



*See What's Really There™*

**4700**  
Precision Diluter



**4700**  
**PRECISION**  
— Diluter —

***The Next Generation in Standards Preparation.***

## 4700 Precision Diluter

The most precise, flexible, and efficient standard preparation system on the market.

The 6 Channel 4700 Precision Diluter represents the next generation in accurate canister standards preparation. Utilizing a combination of precise gas flow control, exact pressure measurements, and an ultra-inert flow path, the 4700 is capable of performing multistage dilutions for achieving standards ranging from part-per-billion to low part-per-trillion. The 4700 works with canisters and Bottle-Vacs™ to create dilutions up to 100x, and then allows a second dilution of up to another 100x to yield a total 2 step dilution of up to 10,000x.



4700 Precision Diluter

## 4700 - The Flexible and Precise solution for TO-15 calibration.



### Features

- **6 Channels Installed and Ready!**

*The 4700 comes standard with six channels. This enables dedicated internal standards, calibration standards, and serial dilution channels.*

- **Performs Dilutions up to 10,000x!**

*The 4700 Precision Diluter can easily perform 1–100x dilutions (100 PPB to 1PPB), or dilutions up to 10,000x by using a dedicated channel on the front of the system for second stage dilution.*

- **Dilutes High Concentrations**

*High concentration samples such as soil gas can be effortlessly diluted with the 4700.*

- **Conserves Cylinder Standards**

*The 4700 conserves cylinder standards relative to dynamic blending.*

- **Ideal for Challenge Standards**

*The 4700 can create 1PPB challenge standards for 6L canister inertness validation tests. (One 110L Cylinder at 1PPM can fill over 15,000 6L to 1PPB at 1 atm)*

- **Gravimetric Dilution Validation**

*An optional digital scale can be used to validate dilution ratios gravimetrically, thus eliminating any need for expensive annual sensor calibrations.*

The 4700 uses precise pressure control, rather than mass flow controllers to meter in the standard. This approach has several advantages. First, very little of the standard mix is used in making a standard. This allows the original cylinder to last longer, keeping cylinder pressures higher where contents are more stable. Secondly, the mixing region required in a dynamic diluter is eliminated, substantially reducing surface area and carryover.

With the 4700, small 110L cylinders at 1PPM will allow over 15,000 6L canisters to be filled to atmospheric pressure with a 1PPB mixture by first making a 20PPB working standard that can be further diluted into each canister to be tested. This results in just pennies worth of standard being consumed when performing inertness testing of canisters every 1-2 years. By contrast, typical dynamic diluters that must balance flows and pressures can typically only fill 50–100 6L canisters per high concentration cylinder, making field canister inertness testing prohibitively expensive.

Low pressure standards or even samples can be further diluted using inlet #6 which is conveniently located on the front of the 4700. Easily perform up to a 100x dilution into a 6L canister, or up to a 40x dilution into a Bottle-Vac™ to obtain working concentrations that are more acceptable to GCMS inlet systems.

## Sample Pressurization

The 4700 can perform automated pressurizing of canister field samples to bring them to a positive pressure after receipt by the laboratory. A high accuracy sensor ( $\pm 0.3\%$ ) first measures the initial pressure, then fills the canister to a requested final pressure and calculates the dilution factor. A second operating mode allows dilution by a constant factor of 1.5, 2, or 3x.

This conveniently eliminates the need to determine different dilution factors for each sample. Pressurizing samples with a surrogate-containing nitrogen cylinder can add further reliability to the results by validating the actual volume withdrawn from the sample canister during analysis.

## SmartLab™ II Control Interface

The 4700 is controlled using Entech's SmartLab™ II network. This software allows the defining and running of methods as well as the pressurizing of samples or standards prior to GCMS analysis. An easy to use graphical interface simplifies operation and accelerates user understanding of operation principles.

## Automatic Dilution Calculations

The automatic dilution calculation system, which is integrated throughout the Entech 4700's user interface, makes it very simple and intuitive to specify and describe target concentrations and final concentrations ranging from % and part-per-trillion.

Dilution values may be entered using any convenient unit of measure and all values are automatically converted to a common base within the Entech 4700 software.

| Description  | Unit | Part #   |
|--|------|----------|
| <b>4700 Precision Diluter</b><br>(Includes 6 channels) | EA   | 4700     |
| 4700 Tablet Option                                     | EA   | 4700-TSC |
| 4-Position 110L Cylinder Holder                        | EA   | 40-44911 |

## Calibration Standards

| Description  | Unit | Part #   |
|--|------|----------|
| 1 PPM TO-14a Standard (110L Cylinder, 1700psig)                  | EA   | 40-45010 |
| 1 PPM TO-15 Subset Standard (110L Cylinder, 1700psig)            | EA   | 40-45110 |
| 1 PPM TO-15 Standard (110L Cylinder, 1700psig)                   | EA   | 40-45115 |
| 1 PPM 4 Component Internal Standard<br>(110L Cylinder, 1700psig) | EA   | 40-45210 |
| 2-5 PPM Carbonyl Standard (800L Cylinder, 2000psig)              | EA   | 40-45130 |
| 4-Position Cylinder Holder (for 102L Standard Cylinders)         | EA   | 40-44911 |
| High Purity Stainless Regulator w/ CGA180                        | EA   | 40-02001 |
| Canister Regulator   | EA   | 40-03000 |

## Six Modes of Operation

The Entech 4700 features six modes of operation. Modes can be easily selected using the Mode Buttons on the Menu Bar at the top of the 4700 screen. Each mode offers its own set of controls, which appear in the Method Control Panel area directly below the menu bar.

## Long-Term Reliability

The Entech 4700 bases its calculations and dilution operations on pressure differentials and ratios, which can mathematically cancel out any errors in zero and gain values respectively.

## Multi-Stage Dilutions

Utilize multi-stage dilutions to easily create sub-PPB level standards for new low level monitoring requirements.

## Feature rich software enables full control.

Intuitive user interface, Optional touch pad quick entry, Color coding, Status lights, Advanced reports, and much more!



## Cylinder Fittings

| Description                       | Unit | Part #          |
|-----------------------------------|------|-----------------|
| 1/8" x 4'L SC Tubing w/ SS Cap    | EA   | 15-85231        |
| SC MMQT-1/8" Comp Fitting- BLUE   | EA   | MQT-200L-BLUES  |
| SC MMQT-1/8" Comp Fitting- GREEN  | EA   | MQT-200L-GREENS |
| SC MMQT-1/8" Comp Fitting- RED    | EA   | MQT-200L-REDS   |
| SC MMQT-1/8" Comp Fitting- YELLOW | EA   | MQT-200L-YELLS  |



**7200**  
Preconcentrator



**7650-L20**  
GC Gas Autosampler



**7016D**  
Canister Autosampler



**5400B**  
Thermal Transfer System



**3108D**  
Canister Cleaning System

*The Recognized Global Leaders  
in Environmental Air Analysis.*

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