

JNI ARMOR

TECHNICAL BULLETIN

Ballistic Washer - Performance and Application Guidelines

Date	May 19, 2026	Applies to	JNI Armor ballistic washers
Material	SSAB Ramor 600	Application	Ballistic fastener protection

PRODUCT FUNCTION

JNI Armor ballistic washers protect fastener locations by shielding exposed threaded shafts from angled projectile strikes and reducing the risk of projectile entry or channeling through fastener openings.



1. Purpose

This bulletin provides performance characteristics, application guidance, safety limitations, and installation considerations for JNI Armor ballistic washers used in ballistic composite assemblies. The washer must be evaluated as part of the complete shield fastening system.

2. Product Overview

Material	SSAB Ramor 600 ballistic steel
Thickness	5 mm
Available finishes	Black oxide; powder coat; polyurea (PU) coating
System role	Protection of fastener holes and exposed threaded shafts

3. Ballistic Performance

Threat	Washer Performance	Application Condition
M80 Ball (7.62 x 51 mm) Type 56 MSC (7.62 x 39 mm)	Rated to stop	0°-90° obliquity
M193 and M855 (5.56 x 45 mm)	Angle-dependent protection	45° obliquity and lower

4. Hazard and Limitation Notice

PERPENDICULAR 5.56 mm IMPACT LIMITATION

At 90° obliquity (perpendicular impact) and the required test velocity, M193 and M855 projectiles will penetrate the ballistic washer. The washer is not a standalone armor solution against perpendicular high-velocity 5.56 mm threats.

A properly designed composite armor system behind the washer may prevent complete system penetration; however, final performance depends on the shield composite, fastener geometry, assembly configuration, impact location, velocity, and other test conditions.

5. System Performance and Standards Context

When used with JNI Armor ballistic bolts, the washer contributes to a complete fastener-protection system intended for shield configurations evaluated against the following threat levels and test frameworks:

NIJ Standard 0108.01	Levels IIIA and III
NIJ Standard 0101.07 threat nomenclature	HG2, RF1, and RF2
ASTM E3141/E3141M	Ballistic-resistant shield test method
ASTM E3347/E3347M	Ballistic-resistant shield performance specification

NO STANDALONE CERTIFICATION CLAIM

References to standards or threat levels describe system design and evaluation context. They do not mean that the washer alone is certified or provides the stated protection independently of the bolt, insert, rear hardware, and shield composite.

6. Design and Application Guidance

- The washer diameter is optimized to reduce angled-shot exposure across common ballistic composite systems.
- Composite selection, thickness, hole geometry, fastener location, and surrounding coverage directly affect overall ballistic performance.
- Confirm that the washer provides adequate coverage throughout the intended shot-angle envelope.
- Validate compatibility through ballistic testing specific to the final shield configuration.

7. Installation Considerations

- Align the ballistic washer correctly with the JNI Armor ballistic bolt and fastener opening.
- Install the washer in the orientation shown in the applicable JNI Armor system installation procedure.
- Avoid scratching, chipping, or otherwise damaging black-oxide, powder-coat, or polyurea finishes.
- Use appropriate non-marring tools, particularly on coated variants.
- Do not substitute washer material, thickness, diameter, or geometry without engineering review and system-level testing.

8. Pre-Service Verification

- ☐ Correct washer material, thickness, finish, and geometry verified.
- ☐ Washer correctly aligned and oriented with ballistic bolt.
- ☐ Fastener opening and surrounding composite free from visible damage.
- ☐ No visible coating damage or corrosion.
- ☐ Required angled-shot coverage confirmed.
- ☐ Complete fastener and shield configuration ballistically validated.

SYSTEM-LEVEL TESTING REQUIRED

Test the final washer, bolt, insert, rear hardware, mounted component, and shield composite together against every applicable threat, velocity, shot angle, impact location, and acceptance requirement before production use. Contact your JNI Armor Technical Sales Representative for application or testing support.