

# Calibrated Leak Standards



ISO 17025:2005  
A2LA Accredited  
Calibration Lab

## HIGHLIGHTS

- ✓ ISO 17025:2005 A2LA accredited
- ✓ NIST-traceable calibration certification
- ✓ Integrate into test instruments
- ✓ Mount into master calibration parts
- ✓ Plug into test line
- ✓ Controlled flow applications
- ✓ Manufactured to a specified leak/flow rate at a specified pressure

## FLOW RANGE

- Leak or Flow range: 1x10<sup>-5</sup> atm-cc/sec to 50,000 scc/min
- Manufactured to ISO 17025

## PRESSURE RANGE

- Standard holders: -1,0 to 34,5 bar  
(-14.7 to 500 psig)
- Welded holders: >34,5 to 206,8 bar  
(>500 to 3000 psig)

## ACCURACY AND MANUFACTURING TOLERANCE

- Standard Flow Range: 10.0 scc/min or greater
  - Flow Accuracy ±1.4%
  - Manufacturing Tolerance ±1.0%
- Low Flow Range: 0.5 to 10.0 scc/min
  - Flow Accuracy ±1.4% or ±0.1 scc/min (whichever is greater)
  - Manufacturing Tolerance ±0.1 scc/min
- Special Flow Range: 0.49 scc/min or Less
  - Flow Accuracy ±6.5%
  - Manufacturing Tolerance ±20%

For a full description of CTS Leak and Flow Accuracies view our documentation online:

<https://portal.a2la.org/scopepdf/1667-01.pdf>

## INTEGRAL ASSEMBLY

The manufactured flow standard is sealed into one of various assemblies:

- General application (1/8" NPT end fittings)
- Legacy units for CTS, Schreiner, and Sciometric instruments
- New units for CTS-Schreiner LPC 528 and LPC 850, CTS Sentinel I28, C28, C20WE, Blackbelt, Blackbelt Pro, and Sciometric 3520 instruments
- Compatible replacement units for competitor instruments
- Custom mounting configurations

All leak standard assemblies include an inlet filter, some models are equipped with an exhaust filter.

## RE-CERTIFICATION

For re-certification, the current flow rate is measured and compared to previous calibration and/or the original leak rate and pressure specification. If the current flow value is outside the allowable tolerance range it is replaced with a new orifice. All CTS-Schreiner recalibrated leak standards come with a NIST traceable certificate and specifications.

# Calibrated Leak Standards

## LEAK RATE CONVERSION (SCC/M TO NCC/M)

CTS leak standards are accredited to ISO 17025:2005 and manufactured to a NIST-traceable calibration. The standard calibration flow unit for CTS is scc/m (standard cubic centimeters per minute). The European standard flow unit is ncc/m, normal flow conditions. The chart below compares scc/m to ncc/m unit showing their temperature differences at baseline pressure.

## STANDARD AND NORMAL CONDITIONS

Unit	Pressure Reference	Temperature Reference
Operating (cc/m, ml)	Actual absolute pressure in the system	Current temperature in the system
Standard (scc/m, sml/m)	1013,25 mbar (14.7 psig) absolute	20° C (68° F)
Normal (ncc/m, nml/m)	1013,25 mbar (14.7 psig) absolute	0° C (32° F)

### Example Flow Unit Conversions (scc/min to ncc/min)

1 scc/m ≈ 0,9318 ncc/m (Ncm<sup>3</sup>/min)

2.5 scc/m ≈ 2,3295 ncc/m (Ncm<sup>3</sup>/min)

30 sml/min ≈ 27,954 nml/min

### Conversion Formulas

$$Q_{M, \text{Standard}} = Q_{M, \text{Normal}} \times \frac{293,15 \text{ K}}{273,15 \text{ K}} \times \frac{1013,15 \text{ mbara}}{1013,15 \text{ mbara}}$$

$$Q_{M, \text{Normal}} = Q_{M, \text{Standard}} \times \frac{273,15 \text{ K}}{293,15 \text{ K}} \times \frac{1013,15 \text{ mbara}}{1013,15 \text{ mbara}}$$

## LEAK STANDARD CONFIGURATIONS

A leak standard is a fabricated part. The Holder is the main body. Each leak standard is made to order, precisely sized to flow at an exact pressure in an ISO certified CTS calibration lab. All leak standards ship with a certificate of calibration that identifies the certified flow at a specific pressure for the manufactured unit.

Our *Part* number identifies the holder style to be used for the leak standard. The *Description* field details the flow and required pressure specification for the leak standard. In the example, the part number is for an A-style holder, the unit is certified to flow at 12 scc/min at 1.5 bar (21.76 psi) using Nitrogen gas.

Line	Part	Description
1	LEAK-033834	Calibrated Leak Standard 520-12.00scc/m-1.50Bar-A Holder: A Leak Rate: 12.00 scc/m Pressure: 1.50 Bar Cal Gas: Nitrogen Mfg Tolerance: +/-1%, or 0.1 scc/m (whichever is greater)



Example of a CTS Quote for a Custom A-style Leak Standard

## APPLICATION EXAMPLES



Automotive



Powertrain



Consumer Goods



Energy



HVAC/R



Medical



Military



Other Transportation