

ANATOMY OF A TOURNIQUET

EFFECTIVE HEMORRHAGE CONTROL BY DESIGN

The US Army Institute of Surgical Research (USAISR) conducted several evaluations of commercial tourniquet devices. The final evaluation identified three devices that were 100% effective. From this evaluation, the US Army selected the C-A-T® as the primary pre-hospital tourniquet. Numerous studies and combat after action reports from the current war theaters validate that organizational decision.

Although there are currently a multitude of tourniquets available on the commercial market, some of these tourniquets may or may not be effective. The challenge is to sort through all of the commercially available devices to identify the one best suited for your organization's requirements. The evaluation and selection should rely on established criteria that are measurable and reproducible.

When the U.S. Army studied tourniquet devices suitable for use by individual soldiers within the tactical operating environment, a consensus panel established criteria for device design. It was clear from the outset that a pneumatic tourniquet was not appropriate for this specific operational environment application.

The committee established **Seven Absolute Requirements** for a Tourniquet:

- 1 Ample Capability...**
Occlusion of arterial flow in a thigh 26.7 in. in diameter
- 2 Rapid Deployment...**
Easy Application to either an upper or lower extremity in less than one minute with minimal familiarization
- 3 Secure Application...**
Cannot slip towards wound during tightening or slip after tightening
- 4 Easy Implementation...**
Capable of easy release and subsequent re-application
- 5 Small Cube Space...**
Weigh less than 230 grams (8.1 oz)
- 6 No Power Requirement...**
Must have no dependence on external power sources such as batteries and/or electricity
- 7 Extended Storage...**
Must have a shelf life in excess of 10 years

In Tourniquet design the committee also listed an additional **Five Desirable Features:**

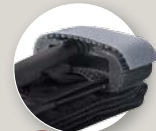
- 1 Wider is Better...**
Not less than 1 inch wide
- 2 Self Application...**
One handed self application to an upper extremity
- 3 Open-Ended Design...**
Capability of being applied to entrapped limbs
- 4 Torque Control...**
Protection from over-tightening
- 5 Low Cost...**
Large scale production cost savings



1 Single Routing Buckle



2 Windlass Rod



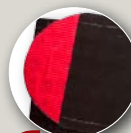
3 Windlass Clip



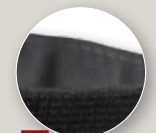
4 Windlass Strap



5 Stabilization Plate



6 Red Tip Technology



7 Free-Moving Internal Band

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