

How do I choose

The Best Syringe?

The most common questions about Syringe Selection

Syringe Needles

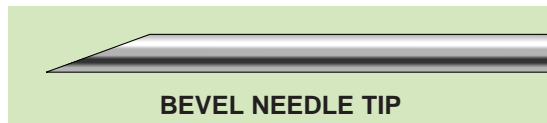
Q *There are so many different needle OD's (outside diameters), which one do I need?*

A Needle selection is based on application and personal choice. When selecting needle diameter, always choose the widest possible to reduce the probability of bending. Autosampler syringes with 0.63mm OD needles should be selected for all applications except on-column injection. Care must be taken when selecting an appropriate needle ID for medium to high viscosity samples.

Q *I've always used a bevel tip needle for my manual GC injections. Now I have an autosampler and all the needles seem to have cone tips, why?*



A The cone shaped needle tip has been specially developed to improve septum lifetime when used with an autosampler. Because an autosampler allows the needle to "hit" the septum in exactly the same position each time, the cone design effectively "parts" the septum during piercing, not cuts it, as would a bevel needle. A bevel tip needle is

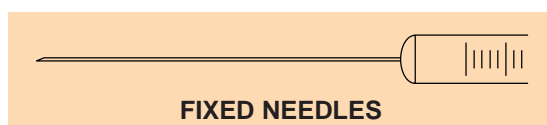


still the preferred option for manual injection where "hitting" the septum in exactly the same place is difficult.

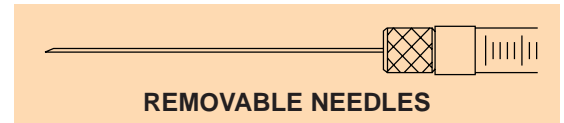
Needle Options

Q *What's best, fixed or removable needles?*

A Fixed needle syringes are always the preferred option for experienced operators or for applications requiring trace sample levels. A fixed needle syringe is also recommended for autosampler



use where the probability of needle bending is minimal. Fixed needles are the most economical syringe option. A fixed needle syringe will also guarantee minimum sample carry-over because the gap between needle and barrel is totally filled with cement.



For the novice or inexperienced user a removable needle syringe is recommended. The removable needle syringe will reduce cost over time because only the needle will need to be replaced if bent. Removable needle syringes can also be heated to 120°C.

Syringe Style

Q *Can I use my 10mL syringe for a 1mL injection?*

A To maximize syringe accuracy and reproducibility, it is recommended that the minimum volume injected from a syringe is 10% of full scale. This will ensure that variations caused by scale reading, needle volume and mechanical handling of the syringe do not become significant errors in dispensed syringe volume. Therefore the smallest recommended injection volume from a 10µL syringe would be 2µL. For capillary injection, a sample-in-plunger, 0.5µL-5µL syringe is recommended in conjunction with the SGE FocuLiner™.



SYRINGE Tip

A syringe should be flushed with approximately 5-10 times its total capacity to eliminate carryover between samples.

SYRINGE Tip 2

Always keep the box your syringe arrives in. It is the best way to protect the syringe when it's not in use and also provides a quick reference for part number and description when its time to reorder. It also contains the batch and date codes for ease of traceability.

Q Why do I need to buy a specific design syringe for my autosampler?

SGE autosampler syringes have been designed to meet all fit and function criteria of a specific autosampler model. As minimum requirements, they will meet dimensional specifications, accuracy of better than $\pm 1\%$, plunger and barrel designed for worry free overnight sampling and extended life. A gas tight (Teflon® tipped) syringe should be selected when analyzing dirty samples. A gas tight syringe stops particulate matter from getting between the plunger and barrel by effectively wiping the barrel ID during the plunger stroke. SGE has autosampler syringes for:

- GC autosamplers: Hewlett Packard, Perkin Elmer, Shimadzu, Thermoquest/CE, Unicam, Dynatech and Varian instruments.
- HPLC autosamplers: ThermoSpectra, Hitachi, Waters, CTC/Fisons, Kontron, Hewlett Packard and Spark Holland instruments.

Q How is it possible to measure less than $1\mu\text{L}$ accurately, what about the needle volume?

To accurately dispense $1\mu\text{L}$ or less, a sample-in-needle syringe is recommended. These syringes have the ability to inject down to $0.1\mu\text{L}$ 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 and gas tight to 650 atm, they provide maximum precision, accuracy at $\pm 2\%$. Sample-in-needle syringes should always be used in conjunction with the SGE FocusLiner™.

Syringe Plunger

Q Help! I always seem to be bending the plunger in my syringe, how can I reduce the risk?

Firstly, make sure your syringe technique is correct (contact your local SGE office if you require help with this) and the sample does not contain particulates. If there is a tendency for the plunger to continue to bend, there are a number of alternatives in syringe designs which can help reduce the possibility of bending.

DID YOU KNOW...

Modern chromatography instrumentation can detect a femtogram (10^{-15})? Low detection limits, precision, accuracy and reproducibility are only as good as the sample introduction method. Are you using the best syringe for your analytical requirements?

For manual syringe operation, Guided Plungers are the most robust barrel and plunger option available. The extended barrel takes the roughest handling without damage, making these syringes ideal for rugged low volume applications or student users. Other alternatives include the Plunger Protection and SuperfleX™ syringes. Always use a gas tight (Teflon® tipped) syringe when analyzing dirty samples.

Q Can I replace a bent plunger in my syringe?

Metal plungers are individually fitted (to submicron tolerances) and leak tested to ensure a perfect fit in an individual syringe barrel. This means that the plunger and barrel become a matched pair and **cannot** be interchanged. Plungers in a gas tight syringes CAN be replaced as they have a multi point sealing,



SGE GUIDED PLUNGER SYRINGES

Teflon® tip. Plungers on gas tight syringes are suitable for both gas and liquid samples and are a good alternative if plunger bending is a constant problem in your lab.



SYRINGE Tip 3

When injecting volumes $< 1\mu\text{L}$ always use an SGE FocusLiner™ for brilliant reproducibility.

SAVE ...

Selected syringes are available in packs of six, ten and twenty-five. Packed in a convenient storage box, you can now have dedicated syringes and will always have a "spare".