Ballistic Shields: Bolted vs. Sewn Carry Systems?

By Boydd Products, Inc.

Ballistic shields are essential protective tools for law enforcement, military, and security personnel operating in high-threat environments. While much attention is given to the shield's ballistic rating, one of the most crucial yet frequently underestimated factors in its performance is the carry system. Specifically, the design and type of the handle and forearm strap play a key role in how effectively the shield can be held, maneuvered, and sustained during prolonged use.

Two primary configurations dominate the market:

1. **Bolted handle and forearm strap systems**
2. **Sewn load-bearing handle and forearm strap systems**

Each configuration presents distinct advantages and limitations in terms of **durability**, **comfort**, **ergonomics**, and **long-term use**.

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1. Bolted Handle and Forearm Strap Systems

Overview: In this configuration, both the handle and forearm strap are affixed to the shield body using mechanical fasteners typically bolts, sleeves, washers, and reinforcement plates. These components are often adjustable and can be replaced if worn or damaged.

Advantages:

- **Structural Integrity:** Bolted systems offer a strong, rigid connection to the shield. Under high-stress conditions, they resist movement, flex, or tearing.
- **Serviceability:** Damaged components can be easily unbolted and replaced without compromising the integrity of the ballistic panel.
- **Secure Fit:** Provides a firm and consistent grip, allowing the operator to maintain solid control of the shield during dynamic movements.
- **Heat and Moisture Resistance:** Metal or composite bolt-on hardware is less susceptible to heat or moisture degradation compared to sewn fabrics.

Disadvantages:

- **Weight Concentration:** The rigidity of a bolted system can lead to pressure points and muscle fatigue during extended use, as weight isn't as evenly distributed.
- **Weak Points:** Direct ballistic impacts or impacts at oblique angles may compromise the integrity of the mechanical fasteners, potentially leading to failure or malfunction. Even more concerning, there exists a risk that a projectile could be channeled through the weak point between the hardware and the drilled section of the armor, resulting in penetration.
- **Potential Snag Points:** Exposed bolts or hardware can catch on gear or clothing, potentially interfering with fast movements.

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2. Sewn Load-Bearing Handle and Forearm Strap Systems

Overview: In these shields, the handle and strap system is integrated using high strength stitching directly into or onto the outer covering. Materials typically include heavy-duty ballistic nylon, polyester, webbing, and padding.

Advantages:

- **Ergonomic Weight Distribution:** Sewn systems are generally more flexible, allowing for a more natural carry and improved comfort over extended durations.
- **Reduced Profile:** A fully sewn system has a smoother exterior with fewer protruding elements, reducing the chance of snags.
- **Lightweight Feel:** The absence of rigid mounting hardware can make the shield feel lighter and easier to maneuver.

Disadvantages:

- **Durability Concerns:** Over time, stitching may weaken or tear under stress or repeated exposure to harsh conditions (e.g., rain, salt, UV).
- **Limited Repairability:** Unlike bolted systems, damaged sewn components typically require professional repair or full replacement of the shield's material cover.
- **Sag and Flex:** Under load or aggressive motion, sewn straps may stretch or sag, potentially impacting shield positioning and response time.

Key Considerations for Selection

When choosing between bolted and sewn systems, the decision should be based on **operational context**, **duration of use**, and **expected wear conditions**:

- Tactical teams involved in short, high-intensity missions may favor a bolted system due to its rigidity and precise control.
- When selecting this option, request NIJ bolt impact test data from the manufacturer to ensure verified performance.
- For extended wear, mobile operations, or patrol-based roles, a sewn system may offer superior comfort and greater flexibility.
- Ensure sufficient standoff distance is maintained to reduce the risk of injury from armor back face deformation (BFD).

Other factors such as shield size, ballistic rating, and operator body type can also influence the best configuration.

Conclusion

While both bolted and sewn handle systems can be effective, their strengths lie in different operational demands. Bolted handle and strap systems offer superior durability, consistency, and modularity. On the other hand, sewn load-bearing systems shine in comfort, agility, and lightweight usability. Ultimately, the right choice balances user needs with mission requirements ensuring maximum performance and protection when it matters most.

About Boydd Products

Boydd Products, Inc. is emerging as a leading innovator in armor support systems dedicated to improving performance, safety, and reliability for professionals in high stress environments. With a focus on practical design and improved features, Boydd Products delivers advanced solutions that address real world challenges and enhance survivability under extreme conditions. Inspired by a recent life saved, retired Police Sergeant Jim Boydd continues to lead the charge in new product innovation. If you want to learn more, contact Boydd Products or visit www.boyddproducts.com or www.advancedballisticshield.com