

Introduction

The plungers in 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.

In order to maintain optimum performance and long life, a few simple care issues should be considered.

Specifications

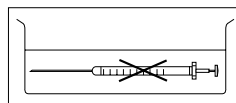
- Temperature: Maximum 70°C.
- Accuracy and reproducibility: $\pm 2\%$ of displaced volume at full scale.

Instructions

- 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.

Clean and care

- 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 bond



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".

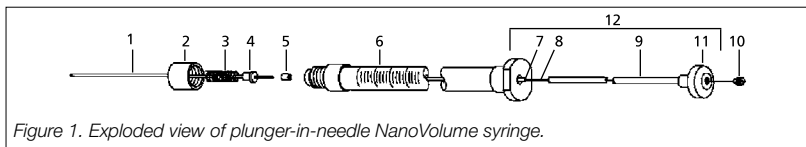


Figure 1. Exploded view of plunger-in-needle NanoVolume syringe.

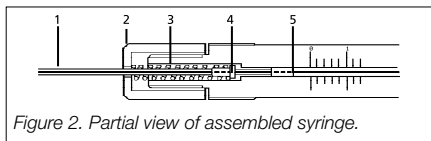


Figure 2. Partial view of assembled syringe.

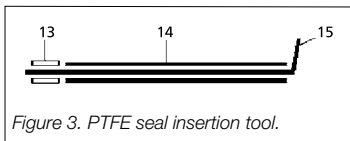


Figure 3. PTFE seal insertion tool.

Legend:

1. Needle
2. Cover nut
3. Compression spring
4. Needle stop
5. PTFE seal
6. Syringe barrel
7. Strengthening sheath
8. Plunger wire
9. Plunger guide
10. Screw
11. Plunger button
12. Plunger assembly
13. PTFE seal
14. Stainless steel tube
15. Wire

Replacement

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.

Agilent Technologies, CTC Analytics, Shimadzu and Thermo Scientific autosampler syringes

- Carefully insert new sheathed plunger wire (8) 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 the sheathed plunger wire (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 sheathed 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 needle and 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.

Storage

- To protect against breakage store the syringe in its original packaging or on a syringe rack.
- Always thoroughly clean the syringe and ensure that it is dry before storage.

Warranty

All Trajan Scientific and Medical 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 Trajan Scientific and Medical 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.

- Do not return any syringe that has been used with radioactive, infectious or hazardous materials.
- Do not return any syringe unless requested to do so by an authorized Trajan representative.
- Any syringe being returned must be clearly marked with a return authorization number, which is available from your Trajan representative.

Conformance statement

Trajan syringes are manufactured under a documented Quality Management System. All in-process measuring equipment and instrumentation is maintained and calibrated in accordance with stringent quality standards. Trajan warrants syringe displacement within the stated conformity specifications.

Information and support

Visit www.trajanscimed.com or contact techsupport@trajanscimed.com

Specifications are subject to change without notice.

Analytical syringes manufactured by Trajan Scientific and Medical are intended for analytical and laboratory use only and are not intended or approved for use with food, including the production or packaging of food, nor medical or human in-vivo use.