

Fused Insert Autosampler Vial Breakage Prevention During Injection - Tips and Suggestions

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When using fused-insert autosampler vials, occasional breakage can occur if the autosampler needle contacts the glass insert during injection. Although this is sometimes assumed to be caused by misaligned inserts, the **more common root cause is needle misalignment**—particularly in the vertical axis. Even minor deviations can cause the needle to strike the inner wall of the fused insert, leading to fractures.

A number of conditions can contribute to needle deflection or poor injection trajectory:

- **Incorrect needle gauge:** A needle that is too thin (high gauge number) may flex more easily, increasing the risk of lateral deflection upon entry.
- **Improper needle tip design:** Certain septa require specific needle geometries. A beveled tip behaves differently than a flat-tipped needle, and mismatch can increase deflection forces during penetration.
- **Septa hardness or inconsistency:** Stiffer or irregular septa can bend the needle upon entry. In such cases, using partial-slit septa or [Soft-Guard septa](#) helps reduce resistance and maintain proper needle trajectory.

To further minimize the likelihood of breakage, wide-opening vials with fused inserts can offer additional clearance, giving the needle more margin of error and reducing the chance of striking the insert wall.

Beyond mechanical factors, autosampler settings can play a crucial role:

- **Datum indexer recalibration:** The “zero-home” or reference position of the autosampler may drift over time. Resetting the datum indexer restores correct positional alignment and reduces needle offset errors.
- **Needle depth adjustment:** If the autosampler drives the needle too deeply, it can directly impact the bottom of the insert and break it. Properly adjusting the travel depth prevents bottoming out and preserves insert integrity.

Implementing the above recommendations helps maintain reliable injection performance, reduce vial breakage, and ensure the autosampler functions at optimum accuracy and longevity.



Examples of Wide Mouth Fused Insert Vials

[Inserts Product Page](#)

AUTOSAMPLER VIALS AND CAPS

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