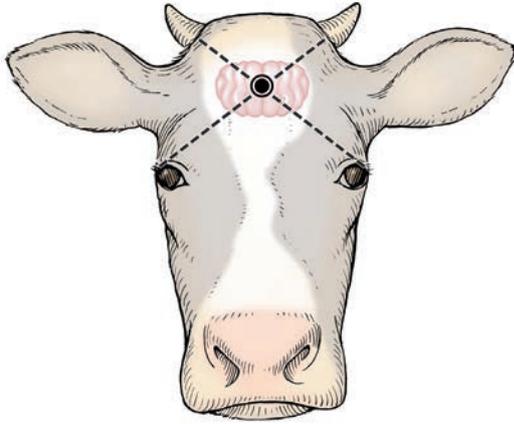


Illustration courtesy of J. K. Shearer, Iowa State University

Signs of an effective stun

- Complete collapse
- Lack of rhythmic breathing
- Loss of corneal reflex
- Relaxed jaw
- Loose tongue

Good practice

- Always ensure that your **CASH**[®] stunning tool is in good working order
- Clean and maintain the stunning tools after each use
- Replace worn components in accordance with user manual
- The stunning tool will require higher maintenance if used with a stronger than necessary cartridge
- Only use genuine Frontmatec Accles & Shelvoke **CASH**[®] branded cartridges

Suggested **CASH**[®] Stunning Tools and Cartridges

	.22" range			.25" range				
	CASH [®] Special	CASH [®] Magnum	CASH [®] Cowpuncher	CASH [®] Special	CASH [®] Magnum	CASH [®] Cowpuncher	CASH [®] Magnum Concussion	CASH [®] Magnum XL
For calves	Pink	Pink	N/A	Pink	Pink	N/A	Pink	N/A
For light animals	Purple	Purple	Purple	Yellow	Yellow	Yellow	Yellow	N/A
For medium animals	Green	Green	Green	Blue	Blue	Blue	Blue	N/A
For heavy animals and bulls	Red*	Red	Red	Orange*	Orange	Orange	Orange	N/A
For very heavy animals	N/A	Black	Black	N/A	Black	Black	Black	Black
For extremely heavy animals	N/A	N/A	N/A	N/A	Green	Green	Green	Green
For exceptionally heavy animals	N/A	N/A	N/A	N/A	N/A	N/A	Red	Red

*CASH[®] Special HD only



How captive bolt stunning works

The following sections explain the mechanism and science behind the process of stunning animals using cartridge powered captive bolt.

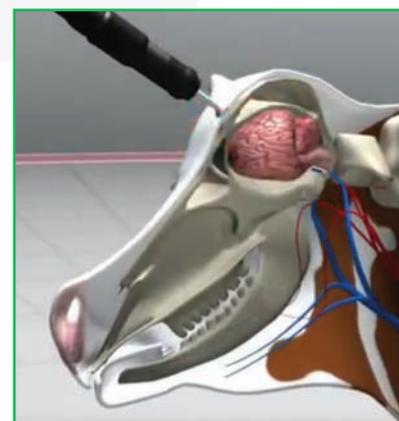
Mechanism of the cartridge powered captive bolt

- A blank cartridge contains chemical energy in the form of an explosive propellant. This is the energy source for a cartridge powered stunning tool. The propellant is ignited when a firing pin strikes the rim of the cartridge
- The propellant burns within the cartridge which creates expanding gases to push the captive bolt forward at high speed
- The performance of a captive bolt stunning tool is measured by calculating the amount of energy transferred to the moving bolt, the formula for which is - $E_k = \frac{1}{2} mv^2$ (where E_k is the kinetic energy carried by the bolt, m is its mass and v is its velocity)



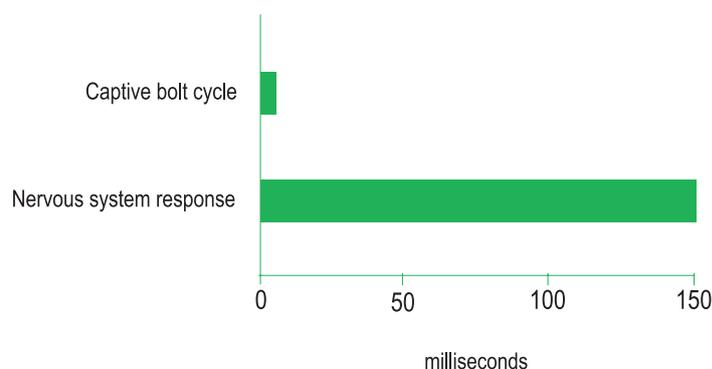
The effect of the impact of the captive bolt on the animal

- The fast moving bolt impacts the skull.
- The skull is accelerated and the brain, which is floating in fluid, responds fractionally later
- The rapid variations in pressure cause shearing forces in the brain and causes massive disruption of brain activity
- This disruption concusses the brain and causes a stunned state
- Both penetrating and non-penetrating bolts are equally effective for stunning an animal



Effectiveness of captive bolt stunning

- It takes approximately 150 ms (milliseconds) between a painful stimulus and perception of pain by the brain
- The full cycle of a captive bolt takes approximately 1.2–1.5 ms
- The concussion by a captive bolt takes place significantly faster than the time taken by the brain to feel the application
- The animals is stunned before it can realise that it has been subjected to a stunning procedure



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