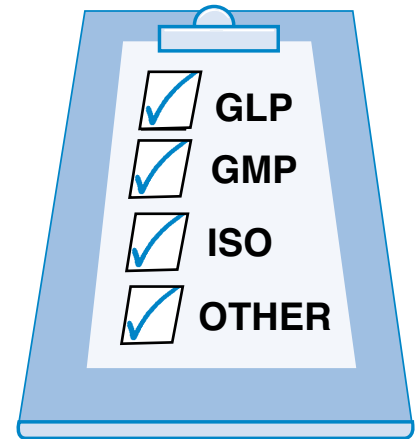


# SYRINGE VALIDATION

**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.**



SGE supplies syringe conformance certificates with every syringe to guarantee the syringe meets all specifications. SGE also offers a calibration service which exactly states the individual displacement volume of that syringe and its limits.

SGE provides certification which can satisfy protocol requirements for syringes. This provides traceability of volume back to International Standards through:

- **National Institute of Standards and Technology (NIST)**
- **National Research Laboratory-Light Laser Standard**

## CERTIFICATE - Supplied with every SGE Syringe



MN-0193-S

### Syringe Conformance Certificate

This syringe has been manufactured using measuring equipment traceable to International Standards through the national Bureau of Standards (NBS) and the National Institute of Standards and Testing (NIST). SGE ensures that the displacement volume is within the conformance specifications. For applications requiring individual syringe calibration, SGE offers a factory calibration service. Contact your local SGE office or visit our web site.


This certification, which is included with every SGE syringe, guarantees that it has passed our quality standards. Some of the 30 on-line checks carried out before passing a SGE syringe are:

- **Volume conformance and accuracy to ensure a syringe falls within the specified displaced volume ranges of  $\pm 1\%$  for Plunger-in-Barrel syringes and  $\pm 2\%$  for Plunger-in-Needle syringes**
- **Liquid and gas leak checks**
- **Plunger 'feel' checks to reduce the risk of plunger binding as a result of irregularities**
- **Needle contamination checks**
- **Functional tests such as dry pumping the plunger on an autosampler to ensure there is no binding**
- **Aesthetic inspection**

## 2. CERTIFICATE OF CALIBRATION - Available for your nominated syringe

SGE also 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 (*shown right*) providing volume conformance and traceability. Syringes are also identified by an engraved number on the syringe flange.

Many companies attempt to calibrate the syringe by measuring the dispensed volume. Because this is often performed by weighing the liquid (usually water) which the syringe dispenses, it introduces many variables such as weighing errors, fluctuations in environmental temperature, pressure and evaporation, as well as operator error. Unlike competitors which use questionable calibration techniques, SGE uses a superior technique of calibrated volume and uncertainty based on the length and inner diameter of the syringe barrel. Using specialised measuring equipment, SGE's calibration method has the highest degree of displacement volume accuracy and provides calibration traceability.

### Certificate of Calibration

This certificate of calibration provides traceable displacement volume accuracy for the enclosed syringe. It should be noted that the precision of dispensed volume will depend on operating conditions and operator technique.

Volume accuracy has been determined by calculated displacement volume traceable to the National Institute of Standards and Technology (NIST) and the National Research Laboratory of Metrology - Light Laser Speed Standard (NRLM).  
*A copy of SGE's method of calibration is available on request.*

Part No: \_\_\_\_\_

Code: \_\_\_\_\_

Serial No: \_\_\_\_\_

Plunger Diameter at tip \_\_\_\_\_ ± \_\_\_\_\_  
(barrel diameter for gas tight syringes)

Scale length \_\_\_\_\_ ± \_\_\_\_\_

Full syringe capacity \_\_\_\_\_ ± \_\_\_\_\_

Needle volume (nominal) \_\_\_\_\_

Date: \_\_\_\_\_ Signed: \_\_\_\_\_

Quality Control

MN-0029-S Rev.03 02/01



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