



# ASI Model DP-049 Series

## In-Situ Dilution Probe



**Dilution  
Solutions...**  
Alpha Suite Inc.

For your **CEMS, RATA, and PROCESS GAS** Sampling ...





Designed to function as a sample conditioning and transport system, the ASI Dilution Probe performs four critical functions to prepare the sample from the stack (duct or process) so that it can be measured accurately and precisely by the analyzer (typically an "ambient level" analyzer). The system uses an air driven aspirator which extracts a continuous and precise low-flow sample from the source gas stream. It is then passed consecutively through a coarse and fine particulate filter, a preselected glass or metal orifice, and diluted with the motive air within the probe aspirator. This process has now reduced the dew point of the source gas sample to below that of the ambient air. It prepared the often warm, wet, sticky and particulate laden sample, so that it can be transported (at a positive pressure) via an unheated umbilical line to the analyzer, up to 300FT (100M) away!!

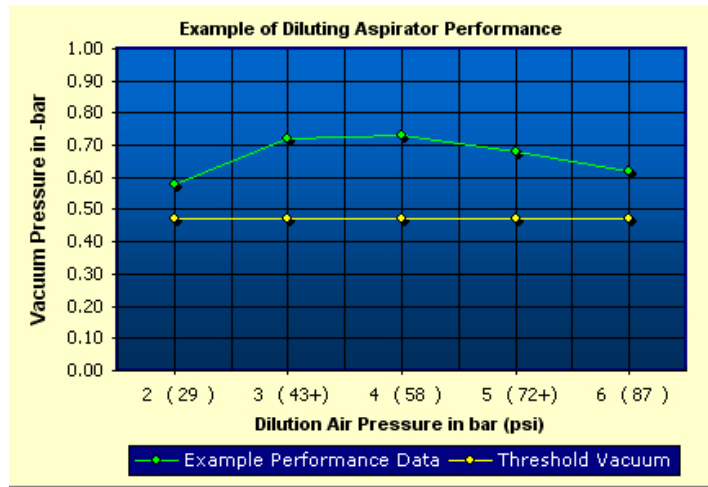


ASI Model DP-049-A  
In-situ Diluting Sampler

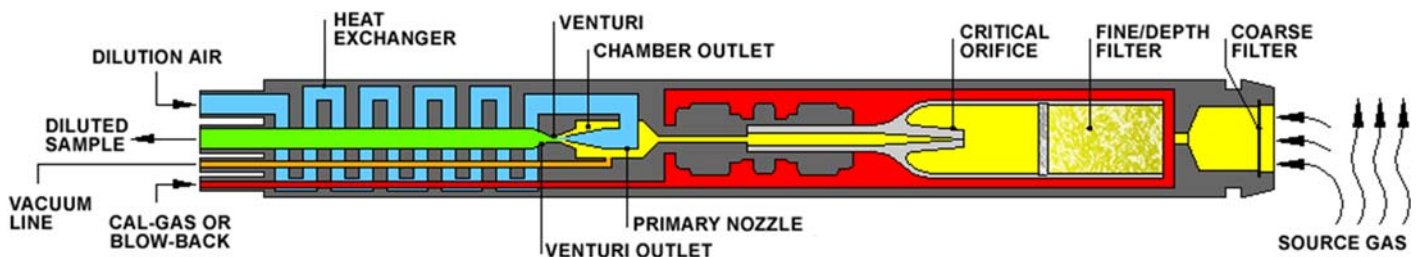
With the high efficiency diluting aspirators that we design into virtually any external form, we are able to offer a diluting probe that will meet your requirements. This makes for an easy retrofit to your existing in-situ dilution probes, that will be compatible and interchangeable with your current installation. For our OEM customers, we also offer custom design services and will work with you to develop and produce a sample diluting unit that is packaged to meet your needs.

**The internal diluting aspirators we utilize are manufactured and calibrated to meet the highest performance efficiencies on the market. This translates into stability and lower dilution air consumption.**

- Reach a minimum vacuum of .47 bar (13.87"Hg) at a low 2.5 bar (36.25psi) dilution air pressure
- Maintain vacuum levels above the .47 bar through dilution air pressures up to 6 bar
- Diluted sample flow rates in range of 4.5 to 12 l/min (dependent on dilution air pressure setting)
- Internal heat exchanger for the dilution air
- Wetted parts from Inconel® 600
- Operating temperatures up to 750°F (400°C), when using a glass orifice (higher with a Monel® orifice)



COMMON DILUTION RATIOS	
Average Dilution Range	Critical Orifice Nominal Flow Rate
215:1 to 350:1	20 ml/min
95:1 to 150:1	50 ml/min
44:1 to 75:1	100 ml/min
32:1 to 50:1	150 ml/min
27:1 to 37:1	200 ml/min
20:1 to 30:1	250 ml/min

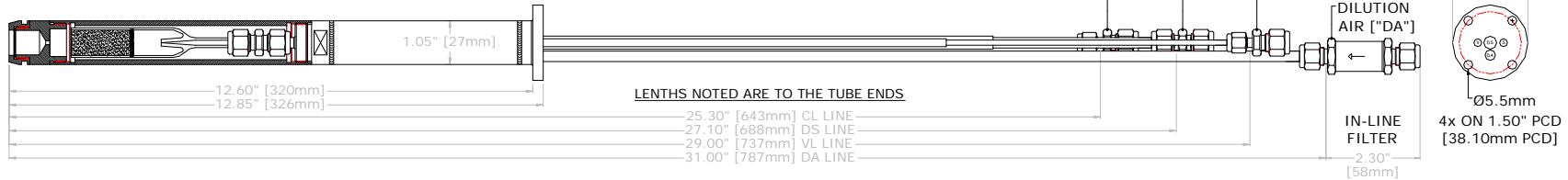


Our diluting probes uses a glass or Monel® critical orifice (included with your diluting probe purchase). A number of sample flow rates are possible which will allow the use of our diluting sampler with a wide range of ambient level analyzers.

We also offer a variety support flange options. This will make the probe compatible with any existing probe extension pipe assembly, and compatible with new or old model probe heaters (using one of two types of coarse inlet filters we offer).

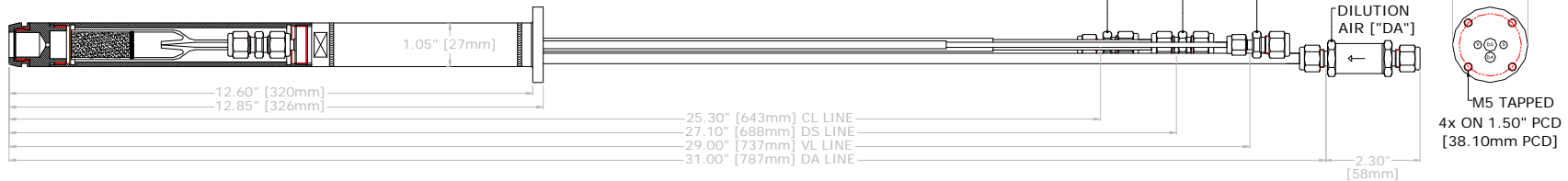
**ASI MODEL DP-049-A**

DESCRIPTION: IN-SITU DILUTION PROBE, WETTED PARTS INCONEL-600, BOLTED SUPPORT FLANGE (4x BORED THRU HOLES, Ø 5.5mm ON 1.50" PCD).



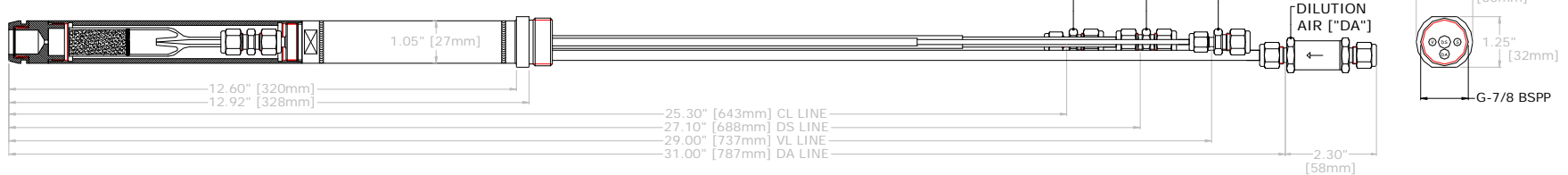
**ASI MODEL DP-049-B OBSOLETE FLANGE TYPE - SEE NOTE**

DESCRIPTION: IN-SITU DILUTION PROBE, WETTED PARTS INCONEL-600, BOLTED SUPPORT FLANGE (4x M5 TAPPED HOLES ON 1.50" PCD). NOTE: CAN ADAPT DP-049-A FOR DP-049-B INSTALL, REF. #5400.045 FLANGE ADAPT KIT.



**ASI MODEL DP-049-C**

DESCRIPTION: IN-SITU DILUTION PROBE, WETTED PARTS INCONEL-600, THREADED SUPPORT FLANGE (G-7/8 BSPP TERMINATION).

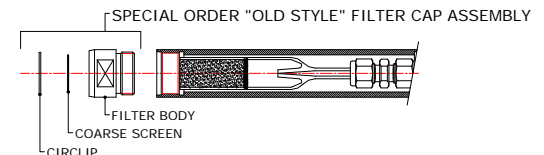
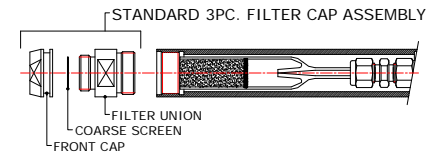


**FILTER CAP ASSEMBLIES:**

Description: Unless otherwise specified, all Model DP-049 Series In-situ Dilution Probes come fitted with standard 3pc. filter cap assemblies. This assembly consists of a front cap, having a special groove for Kalrez O-ring (used when heated with the old EPM Model 797.560 Series heaters, or the current ASI Model DP-060 Series Heaters), filter union, and coarse filter screen (located between the front cap and filter union). Old style filter cap assemblies available upon request. The "old style" filter cap assembly consists of a filter body, with coarse screen secured at front with circlip.

**DP-049-A BOLT HOLE NOTES:**

Please note that the 4 mounting holes on the probe support flange have been changed from the old EPM spec of 6.2mm ID to 5.5mm ID. This was done to facilitate closer tolerances when using a standard 5mm socket head cap screw (or bolt) when mounting the instrument. We can bore to 6.2mm if need be, please specify this on your order.



**MODEL DP-049 SERIES  
IN-SITU DILUTION PROBES**  
**Alpha Suite, Inc.**  
www.alphasuite.com  
**DETAIL:  
PROBE SUPPORT FLANGE TYPES**

DWG# DP-049-SERIES\_V01D4



**TEST & PERFORMANCE CERTIFICATE [EXAMPLE]**

Date: 06/25/04 Customer: \_\_\_\_\_ Cust. PO#: \_\_\_\_\_

Dilution Probe Model: ASI DP-049-A Serial Number: 12345

Table 1	Table 2	Table 3	
DA bar ( psi )	Flow liters/min	Vacuum -bar	inHg
2 ( 29 )	3.9	- 0.51	15.06
3 ( 43+ )	5.3	- 0.70	20.67
4 ( 58 )	6.8	- 0.72	21.26
5 ( 72+ )	8.3	- 0.68	20.08
6 ( 87 )	9.7	- 0.62	18.31

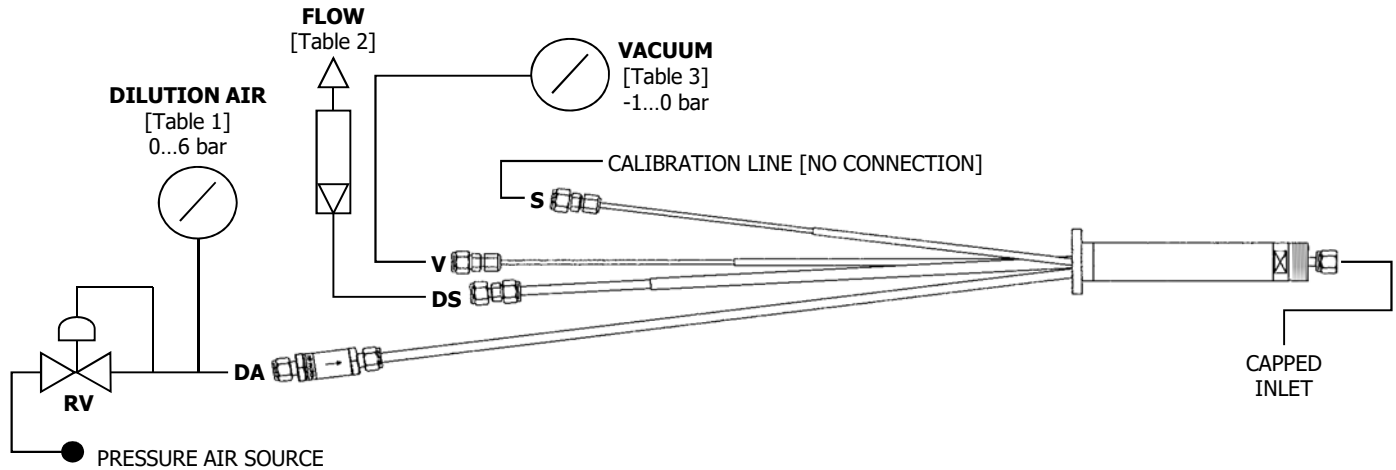
**Remarks:**

INSTALL CRITICAL ORIFICE BEFORE ATTEMPTING TO USE DILUTION PROBE.

IF GLASS TYPE CRITICAL ORIFICE IS TO BE USED, A GRAPHITE FERRULE IS SUPPLIED ON PROBE TIP. THE 1/4" STEM ON PROBE TIP IS TO PROVIDE INTERNAL SUPPORT FOR THE FERRULE DURING DELIVERY ONLY.

**Test Procedure for Dilution Probe Aspirator:**

Pressurized air is supplied to DA probe inlet (DA = Dilution Air) Pressure set with RV to the values listed in Table 1. The air flow through the pump is measured with a mass flow meter, calibrated in liters/min. The measured flow is listed in Table 2. The partial vacuum generated by the aspirator is listed in Table 3. The connector for the critical orifice is capped off during this test which is performed at room temperature. Sample suction of the probe is zero during this test because of the stop plug.



"S" = SERVICE LINE (CALIBRATION LINE)  
 "V" = VACUUM LINE  
 "DS" = DILUTED SAMPLE LINE  
 "DA" = DILUTION AIR LINE  
 "RV" = REDUCING VALVE (REGULATOR)

**Pressure Conversions**  
 bar x 29.53 = inHg (inch of mercury (32° F))  
 bar x 401.463 = inH<sub>2</sub>O (inch of water (39.2° F))  
 bar x 14.5038 = lbf/in<sup>2</sup> (pound force per square inch)