



Syringes for the laboratory



## SGE syringes have been the syringe of choice in analytical laboratories for over 50 years

In the laboratory it is essential to have the right consumables to deliver an efficient workflow. The analytical syringe plays an important role in ensuring consistent delivery, precision, accuracy, and integrity of the sample.



Trajan Scientific and Medical (Trajan) is focused on delivering a portfolio of high performance syringes designed to meet these requirements.

We combine precision manufacturing and meticulous assembly, to create SGE syringes for precise volume delivery of your analytical samples.



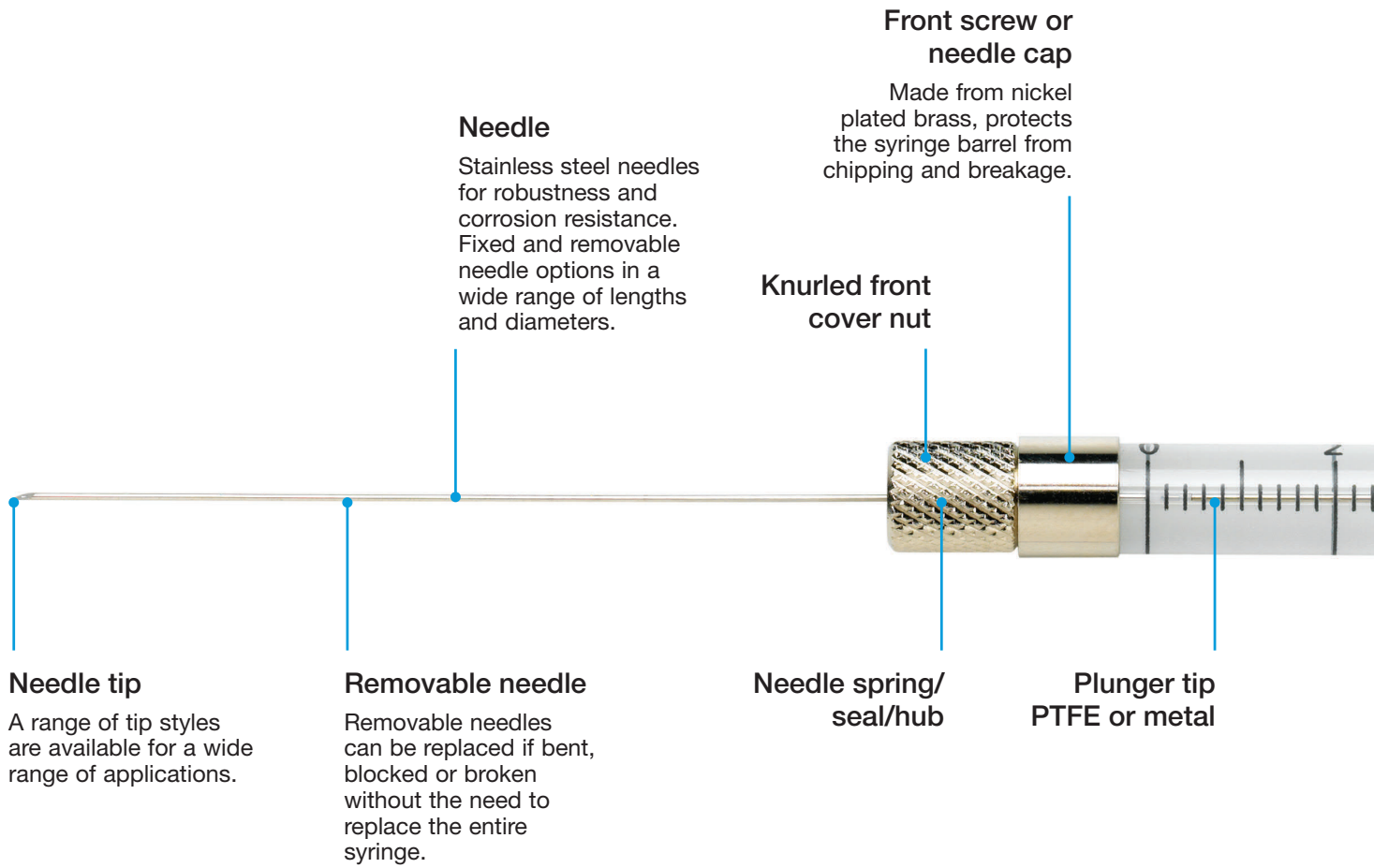
Our comprehensive expertise in liquid handling technologies with glass and metal assembly enables us to develop syringes for a vast variety of applications.

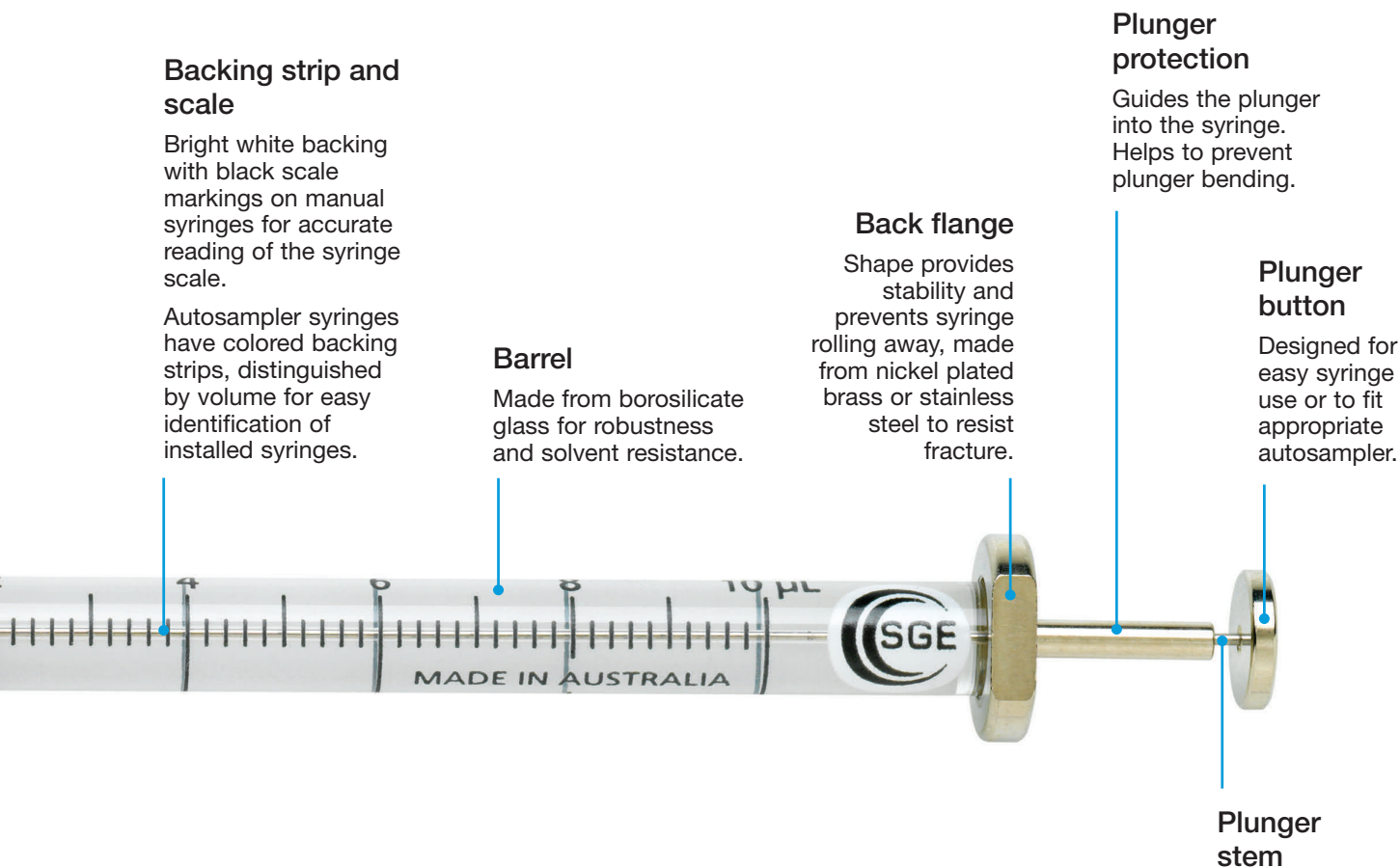
We are confident this guide will assist you in identifying the right SGE syringe for your application. If you need help with your selection, please contact us to recommend appropriate products or to investigate a custom solution for you.

## Contents

SGE Syringes   <b>Structure of a syringe</b>	<b>2</b>
SGE Syringes   <b>Which syringe to use?</b>	<b>4</b>
SGE Syringes   <b>Agilent</b>	<b>13</b>
SGE Syringes   <b>CTC Analytics</b>	<b>15</b>
SGE Syringes   <b>PerkinElmer</b>	<b>18</b>
SGE Syringes   <b>Shimadzu</b>	<b>19</b>
SGE Syringes   <b>Thermo Scientific</b>	<b>20</b>
SGE Syringes   <b>General purpose</b>	<b>23</b>
SGE Syringes   <b>Hamilton cross reference</b>	<b>30</b>
Digital analytical syringe   <b>eVol® XR</b>	<b>40</b>

# SGE Syringes | Structure of a syringe





## SGE Syringes - volumetric color guide



SGE Syringes for autosamplers incorporate a vibrant color scheme, distinguished by volume, enabling easy identification of syringes installed in instruments.

Choose from a comprehensive range of SGE Syringe options including plunger protection, removable or fixed needles, a range of needle gauge and length options as well as needle tip style alternatives.

Color	Syringe capacities			
Light orange	500 nL (0.5 $\mu$ L)	500 $\mu$ L		500 mL (0.5 L)
Yellow	1000 nL (1 $\mu$ L)		1 mL	1000 mL (1 L)
Lime	5000 nL (5 $\mu$ L)	5 $\mu$ L	5 mL	
Dark orange		10 $\mu$ L	10 mL	
Green		25 $\mu$ L	25 mL	
Purple		50 $\mu$ L	50 mL	
Aqua		100 $\mu$ L	100 mL	
Gray		250 $\mu$ L	2.5 mL	2000 mL (2 L)

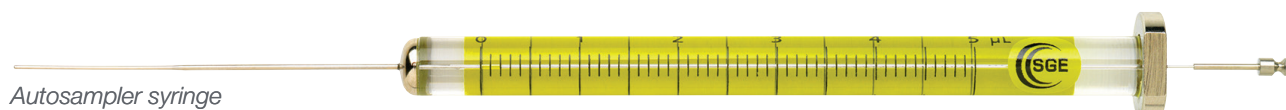
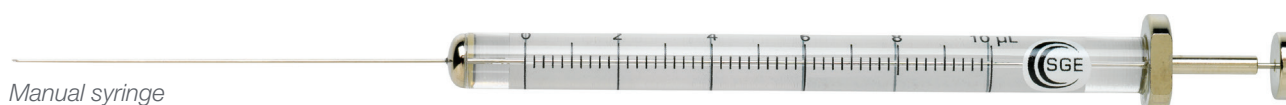
# SGE Syringes | Which syringe to use?

Trajan offers a complete choice in syringes with a range of capacities, termination types, and numerous needle sizes for a wide range of applications. The following sections explain the SGE Syringe features and how to select the ideal syringe for any application.

## What type of syringe?

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If the syringe is being used by hand, a manual syringe should be selected. If the syringe is installed in an instrument then select an autosampler syringe to suit that particular instrument.



Trajan has a large range of manual syringes for use in chromatography and many other applications. SGE manual syringes have a bright white backing and contrasting black print making them easy to read the fluid level. This provides confidence the right volume is being delivered every time.

Trajan's extensive range of SGE autosampler syringes meet all fit, form and function criteria of a specific autosampler model. As minimum requirements, they meet dimensional specifications, have accuracy of better than  $\pm 1\%$ \*, are designed for worry free overnight sampling, have extended life, and are color coded by capacity for easy identification.

Consider the eVol® XR the digital analytical syringe for precise programmable injections. eVol syringes are easily and quickly changed allowing them to be dedicated to individual liquids or methods to prevent possible cross contamination of reagents.



## What size syringe?

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For the best possible injection reproducibility and accuracy, the smallest injectable volume from any syringe (with the exception of eVol) should be no less than 10% of its total capacity. For example: the smallest recommended injection volume from a 10 µL syringe would be 1 µL.

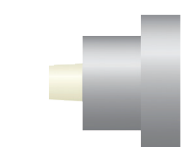
To accurately dispense 1 µL or less a NanoVolume syringe is recommended. SGE NanoVolume syringes are available with capacities ranging from 0.5 µL to 5 µL. These syringes can inject down to 0.05 µL because the entire sample is contained within the needle. Designed with submicron tolerances, these syringes are rugged, robust and reliable with virtually zero dead volume. Liquid tight, they provide precision and accuracy of  $\pm 2\%$ .

\*Plunger-in-barrel syringes.

## Termination

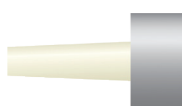
Termination refers to the interface between the syringe barrel and its mating connection such as the needle. There are several different termination options to accommodate a wide range of applications.

Many syringes are supplied and used with needles attached; there are also other terminations available: Luer Lock, Luer Tip, and threaded terminations.



### Luer Lock termination

- For Luer Lock needles and fittings, syringe filters and pump priming.
- Specifically designed to secure Luer Lock needles.



### Luer Tip termination

- For Luer Lock needles and fittings.

*Luer Lock and Luer Tip fittings are a universal fitting with a male Luer taper made from Kel-F® or PTFE to ISO standard 594. Luer Lock needles and fittings are used with syringes having Luer terminations. These syringes are often used with syringe filters and syringe pumps.*

Trajan offers both fixed and removable Luer Lock syringes. Fixed Luer Lock syringes have a Luer fitting that is permanently fixed to the barrel. If the tip is ever damaged, the syringe will need to be replaced. Removable Luer Lock syringes have Luer fittings that screw onto the barrel with the Luer Tip inserted. Luer tips and Luer fittings can be replaced if these are damaged. Removable Luer tips need to be tightened securely to ensure they do not come loose during use.

Syringes with threaded terminations screw into a valve or other device, and are required for some LC autosamplers, syringe pumps and dispensers. There are many thread terminations possible, contact Trajan if you require a particular threaded termination that is not covered in this selection guide.

### Trajan's termination codes for SGE Syringes:

F	Fixed needle
R	Removable needle
LL	Luer Lock
LT	Luer Tip

## Barrel internal diameter

When using a syringe pump, the internal diameter (ID) of the syringe barrel is required to calculate the pumping speed. The table below lists the IDs of SGE syringes based on capacity.

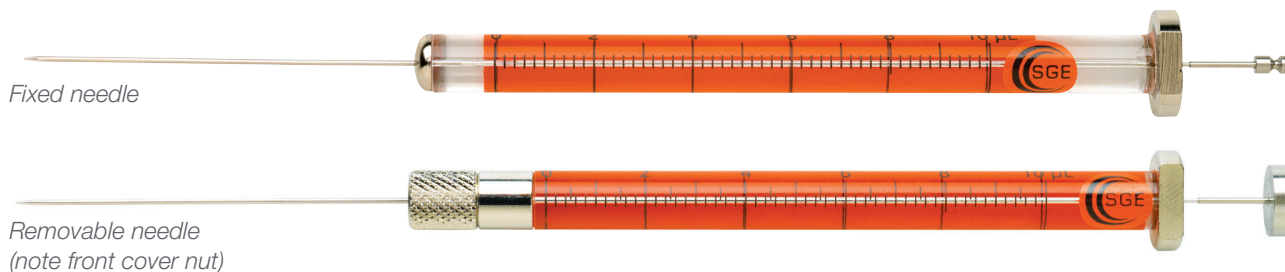
Syringe capacity	5 µL	10 µL	25 µL	50 µL	100 µL	250 µL	500 µL	1 mL
Internal diameter of syringe barrel	0.343 mm	0.485 mm	0.728 mm	1.030 mm	1.457 mm	2.303 mm	3.257 mm	4.606 mm

Syringe capacity	-	-	2.5 mL	5 mL	10 mL	25 mL	50 mL	100 mL
Internal diameter of syringe barrel	-	-	7.284 mm	10.30 mm	14.57 mm	23.03 mm	27.50 mm	34.99 mm

*Note: These diameters are based on scale lengths of 54.1 mm for 5 µL and 10 µL syringes, and 60 mm for 25 µL to 100 mL syringes. Scale length is sometimes referred to as stroke length or the travel of the plunger in one direction.*

## Needle selection

Needle selection is based on application and personal preference.



### Fixed needle or removable needle syringes:

Fixed needle syringes are often the preferred option for experienced operators or for applications requiring trace sample levels. A fixed needle syringe is recommended for autosampler use where the probability of needle bending is minimal. Fixed needles are easy to use and the most economical syringe option. Fixed needle syringes can be heated to 70°C.

For versatility a removable needle syringe is recommended. The removable needle syringe reduces cost over time because only the needle needs to be replaced if bent or blocked. Removable needle syringes can be heated to 120°C. Removable needle syringes allow the needle to be changed for different applications.

Needles are easily changed to meet the application need. For example: a standard 10 µL removable needle syringe can be easily converted for LC or on-column use.

### Trajan divides its removable needles into different ranges:

- 5 µL eVol
- 5 µL
- 10 µL
- 25 µL to 500 µL (suitable for 50 µL and 100 µL eVol syringes)
- 1 mL to 2.5 mL (suitable for 500 µL and 1 mL eVol syringes)
- 5 mL to 10 mL
- Luer Lock
- Valve needles

### Gauge or outer diameter (OD)


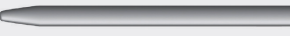



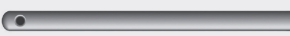
To reduce the possibility of bending, choose the largest available needle outer diameter suitable for the application. For autosamplers, syringes with 23 gauge or 0.63 mm OD cone tipped needles should be selected for all applications except on-column injection.

### Internal diameter (ID)

The ID of the needle is selected to ensure minimal retained volume without compromising the ability of the syringe to draw normal viscosity samples. Medium to high viscosity samples should be diluted prior to use or select a needle with a larger internal diameter.

## Needle tip styles

Trajan has various needle tip styles to suit a range of applications and uses.

Needle tip style	Application	Features/applications
Bevel 	Manual GC	Typically used for manual injections. The tip shape helps reduce septa coring.
Cone 	GC autosampler	Most versatile needle for autosampler use. Resist coring of vial and inlet septa.
Dual gauge 	On-column injection - autosampler	Narrow gauge part suitable for suitable for large bore on-column injection.
LC 	HPLC	Also suitable for injections that do not contain an inlet septa such as Merlin Microseal™.
Dome 	With pre-drilled septa	Recommended for use with pre-drilled septa.
Side hole 	LV Injection	Usually used for headspace and large volume injections.

### Bevel

The standard general purpose needle tip style supplied with many SGE Syringes is a 20° bevel tip. It is the preferred option for manual injection where piercing the septa in exactly the same place is difficult. The bevel tip is designed for optimum septa penetration and prevention of septa coring.

### Cone

The cone shaped needle tip is specially developed to withstand multi injection demands and improve septa lifetime when used with an autosampler. The cone design effectively 'parts' the septa during piercing not cutting it, as would a bevel needle.

### Dual gauge

Dual gauge needles have a narrow gauge at the tip suitable for large bore on-column injection. The wider gauge for the remainder of the needle gives increased strength to the needle for autosampler use.

### LC

These needles are used for LC and HPLC valve injection and have a 90° square tip with rounded and polished edges, this eliminates damage to the valve's rotor seal and stator face.

### Dome

This style needle is recommended for use with pre-drilled septa. The tip is rounded and polished to help septa penetration.

### Side hole

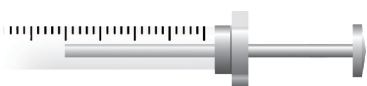
Samples are filled and dispensed through the side hole eliminating septa plugging of the needle. Ideal for large volume gas injection, the solid domed tip minimizes septa damage.

## PTFE tipped or metal plunger

A syringe with a PTFE tipped plunger should be selected when analyzing 'dirty' samples such as serum and urine. The PTFE tip minimizes carryover and prevents particulate matter from getting between the plunger and barrel by effectively wiping the barrel inner diameter during the plunger stroke. PTFE tipped plungers are suitable for both liquid and gas samples. Syringes with PTFE tipped plungers have the added benefit of the plungers being replaceable as the PTFE wears due to use.

Metal plungers are individually fitted to the syringe glass barrel for a perfect 'feel', optimized life with minimal carryover, a liquid tight seal between the barrel and plunger and excellent performance.

### SGE Syringe plunger options:



#### Metal plunger

- Stainless steel plunger individually fitted to its own syringe barrel.
- Plunger is not replaceable or interchangeable.
- Industry standard syringe for chromatography applications.
- For use when injection volume is greater than 1  $\mu\text{L}$ .



#### Metal plunger for NanoVolume syringes (plunger-in-needle)

- Plunger extends into the needle tip.
- Sample is contained only in the needle, i.e. no glass contact.
- Ideal for dispensing very small liquid volumes.
- Recommended for use when sample volume is less than 1  $\mu\text{L}$ .
- Capacities: 0.5  $\mu\text{L}$ , 1  $\mu\text{L}$  and 5  $\mu\text{L}$ .



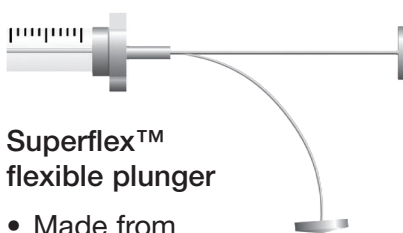
#### Plunger protection

- Extended protection from the top of the syringe back flange to help prevent plunger bending during injection and improve plunger stroke.
- Ideal for general use for both experienced and inexperienced users.
- Capacities: 5  $\mu\text{L}$  and 10  $\mu\text{L}$  (not necessary for capacities larger than 10  $\mu\text{L}$  due to strength of the wider plunger diameter).



#### PTFE tipped plunger

- Suitable for both liquid and gas samples.
- Suitable for headspace applications.
- Plunger is replaceable.
- Ideal for 'dirty' samples.
- Easy to remove and clean to extend plunger life.
- Capacities: 10  $\mu\text{L}$  to 100 mL.



#### Superflex™ flexible plunger

- Made from titanium/nickel alloy.
- Virtually indestructible plunger.
- Capacities: 5  $\mu\text{L}$  and 10  $\mu\text{L}$ .



#### Guided plunger

- Extended barrel guides plunger during injection.
- Robust and rugged.
- Capacities: 5  $\mu\text{L}$  and 10  $\mu\text{L}$ .

## Syringe care, cleaning and use

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The SGE Syringe is a precision instrument with a high standard of fit between the plunger and the glass barrel. Like most precision instruments, regular maintenance is important for ensuring long life and robust performance.

Syringes should be routinely checked for damage to the barrel and needle. Look for fine cracks in the barrel. Needles should also be checked for burrs and rough surfaces which may cause tearing and excessive wear on the septa.

### Needle care

Unblocking needles:

1. To unblock the needle, remove the plunger and fill the syringe with solvent using another syringe.
2. Insert plunger and gently push solvent through the needle. Never force the plunger as too much pressure may crack the syringe barrel.



*Needle cleaning kit (part number 031782)*

The SGE Syringe needle cleaning kit contains a range of stylet wires for needle cleaning, tweezers and a surfactant material for barrel cleaning.

### Syringe cleaning

Syringe cleaning agents will usually depend on the contaminating material. Methanol, methylene chloride, acetonitrile and acetone are commonly used.



Do not immerse the entire syringe in solvent as this may damage the adhesive used to bond parts of the syringe. Clean externally by wiping with a tissue.

### Syringe cleaning steps

1. Flush thoroughly with suitable solvents. Depending on contaminant this may have to be done up to 20 times.
2. Rinse with distilled water.
3. Flush with acetone.
4. Remove plunger and wipe with tissue.
5. Refit plunger and flush with acetone.
6. Allow syringe to dry.

Cleaning steps for NanoVolume syringes can be found in the manual supplied with the syringe.

## SGE Syringe temperature specifications

Heating will remove semi-volatile material from the syringe. Before heating or autoclaving remove the plunger.

- Fixed needle and fixed Luer syringes can be heated in an oven to 70°C.
- Removable needle and removable Luer syringes can be heated in an oven to 120°C.
- NanoVolume syringes can be heated in an oven to 70°C.
- Headspace syringes can be heated to 150°C.

Rapid changes in temperature can lead to splitting of the glass barrel. Ensure heating and cooling of a syringe is a gradual process.

## Syringe use

- Always inspect the syringe before use. Check the barrel for cracks and the needle tip for burrs.
- To eliminate carryover between samples, flush the syringe with solvent 5-20 times, remembering to discard at least the first 2-3 washes.
- To eliminate air bubbles from the barrel, repeatedly draw and expel sample while keeping the needle tip immersed in the solution. Bubbles can also be removed by turning the barrel upright while expelling some of the sample. If bubbles persist, slow the aspiration speed.
- To make an injection, overfill the syringe then press the plunger until the correct volume is reached. Draw the plunger back slightly then wipe the needle tip with a lint free tissue. Make injection. For improved precision, a repeating adaptor, which allows the volume to be preset, may be purchased.

Before storage always flush the syringe with solvent and air dry.

## Plunger care

Metal plungers for standard syringes

- Never force the plunger.
- Do not pump the plunger when the needle is blocked as the high pressure generated could crack the barrel.
- Replacement metal plungers are not available. Plungers are individually fitted to the barrels to achieve a perfect seal. This means that plungers are not interchangeable.
- Avoid unnecessary movement of plungers when the syringe is dry.

## Metal plungers for NanoVolume syringes

- Always loosen needle cover nut before removing or inserting plunger.
- Wipe plunger with a lint-free tissue before replacing into the syringe.

## PTFE tipped plungers

- Avoid unnecessary movement of plungers when the syringe is dry.
- Replacement PTFE tipped plungers are available for many syringes.

## Syringe validation and calibration

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If your laboratory is involved in GLP, ISO, GMP, NAMAS, ANSI, BSI or National Standards Protocol, then you will appreciate the importance of instrument calibration and its traceability. Although essential, this is often a time consuming, error prone and costly exercise to perform.

### Certificate of conformance

Trajan supplies a syringe conformance certificate with every syringe to guarantee the syringe meets all specifications.

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.

### Certificate of calibration

Available for most SGE Syringes:

Trajan offers a factory calibration service, at an additional cost, for any syringe nominated by you at the time of purchase. These syringes are supplied with a certificate of calibration providing volume conformance and traceability. For identification, each calibrated syringe is uniquely numbered and marked with this number.

Many companies attempt to calibrate syringes by measuring the mass of a dispensed volume. The accuracy of this technique is affected by many variables such as weighing errors, fluctuations in environmental temperature, pressure and evaporation, as well as operator error.

Trajan uses a superior technique of calibrated volume based on the length and inner diameter of the syringe barrel. Using specialized measuring equipment, Trajan's calibration method has the highest degree of displacement volume accuracy and provides calibration traceability.

To order a calibrated syringe simply add 'CAL' to the end of the part number when ordering. For example; if you require a calibration certificate for a 002000, 10 µL fixed needle syringe; order part number 002000CAL.

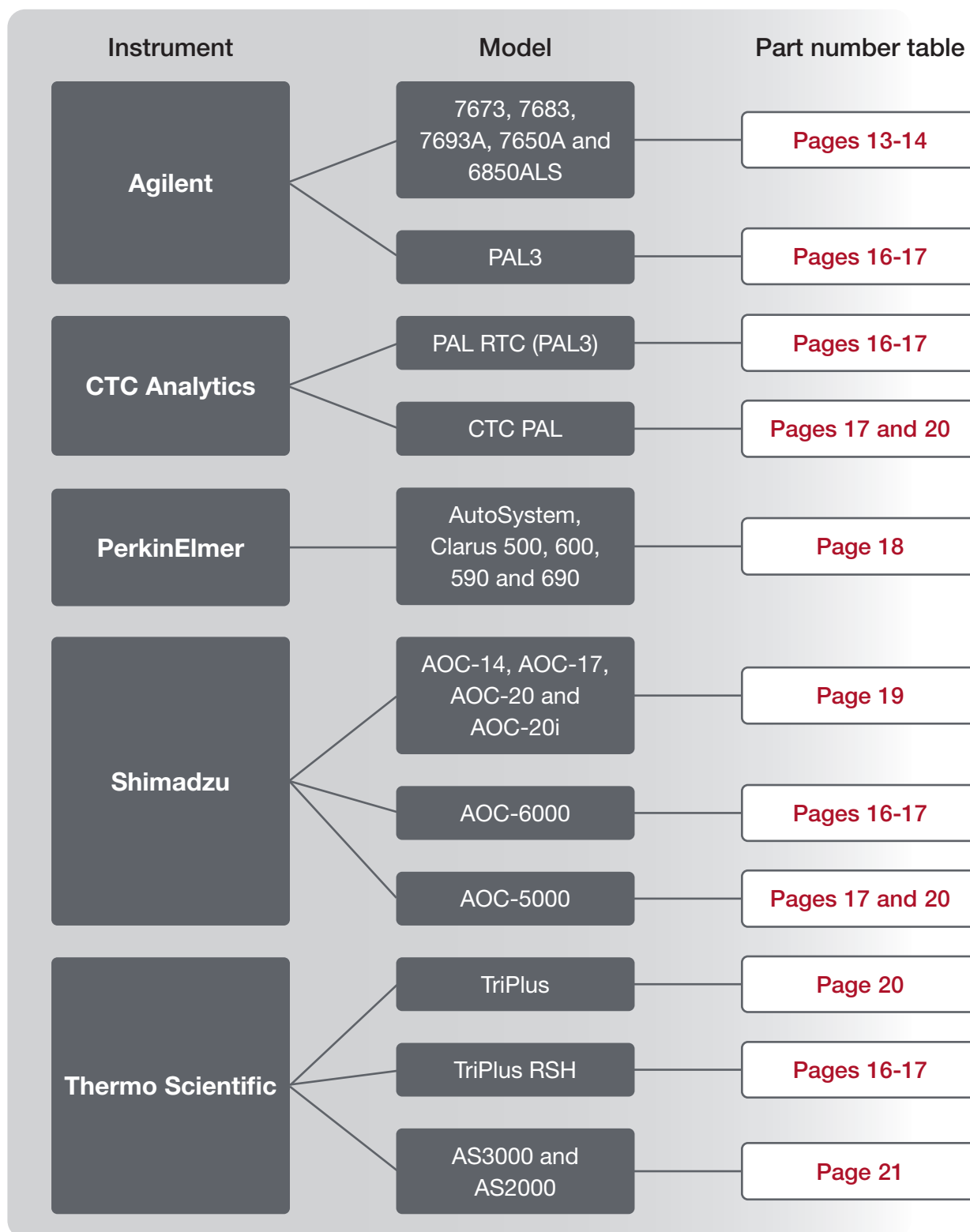
### eVol XR digital analytical syringe calibration

Trajan's eVol XR – Digitally controlled analytical syringe, is the world's first user calibrated analytical syringe. Every eVol XR is factory tested to ensure its operation complies with a comprehensive list of criteria.

To achieve the highest level of accuracy possible each syringe may be calibrated. This will ensure your eVol XR will dispense more accurately than any other manual syringe-based dispensing technique. A calibration factor for each syringe is used to adjust the software instructions controlling the motor to compensate for any slight variations in the positively displaced liquid volume. The calibration procedure for eVol XR is based on a gravimetric measure of the volume dispensed from the eVol XR.

## Autosampler syringe selection tree

This selection tree is provided to facilitate finding the syringes to suit your autosampler. The relevant part number table can be found after following the path for your instrument and model.



# SGE Syringes | Agilent

## Product specifications and part numbers

Specifications			
Accuracy and reproducibility	±1% (dispensed volume) (±2% for 0.5 µL and 1 µL syringes)	Scale length	0.5 µL to 1 µL = 27.05 mm 5 µL to 10 µL = 54.1 mm 25 µL to 250 µL = 60 mm
Borosilicate glass barrel outer diameter (OD)	0.5 µL to 250 µL = 6.5 mm	International standards traceability	✓

Syringes listed in the following part number table (pages 13-14) are suitable for:

- Agilent 7673
- Agilent 7683
- Agilent 7693A
- Agilent 7650A
- Agilent 6850ALS

For Agilent PAL3 compatible syringes see pages 16-17.



### Agilent 7673, 7683, 7693A, 7650A, 6850ALS

VWR catalog number	Part description and detail	Replacement needle (*needle and plunger kit)	Replacement plunger
549-0382	0.5 µL NanoVolume Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	549-0502*	-
562-1002	0.5 µL NanoVolume Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	549-0503*	-
549-0391	0.5 µL NanoVolume Agilent syringe with 4.2 cm 0.63/0.47 mm OD dual gauge cone tipped needle	549-0504*	-
549-0383	1.0 µL NanoVolume Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	549-0514*	-
549-0371	5 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	-	-
562-1014	5 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle PK6	-	-
562-1015	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	-	-
562-1016	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle PK6	-	-
549-0374	5 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	-	-
568-0344	5 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	-	-
562-1034	10 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	-	-
562-1035	10 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle PK6	-	-
549-0384	10 µL removable needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	549-0544	-
549-0372	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	-	-
568-0345	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD side hole needle	-	-
549-0373	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle	-	549-0484
568-0346	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle PK25	-	-
562-1036	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle PK6	-	-
562-1037	10 µL removable needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	549-0545	-
568-0347	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle PK25	-	549-0484
568-0348	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle PK10	549-0545	549-0485
549-0375	10 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	-	-
568-0349	10 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	-	-
568-0350	10 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK25	-	-
549-0376	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	-	-

## Agilent 7673, 7683, 7693A, 7650A, 6850ALS continued

VWR catalog number	Part description and detail	Replacement needle (*needle and plunger kit)	Replacement plunger
568-0351	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	-	549-0484
549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	549-0546	549-0485
568-0352	10 µL fixed needle Agilent syringe with Superflex plunger and 4.2 cm 0.47 mm OD cone tipped needle PK6	-	-
568-0353	10 µL fixed needle Agilent syringe with Superflex plunger and 4.2 cm 0.63 mm OD cone tipped needle PK6	-	-
549-0377	25 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	-	-
549-0388	50 µL removable needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	549-0552	-
549-0378	50 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	-	-
549-0379	100 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	-	549-0492

## Expert tips

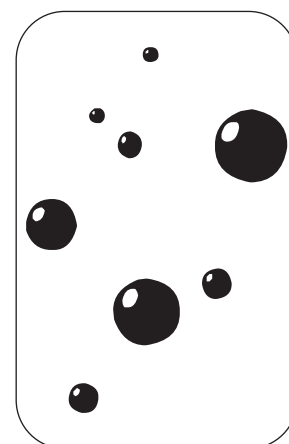
### Q. We are getting air bubbles when taking up sample – what is the cause and how can we fix this?

A. To prevent air bubbles forming, repeatedly draw and expel sample while keeping needle tip immersed in the sample.

Slow down! If the plunger is being pulled back too quickly air can be pulled up from the sample.

To remove air bubbles turn the syringe tip towards the ceiling, tap the side of the barrel and expel some sample.

### Air bubbles



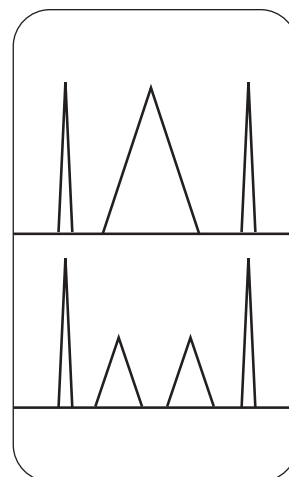
### Q. Our results are inconsistent and unreliable – why is this happening and what can we do to fix this?

A. One of the major causes of inconsistent results is sampling and injection technique. Check that each sample is being injected the same way.

The SGE repeating adaptor, RAX, ensures reproducibility of sample volumes with accuracy and precision in injection.

Another cause of unreliable results is carryover between samples. Flush the syringe with solvent after each sample injected.

### Inconsistent results



# SGE Syringes | CTC Analytics

## Product specifications and part numbers

Specifications			
Accuracy and reproducibility	±1% (dispensed volume) (±2% for 0.5 µL and 1 µL syringes)	Scale length	0.5 µL to 1 µL = 27.05 mm 5 µL to 10 µL = 54.1 mm 25 µL to 5 mL = 60 mm
Borosilicate glass barrel outer diameter (OD)	10 µL to 250 µL = 6.5 mm (except part numbers 003715 and 006720 = 8 mm) 500 µL = 8 mm 1 mL = 7.6 mm 2.5 mL = 9.7 mm 5 mL = 14 mm	International standards traceability	✓

Syringes listed in the following part number tables (pages 16-17) are suitable for:

- CTC Analytics CTC PAL
- CTC Analytics PAL RTC (PAL3)
- Shimadzu AOC-6000
- Shimadzu AOC-5000
- Thermo Scientific TriPlus RSH
- Agilent PAL3



CTC Analytics PAL RTC (PAL3), Shimadzu AOC-6000, Thermo Scientific TriPlus RSH and Agilent PAL3

VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
548-1573	0.5 µL NanoVolume CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	548-1681*	-
548-1574	1.0 µL NanoVolume CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	548-1682*	-
548-1575	5 µL fixed needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	-	-
548-1576	5 µL fixed needle CTC RTC and Thermo RSH syringe with 8.5 cm 0.63 mm OD cone tipped needle	-	-
548-1577	5 µL fixed needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.47 mm OD cone tipped needle	-	-
548-1579	5 µL removable needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	548-1751	-
548-1581	5 µL removable needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.47 mm OD cone tipped needle	548-1753	-
548-1582	5 µL removable needle CTC RTC and Thermo RSH syringe with 8.5 cm 0.47 mm OD cone tipped needle	548-1754	-
548-1589	10 µL fixed needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	-	-
548-1590	10 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	-	548-1673
548-1591	10 µL fixed needle CTC RTC and Thermo RSH syringe with 8.5 cm 0.63 mm OD cone tipped needle	-	-
548-1592	10 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	-	548-1673
548-1593	10 µL fixed needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.47 mm OD cone tipped needle	-	-
548-1594	10 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	-	-
548-1595	10 µL fixed needle CTC RTC and Thermo RSH syringe with 8.5 cm 0.47 mm OD cone tipped needle	-	-
548-1596	10 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	-	548-1673
548-1597	10 µL fixed needle CTC RTC and Thermo RSH syringe with 8.5 cm 0.47 mm OD bevel tipped needle	-	-
548-1598	10 µL removable needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	548-1755	-
548-1599	10 µL removable needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	548-1755	548-1673
548-1601	10 µL removable needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	548-1756	548-1673
548-1602	10 µL removable needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.47 mm OD cone tipped needle	548-1757	-
548-1603	10 µL removable needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	548-1757	548-1673
548-1605	10 µL removable needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	548-1758	548-1673
548-1613	25 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	-	548-1674
548-1614	25 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	-	548-1674
548-1615	25 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	-	548-1674
548-1616	25 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	-	548-1674
548-1626	50 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	-	548-1675
548-1627	50 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	-	548-1675
548-1628	50 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	-	548-1675
548-1629	50 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	-	548-1675
548-1637	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	-	548-1676
548-1638	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	-	548-1676
548-1639	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	-	548-1676
548-1640	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	-	548-1676

CTC Analytics PAL RTC (PAL3), Shimadzu AOC-6000, Thermo Scientific TriPlus RSH and Agilent PAL3 continued

VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
548-1641	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD side hole needle	-	548-1676
548-1642	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD side hole needle	-	548-1676
548-1649	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	-	548-1677
548-1650	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	-	548-1677
548-1651	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	-	548-1677
548-1652	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	-	548-1677
548-1653	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD side hole needle	-	548-1677
548-1654	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD side hole needle	-	548-1677
548-1657	500 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	-	548-1678
548-1658	500 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD cone tipped needle	-	548-1678
548-1659	500 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	-	548-1678
548-1660	500 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	-	548-1678
548-1661	500 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD side hole needle	-	548-1678
548-1662	500 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.63 mm OD side hole needle	-	548-1678
548-1666	1 mL fixed needle CTC RTC and Thermo RSH headspace syringe with energized GT plunger and 6.5 mm OD side hole needle	-	548-1679
548-1670	2.5 mL fixed needle CTC RTC and Thermo RSH headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	-	548-0680

CTC Analytics CTC PAL and Shimadzu AOC-5000

VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
554-1442	10 µL fixed needle CTC syringe with 5 cm 0.47 mm OD cone tipped needle	-	-
548-1607	10 µL fixed needle CTC syringe with GT plunger and 5 cm 0.72 mm OD side hole needle	-	SGEA031803 (PK1) SGEA0318120 (PK2)
554-1451	25 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	-	554-1479
554-1456	100 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	-	SGEA0318261
554-1461	250 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	-	554-1483
548-1663	1 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	-	SGEA031841
548-1664	1 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.47 mm OD side hole needle	-	SGEA031841
548-1668	2.5 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	-	SGEA031851
548-1669	2.5 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.47 mm OD side hole needle	-	SGEA031851

# SGE Syringes | PerkinElmer

## Product specifications and part numbers

Specifications			
Accuracy and reproducibility	±1% (dispensed volume) (±2% for 0.5 µL syringes)	Scale length	0.5 µL to 5 µL = 27.05 mm 50 µL = 54.1 mm
Borosilicate glass barrel outer diameter (OD)	0.5 µL to 50 µL = 6.5 mm	International standards traceability	✓

Syringes listed in the following part number table are suitable for:

- PerkinElmer AutoSystem
- PerkinElmer Clarus 500
- PerkinElmer Clarus 600
- PerkinElmer Clarus 590
- PerkinElmer Clarus 690



### PerkinElmer AutoSystem, Clarus 500, 600, 590 and 690

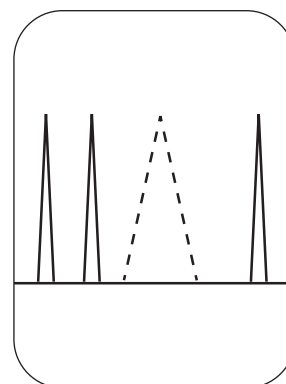
VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
549-0397	0.5 µL NanoVolume PerkinElmer syringe with 7 cm 0.47 mm OD cone tipped needle	549-0508*	-
562-1003	0.5 µL NanoVolume PerkinElmer syringe with 7 cm 0.63 mm OD cone tipped needle	549-0509*	-
562-1018	5 µL fixed needle PerkinElmer syringe with 7 cm 0.47 mm OD cone tipped needle	-	-
562-1019	5 µL fixed needle PerkinElmer syringe with 7 cm 0.63 mm OD cone tipped needle	-	-
562-1020	5 µL fixed needle PerkinElmer syringe with GT plunger and 7 cm 0.47 mm OD cone tipped needle	-	549-0483
562-1021	5 µL fixed needle PerkinElmer syringe with GT plunger and 7 cm 0.63 mm OD cone tipped needle	-	549-0483
549-0307	50 µL fixed needle PerkinElmer syringe with 7 cm 0.63 mm OD cone tipped needle	-	-

## Expert tips

**Q. Ghost peaks are appearing on our chromatograms and interfering with our results – what is causing this?**

A. Ghost peaks can be caused by a number of areas of the instrument set up. To rule out the syringe as a cause of ghost peaks consider if the injection volume is too large or if the syringe or needle tip is contaminated.

### Ghost peaks



# SGE Syringes | Shimadzu

## Product specifications and part numbers

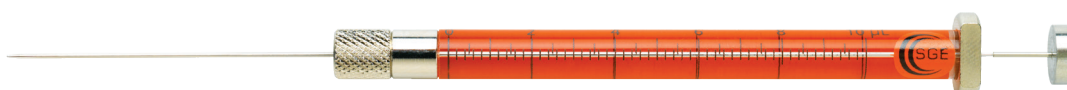
Specifications			
Accuracy and reproducibility	±1% (dispensed volume) (±2% for 0.5 µL syringes)	Scale length	0.5 µL = 27.05 mm 5 µL to 10 µL = 54.1 mm
Borosilicate glass barrel outer diameter (OD)	0.5 µL to 10 µL = 6.5 mm	International standards traceability	✓

Syringes listed in the following part number table are suitable for:

- Shimadzu AOC-14
- Shimadzu AOC-17
- Shimadzu AOC-20
- Shimadzu AOC-20i

For Shimadzu AOC-6000 compatible syringes see pages 16-17.

For Shimadzu AOC-5000 compatible syringes see pages 17 and 20.



### Shimadzu AOC-14, AOC-17, AOC-20 and AOC-20i

VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
549-0410	0.5 µL NanoVolume Shimadzu syringe with 4.2 cm 0.47 mm OD cone tipped needle	549-0506*	-
549-0411	0.5 µL NanoVolume Shimadzu syringe with 4.2 cm 0.63 mm OD cone tipped needle	549-0507*	-
549-0409	5 µL fixed needle Shimadzu syringe with 4.2 cm 0.63 mm OD cone tipped needle	-	-
562-1038	10 µL removable needle Shimadzu syringe with 4.2 cm 0.47 mm OD cone tipped needle	549-0548	-
562-1039	10 µL removable needle Shimadzu syringe with 4.2 cm 0.63 mm OD cone tipped needle	549-0549	-
549-0413	10 µL removable needle Shimadzu syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle	549-0549	549-0556

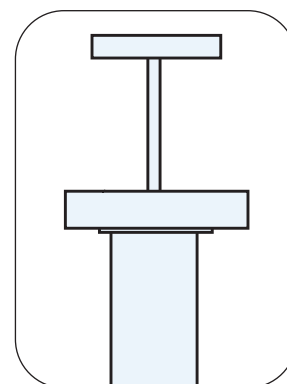
## Expert tips

### Q. Why is the plunger getting stuck in the syringe barrel?

A. Build up from dirty samples can cause plungers to seize – ensure correct syringe cleaning procedures are being followed. The plungers may also be ‘getting stuck’ if they are bent. Plungers bend because of poor dispensing technique.

If plungers are seizing when using an autosampler check that the syringe is installed correctly.

### Seized plungers



# SGE Syringes | Thermo Scientific

## Product specifications and part numbers

Specifications			
Accuracy and reproducibility	±1% (dispensed volume) (±2% for 0.5 µL and 1 µL syringes)	Scale length	0.5 µL to 1 µL = 27.05 mm 5 µL to 10 µL = 54.1 mm 25 µL to 5 mL = 60 mm
Borosilicate glass barrel outer diameter (OD)	10 µL to 250 µL = 6.5 mm (except part numbers 003715 and 006720 = 8 mm) 500 µL = 8 mm 1 mL = 7.6 mm 2.5 mL = 9.7 mm 5 mL = 14 mm	International standards traceability	✓

Syringes listed in the following part number tables (pages 20-21) are suitable for:

- Thermo Scientific TriPlus
- Thermo Scientific AS3000
- Thermo Scientific AS2000
- CTC Analytics CTC PAL
- Shimadzu AOC-5000

For Thermo Scientific TriPlus RSH compatible syringes see pages 16-17.

### Thermo Scientific TriPlus, CTC Analytics CTC PAL and Shimadzu AOC-5000

VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
558-0611	0.5 µL NanoVolume CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	558-0613*	-
558-0612	0.5 µL NanoVolume CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	558-0614*	-
SGEA000790	2.0 µL NanoVolume CTC/Thermo syringe with 5.0 cm 0.63 mm OD cone tipped needle	SGEA034905*	-
549-0403	5 µL fixed needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	-	-
548-1583	5 µL fixed needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	-	-
SGEA001984	5 µL removable needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	548-0958	-
558-0610	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.5 mm OD cone tipped needle	-	-
SGEA002971	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle PK6	-	-
554-1448	10 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle PK6	-	SGEA031803 (PK1) SGEA0318120 (PK2)
554-1449	10 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle PK6	-	SGEA031803 (PK1) SGEA0318120 (PK2)
554-1450	10 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	-	SGEA031803 (PK1) SGEA0318120 (PK2)
562-1041	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	-	-
SGEA002981	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	-	-
562-1042	10 µL removable needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	548-0967	-
SGEA002984	10 µL removable needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	549-0558	-
548-1561	10 µL removable needle CTC/Thermo syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	548-0967	SGEA0318121
548-1938	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle PK6	-	-
562-1043	10 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	-	SGEA031803 (PK1) SGEA0318120 (PK2)
562-1044	10 µL fixed needle CTC/Thermo syringe with 8 cm 0.47 mm OD cone tipped needle <sup>^</sup>	-	-
549-0405	10 µL removable needle CTC/Thermo syringe with 8 cm 0.47 mm OD cone tipped needle <sup>^</sup>	549-0481	-
548-1619	25 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	-	SGEA031817
548-1620	25 µL removable needle CTC/Thermo syringe with GT plunger and 5 cm 0.47 mm OD side hole needle	SGEA038749	SGEA031816
548-1632	100 µL removable needle CTC/Thermo syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	SGEA038732	SGEA031826
548-1633	100 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	-	SGEA0318261

<sup>^</sup>Syringes with 8 cm length needles are not suitable for CTC Analytics CTC PAL and Shimadzu AOC-5000.

## Thermo Scientific AS3000 and AS2000

VWR catalog number	Part description and detail	Replacement needle (* needle and plunger kit)	Replacement plunger
SGEA0019811	5 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.63 mm OD cone tipped needle	-	-
SGEA0019821	5 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	-	-
SGEA0029671	10 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.5 mm OD cone tipped needle	-	-
SGEA0029741	10 µL fixed needle CTC/Thermo (classic button) syringe with 8 cm 0.72 mm OD cone tipped needle	-	-
SGEA0029761	10 µL fixed needle CTC/Thermo (classic button) syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle PK6	-	SGEA03181201
SGEA0029771	10 µL fixed needle CTC/Thermo (classic button) syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	-	SGEA03181201
SGEA0029781	10 µL fixed needle CTC/Thermo (classic button) syringe with 7 cm 0.47 mm OD cone tipped needle	-	-
548-1530	10 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	-	-
548-1531	10 µL removable needle CTC/Thermo (classic button) syringe with 5 cm 0.63 mm OD cone tipped needle	549-0558	-
548-1938	10 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle PK6	-	-
548-1526	10 µL fixed needle CTC/Thermo (classic button) syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	-	SGEA03181201
548-1527	10 µL fixed needle CTC/Thermo (classic button) syringe with 8 cm 0.63 mm OD cone tipped needle	-	-
548-1528	10 µL fixed needle CTC/Thermo (classic button) syringe with 8 cm 0.47 mm OD cone tipped needle	-	-
548-1562	10 µL removable needle CTC/Thermo (classic button) syringe with 8 cm 0.47 mm OD cone tipped needle	549-0481	-
548-1939	25 µL fixed needle CTC/Thermo (classic button) syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	-	SGEA0318171



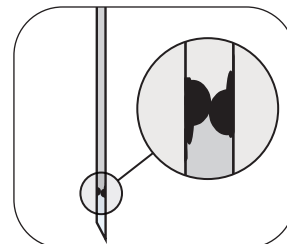
## Expert tips

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### Q. Why is the syringe needle getting blocked?

A. Needles become blocked due to a build up from dirty sample, improper cleaning or by septa during injection. SGE bevel and cone tipped needles are designed for optimum septa penetration and prevention of septa coring.

### Blocked needles



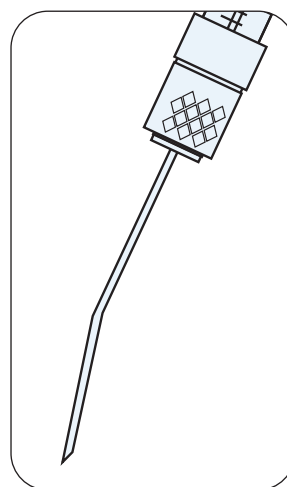
### Q. Why does the needle keep bending?

A. To reduce the possibility of bending choose the largest available needle outer diameter suitable for the application. For autosamplers, syringes with 23 gauge or 0.63 mm OD cone tipped needles are recommended.

If needles are bending when the syringe is being used on an autosampler check that the syringe is installed correctly.

Use a removable needle syringe as the needle can be replaced if bent or blocked.

### Bent needles



# SGE Syringes | General purpose

## Product specifications and part numbers

### 0.5 $\mu\text{L}$ to 5 $\mu\text{L}$ NanoVolume syringes

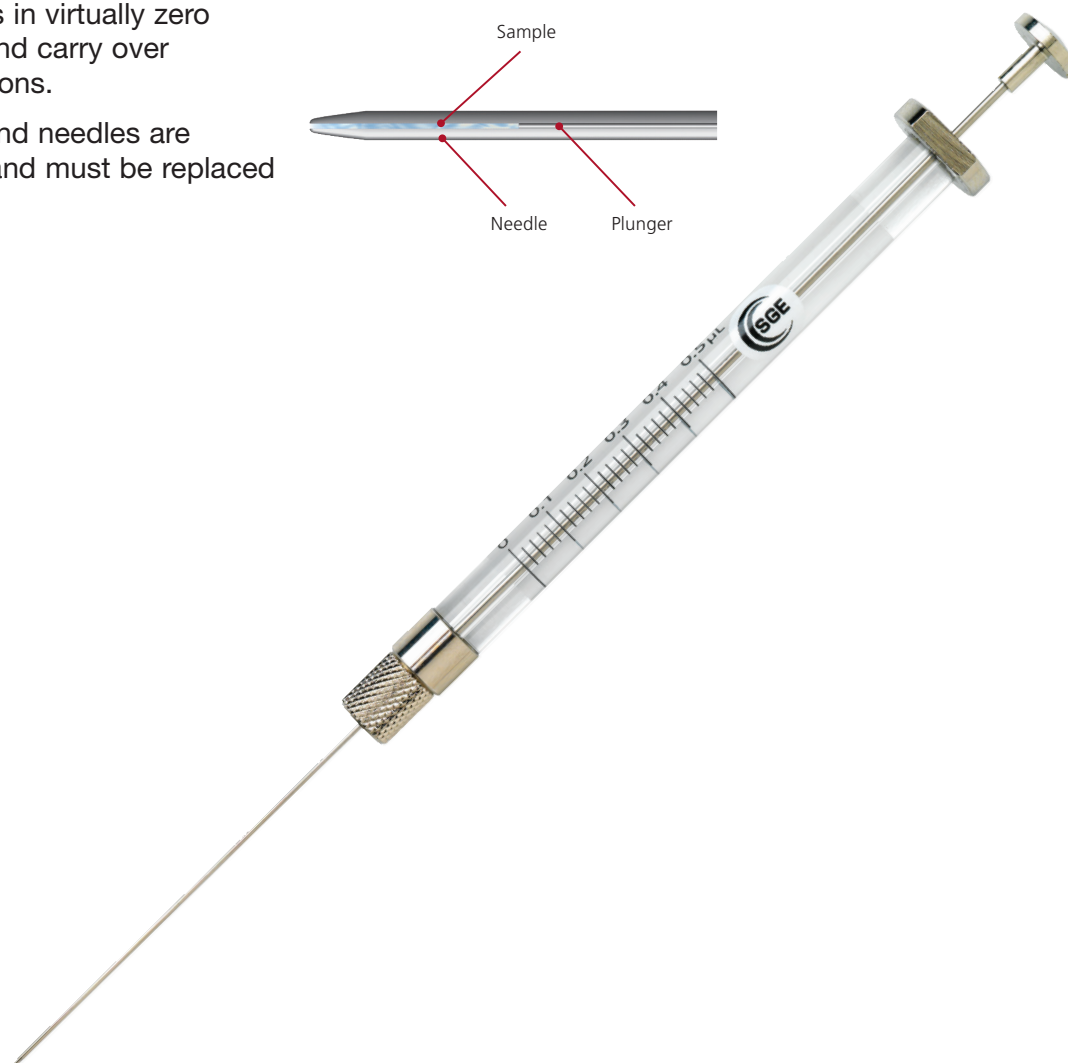
Specifications			
Accuracy and reproducibility	$\pm 2\%$ (dispensed volume)	Scale length	0.5 $\mu\text{L}$ and 1 $\mu\text{L}$ = 54.1 mm 5 $\mu\text{L}$ = 48.7 mm
Borosilicate glass barrel outer diameter (OD)	0.5 $\mu\text{L}$ to 5 $\mu\text{L}$ = 8 mm (except part numbers 000300, 000301, 000303, 000303, 000350, 000353 = 6.5 mm)	International standards traceability	✓

With the ability to inject down to 50 nL with high precision and accuracy, SGE NanoVolume syringes are perfect for NanoVolume capillary chromatography injection as well as making accurate standards that require small volumes.

The sample is only drawn into the needle, not the syringe barrel. When the plunger is depressed, the sample is completely dispensed by the NanoVolume plunger that extends to the tip of the needle.

Displacing the full sample during injection results in virtually zero dead volume and carry over between injections.

The plungers and needles are matched sets and must be replaced as a set.



## 0.5 µL to 5 µL NanoVolume syringes

VWR catalog number	Part description and detail	Replacement needle and plunger kit
<b>NanoVolume</b>		
549-0253	0.5 µL NanoVolume syringe with 5 cm 0.63 mm OD cone tipped needle	549-0498
549-0414	0.5 µL NanoVolume syringe with 5 cm 0.63 mm OD bevel tipped needle	549-0499
549-0415	0.5 µL NanoVolume syringe with 5 cm 0.47 mm OD cone tipped needle	549-0500
549-0254	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle	549-0350
549-0416	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD bevel tipped needle	549-0501
549-0255	0.5 µL NanoVolume syringe with 5 cm 0.63 mm OD cone tipped needle and repeating adaptor	549-0498
549-0424	0.5 µL NanoVolume syringe with 5 cm 0.47 mm OD cone tipped needle and repeating adaptor	549-0500
549-0425	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	549-0350
SGEA000376	0.5 µL NanoVolume on-column syringe with 7 cm 0.47 mm OD needle	SGEA033630
SGEA000380	0.5 µL NanoVolume on-column syringe with 7.5 cm 0.23 mm OD needle	SGEA033620
549-0258	1.0 µL NanoVolume syringe with 5 cm 0.63 mm OD cone tipped needle	549-0351
549-0417	1.0 µL NanoVolume syringe with 5 cm 0.63 mm OD bevel tipped needle	549-0510
549-0259	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle	549-0352
549-0418	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD bevel tipped needle	549-0512
549-0419	1.0 µL NanoVolume syringe with 11.5 cm 0.63 mm OD bevel tipped needle	549-0511
549-0260	1.0 µL NanoVolume syringe with 5 cm 0.63 mm OD cone tipped needle and repeating adaptor	549-0351
549-0261	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	549-0352
549-0262	1.0 µL NanoVolume syringe with 7 cm 0.47 mm OD cone tipped needle	549-0513
549-0263	5.0 µL NanoVolume syringe with 5 cm 0.63 mm OD cone tipped needle	549-0353
549-0420	5.0 µL NanoVolume syringe with 5 cm 0.63 mm OD bevel tipped needle	549-0516
549-0264	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle	549-0354
549-0421	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD bevel tipped needle	549-0517
549-0422	5.0 µL NanoVolume syringe with 11.5 cm 0.63 mm OD cone tipped needle	-
549-0265	5.0 µL NanoVolume syringe with 5 cm 0.63 mm OD cone tipped needle and repeating adaptor	549-0353
549-0426	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	549-0354

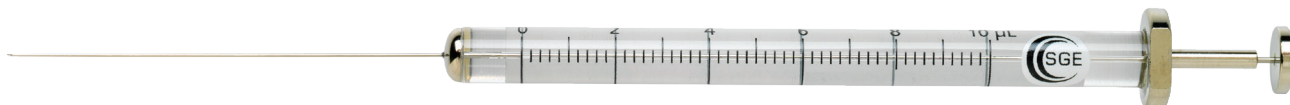
## Expert tips

**To eliminate carryover between samples**, flush the syringe with solvent 5-20 times, remembering to discard the first 2-3 washes.

**When replacing the plunger and needle** follow the instructions included in the kit – the front cover nut must be loosened before removing the plunger.

## 5 µL to 500 µL metal plunger syringes

Specifications			
Accuracy and reproducibility	±1% (dispensed volume)	Scale length	5 µL to 10 µL = 54.1 mm 25 µL to 500 µL = 60 mm
Borosilicate glass barrel outer diameter (OD)	5 µL to 10 µL = 6.5 mm 25 µL to 500 µL = 8 mm	International standards traceability	✓



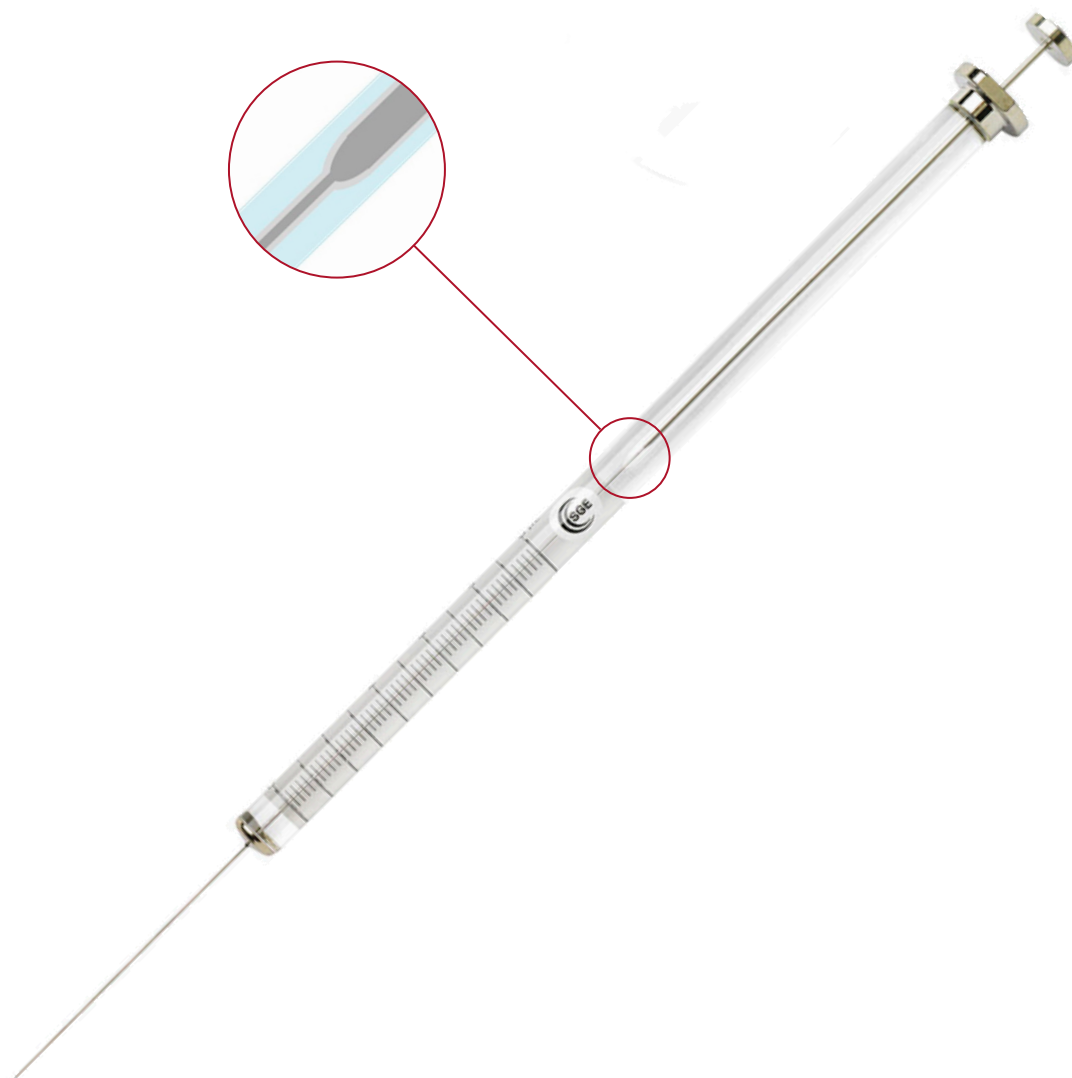
## 5 µL to 500 µL metal plunger syringes

VWR catalog number	Part description and detail	Replacement needle
549-0267	5 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle	-
549-0268	5 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle	549-0356
549-0269	5 µL fixed needle syringe with flexible plunger and 5 cm 0.47 mm OD bevel tipped needle	-
549-0279	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle	-
549-0430	10 µL fixed needle syringe with 7 cm 0.47 mm OD bevel tipped needle	-
549-0431	10 µL fixed needle syringe with 5 cm 0.47 mm OD cone tipped needle	-
549-0280	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle PK6	-
548-0198	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle PK10	-
548-0199	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle PK25	-
549-0281	10 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle	549-0357
549-0283	10 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle PK6	549-0357
549-0284	10 µL fixed needle syringe with flexible plunger and 5 cm 0.47 mm OD bevel tipped needle	-
549-0434	10 µL fixed needle syringe with flexible plunger and 5 cm 0.47 mm OD cone tipped needle	-
549-0285	10 µL fixed needle syringe with flexible plunger and 5 cm 0.47 mm OD bevel tipped needle PK6	-
548-0779	10 µL fixed needle syringe with flexible plunger and 5 cm 0.47 mm OD cone tipped needle PK6	-
548-0934	10 µL fixed needle syringe with flexible plunger and 5 cm 0.63 mm OD cone tipped needle PK6	-
549-0287	10 µL removable needle syringe with flexible plunger and 5 cm 0.47 mm OD bevel tipped needle PK6	549-0357
549-0293	25 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	-
549-0294	25 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	549-0359
549-0298	50 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	-
549-0299	50 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	549-0359
549-0308	100 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	-
549-0309	100 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	549-0359
549-0885	100 µL removable needle syringe with 7 cm 0.5 mm OD bevel tipped needle	548-0985
549-0316	250 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	-
549-0317	250 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	549-0359
548-0943	500 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	-
562-1063	500 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	549-0359

## 5 µL to 10 µL guided plunger syringes

Specifications			
Accuracy and reproducibility	±1% (dispensed volume)	Scale length	5 µL to 10 µL = 54.1 mm
Borosilicate glass barrel outer diameter (OD)	5 µL to 10 µL = 6.5 mm	International standards traceability	✓

Guided plunger syringes are the most rugged syringe available, making them perfect for industrial environments.



## 5 µL to 10 µL guided plunger syringes

VWR catalog number	Part description and detail	Replacement needle	Replacement plunger
549-0272	5 µL fixed needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	-	-
549-0273	5 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	549-0356	-
549-0439	5 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle (half scale)	549-0357	-
549-0290	10 µL fixed needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	-	-
549-0291	10 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	549-0357	-
549-0448	10 µL removable needle guided plunger syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle	549-0357	549-0482

## 10 µL to 500 µL PTFE tipped plunger syringes

Specifications			
Accuracy and reproducibility	±1% (dispensed volume)	Scale length	10 µL = 54.1 mm 25 µL to 500 µL = 60 mm
Borosilicate glass barrel outer diameter (OD)	10 µL = 6.5 mm 25 µL to 500 µL = 8 mm	International standards traceability	✓

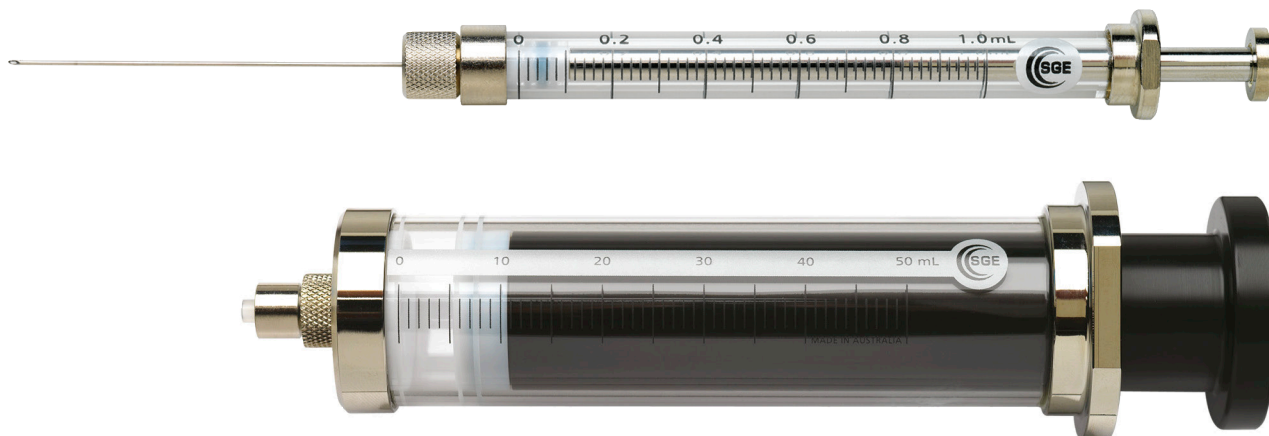


## 10 µL to 500 µL PTFE tipped plunger syringes

VWR catalog number	Part description and detail	Replacement needle	Replacement plunger
549-0288	10 µL fixed needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle	-	549-0486
548-0935	10 µL fixed needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle PK6	-	549-0486
549-0445	10 µL fixed needle syringe with GT plunger and 7 cm 0.47 mm OD bevel tipped needle	-	549-0486
549-0289	10 µL removable needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle	549-0357	549-0487
562-1031	10 µL removable needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle PK6	549-0357	549-0487
549-0295	25 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	-	549-0488
549-0296	25 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	549-0488
549-0300	50 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	-	549-0490
549-0301	50 µL fixed Luer Tip syringe with GT plunger	-	549-0490
549-0302	50 µL fixed Luer Lock syringe with GT plunger	-	549-0490
548-0938	50 µL fixed Luer Lock syringe with GT plunger and plunger stop	-	-
549-0303	50 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	549-0490
549-0304	50 µL syringe with removable needle valve and GT plunger	-	549-0490
549-0310	100 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	-	549-0493
549-0311	100 µL fixed Luer Tip syringe with GT plunger	-	549-0493
548-0940	100 µL fixed Luer Lock syringe with GT plunger	-	549-0493
548-0941	100 µL fixed Luer Lock syringe with GT plunger and plunger stop	-	-
549-0312	100 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	549-0493
549-0313	100 µL syringe with removable needle valve and GT plunger	-	549-0493
549-0318	250 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	-	549-0494
549-0319	250 µL fixed Luer Tip syringe with GT plunger	-	549-0494
549-0320	250 µL fixed Luer Lock syringe with GT plunger	-	549-0494
548-0942	250 µL fixed Luer Lock syringe with GT plunger and plunger stop	-	SGEA031833
549-0446	250 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	549-0494
549-0321	250 µL syringe with removable needle valve and GT plunger	-	549-0494
549-0326	500 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	-	549-0495
548-0945	500 µL fixed Luer Tip syringe with GT plunger	-	549-0495
548-0946	500 µL fixed Luer Lock syringe with GT plunger	-	549-0495
548-0947	500 µL fixed Luer Lock syringe with GT plunger and plunger stop	-	-
549-0447	500 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	549-0495
SGEA007279	500 µL syringe with removable needle valve and GT plunger	-	549-0495

## 1 mL to 100 mL PTFE tipped plunger syringes

Specifications			
Accuracy and reproducibility	±1% (dispensed volume)	Scale length	1 mL to 25 mL = 60 mm 50 mL = 84.2 mm 100 mL = 104 mm
Borosilicate glass barrel outer diameter (OD)	1 mL = 9 mm 2.5 mL = 11 mm 5 mL = 14 mm 10 mL = 18 mm 25 mL = 27 mm 50 mL = 32.8 mm 100 mL = 40.8 mm	Thread in plunger stem	6-32 UNC
		International standards traceability	✓



## 1 mL to 100 mL PTFE tipped plunger syringes

VWR catalog number	Part description and detail	Replacement needle	Replacement plunger
549-0332	1 mL fixed Luer Tip syringe with GT plunger	-	549-0496
549-0333	1 mL fixed Luer Lock syringe with GT plunger	-	SGEA0318441
549-0334	1 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	548-0998	549-0496
548-0948	1 mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	-	SGEA0318441
SGEA008110	1 mL syringe with removable needle valve and GT plunger	-	549-0496
SGEA008160	1 mL syringe with removable Luer Lock valve and GT plunger	-	549-0496
549-0335	2.5 mL fixed Luer Tip syringe with GT plunger	-	549-0497
549-0336	2.5 mL fixed Luer Lock syringe with GT plunger	-	549-0497
549-0337	2.5 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	548-0998	549-0497
548-0949	2.5 mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	-	549-0497
SGEA008510	2.5 mL syringe with removable needle valve and GT plunger	-	549-0497
SGEA008560	2.5 mL syringe with removable Luer Lock valve and GT plunger	-	549-0497
549-0338	5 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	548-0953	549-0529
549-0339	5 mL removable Luer Lock syringe with GT plunger	-	549-0529
548-0950	5 mL fixed Luer Lock syringe with GT plunger	-	SGEA0318562
SGEA008770	5 mL syringe with removable Luer Lock valve and GT plunger	-	549-0529
549-0340	10 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	548-0953	549-0530
549-0341	10 mL removable Luer Lock syringe with GT plunger	-	549-0530
548-0951	10 mL fixed Luer Lock syringe with GT plunger	-	SGEA031864
SGEA008970	10 mL syringe with removable Luer Lock valve and GT plunger	-	549-0530
549-0342	25 mL removable Luer Lock syringe with GT plunger	-	549-0531
548-0952	25 mL fixed Luer Lock syringe with GT plunger	-	SGEA031874
SGEA009472	25 mL syringe with removable Luer Lock valve and GT plunger	-	549-0531
549-0343	50 mL removable Luer Lock syringe with GT plunger	-	549-0532
SGEA009670	50 mL syringe with removable Luer Lock valve and GT plunger	-	549-0532
549-0344	100 mL removable Luer Lock syringe with GT plunger	-	549-0533
SGEA009770	100 mL syringe with removable Luer Lock valve and GT plunger	-	549-0533

## LC syringes

Specifications			
Accuracy and reproducibility	±1% (dispensed volume)	Scale length	5 µL to 10 µL = 54.1 mm 25 µL to 2.5 mL = 60 mm
Borosilicate glass barrel outer diameter (OD)	5 µL and 10 µL = 6.5 mm 25 µL to 500 µL = 8 mm 1 mL = 8.8 mm 2.5 mL = 10.8 mm	International standards traceability	✓

Syringes listed in the following part number table are suitable for:

- Beckman/Altex
- Rheodyne
- SSI instruments
- Valco valves



### Beckman/Altex, Rheodyne, SSI instruments and Valco valves

VWR catalog number	Part description and detail	Replacement needle	Replacement plunger
549-0450	5 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0453	10 µL fixed needle syringe with Superflex plunger and 5.1 cm 0.72 mm OD LC needle	-	-
549-0451	10 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0456	10 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0542	549-0487
548-1047	10 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle PK6	-	-
548-1048	10 µL fixed needle syringe with Superflex plunger and 5.1 cm 0.72 mm OD LC needle PK6	-	-
549-0452	10 µL fixed needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	-	549-0486
549-0297	25 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0458	25 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0360	549-0488
549-0305	50 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0459	50 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0360	549-0490
549-0314	100 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0460	100 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0360	549-0493
549-0322	250 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0323	250 µL removable needle syringe with 5.1 cm 0.72 mm OD LC needle	-	-
549-0461	250 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0360	549-0494
549-0330	500 µL fixed needle syringe with and 5.1 cm 0.72 mm OD LC needle	-	-
549-0462	500 µL removable needle syringe with 5.1 cm 0.72 mm OD LC needle	549-0360	-
549-0412	500 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0360	549-0495
549-0463	1 mL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0554	549-0496
549-0464	2.5 mL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	549-0554	549-0496

## Expert tips

**Users of Valco injectors requiring 3/4" long needles, must fit a Valco VISF-2 adaptor.**

**When using the complete loop fill technique, the syringe capacity should be greater than twice the loop volume. The loop capacity sets the injection volume.**

**When using the partial loop technique, the injection volume should be no greater than half the loop capacity. The injection size sets the injection volume.**

# SGE Syringes | Hamilton cross reference

## Variation notes:

FN = fixed needle, GT = gas tight, with PTFE tipped plunger, H = Hamilton, LL = Luer Lock, LT = Luer Tip, RN = removable needle, WO = without

Hamilton part number	Part description and detail	VWR catalog number	Part description and detail	Equivalent or option	Variation
0160310	1750 HITACHI SYRINGE	548-1655	500 µL Hitachi LC autosampler syringe with GT plunger with M10 - 1.0 screw thread	E	
202640	701RSN AOC 14/17 (22s/1.69"/2)	562-1039	10 µL removable needle Shimadzu syringe with 4.2 cm 0.63 mm OD cone tipped needle	O	23 g needle
202660	1002LTN CTC SYR (22/56/5)	548-1668	2.5 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	O	23 g needle
202880	701RN VARIAN 8100/8200	562-1040	10 µL removable needle Varian (8035, 8100, 8200) syringe with GT plunger and 5.3 cm 0.5 mm OD needle	O	25 g needle
203043	1702N CTC SYRINGE (26s/51/AS)	554-1451	25 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	E	
203072	SYR,701 CTC,SLIM (26s/51/2)	562-1041	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	O	Cone tipped needle
203073	701N CTC SYRINGE (22s/51/3)	554-1444	10 µL fixed needle CTC syringe with 5.1 cm 0.72 mm OD LC needle	E	
203074	SYR,1702CTC,SLIM (26s/51/AS)	548-1939	25 µL fixed needle CTC/Thermo (classic button) syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	O	23 g needle
203075	1702N CTC SYRINGE (22s/51/3)	554-1452	25 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle (8 mm OD barrel)	E	
203076	SYR,1710 CTC,SLIM 26s/51/AS)	554-1456	100 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	E	
203077	SYR,1710N CTC,SLIM (22s/51/3)	554-1457	100 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
203078	1725N CTC SYRINGE (26/51/AS)	554-1461	250 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	E	
203082	1001LTN CTC SYRINGE (23/51/5)	548-1663	1 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	E	
203084	1002LTN CTC SYRINGE (23/51/5)	548-1668	2.5 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	E	
203141	1001LTN CTC SYRINGE (26/51/5)	548-1664	1 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.47 mm OD side hole needle	E	
203181	1002LTN CTC SYRINGE (26/51/5)	548-1669	2.5 mL fixed needle CTC headspace syringe with energized GT plunger and 5.6 cm 0.47 mm OD side hole needle	E	
203185	7701.2 CTC SYRINGE (26/51/AS)	SGEA000790	2.0 µL NanoVolume CTC/Thermo syringe with 5.0 cm 0.63 mm OD cone tipped needle	O	2 µL instead of 1.2 µL
203189	75N CTC SYRINGE (26s/51/AS)	548-1583	5 µL fixed needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	E	
203205	701N CTC SYRINGE (26s/51/AS)	554-1442	10 µL fixed needle CTC syringe with 5 cm 0.47 mm OD cone tipped needle	E	
203235	1710N CTC SYRINGE (22/51/3)	554-1458	100 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD (0.4 mm ID) LC needle	E	
203349	1750N CTC SYR (22/51/3)	554-1464	500 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD (0.4 mm ID) LC needle	E	
203361	701N CTC SYR (23S/51/AS)	SGEA002981	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	E	
203362	701N CTC SYR (23S-26S/51/AS)	562-1041	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.47 mm OD cone tipped needle	O	26 g needle
203363	701N CTC SYR (23S/2"/2)	SGEA002981	10 µL fixed needle CTC/Thermo syringe with 5 cm 0.63 mm OD cone tipped needle	O	Cone tipped needle
203566	1710 CTC A200S SYR (22s/2/3)	548-1631	100 µL fixed needle CTC/Thermo syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
204000	SYRINGE,75N (26S/50/2)	SGEA0019821	5 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	O	Cone tipped needle

Hamilton part number	Part description and detail	VWR catalog number	Part description and detail	Equivalent or option	Variation
204001	SYRINGE,701SN (26S/50/2)	548-1530	10 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	O	Cone tipped needle
204051	SYRINGE,75SN (26S/50/AS)	SGEA0019821	5 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	E	
204052	SYRINGE,701SN (26S/50/AS)	548-1530	10 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	E	
207189	701 PAL3 (26S/85/AS)	548-1595	10 µL fixed needle CTC and Thermo RSH syringe with 8.5 cm 0.47 mm OD cone tipped needle	E	
207290	1002 CTC PAL3 (23/65/5)HS	548-1670	2.5 mL fixed needle CTC RTC and Thermo RSH headspace syringe with energized GT plunger and 5.6 cm 0.63 mm OD side hole needle	E	
207292	1010 CTC PAL3 (19/57/3)	548-1672	10 mL removable needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 1.07 mm OD LC tipped needle	E	
207803	701 PAL3 (23S/57/AS)	548-1589	10 µL fixed needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.63 mm OD cone tipped needle	E	
207807	701 PAL3 (26S/57/AS)	548-1593	10 µL fixed needle CTC RTC and Thermo RSH syringe with 5.7 cm 0.47 mm OD cone tipped needle	E	
207813	1701 PAL3 (22S/57/3)	548-1606	10 µL removable needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.72 mm OD LC needle	E	
207829	1725 PAL3 (23/57/AS)	548-1649	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	E	
207831	1725 PAL3 (26/85/AS)	548-1652	250 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 8.5 cm 0.47 mm OD cone tipped needle	E	
207836	1001 PAL3 (22/57/3)	548-1665	1 mL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.72 mm OD LC tipped needle	E	
207837	1701 PAL3 (26S/57/AS)	548-1594	10 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	E	
207839	1701 PAL3 (23S/57/AS)	548-1590	10 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.63 mm OD cone tipped needle	E	
207840	1710 PAL3 (26S/57/AS)	548-1639	100 µL fixed needle CTC RTC and Thermo RSH syringe with GT plunger and 5.7 cm 0.47 mm OD cone tipped needle	E	
207853	1001 CTC PAL3 (23/65/5)HS	548-1666	1 mL fixed needle CTC RTC and Thermo RSH headspace syringe with energized GT plunger and 6.5 cm 0.63 mm OD side hole needle	E	
54658-01	SYRINGE,1710C, AUTO SAMPLER	SGEA005696	100 µL V6 dispenser syringe	E	
54659-01	SYRINGE,1725C, AUTO SAMPLER	SGEA006696	250 µL V6 dispenser syringe	E	
54660-01	SYRINGE,1750C, AUTO SAMPLER	SGEA007696	500 µL V6 dispenser syringe	E	
54661-01	SYRINGE,1001C, AUTO SAMPLER	SGEA008196	1.0 mL V6 dispenser syringe	E	
54662-01	SYRINGE,1002C, AUTO SAMPLER	SGEA008596	2.5 mL V6 dispenser syringe	E	
62161-01	SYRINGE,1702C, SPARK AUTO	SGEA003696	25 µL V6 dispenser syringe	E	
67430-01	SYR,1702N,(23/51/AS), CTC-S	554-1451	25 µL fixed needle CTC syringe with GT plunger and 5 cm 0.47 mm OD cone tipped needle	O	26 g needle
67432-01	SYR,1710N,(22S/51/3), CTC-S-X	548-1631	100 µL fixed needle CTC/Thermo syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
67434-01	SYR,1710N,(23/51/AS), CTC-S	548-1633	100 µL fixed needle CTC/Thermo syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	E	
67436-01	SYR,75N,(26S/51/AS), CTC-S	SGEA0019821	5 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	E	
67438-01	SYR,701N,(26S/51/AS), CTC-S	548-1530	10 µL fixed needle CTC/Thermo (classic button) syringe with 5 cm 0.47 mm OD cone tipped needle	E	
67440-01	SYR,701SN,(23S/51/AS), CTC-S	548-1529	10 µL fixed needle Varian 8400/CTC/Thermo (classic button) syringe with 5 cm 0.63 mm OD cone tipped needle	E	

Hamilton part number	Part description and detail	VWR catalog number	Part description and detail	Equivalent or option	Variation
67442-01	SYR,1725N, (22/51/3),CTC-S	554-1462	250 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD (0.4 mm ID) LC needle	E	
67446-01	SYR,1702N, (22S/51/3),CTC-S	554-1452	25 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle (8 mm OD barrel)	E	
67448-01	SYR,1750N, (22/51/3),CTC-S	554-1464	500 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD (0.4 mm ID) LC needle	E	
67450-01	SYR,1705N, (22/51/3),CTC-S	548-1625	50 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
67452-01	SYR,1710SN, (22S/51/3),CTC-S	554-1457	100 µL fixed needle CTC syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
67454-01	SYR,1701SN, (23S/51/AS),CTC-S	548-1526	10 µL fixed needle CTC/Thermo (classic button) syringe with GT plunger and 5 cm 0.63 mm OD cone tipped needle	E	
80000	1701N 10 µL SYR (26s/2"/2)	549-0288	10 µL needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle	E	
80004	1701NCH 10 µL SYR (26s/2"/2)	549-0288 + SGEA031930	10 µL fixed needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle and repeating adaptor	E	
80020	1702 WISP SYR 25 µL	548-1621	25 µL Waters Wisp syringe with GT plunger	E	
80024	1725 WISP SYR 250 µL	548-1647	250 µL Waters Wisp syringe with GT plunger	E	
80030	1701RN 10 µL SYR (26s/2"/2)	549-0289	10 µL removable needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle	E	
80039	1701NPT5 10 µL SYR (26s/2"/5)	549-0289 + 548-0976	10 µL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	Removable needle
80065	1701RNR 10 µL SYR (22s/2"/3)	549-0456	10 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
80074	SYRINGE,175ASN, 23S GA,1.71	562-1015	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	O	Not GT (note that H is half scale 10 µL)
80074	SYRINGE,175ASN, 23S GA,1.71	549-0373	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle	O	Full scale 10 µL instead of half scale 5 µL
80075	1701N 10 µL SYR (26s/2"/3)	549-0452	10 µL fixed needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	22 g needle
80076	175ASN SYR (23-26/1.71"/HP)	549-0374	5 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	Not GT (note that H is half scale 10 µL )
80076	175ASN SYR (23-26/1.71"/HP)	549-0376	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	Full scale 10 µL instead of half scale 5 µL
80079	1701ASN SYR (23S/26S/1.71"/HP)	549-0376	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	E	
80080	1701ASN SYR (23s/1.71"/HP)	549-0373	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle	E	
80084	175ASRN (23s/1.71"/HP)	549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	Dual gauge needle (note that H 5 µL is half scale 10 µL )
80085	1701N 10 µL SYR (26/2"/3)	549-0452	10 µL fixed needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	22 g needle
80086	175ASRN SYR (23-26/1.71"/HP)	549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	Full scale 10 µL instead of half scale 5 µL
80087	1701ASRN 10 µL SYR 23s/1.71"/HP	549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	Dual gauge needle
80088	1701ASRN 10 µL SYR 26s/1.71"/HP	549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	Dual gauge needle
80089	1701ASRN SYR (23S/26S/1.71"/HP)	549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	E	
80090	175ASN 5 µL (23S/1.71"/HP) 6/PK	549-0373	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle	O	Full scale 10 µL instead of half scale 5 µL
80090	175ASN 5 µL (23S/1.71"/HP) 6/PK	568-0347	10 µL removable needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle PK25	O	Full scale 10 µL instead of half scale 5 µL

Hamilton part number	Part description and detail	VWR catalog number	Part description and detail	Equivalent or option	Variation
80092	175ASN 5 µL (23-26/1.71"/HP) 6/PK	568-0351	5 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	O	Full scale 10 µL instead of half scale 5 µL
80094	1701ASN SYR (23s/1.71"/HP) 6/PK	549-0373	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle	O	
80094	1701ASN SYR (23s/1.71"/HP) 6/PK	568-0347	10 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63 mm OD cone tipped needle PK25	O	
80096	1701ASN (23-26/1.71"/HP) 6/PK	568-0351	5 µL fixed needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	E	
80100	7001KH 1 µL SYR (25/2.75"/3)	549-0262	1.0 µL NanoVolume syringe with 7 cm 0.47 mm OD cone tipped needle	O	26 g, cone tipped needle
80104	7001KHCH 1 µL SYR (25/2.75"/3)	549-0262 + SGEA031930	1.0 µL NanoVolume syringe with 7 cm 0.47 mm OD cone tipped needle and repeating adaptor	O	26 g, a tipped needle
80107	7001KHWG 1 µL SYR (25s/2.75"/3)	549-0262 + SGEA031930	1.0 µL NanoVolume syringe with 7 cm 0.47 mm OD cone tipped needle and repeating adaptor	O	26 g, cone tipped needle
80135	7001KH 1.0 µL SYR (25/2.75"/2)	549-0418	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD bevel tipped needle	O	23 g needle
80175	7001ASRN (26/1.71"/HP)	549-0383	1.0 µL NanoVolume Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	O	23 g needle
80176	7001ASRN 23/1.71"/HP)	549-0383	1.0 µL NanoVolume Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	E	
80200	1702N 25 µL SYR (22s/2"/2)	549-0295	25 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80201	1702LT 25 µL SYR	549-0301	50 µL fixed Luer Tip syringe with GT plunger	O	50 µL
80222	1702TLLX 25 µL SYR	548-0938	50 µL fixed Luer Lock syringe with GT plunger and plunger stop	O	50 µL
80223	1702TLLX SYR W/BSHG STD BTN	548-0938	50 µL fixed Luer Lock syringe with GT plunger and plunger stop	O	50 µL
80230	1702RN 25 µL SYR (22s/2"/2)	549-0296	25 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80238	1702RNW 25 µL SYR (25s/1.97"/3)	549-0296 + 548-0989	25 µL removable needle syringe with GT plunger and Waters LC tipped needle	E	
80239	1702NPT5 25 µL SYR (22s/2"/5)	549-0296 + 548-0992	25 µL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	RN, 25 g needle
80265	1702RNR 25 µL SYR (22s/2"/3)	549-0458	25 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
80275	1702N 25 µL SYR (22s/2"/3)	549-0297	25 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	O	Not GT
80285	1702N 25 µL SYR (22/2"/3)	549-0297	25 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	O	Not GT
80300	701N 10 µL SYR (26s/2"/2)	549-0279	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
80300	701N 10 µL SYR (26s/2"/2)	549-0402	10 µL fixed needle Varian 8400 syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
80304	701NCH 10 µL SYR (26s/2"/2)	549-0279 + SGEA031930	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle and repeating adaptor	E	
80307	701NWX 10 µL SYR (26s/2"/2)	549-0279 + SGEA031930	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle and repeating adaptor	E	
80318	701SN 10 µL SYR (26s/3.15"/AS)	548-1528	10 µL fixed needle CTC/Thermo (classic button) syringe with 8 cm 0.47 mm OD cone tipped needle	E	
80330	701RN 10 µL SYR (26s/2"/2)	549-0281	10 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
80334	701RNCH 10 µL SYR (26s/2"/2)	549-0281 + SGEA031930	10 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle and repeating adaptor	E	
80336	701RN 10 µL SYR 6/PK (26s/2"/2)	549-0283	10 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle PK6	E	
80337	701RNWX 10 µL SYR (26s/2"/2)	549-0281 + SGEA031930	10 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle and repeating adaptor	E	
80339	701NPT5 10 µL SYR (26s/2"/5)	549-0281 + 548-0976	10 µL removable needle syringe with 5 cm side hole dome tipped needle	O	RN
80342	701SN 10 µL SYR (23s/2"/HP)	549-0431	10 µL fixed needle syringe with 5 cm 0.47 mm OD cone tipped needle	E	
80350	701SN 10 µL SYR (26s/2.75"/2)	549-0430	10 µL fixed needle syringe with 7 cm 0.47 mm OD bevel tipped needle	E	
80357	701ASRN 10 µL SYR (23s/1.71"/HP)	562-1037	10 µL removable needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	E	

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80358	701ASRN 10 µL SYR (26s/1.71"/HP)	549-0384	10 µL removable needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	E	
80359	701ASRN 10 µL (23-26/1.71"/HP)	549-0394	10 µL removable needle Agilent syringe with GT plunger and 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	GT
80360	901N 10 µL SYR (26s/2"/2)	549-0290	10 µL fixed needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
80365	701SNR 10 µL SYR (22s/2"/3)	549-0451	10 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80366	701N 10 µL SYR 6/PK (26s/2"/2)	549-0280	10 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle PK6	E	
80370	901RN 10 µL SYR (26s/2"/2)	549-0291	10 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
80383	701SN 10 µL SYR 26s/2"/3)	549-0451	10 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80384	701SN 10 µL SYR (26s/3"/2)	549-0430	10 µL fixed needle syringe with 7 cm 0.47 mm OD bevel tipped needle	O	7 cm needle
80387	701ASN 10 µL SYR (23s/1.71"/HP)	549-0372	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	E	
80388	701ASN 10 µL SYR (26s/1.71"/HP)	562-1034	10 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	E	
80389	701ASN 10 µL SYR-HP 26s (6/PK)	562-1035	10 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle PK6	E	
80390	701ASN 10 µL SYR-HP 23s (6/PK)	562-1036	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle PK6	E	
80391	701ASN 6/PK (23-26/1.71"/HP)	568-0349	10 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	E	
80393	701ASN SYR (23-26/1.71"/HP)	549-0375	10 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped dual gauge needle	E	
80398	701ASN 10 µL SYR (23S/1.71"/2)	549-0372	10 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	O	Cone tipped needle
80399	701ASN 10 µL SYR (26S/1.71"/2)	562-1034	10 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	O	Cone tipped needle
80400	702N 25 µL SYR (22s/2"/2)	549-0293	25 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	E	
80404	702NCH 25 µL SYR (22s/2"/2)	549-0293 + SGEA031930	25 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle and repeating adaptor	O	25 g needle
80407	702NNG 25 µL SYR (22s/2"/2)	549-0293 + SGEA031930	25 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle and repeating adaptor	O	25 g needle
80419	702SN 25 µL SYR (22/2"/3)	549-0297	25 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80430	702RN 25 µL SYR (22s/2"/2)	549-0294	25 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80439	702NPT5 25 µL SYR (22s/2"/5)	549-0294 + 548-0992	25 µL removable needle syringe with 5 cm side hole dome tipped needle	O	RN, 25 g needle
80465	702SNR 25 µL SYR (22s/2"/3)	549-0297	25 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80500	705N 50 µL SYR (22s/2"/2)	549-0298	50 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80501	705LT 50 µL SYR	549-0301	50 µL fixed Luer Tip syringe with GT plunger	E	
80505	705NCH 50 µL SYR (22s/2"/2)	549-0298 + SGEA031930	50 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle and repeating adaptor	O	25 g needle
80521	705SN 50 µL SYR (22/2"/3)	549-0305	50 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80530	705RN 50 µL SYR (22s/2"/2)	549-0299	50 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80539	705NPT5 50 µL SYR (22s/2"/5)	549-0299 + 548-0992	50 µL removable needle syringe with 5 cm side hole dome tipped needle	O	RN, 25 g needle
80565	705SNR 50 µL SYR (22s/2"/3)	549-0305	50 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80600	710N 100 µL SYR (22s/2"/2)	549-0308	100 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80601	710LT 100 µL SYR	549-0311	100 µL fixed Luer Tip syringe with GT plunger	E	
80605	710NCH 100 µL SYR (22s/2"/2)	549-0308 + SGEA031930	100 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle and repeating adaptor	O	25 g needle
80621	710SN 100 µL SYR (22/2"/3)	549-0314	100 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	

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80630	710RN 100 µL SYR (22s/2"/2)	549-0309	100 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80639	710NPT5 100 µL SYR (22s/2"/5)	549-0309 + 548-0992	100 µL removable needle syringe with 5 cm side hole dome tipped needle	O	RN, 25 g needle
80665	710SNR 100 µL SYR (22s/2"/3)	549-0314	100 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80700	725N 250 µL SYR (22S/2"/2)	549-0316	250 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80701	725LT 250 µL SYR	549-0319	250 µL fixed Luer Tip syringe with GT plunger	E	
80730	725RN 250 µL SYR (22s/2"/2)	549-0317	250 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80739	725N 250 µL SYR (22S/2"/5)	549-0317 + 548-0992	250 µL removable needle syringe with 5 cm side hole dome tipped needle	O	RN, 25 g needle
80765	725NR 250 µL (22/2"/3)	549-0322	250 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	E	
80800	750N 500 µL SYR (22/2"/2)	548-0943	500 µL fixed needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80801	750LT 500 µL SYR	548-0945	500 µL fixed Luer Tip syringe with GT plunger	E	
80830	750RN 500 µL SYR (22/2"/2)	562-1063	500 µL removable needle syringe with 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80839	750N 500 µL SYR (22/2"/5)	562-1063 + 548-0992	500 µL removable needle syringe with 5 cm side hole dome tipped needle	O	RN, 25 g needle
80865	750N 500 µL SYR (22/2"/3)	549-0330	500 µL fixed needle syringe with and 5.1 cm 0.72 mm OD LC needle	E	
80900	1705N 50 µL SYR (22s/2"/2)	549-0300	50 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80901	1705LT 50 µL SYR	549-0301	50 µL fixed Luer Tip syringe with GT plunger	E	
80920	1705TLL 50 µL SYR	549-0302	50 µL fixed Luer Lock syringe with GT plunger	E	
80922	1705TLLX 50 µL SYR	548-0938	50 µL fixed Luer Lock syringe with GT plunger and plunger stop	E	
80927	1705TLL 50 µL SYR W/SLOTS	549-0302	50 µL fixed Luer Lock syringe with GT plunger	E	
80930	1705RN 50 µL SYR (22s/2"/2)	549-0303	50 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
80938	1705RNR 50 µL SYR (25s/1.97"/3)	549-0303 + 548-0989	50 µL removable needle syringe with GT plunger and Waters LC tipped needle	E	
80939	1705NPT5 50 µL SYR (22s/2"/5)	549-0303 + 548-0992	50 µL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	RN, 25 g needle
80956	1705SL 50 µL SYR (22s/2"/2)	549-0304	50 µL syringe with removable needle valve and GT plunger	E	
80962	1705CX 50 µL SYR W/STOP	SGEA004995	50 µL syringe with GT plunger and 1/4-28 UNF termination	E	
80965	1705RNR 50 µL SYR (22s/2"/3)	549-0459	50 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
80975	1705N 50 µL SYR (22s/2"/3)	549-0459	50 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
80985	1705N 50 µL SYR (22/2"/3)	549-0459	50 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
81000	1710N 100 µL SYR (22s/2"/2)	549-0310	100 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
81001	1710LT 100 µL SYR	549-0311	100 µL fixed Luer Tip syringe with GT plunger	E	
81020	1710TLL 100 µL SYR	548-0940	100 µL fixed Luer Lock syringe with GT plunger	E	
81022	1710TLLX 100 µL SYR	548-0941	100 µL fixed Luer Lock syringe with GT plunger and plunger stop	E	
81027	1710TLL 100 µL SYR W/SLOTS	548-0940	100 µL fixed Luer Lock syringe with GT plunger	E	
81030	1710RN 100 µL SYR (22s/2"/2)	549-0312	100 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	25 g needle
81038	1710RNR 100 µL SYR (25s/1.97"/3)	549-0312 + 548-0989	100 µL removable needle syringe with GT plunger and Waters LC tipped needle	E	
81039	1710NPT5 100 µL SYR (22s/2"/5)	549-0312 + 548-0992	100 µL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	RN, 25 g needle
81056	1710SL 100 µL SYR (22s/2"/2)	549-0313	100 µL syringe with removable needle valve and GT plunger	E	
81060	1710C 100 µL SYR	SGEA005990	100 µL syringe with GT plunger and 1/4-28 UNF termination	E	
81062	1710CX 100 µL SYR W/STOP	SGEA005990	100 µL syringe with GT plunger and 1/4-28 UNF termination	E	

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81065	1710RNR 100 µL SYR (22s/2"/3)	549-0460	100 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
81075	1710N 100 µL SYR (22s/2"/3)	549-0460	100 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN, needle ID 0.37 mm
81085	1710N 100 µL SYR (22/2"/3)	549-0460	100 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
81100	1725LTN 250 µL SYR (22s/2"/2)	549-0318	250 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	Not LT
81101	1725LT 250 µL SYR	549-0319	250 µL fixed Luer Tip syringe with GT plunger	E	
81120	1725TLL 250 µL SYR	549-0320	250 µL fixed Luer Lock syringe with GT plunger	E	
81122	1725TLLX 250 µL SYR	548-0942	250 µL fixed Luer Lock syringe with GT plunger and plunger stop	E	
81127	1725TLL 250 µL SYR W/SLOTS	549-0320	250 µL fixed Luer Lock syringe with GT plunger	E	
81130	1725RN 250 µL SYR (22s/2"/2)	549-0446	250 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	E	
81138	1725RNRW 250 µL SYR (25s/1.97"/3)	549-0446 + 548-0989	250 µL removable needle syringe with GT plunger and Waters LC tipped needle	O	RN
81139	1725LTN 250 µL SYR (22S/2"/5)	549-0446 + 548-0992	250 µL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	
81156	1725SL 250 µL SYR (22s/2"/2)	549-0321	250 µL syringe with removable needle valve and GT plunger	E	
81162	1725CX 250 µL SYR W/STOP	SGEA006995	250 µL syringe with GT plunger and 1/4-28 UNF termination	E	
81165	1725RNR 250 µL SYR (22/2"/3)	549-0461	250 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
81175	1725LTN 250 µL SYR (22S/2"/3)	549-0461	250 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
81185	1725LTN 250 µL SYR (22/2"/3)	549-0461	250 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
81201	1750LT 500 µL SYR	548-0945	500 µL fixed Luer Tip syringe with GT plunger	E	
81216	1750LTN 500 µL SYR (22/2"/3)	549-0412	500 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
81217	1750LTN 500 µL SYR (22/2"/2)	549-0326	500 µL fixed needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	O	Not LT
81220	1750TLL 500 µL SYR	548-0946	500 µL fixed Luer Lock syringe with GT plunger	E	
81222	1750TLLX 500 µL SYR	548-0947	500 µL fixed Luer Lock syringe with GT plunger and plunger stop	E	
81227	1750TLL 500 µL SYR W/SLOTS	548-0946	500 µL fixed Luer Lock syringe with GT plunger	E	
81230	1750RN 500 µL SYR (22/2"/2)	549-0447	500 µL removable needle syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	E	
81243	1750LTNPT5 500 µL SYR (22/2"/5)	549-0447 + 548-0992	500 µL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	Not LT, 25 g needle
81256	1750SL 500µL SYR	SGEA007279	500 µL syringe with removable needle valve and GT plunger	O	23 g needle
81262	1750CX 500 µL SYR W/STOP	SGEA007995	500 µL syringe with GT plunger and 1/4-28 UNF termination	E	
81265	1750RNR 500 µL SYR (22/2"/3)	549-0412	500 µL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
81301	1001LT 1.0 mL SYR	549-0332	1 mL fixed Luer Tip syringe with GT plunger	E	
81316	1001LTN 1.0 mL SYR (22/2"/3)	549-0463	1 mL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	O	RN
81317	1001LTN 1.0 mL SYR (22/2"/2)	548-0948	1 mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	O	Not LT
81318	1001LTNCH 1.0 mL SYR (22/2"/2)	548-0948	1 mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	O	WO adaptor
81320	1001TLL 1.0 mL SYR	549-0333	1 mL fixed Luer Lock syringe with GT plunger	E	
81324	1001TLLCH 1.0 mL SYR	549-0333	1 mL fixed Luer Lock syringe with GT plunger	O	WO adaptor
81327	1001TLL 1.0 mL SYR W/SLOTS	549-0333	1 mL fixed Luer Lock syringe with GT plunger	E	
81330	1001RN 1.0 mL SYR (22/2"/2)	549-0334	1 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	E	
81343	1001LTNPT5 1.0 mL SYR (22/2"/5)	549-0334 + SGEA039120	1 mL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	Not LT, 23 g needle
81356	1001SL 1.0 mL SYR (22/2"/2)	SGEA008110	1 mL syringe with removable needle valve and GT plunger	E	
81360	1001C 1.0 mL SYR	SGEA008185	1 mL syringe with GT Plunger and 1/4-28 UNF termination	E	

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81365	1001RNR 1.0 mL SYR (22/2"/3)	549-0463	1 mL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
81401	1002LT 2.5 mL SYR	549-0335	2.5 mL fixed Luer Tip syringe with GT plunger	E	
81403	1002LTCH 2.5 mL SYR	549-0335	2.5 mL fixed Luer Tip syringe with GT plunger	O	WO adaptor
81416	1002LTN 2.5 mL SYR (22/2"/3)	549-0464	2.5 mL removable needle syringe with GT plunger and 5.1 cm 0.72 mm OD LC needle	E	
81417	1002LTN 2.5 mL SYR (22/2"/2)	548-0949	2.5 mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	E	
81418	1002LTNCH 2.5 mL SYR (22/2"/2)	548-0949	2.5 mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	O	WO adaptor
81420	1002TLL 2.5 mL SYR	549-0336	2.5 mL fixed Luer Tip syringe with GT plunger	E	
81424	1002TLLCH 2.5 mL SYR	549-0336	2.5 mL fixed Luer Lock syringe with GT plunger	O	WO adaptor
81427	1002TLL 2.5 mL SYR W/SLOTS	549-0336	2.5 mL fixed Luer Lock syringe with GT plunger	E	
81430	1002RN 2.5 mL SYR (22/2"/2)	549-0337	2.5 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	O	23 g needle
81443	1002LTNPT5 2.5 mL SYR (22/2"/5)	549-0337 + SGEA039120	2.5 mL removable needle syringe with GT plunger and 5 cm side hole dome tipped needle	O	RN not LT, 23 g needle
81456	1002SL 2.5 mL SYR (22/2"/2)	SGEA008510	2.5 mL syringe with removable needle valve and GT plunger	E	
81460	1002C 2.5 mL SYR	SGEA008687	2.5 mL syringe with GT plunger and 1/4-28 UNF termination	E	
81501	1005LT 5.0 mL SYR	549-0339	5 mL removable Luer Lock syringe with GT plunger	O	LL not LT
81516	1005LTN 5 mL SYR (22/2"/3)	549-0338 + 548-0955	5 mL removable needle syringe with GT plunger and LC needle	O	RN
81517	1005LTN 5.0 mL SYR (22/2"/2)	549-0338	5 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	O	RN
81518	1005LTNCH 5.0 mL SYR (22/2"/2)	548-0950	5 mL fixed Luer Lock syringe with GT plunger	O	LL not LT, WO adaptor
81520	1005TLL 5.0 mL SYR	548-0950	5 mL fixed Luer Lock syringe with GT plunger	E	
81524	1005TLLCH 5.0 mL SYR	548-0950	5 mL fixed Luer Lock syringe with GT plunger	O	WO adaptor
81527	1005TLL 5 mL SYR W/SLOTS	548-0950	5 mL fixed Luer Lock syringe with GT plunger	E	
81530	1005RN 5.0 mL SYR (22/2"/2)	549-0338	5 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	E	
81560	1005C 5.0 mL SYR	SGEA008787	5 mL syringe with GT plunger and 1/4-28 UNF termination	E	
81601	1010LT 10.0 mL SYR	548-0951	10 mL fixed Luer Lock syringe with GT plunger	O	LL not LT
81610	1010W 10.0 mL (WATERS) SYR	548-0951	10 mL fixed Luer Lock syringe with GT plunger	E	
81616	1010LTN 10 mL SYR (22/2"/3)	549-0340 + 548-0955	10 mL removable needle syringe with GT plunger and LC needle	O	RN
81617	1010LTN 10.0 mL SYR (22/2"/2)	549-0340	10 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	O	RN
81618	1010LTNCH 10.0 mL SYR (22/2"/2)	548-0951	10 mL fixed Luer Lock syringe with GT plunger	O	LL not LT, WO adaptor
81620	1010TLL 10.0 mL SYR	548-0951	10 mL fixed Luer Lock syringe with GT plunger	E	
81624	1010TLLCH 10.0 mL SYR	548-0951	10 mL fixed Luer Lock syringe with GT plunger	O	WO adaptor
81627	1010TLL 10 mL SYR W/SLOTS	548-0951	10 mL fixed Luer Lock syringe with GT plunger	E	
81630	1010RN 10.0 mL SYR (22/2"/2)	549-0340	10 mL removable needle syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	E	
81660	1010C 10.0 mL SYR	SGEA008987	10 mL syringe with GT plunger and 1/4-28 UNF termination	E	
82017	1001.25LTN 1.25 mL SYR (22/2"/2)	548-0949	2.5mL fixed needle syringe with GT plunger and 5 cm 0.72 mm OD bevel tipped needle	O	Not LT, 2.5 mL instead of 1.25 mL
82520	1025TLL 25.0 mL SYR	548-0952	25 mL fixed Luer Lock syringe with GT plunger	E	
82525	1025TLL W/O FL 25 mL SYR W/ SLOT	548-0952	25 mL fixed Luer Lock syringe with GT plunger	O	
82527	1025TLL 25 mL SYR W/SLOTS	548-0952	25 mL fixed Luer Lock syringe with GT plunger	E	
84850	85N 5 µL SYR (26s/2"/2)	549-0272	5 µL fixed needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
84851	85RN 5 µL SYR (26s/2"/2)	549-0273	5 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
84852	801N 10 µL SYR (26s/2"/2)	549-0290	10 µL fixed needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	E	

Hamilton part number	Part description and detail	VWR catalog number	Part description and detail	Equivalent or option	Variation
84853	801RN 10 µL SYR (26s/2"/2)	549-0291	10 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
85020	1050TLL 50.0 mL SYR	549-0343	50 mL removable Luer Lock syringe with GT plunger	E	
85027	1050TLL 50 mL SYR W/SLOTS	549-0343	50 mL removable Luer Lock syringe with GT plunger	E	
86020	1100TLL 100.0 mL SYR	549-0344	100 mL removable Luer Lock syringe with GT plunger	E	
86204	7101KHCH 1 µL SYR (22/2.75"/3)	549-0261	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	O	
86207	7101KHWG 1 µL SYR (22/2.75"/3)	549-0261	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	O	
86211	7101KH 1 µL SYR (22s/2.75"/2)	549-0259	1.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle	O	
86250	7000.5KH 0.5 µL SYR (25/2.75"/3)	549-0254	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle	O	
86252	7000.5KHCH 0.5 µL SYR (25/2.75"/3)	549-0425	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	O	
86254	7000.5KHWG 0.5 µL SYR (25/2.75"/3)	549-0425	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	O	Cone tip, 23 g needle
86259	7000.5KH 0.5 µL SYR (25/2.75"/2)	549-0416	0.5 µL NanoVolume syringe with 7 cm 0.63 mm OD bevel tipped needle	O	23 g needle
86274	7000.5ASRN (26/1.71"/HP)	549-0382	0.5 µL NanoVolume Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	E	
86276	7000.5ASRN (23/1.71"/HP)	562-1002	0.5 µL NanoVolume Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	E	
86311	S0500 0.5 L SYR (TLL)	SGEA009910	500 mL jumbo Luer Lock syringe	E	
86312	S1000 1.0 L SYR (TLL)	SGEA009920	1000 mL jumbo Luer Lock syringe	E	
86313	S1500 1.5 L SYR (TLL)	SGEA009930	2000 mL jumbo Luer Lock syringe	O	
86314	S2000 2.0 L SYR (TLL)	SGEA009930	2000 mL jumbo Luer Lock syringe	E	
86326	1025SL 25 mL SYR (22/2"/2)	SGEA009472	25 mL syringe with removable Luer Lock valve and GT plunger	O	LL, select needle separately
86326	1025SL 25 mL SYR (22/2"/2)	SGEA009472	25 mL syringe with removable Luer Lock valve and GT plunger	O	LL, select needle separately
86336	1050SL 50 mL SYR (22/2"/2)	SGEA009670	50 mL syringe with removable Luer Lock valve and GT plunger	O	LL, select needle separately
86336	1050SL 50 mL SYR (22/2"/2)	SGEA009670	50 mL syringe with removable Luer Lock valve and GT plunger	O	LL, select needle separately
86346	1100SL 100 mL SYR (22/2"/2)	SGEA009770	100 mL syringe with removable Luer Lock valve and GT plunger	O	LL, select needle separately
87402	701RNFS 10 µL SYR (0.17 mm/10 cm/3)	549-0281 + 548-0980	10 µL removable needle syringe with 10 cm 0.17 mm OD needle	E	
87404	1701RNFS 10 µL SYR (0.17 mm/10 cm/3)	549-0289 + 548-0980	10 µL removable needle syringe with GT plunger and 5 cm 0.47 mm OD bevel tipped needle	E	
87900	75N 5 µL SYR (26s/2"/2)	549-0267	5 µL fixed needle syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
87919	75N 5 µL SYR (26s/2"/3)	549-0450	5 µL fixed needle syringe with 5.1 cm 0.72 mm OD LC needle	O	22g needle
87930	75RN 5.0 µL SYR (26s/2"/2)	549-0268	5 µL removable needle syringe with 5 cm 0.47 mm OD bevel tipped needle	E	
87943	65RNR 5.0 µL SYR (22s/2"/3)	549-0273	5 µL removable needle guided plunger syringe with 5 cm 0.47 mm OD bevel tipped needle	O	26g needle, bevel tip
87957	75ASRN 5 µL SYR (23s/1.71"/HP)	562-1015	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	O	FN
87958	75ASRN 5 µL SYR (26s/1.71"/HP)	549-0371	5 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	O	FN
87959	75ASRN SYR (23S/26S/1.71"/HP)	549-0374	5 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	O	FN
87987	75ASN 5 µL SYR (23s/1.71"/HP)	562-1015	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	E	
87988	75ASN 5 µL SYR (26s/1.71"/HP)	549-0371	5 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	E	
87989	75ASN 5 µL SYR (26s/1.71"/HP) 6PK	562-1014	5 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle PK6	E	

Hamilton part number	Part description and detail	VWR catalog number	Part description and detail	Equivalent or option	Variation
87990	75ASN 5 µL SYR (23s/1.71"/HP) 6PK	562-1016	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle PK6	E	
87991	75ASN 5 µL SYR (23s/1.71"/2)	562-1015	5 µL fixed needle Agilent syringe with 4.2 cm 0.63 mm OD cone tipped needle	O	Cone tipped needle
87992	75ASN 5 µL SYR (26s/1.71"/HP)	549-0371	5 µL fixed needle Agilent syringe with 4.2 cm 0.47 mm OD cone tipped needle	O	Cone tipped needle
87993	75ASN 5 µL SYR (23-26/1.71"/HP)	549-0374	5 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle	E	
87994	75ASN 5 µL 6/PK (23-26/1.71"/HP)	568-0344	5 µL fixed needle Agilent syringe with 4.2 cm 0.63/0.47 mm OD cone tipped dual gauge needle PK6	E	
88000	7105KH 5.0 µL SYR (24/2.75"/3)	549-0264	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle	O	23 g needle, cone tip
88004	7105KHCH 5.0 µL SYR (24/2.75"/3)	549-0426	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	O	23 g needle, cone tip
88007	7105KHWG 5.0 µL SYR (24/2.75"/3)	549-0426	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD cone tipped needle and repeating adaptor	O	23 g needle, cone tip
88011	7105KH 5.0 µL SYR (24/2.75"/2)	549-0421	5.0 µL NanoVolume syringe with 7 cm 0.63 mm OD bevel tipped needle	O	23 g needle, cone tip
88035	75ASN/PE SYR 5 µL 0.63 mm OD	562-1019	5 µL fixed needle PerkinElmer syringe with 7 cm 0.63 mm OD cone tipped needle	E	
88040	75ASN/PE SYR 5 µL 0.47 mm OD	562-1018	5 µL fixed needle PerkinElmer syringe with 7 cm 0.47 mm OD cone tipped needle	E	

*Every effort has been made to ensure the SGE branded equivalents and similar close options suggested here are suitable alternative products, however the appropriateness for individual applications must remain the responsibility of the user.*

# Digital analytical syringe | eVol<sup>®</sup> XR

## Product specifications and part numbers

eVol<sup>®</sup> XR is the coupling of two precision devices: a digitally controlled electronic drive and an XCHANGE<sup>®</sup> enabled analytical syringe.

Ergonomic, comfortable and easy to use.

- Suitable for use with volatile samples.
- Variable speed of operation.
- eVol syringes are easily and quickly changed allowing them to be dedicated to individual liquids or methods to prevent possible cross contamination of reagents.
- Easily calibrated by operators, and calibration factors saved for each syringe, enabling laboratories to comply with stringent global laboratory standards (e.g. GLP, GMP, FDA).
- Programmable and able to store a laboratory workflow (up to 98 steps).
- Password protection options enabling standardization of work processes.
- Inject directly onto a chromatography column with a consistent flow rate.
- eVol syringe stainless steel needle enables direct injection through septa.



### Accuracy of eVol syringes

Syringe volume	1 mL	500 µL	100 µL	50 µL	5 µL
At 100% (uncalibrated)*	±0.7%	±0.7%	±0.7%	±1.0%	±1.0%
At 100% (calibrated)**	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%
At 10% (calibrated)***	±0.5%	±0.5%	±0.5%	±0.5%	±1.0%

\*Calibration factor of 1.0000 applied to handle.

\*\*Syringe and handle calibrated at full volume.

\*\*\*Syringe and handle calibrated at 10% of capacity. Accuracy based on the 10% dispensed volume closest to zero position.

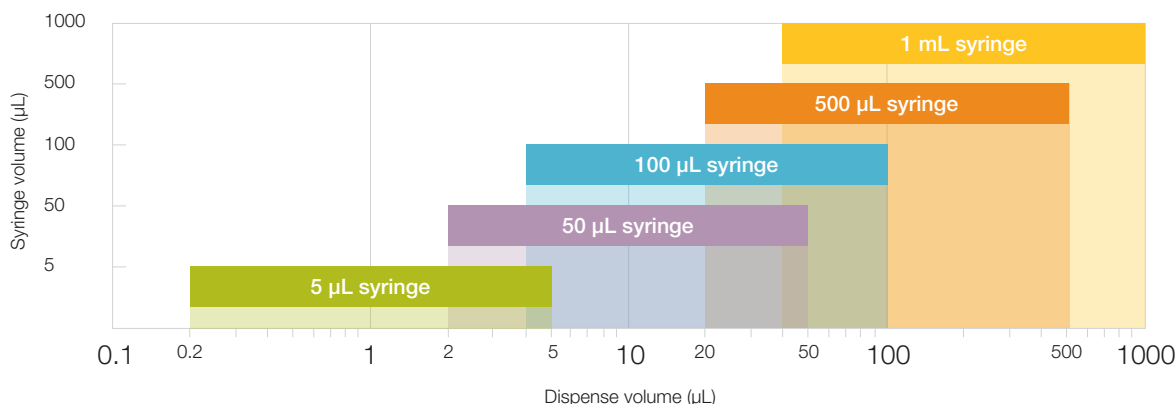
Note: For best results when performing repeat dispense (one aspiration followed by multiple dispense steps) use a calibration factor of 1.0000.

### Precision of eVol syringes

Syringe volume	1 mL	500 µL	100 µL	50 µL	5 µL
At 100%	±0.3%	±0.3%	±0.4%	±0.4%	±0.5%
At 10%	±0.6%	±0.6%	±0.7%	±0.8%	±1.0%

## Product specification

### Volume range of eVol syringes



### Applications include:

- Preparation of calibration standards
- Preparation and addition of internal standards
- Precise dispensing of aqueous and non-aqueous liquids
- Routine dispensing
- Sample dilution
- Ergonomic operation with substances in a fume hood
- GC and LC instrument injections
- Eliminates the need for serial dilutions
- Micro titrations
- TLC spotting
- FDA methods requiring a 1 mL syringe

### Improve standard laboratory processes

The award winning eVol  $x_R$  improves the pace of laboratory processes while delivering improved accuracy and reproducibility.

Process	Without eVol $x_R$	With eVol $x_R$	Benefits of using eVol $x_R$
<b>eVol <math>x_R</math></b>			
Standard preparation	Standards prepared in a large volume flask. From this standard aliquots are individually dispensed into autosampler vials.	Standards are made up directly in the vial, including the make up solvent.	<ul style="list-style-type: none"> <li>• Less glassware usage</li> <li>• Reduces waste fluid</li> <li>• Significant time saving</li> <li>• Improved accuracy and reproducibility</li> </ul>
Addition of standards	Small amounts of standard aspirated and dispensed into all samples before being transferred to an autosampler vial.	One aspiration and a fast series of repeated accurate dispenses directly into vials.	<ul style="list-style-type: none"> <li>• Significant time saving</li> <li>• Improved accuracy and reproducibility</li> </ul>
Delivery of derivatization agents	Laboratory staff required to work in a fume hood with potentially hazardous materials, to prepare combinations of derivatization agents in open vials.	Process completed with eVol $x_R$ programmed to aspirate an amount of solvent or agent and then dispense aliquots into sealed vials. This is a single handed operation.	<ul style="list-style-type: none"> <li>• Improved operator safety, lower spill and splash risk</li> <li>• Ergonomic benefits behind fume hood screen</li> <li>• Improved accuracy and reproducibility</li> <li>• Less glassware use</li> </ul>
Serial dilutions	Transfer of a small amount of solution to another container. Solvent added to achieve the required volume. This is repeated multiple times to obtain the required final accurate concentration.	One aspiration of the solution can be dispensed directly into the solvent to achieve the required accurate concentration.	<ul style="list-style-type: none"> <li>• Complete workflow simplification</li> <li>• Significant time savings</li> <li>• Improved accuracy</li> <li>• Less solvent required</li> <li>• Less glassware used</li> </ul>

### Enabling MEPS automation.

MEPS is microextraction by packed sorbent, the miniaturization of conventional SPE (solid phase extraction) packed bed devices from milliliter bed volumes to microliter volumes.

The MEPS approach to sample preparation is suitable for reversed phase, normal phase, mixed mode or ion exchange chemistries.



### MEPS advantages over conventional SPE:

Less sample required giving you greater flexibility when you have small sample quantities.

- Less solvent used means less solvent waste and ultimately reduced expense.
- Faster preparation time, reducing from hours to minutes for improved laboratory workflow.
- MEPS incorporates packed phase in a micro-cartridge or BIN (barrel insert and needle) which is then integrated into an SGE analytical syringe to make miniaturized SPE possible. With MEPS, the sample processing, extraction and injection steps are performed using the same syringe.

### Configuration for MEPS

MEPS BINs are available for use with eVol MEPS syringes, with a range of packing material phases.

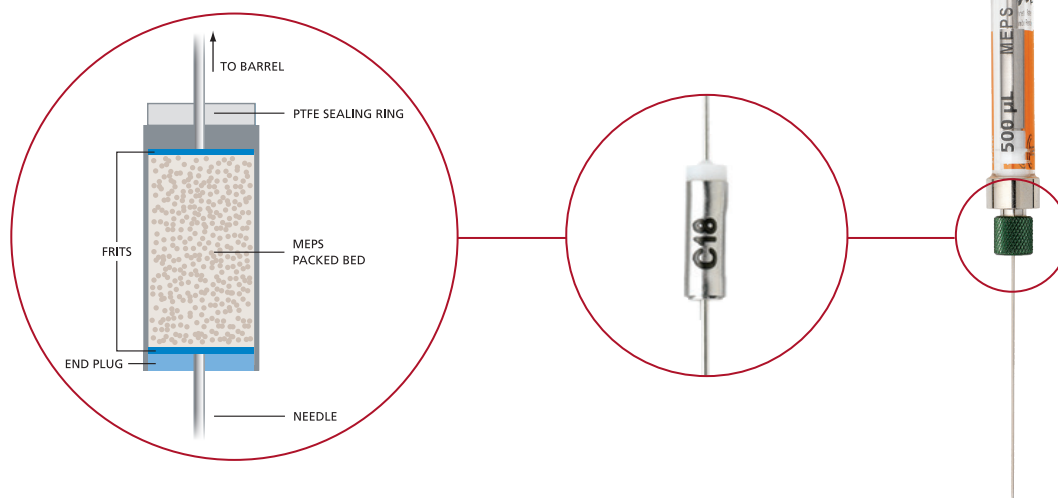
- MEPS BINs can be used with 50  $\mu$ L, 100  $\mu$ L and 500  $\mu$ L eVol MEPS syringes.
- LC needles are 55.5 mm in length, 22 gauge and LC tipped.
- GC needles are 55.5 mm in length, 23 gauge and cone tipped.

## eVol MEPS applications

Use eVol MEPS for sample preparation, SPE method development, sample clean up and proofing before transition to fully automated platforms. Quickly process small sample batches, or urgent samples.

Suitable for a range of analyses:

- **Environmental** e.g. determination of organic priority pollutants and emerging compounds in wastewater and snow samples.
- **Forensics** e.g. the analysis of cotinine in human urine by GCMS.
- **Pharmaceutical** e.g. liquid chromatographic analysis of oxcarbazepine and its metabolites in plasma and saliva.
- **Food and flavor** e.g. determination of 2,4,6-trichloroanisole and 2,4,6-tribromoanisole in wine.
- **Life sciences** e.g. rapid and sensitive method for determination of cyclophosphamide in patient plasma samples.



## eVol XR

VWR catalog number	Part description and detail	Replacement needle	Replacement plunger
<b>eVol kits and components</b>			
548-1359	eVol stand (acrylic)	-	-
548-1348	eVol charger	-	-
548-1355	eVol charging stand	-	-
548-1435	eVol replacement battery	-	-
548-1426	eVol XR starter kit for NMR (eVol XR handle, charger, stand. 3 eVol removable needle syringes with bevel tipped removable needles: 5 µL with 11.5 cm removable needle, 50 µL with 11.5 cm and 18 cm removable needles, 500 µL with 11.5 cm and 18 cm removable needles)	-	-
548-1532	eVol XR starter kit (eVol XR handle, charger, stand. 3 eVol syringes with 5 cm bevel tipped needles: 5 µL , 100 µL , 1 mL)	-	-
548-1514	eVol XR (handle only)	-	-
<b>eVol syringes</b>			
548-1349	5 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	548-1342	548-1356
548-1350	5 µL eVol syringe with GT plunger. No needle.	-	548-1356
548-1351	50 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	548-1357
548-1352	50 µL eVol syringe with GT plunger. No needle.	-	548-1357
548-1353	500 µL eVol syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	548-0998	548-1358
548-1354	500 µL eVol syringe with GT plunger. No needle.	-	548-1358
548-1430	100 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle	549-0359	548-1436
548-1515	1 mL eVol syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle	548-0998	SGEA2910385
548-2355	100 µL eVol syringe with GT plunger. No needle.	-	548-1436
548-1431	5 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle PK3	548-1342	548-1356
548-1432	50 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle PK3	549-0359	548-1357
548-1433	500 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle PK3	548-0998	548-1358
548-1434	100 µL eVol syringe with GT plunger and 5 cm 0.5 mm OD bevel tipped needle PK3	549-0359	548-1436
548-2356	1 mL eVol syringe with GT plunger and 5 cm 0.63 mm OD bevel tipped needle PK3	548-0998	SGEA2910385
<b>eVol MEPS syringes</b>			
548-1427	500 µL eVol MEPS syringe with GT plunger	-	548-1358
548-1428	50 µL eVol MEPS syringe with GT plunger	-	548-1357
548-1429	100 µL eVol MEPS syringe with GT plunger	-	548-1436

## MEPS BINs

Part number	Part description and detail
<b>MEPS barrel insert and needle (BIN) for LC applications</b>	
548-1437	C18 MEPS BIN for eVol MEPS syringes, 0.72 mm OD LC tipped needle PK5
548-1438	C8 MEPS BIN for eVol MEPS syringes, 0.72 mm OD LC tipped needle PK5
548-1439	APS MEPS BIN for eVol MEPS syringes, 0.72 mm OD LC tipped needle PK5
548-1440	HVDB MEPS BIN for eVol MEPS syringes, 0.72 mm OD LC tipped needle PK5
548-1453	SDVB MEPS BIN for eVol MEPS syringes, 0.72 mm OD LC tipped needle PK5
549-0745	C2 MEPS BIN for eVol MEPS syringes, 0.72 mm OD LC tipped needle PK5
<b>MEPS barrel insert and needle (BIN) for GC applications</b>	
549-0746	C18 MEPS BIN for eVol MEPS syringes, 0.63 mm OD cone tipped needle PK5
549-0747	C8 MEPS BIN for eVol MEPS syringes, 0.63 mm OD cone tipped needle PK5
549-0748	APS MEPS BIN for eVol MEPS syringes, 0.63 mm OD cone tipped needle PK5
549-0749	HDVB MEPS BIN for eVol MEPS syringes, 0.63 mm OD cone tipped needle PK5
549-0750	SDVB MEPS BIN for eVol MEPS syringes, 0.63 mm OD cone tipped needle PK5
549-0751	C2 MEPS BIN for eVol MEPS syringes, 0.63 mm OD cone tipped needle PK5

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**AUSTRIA**

VWR International GmbH  
Graumanngasse 7  
1150 Wien  
Tel.: +43 1 97 002 0  
info.at@vwr.com

**BELGIUM**

VWR International bv  
Researchpark Haasrode 2020  
Geldenaaksebaan 464  
3001 Leuven  
Tel.: +32 (0) 16 385 011  
vwr.be@vwr.com

**CZECH REPUBLIC**

VWR International s. r. o.  
Veetee Business Park  
Pražská 442  
CZ - 281 67 Stříbrná Skalice  
Tel.: +420 321 570 321  
info.cz@vwr.com

**DENMARK**

VWR International A/S  
Tobaksvejen 21  
2860 Søborg  
Tel.: +45 43 86 87 88  
info.dk@vwr.com

**FINLAND**

VWR International Oy  
Valimotie 9  
00380 Helsinki  
Tel.: +358 (0) 9 80 45 51  
info.fi@vwr.com

**FRANCE**

VWR International S.A.S.  
Le Périgares – Bâtiment B  
201, rue Carnot  
94126 Fontenay-sous-Bois cedex  
Tel.: 0 825 02 30 30\* (national)  
Tel.: +33 (0) 1 45 14 85 00  
(international)  
info.fr@vwr.com  
\* 0,18 € TTC/min + prix appel

**GERMANY**

VWR International GmbH  
Hilpertstraße 20a  
D - 64295 Darmstadt  
Tel.: 0800 702 00 07\* (national)  
Tel.: +49 (0) 6151 3972 0 (international)  
info.de@vwr.com  
\*Freecall

**HUNGARY**

VWR International Kft.  
Simon László u. 4.  
4034 Debrecen  
Tel.: +36 52 521130  
info.hu@vwr.com

**IRELAND**

VWR International Ltd  
Orion Business Campus  
Northwest Business Park  
Ballycoolin  
Dublin 15  
Tel.: +353 (0) 1 88 22 222  
sales.ie@vwr.com

**ITALY**

VWR International S.r.l.  
Via San Giusto 85  
20153 Milano (MI)  
Tel.: +39 02 3320311  
info.it@vwr.com

**THE NETHERLANDS**

VWR International B.V.  
Postbus 8198  
1005 AD Amsterdam  
Tel.: +31 (0) 20 4808 400  
info.nl@vwr.com

**NORWAY**

VWR International AS  
Brynsalleen 4,  
0667 Oslo  
Tel.: +47 22 90 00 00  
info.no@vwr.com

**POLAND**

VWR International Sp. z o.o.  
Limbowa 5  
80-175 Gdansk  
Tel.: +48 58 32 38 200  
info.pl@vwr.com

**PORTUGAL**

VWR International - Material de  
Laboratório, Lda  
Centro Empresarial de Alfragide  
Rua da Indústria, nº 6  
2610-088 Amadora  
Tel.: +351 21 3600 770  
info.pt@vwr.com

**SPAIN**

VWR International Eurolab S.L.U.  
C/ Tecnología 5-17  
A-7 Llinars Park  
08450 - Llinars del Vallès  
Barcelona  
Tel.: +34 902 222 897  
info.es@vwr.com

**SWEDEN**

VWR International AB  
Fagerstagatan 18a  
163 94 Stockholm  
Tel.: +46 (0) 8 621 34 00  
kundservice.se@vwr.com

**SWITZERLAND**

VWR International GmbH  
Lerzenstrasse 16/18  
8953 Dietikon  
Tel.: +41 (0) 44 745 13 13  
info.ch@vwr.com

**UK**

VWR International Ltd  
Customer Service Centre  
Hunter Boulevard - Magna Park  
Lutterworth  
Leicestershire  
LE17 4XN  
Tel.: +44 (0) 800 22 33 44  
uksales@vwr.com

**CHINA**

VWR (Shanghai) Co., Ltd  
Bld.No.1, No.3728 Jinke Rd,  
Pudong New District  
Shanghai, 201203- China  
Tel.: 400 821 8006  
info\_china@vwr.com

**INDIA**

Avantor Performance Materials India  
Limited  
17th Floor, Building No. 5, Tower C  
DLF Cyber City Phase – III  
Gurgaon - 122002, Haryana  
Tel.: +91-1244-65-6700  
help@avantoric.com

**KOREA**

VWR International ~  
17, Daehak 4-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do  
Tel.: +82 31 645 7256  
saleskorea@avantorsciences.com

**MIDDLE EAST & AFRICA**

VWR International FZ-LLC  
Office 203, DSP Lab Complex,  
Dubai Science Park,  
Dubai, United Arab Emirates  
Tel.: +971 4 5573271  
Info.mea@vwr.com

**SINGAPORE**

VWR Singapore Pte Ltd  
18 Gul Drive  
Singapore 629468  
Tel.: +65 6505 0760  
sales.sg@vwr.com