

SEMI F99-0705

SPECIFICATION OF A DIAPHRAGM VALVE FOR A METRIC TETRAFLUOROETHYLENE PERFLUOROALKYLVINYLETHER (PFA) TUBE

This Standard was technically approved by the Liquid Chemicals Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on March 11, 2005. Available at www.semiviews.org in July 2005.

NOTICE: This Standard or Safety Guideline has an Inactive Status because the conditions to maintain Current Status have not been met. Inactive Standards or Safety Guidelines are available from SEMI and continue to be valid for use.

1 Purpose

1.1 This Standard specifies the outside dimensions of diaphragm valves used with metric tetrafluoroethylene perfluoroalkylvinylether (PFA) tubes in liquid chemical distribution facilities and process equipment for semiconductor and flat panel display manufacturing.

2 Scope

2.1 This Specification addresses dimensions of diaphragm valves used with metric PFA tubes except for face-to-face dimensions. Since there are many sizes of fittings being applied to valves, this document doesn't specify face-to-face dimensions.

2.2 These diaphragm valves are limited to pneumatic valves. Specification for manual valves should be separately provided as needed.

2.3 These diaphragm valves are used in chemical distribution systems for semiconductor and flat panel display manufacturing.

2.4 The valves are made from materials such as tetrafluoroethylene (PTFE) or PFA, which have high corrosion resistance and low contamination contribution to the fluid.

2.5 The valves withstand up to 0.2 megapascals (MPa) (29 pounds per square inch [psi]) back pressure.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Referenced Standards and Documents

3.1 SEMI Standards and Safety Guidelines

SEMI F65 — Specification for Mounting Bases of Diaphragm Valves Used with Metric PFA Tubes

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

4 Terminology

4.1 Abbreviations and Acronyms

4.1.1 *PFA* — tetrafluoroethylene perfluoroalkylvinylether

4.2 Definitions

4.2.1 *back pressure* — a maximum allowable pressure applied to outlet of a diaphragm valve.

4.2.2 *liquid chemicals* — acid, alkali, organic solvent, and pure water used for wet stations; resists and developers used for track system; and other chemicals used for process or maintenance (such as slurry of CMP) of equipment or facilities.

5 Dimensional Specifications

5.1 *Overall Height Dimensions* — The height (B) and (C) indicated in Figure 1 and the values for different tube sizes are specified in Table 1.

5.2 *Port Height Dimensions* — The height (A) indicated in Figure 1 and the values for different tube sizes are specified in Table 1.

5.3 *Body Dimensions* — The length (D) and width (E) of the body indicated in Figure 1 and the values for different tube sizes are specified in Table 1.

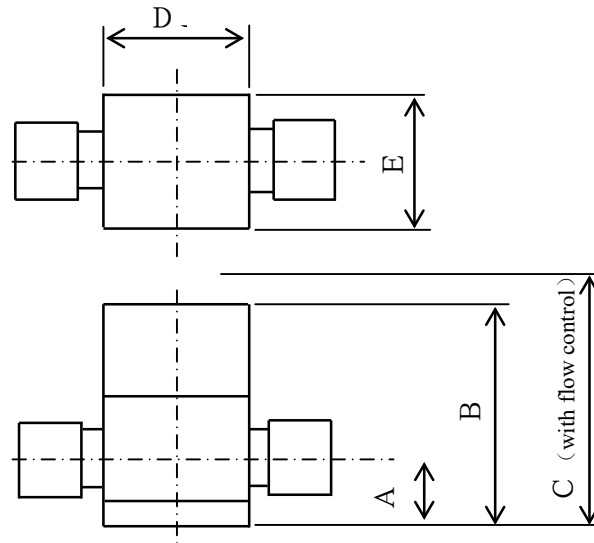


Figure 1
Top View of A Typical Diaphragm Valve

Table 1 Dimensional Specifications

Tube Size (mm) (OD / ID)*	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
25/22	35–40	MAX 145	MAX 175	MAX 62	MAX 62
19/16	25–30	MAX 120	MAX 150	MAX 60	MAX 60
12/10	20–30	MAX 95	MAX 115	MAX 36	MAX 40
10/8	20–25	MAX 95	MAX 115	MAX 36	MAX 40
6/4	15–25	MAX 80	MAX 100	MAX 35	MAX 35

#1 OD and ID are the outside diameter and inside diameter of the tube respectively.

#2 As seen above, dimensions of A are specified by the range, and dimensions from B to E are specified as maximum dimensions that are to be considered as targets.

6 Measurements

6.1 The mounting base must be conditioned for a minimum of one hour in an air environment of $23 \pm 3^{\circ}\text{C}$ ($73.4 \pm 5.4^{\circ}\text{F}$) prior to measuring the dimensions.