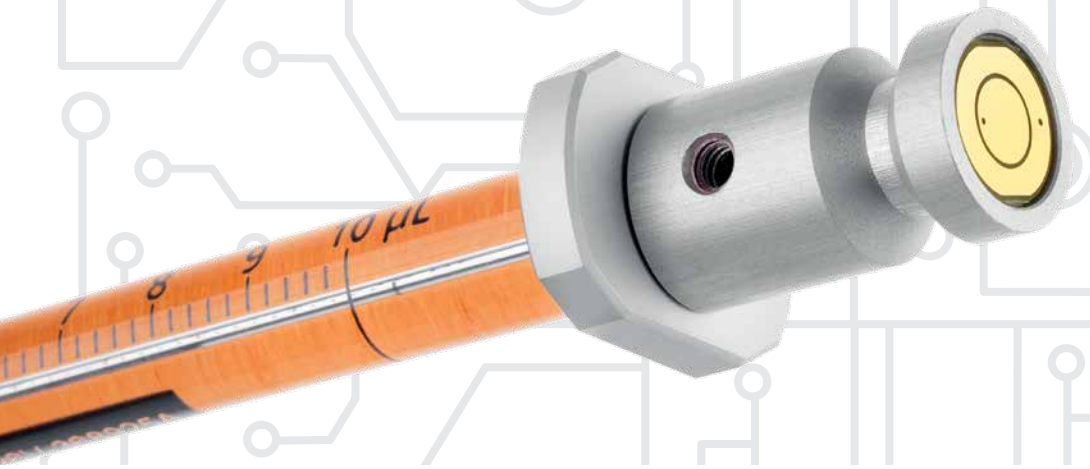
GC Consumables



User Guide

SMART Chromatography Syringes

Thermo Scientific SMART technology offers a traceable, usage-based approach for chromatography consumables.

Our SMART consumables are available in syringes, SPME, and SPME Arrow fiber formats which provide automated management, resulting in increased reliability, instrument up-time, confidence in the results, and full traceability.

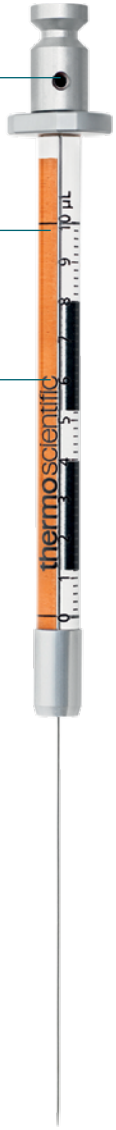
Each SMART consumable contains an ID chip which communicates with the Thermo Scientific™ TriPlus™ RSH SMART Autosampler. Important parameters such as part number, lot number, usage parameters, ranges, and history for each SMART consumable are available through Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) Software records in the audit trail log file.

To support the smooth running of your laboratory, the system will trigger consumable health notifications to help maintain system up-time and the generation of high quality, reliable data.

The benefits of SMART technology

- Gain higher confidence in analytical results
- Ensure error-free usage of syringes or SPME fibers through automatic identification
- Support Good Laboratory Practice (GLP) accreditation with usage history traceability
- Optimize consumables consumption by monitoring of usage conditions and lifetime
- Facilitate consumables management thanks to color-coded health notification dashboard integrated in Chromeleon CDS

Thermo Scientific SMART chromatography syringes are compatible with all TriPlus RSH autosamplers, as well as PAL platforms and AOC-6000 series autosamplers.



Read/write chip stores information such as syringe ID, operational parameters range, and usage history

Easy volume identification of syringes installed in autosamplers is distinguished by a vibrant color scheme

The part number and lot number of each SMART syringe can be found on the barrel

Instructions for use, care, and maintenance

The SMART chromatography syringe is a precision instrument designed for consistent delivery, precision, accuracy, and integrity of the sample. 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 be checked for burrs and rough surfaces which may cause tearing and excessive wear of the septa

Syringe use

- Always inspect the syringe before use. Check the barrel for cracks and the needle tip for burrs.
- To maximize syringe accuracy and reproducibility, it is recommended that the volume injected from a syringe is between 10% to 50% of the syringe's total capacity
- To avoid carry-overs between samples, flush the syringe with solvents 5-20 times, remembering to discard the first 2-3 washes
- To eliminate air bubbles from the barrel, repeatedly draw and expel sample whilst keeping the needle tip immersed in the solution. If bubbles persist, slow the aspiration speed.
- To make a manual 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 the injection.

To install on a TriPlus RSH SMART autosampler, please refer to the instrument hardware manual. For other makes of instrument, please consult the manufacturer's manual.

Needle care

- To unblock the needle, remove the plunger and fill the syringe with solvent using another syringe. Reinsert the plunger and gently push solvent through the needle. Never force the plunger as too much pressure may crack the syringe barrel.
- Medium to high viscosity samples should be diluted prior to use, or a larger inside diameter needle selected

Plunger care

- Never force the plunger
- Do not pump the plunger when the needle is blocked as the high pressure generated could crack the barrel
- Avoid unnecessary movement of plungers when the syringe is dry

Syringe cleaning

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

Cleaning steps:

- Flush thoroughly with suitable solvents. Depending upon the contaminant, this may have to be done up to 20 times.
- Rinse with distilled water
- Flush with acetone
- Remove plunger and wipe with tissue
- Refit plunger and flush with acetone
- Allow syringe to dry

Storage

- Always flush the syringe with solvent and air dry

Specifications

Temperature

- Removable needle syringes 5-120 °C
- Fixed needle syringes 5-70 °C
- Headspace syringes 5-150 °C

Heating the syringe will remove semi-volatile material from the syringe. Before heating, remove the plunger. Rapid changes in temperature can lead to splitting of the glass barrel. Ensure heating and cooling of a syringe is a gradual process.

Volume

Accuracy (displaced volume) of ±1% (±2% for 0.5 µL and 1 µL syringes).

SMART chromatography syringes ordering guide

Part number	Syringe volume (µL)	Needle length (mm)	Gauge	Needle type	Gas tight	For use with
365A0241-SM	0.5	57	23	Cone	No	Microvolume injections of highly concentrated samples or Fast GC applications with narrow bore columns
365B0251-SM	1	57	23	Cone	No	Microvolume injections of highly concentrated samples or Fast GC applications with narrow bore columns
365C0221-SM	5	85	23s	Cone	No	SSL on Trace Ultra, TSI, or Injector with Merlin adaptor
365C0231-SM	5	57	23s	Cone	No	PTV all injection modes, SSL all injection modes, or Injector with Merlin adaptor
365C0241-SM	5	85	26s	Cone	No	On-column injection, SSL on Trace Ultra, or TSI
365C0251-SM	5	57	26s	Cone	No	PTV all injection modes or SSL all injection modes
365D0261-SM	10	85	23s	Cone	No	SSL on Trace Ultra, TSI, or Injector with Merlin adaptor
365D0271-SM	10	57	23s	Cone	No	PTV all injection modes, SSL all injection modes, or Injector with Merlin adaptor
365D0281-SM	10	85	26s	Cone	No	On-column injection, SSL on Trace Ultra, or TSI
365D0291-SM	10	57	26s	Cone	No	PTV all injection modes and SSL all injection modes
365D0391-SM	10	57	26s	Bevel	No	PTV injection with empty straight liner (requires PTV liner cap P/N 29004014 for polar solvents)
365D0301-SM	10	85	23s	Cone	Yes	SSL on Trace Ultra, TSI, or Injector with Merlin adaptor. Particularly suitable for volatile solvents or corrosive samples
365D0311-SM	10	57	23s	Cone	Yes	PTV all injection modes, SSL all injection modes, or Injector with Merlin adaptor. Particularly suitable for volatile solvents or corrosive samples
365D0321-SM	10	85	26s	Cone	Yes	On-column injection, SSL on Trace Ultra, or TSI. Particularly suitable for volatile solvents or corrosive samples
365D0331-SM	10	57	26s	Cone	Yes	PTV all injection modes or SSL all injection modes. Particularly suitable for volatile solvents or corrosive samples
365F2441-SM	25	57	23s	Cone	Yes	PTV all injection modes, SSL all injection modes, or Injector with Merlin adaptor
365F2451-SM	25	85	26s	Cone	Yes	On-column injection, SSL on Trace Ultra, or TSI
365F2461-SM	25	57	26s	Cone	Yes	PTV all injection modes or SSL all injection modes

SMART chromatography syringes by color code

10µL / 10mL 0.5µL / 500µL 1µL / 1mL 5µL / 5mL 100µL 50µL 25µL 250µL / 2.5mL

SMART chromatography syringes ordering guide

Part number	Syringe volume (µL)	Needle length (mm)	Gauge	Needle type	Gas tight	For use with
365G2311-SM	50	57	23s	Cone	Yes	Large volume splitless with SSL or PTV or injector with Merlin adaptor
365G2321-SM	50	85	26s	Cone	Yes	Large volume on-column injection
365G2331-SM	50	57	26s	Cone	Yes	Large volume splitless with SSL or PTV
365H2141-SM	100	57	23s	Cone	Yes	Large volume splitless with SSL, PTV, or injector with Merlin adaptor
365H2151-SM	100	85	26s	Cone	Yes	Large volume on-column injection
365H2161-SM	100	57	26s	Cone	Yes	Large volume splitless with SSL or PTV
365H2171-SM	100	85	23	Side Hole	Yes	Variable depth large volume PTV with and without Merlin adaptor
365H2181-SM	100	57	23	Side Hole	Yes	Large volume PTV with and without Merlin adaptor
365I2321-SM	250	85	26	Cone	Yes	Large volume on-column injection
365I2331-SM	250	57	26	Cone	Yes	Large volume splitless with SSL without Merlin adaptor
365I2341-SM	250	85	23	Side Hole	Yes	Variable depth large volume PTV with and without Merlin adaptor
365I2351-SM	250	57	23	Side Hole	Yes	Large volume PTV with and without Merlin adaptor
365J2411-SM	500	85	26	Cone	Yes	Large volume on-column injection
365J2421-SM	500	57	26	Cone	Yes	Large volume splitless with SSL without Merlin adaptor, sample preparation (i.e., dilution, calibration)
365J2441-SM	500	57	23	Side Hole	Yes	Large volume PTV with and without Merlin adaptor
365K2811-SM	1000	57	22	LC	Yes	Sample preparation (i.e., dilution, derivatization, liquid-liquid extraction, micro-SPE)
365K2871-SM	1000	65	23	Side Hole	Yes	Headspace
365L2321-SM	2500	65	23	Side Hole	Yes	Headspace
365M2331-SM	5000	65	23	Side Hole	Yes	Headspace
365N2721-SM	10000	57	19	LC	Yes	Sample preparation (i.e., dilution, derivatization, liquid-liquid extraction)

SMART chromatography syringes by color code

10µL / 10mL 0.5µL / 500µL 1µL / 1mL 5µL / 5mL 100µL 50µL 25µL 250µL / 2.5mL

Learn more at **thermofisher.com/smartchromatographysyringe** and **thermofisher.com/triplusrsh**