

SEMI F65-1101

DIMENSIONAL SPECIFICATION FOR MOUNTING BASES OF DIAPHRAGM VALVES USED WITH METRIC TETRAFLUOROETHYLENE PERFLUOROALKYL VINYLETHER COPOLYMER (PFA) TUBES

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 August 3, 2001. Available at www.semi.org in November 2001.

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 Document specifies dimensions of mounting base and their clearance hole sizes for bolts and the hole locations of diaphragm valves used with metric tetrafluoroethylene perfluoroalkylvinylether copolymer (PFA) tubes in liquid chemical distribution facilities and process equipment for semiconductor and flat panel display manufacturing.

1.2 To avoid any disturbance of future development and to facilitate interchangeability of diaphragm valves, this Document has a limited scope as specified in § 2.

2 Scope

2.1 This Document applies to mounting bases for two way valves with a diaphragm designed to shut off and/or regulate a liquid chemical flow in tubes whose sizes are listed in Table 1.

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

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 ISO Standards¹

ISO 273 — Fasteners — Clearance Holes for Bolts and Screws

ISO 2768-1 — General Tolerance — Part 1: Tolerances for Linear and Angular Dimensions Without Individual Tolerance Indications

3.2 JIS Standards²

JIS B 1001 — Diameter of Clearance Holes and Counterbores for Bolts and Screws

JIS B 0405 — General Tolerance — Part 1: Tolerances for Linear and Angular Dimensions Without Individual Tolerance Indications

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 copolymer

¹ International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland; Telephone: +41.22.749.01.11, <http://www.iso.org>

² Japanese Standards Association, 4-1-24 Akasaka, Minato-ku, Tokyo 107-8440, Japan; Telephone: +81.3.3583.8005, Fax: +81.3.3586.2014, <http://www.jsa.or.jp>

4.1.2 PTFE — polytetrafluoroethylene

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 chemical-mechanical polishing) of equipment or facilities.

4.2.3 *mounting bases* — plates which are attached to diaphragm valves to mount the valves to equipment or a facility.

5 Dimensional Specification

5.1 *Mounting Base Dimensions* — The length (l) and width (w) of the mount base plate indicated in the Figure 1 and the values for different tube sizes are specified in Table 1.

5.2 *Clearance Hole Locations* — The location of the clearance holes for bolts are indicated with 'w' and 'l' in the Figure 1 and the values for different tube sizes are specified in Table 1.

5.3 *Clearance Hole Sizes* — The size of clearance holes (ϕD) for different tube sizes are specified in the Table 1 according to ISO 273 (JIS B 1001).

5.4 Where the dimension depends on the valve design considering the back pressure, the upper row in Table 1 applies to the valves that withstand up to 0.2 megapascals (MPa) (29 pounds per square inch [psi]) back pressure, and the lower row applies to the valves that withstand more than 0.2 MPa (29 psi) back pressure.

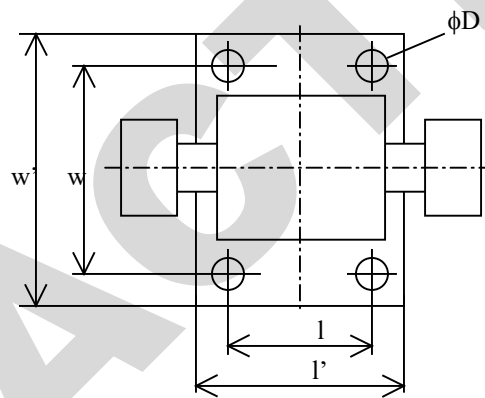


Figure 1
Top View of A Typical Diaphragm Valve with A Mounting Base

Table 1 Dimensional Specifications

Tube Size (mm) (OD/ID) ^{#1}	Back Pressure (Mpa)	l' (mm)	l (mm)	w' (mm)	w (mm)	ϕD (mm)	Bolt Type (example)
25/22	≤ 0.2	60	48	96	84	7	M6
	> 0.2	68	56				
19/16	≤ 0.2	44	32	76	64	7	M6
	> 0.2	52	40	84	72		
12/10	≤ 0.2	34	22	62	50	7	M6
	> 0.2	46	34	70	58		
10/8	≤ 0.2	34	22	62	50	7	M6
	> 0.2	46	34	68	56		
6/4	≤ 0.2	32	20	56	44	7	M6