



Volvo Car USA LLC Statement on Structural Aluminum Inspection

Volvo Cars Commitment to Safety, Quality, and Detailed Inspection Methods for Micro-Cracks in Aluminum Structures

Exceeding Industry Standards: Inspection procedures should adhere to and surpass industry standards—high benchmarks for the inspection of structural aluminum, exceeding regulatory requirements to guarantee superior safety and reliability.

Expertise and Specialization: Properly trained technicians have specialized knowledge in automotive engineering and materials, particularly structural aluminum. Their expertise ensures meticulous inspections and accurate assessments.

At Volvo Cars, ensuring the safety and quality of our vehicles' structural aluminum components extends to employing meticulous inspection methods, including detecting micro-cracks. Our dedication to safety and quality extends to employing precise inspection methods in the aluminum structures of our vehicles.

These inspection methods are to be executed by specialized technicians proficient in interpreting inspection results and identifying even the minutest indications of micro-cracks within the aluminum structures of Volvo vehicles.

Visual inspection is required for all vehicles that may have sustained structural damage(s). Options 2-4 are required if the visual inspection shows potential damage(s) or micro-crack(s). If micro-cracking is detected, replacement of the component is required.

Inspections should include the following steps and methodologies:

Visual Inspection: The initial step involves a meticulous visual inspection by trained professionals. This examination focuses on potential stress concentration or vulnerability areas to ascertain any visible signs of micro-cracks, including surface irregularities or anomalies.

- Trained professionals conduct a thorough visual inspection using magnification tools and lighting to scrutinize surfaces for irregularities, such as hairline cracks or fissures.
- Focus areas include weld joints, high-stress zones, and areas prone to fatigue, where micro-cracks might initiate and propagate.

Eddy Current Testing: Utilizing eddy current testing, a non-destructive method, to detect surface and near-surface flaws, including micro-cracks. This technique uses electromagnetic induction to identify changes in the material's conductivity, alerting it to potential flaws without impacting the integrity of the aluminum.

- Eddy current testing utilizes a probe emitting electromagnetic fields that interact with the aluminum's surface.
- Changes in the electromagnetic field due to surface irregularities, including micro-cracks, are detected and displayed for analysis by skilled technicians.

Dye Penetrant Inspection: This method involves applying a penetrant fluid to the aluminum surface, allowing it to seep into any surface openings, including micro-cracks. After a specified time, the excess penetrant is removed, and a developer is applied to draw out the penetrant from the cracks, making them visible for thorough examination.

- A penetrant fluid is applied to the aluminum surface, allowed to dwell, and thoroughly cleaned.
- A contrasting developer is applied, drawing out the penetrant from any surface cracks or discontinuities, making them visible under proper lighting conditions.

Ultrasonic Testing: Ultrasonic testing involves transmitting high-frequency sound waves into the aluminum structure. Any irregularities or discontinuities, such as micro-cracks, will reflect these waves differently, enabling their detection without damaging the structure.

- Ultrasonic waves are transmitted into the aluminum structure via a probe, and the reflected waves are analyzed for variations.
- Discontinuities, including micro-cracks, reflect waves differently, allowing their detection without causing harm to the aluminum structure.

Caution!

When Vehicle is being connected to VIDA for diagnostics or software download, a battery maintainer must be connected to ensure 12V battery remains charged.

Utilizing only genuine Volvo parts will help ensure vehicle safety, performance, and residual value.

Volvo genuine parts are designed and manufactured to exact specifications to help maximize safety, performance, and reliability.

All Volvo exterior paneling, glass, unibody components, drivetrain, electronics, suspension SRS and steering components are essential to safe control of the vehicle. These parts are designed to work with other vehicle components to help keep occupants safe in an accident.

In the event of a collision, Volvo Cars recommends that all repairs be performed by a Volvo Certified Technician through a Volvo Certified Collision Center using only genuine Volvo Car parts.

Always refer to Volvo Information and Diagnostics for Aftersales (VIDA) for the latest technical guidelines.

