

SYRINGE USE, CARE AND MAINTENANCE INSTRUCTIONS

500 nL to 2 μ L NanoVolume Autosampler Syringes

The plungers in SGE Analytical Science NanoVolume Syringes extend to the needle tip. The nanoliter sized sample is contained only in the needle – there is no contact between the sample and the syringe barrel.

This syringe is a precision instrument, in order to maintain optimum performance and long life, a few simple care issues should be considered.

Syringe Specifications:

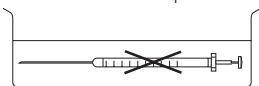
- Temperature: Maximum 70 °C.
- Accuracy and Reproducibility: \pm 2 % of displaced volume.

Syringe Use:

- Always inspect the syringe before use. Check the barrel for cracks and the needle tip for burrs.
- Adjusting the position of the injection port packing so that the needle tip is wiped during injection improves peak shape, reproducibility and linearity without adversely effecting boiling point discrimination.
- It is recommended that pre-drilled septa be used with NanoVolume autosampler syringes.
- Do not over tighten the septum cap when using high speed autosampler. Deformation of the septum due to over tightening may cause leakage during the rapid injection stroke.
- To ensure accuracy, the smallest injected volume from any syringe should be no less than 10 % of its total capacity.
- To eliminate carryover between samples, flush the syringe with solvent 5-20 times, remembering to discard the first 2-3 washes.

Syringe Cleaning:

- Syringe cleaning agents will usually depend on the contaminating material. Methanol, methylene chloride, acetonitrile and acetone are commonly used solvents for cleaning.
- After the syringe has been cleaned, rinse the syringe with acetone and air dry.
- Clean externally by wiping with a tissue.
- **Do not immerse the entire syringe in solvent** as this may damage the adhesive used to bond parts of the syringe.




Needle and Plunger Care:

- Check the needle for burrs prior to use. Use a fine emery board or carborundum to remove burrs.
- The needle and plunger in this syringe are a matched set. Ensure both the needle and plunger are changed if replacement is required.

- Always loosen the cover nut (2) before removing or inserting the plunger.
- Avoid unnecessary movement of the plunger when the syringe is dry.
- Avoid prolonged heating of the needle.
- Avoid movement of the plunger when the needle is hot.
- Never force the plunger.
- Wipe plunger with a lint free tissue before replacing into the syringe. Be careful not to bend the plunger.
- Never tighten cover nut unless plunger is fully inserted.
- When replacing the plunger and needle refer to instructions supplied with Replacement Plunger and Needle Kit.
- For information about the range of Replacement Plunger and Needle Kits see www.sge.com

Needle and Plunger Replacement (refer to figure 1):

	WARNING
	Always loosen the cover nut before removing or inserting plunger. Never tighten cover nut unless plunger is fully inserted.

- **The needle and plunger in this syringe are a matched set. Ensure both the needle and plunger are changed if replacement is required.**
- Loosen cover nut (2) and withdraw the plunger assembly (12).
- Remove cover nut (2), needle (1) and spring (3).
- Replace needle (1) and cover nut (2), ensuring the spring (3) is located on needle stop (4). DO NOT TIGHTEN COVER NUT.

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- Carefully insert new plunger wire (7) into guide tube inside the glass barrel and push the plunger assembly (12) down level with the zero mark on the scale.
- Then tighten cover nut (2).

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- After removing plunger assembly from syringe barrel, remove small screw (10) from button (11) and push out plunger wire and strengthening sheath (7 and 8) from guide tube (9) through the top of button (11).
- Apply a small amount of the glue to screw thread (10) on the new plunger. A small sachet of glue is included in the Needle and Plunger Repair Kit.
- Fit new plunger and lock into position with small screw (10).
- Insert new plunger wire and assembly as described above.
- Then tighten cover nut (2).
- With the screwdriver adjust the position of the plunger (8-10) so that the tip is flush with the needle tip with the plunger at zero position.

Replacement of seal (Refer to figure 1, 2 and 3):

- Each syringe and repair kit is supplied with a spare PTFE seal and insertion tool and consists of a stainless steel tube (14), wire (15) and PTFE seal (13).
- A small PTFE seal (5) is located inside the glass barrel around the plunger and located at the back end of the needle. This seal should not require replacement in general use but if it becomes dislodged or damaged it can be replaced as follows:
 - Loosen cover nut (2) and withdraw plunger assembly.
 - Remove cover nut (2), needle (1) and spring (3).
 - Hold insertion tool assembly in one hand and syringe barrel in the other and insert seal (13) and tube (14) into the small hole in the glass barrel where the needle normally fits. Then withdraw wire (15) about 5 mm which will leave the seal in position.
 - Remove insertion tool.
 - Replace needle (1) and cover nut (2), ensuring spring (3) is located on needle stop (4). DO NOT TIGHTEN NUT.
 - Refit plunger assembly as detailed in Plunger Replacement section.
 - Then tighten cover nut (2).
- To check that the seal is in position simply tighten the cover nut then measure the effective length of the needle extending beyond the face of the nut. If the 1.5 mm long seal is missing, the effective length of the needle will shorten.

Legend:

1. Needle
2. Cover Nut
3. Compression Spring
4. Needle Stop
5. PTFE Seal
6. Syringe Barrel
7. Plunger Wire
8. Strengthening Sheath
9. Plunger Guide
10. Screw
11. Plunger Button
12. Plunger Assembly
13. PTFE Seal
14. Stainless Steel Tube
15. Wire

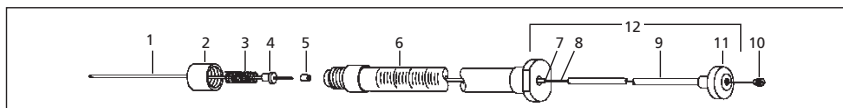


Figure 1. Exploded view of plunger-in-needle NanoVolume syringe

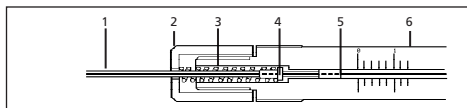


Figure 2. Partial view of assembled syringe

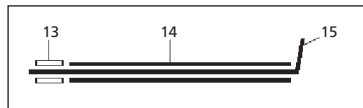


Figure 3. PTFE Seal Insertion Tool

WARRANTY All SGE syringes are warranted to meet the stated quality and performance specifications and to be free of defects in material or workmanship. The warranty implies free replacement of a defective syringe only upon proper written proof of the defect and if requested by SGE, the return of the defective product in its original packaging. It does not apply to mishandling of product by the customer, either in storage or use.

Syringe Conformance Certificate

This syringe has been manufactured using measuring equipment traceable to International Standards. SGE Analytical Science ensures that the displacement volume is within the conformance specifications. For applications requiring individual syringe calibration, SGE Analytical Science offers a factory calibration service. Contact your nearest SGE Analytical Science office or dealer for details.

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