SEMI F90-1012
SPECIFICATION FOR DIMENSION OF STANDARD SIZE TWO PORT COMPONENTS (EXCEPT MFC/MFM) FOR 1.5 INCH TYPE TWO FASTENER CONFIGURATION SURFACE MOUNT GAS DISTRIBUTION SYSTEMS

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NOTICE: Paragraphs entitled 'NOTE:' are not an official part of this Standard or Safety Guideline and are not intended to modify or supersede the official Standard or Safety Guideline. These have been supplied by the global technical committee to enhance the usage of the Standard or Safety Guideline.

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 establishes the properties and physical dimensions of two port components for 1.5 inch type surface mount gas distribution systems.

2 Scope

2.1 This Standard includes common requirements, layout, size, detailed specifications, and dimensions of the components.

2.2 This Standard applies to standard size two-port/two-fastener components (except mass flow controllers and mass flow meters). The components (i.e., valves, pressure regulators, pressure transducers, filters, and purifiers) are mounted on substrates with fasteners accessible from the top.

2.3 This Standard only applies to components for systems, which control flow of ≤50 slm nitrogen equivalent at 308 kPa (44.7 psia). This Standard also only applies to components with operating pressures less than 3445 kPa (500 psia) at 20°C.

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 Limitations

3.1 This Standard only addresses the component; it does not address the seals, the sealing system, or the assembly process and does not guarantee the performance of the sealing system. The user should be aware that gas delivery system performance and sealing system performance are addressed elsewhere in the SEMI Standards.

3.2 The user should be aware that alternative technologies are commercially available.

3.3 International, national, and local codes, regulations, and laws should be consulted to ensure that the equipment meets regulatory requirements in each location of use.

4 Referenced Standards and Documents

4.1 *SEMI Standards and Safety Guidelines*

SEMI F20 — Specification for 316L Stainless Steel Bar, Forgings, Extruded Shapes, Plate, and Tubing for Components Used in General Purpose, High Purity and Ultra-High Purity Semiconductor Manufacturing Applications

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4.2 *ASME™ Standards*[1]

ASME Y14.5 — Dimensioning and Tolerancing

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

5 Terminology

5.1 *Definitions*

5.1.1 *component for surface mount* — a gas distribution system component having inlets and outlets located on the bottom of the component with the attachment mechanism accessible from the top.

5.1.2 *roughness average (Ra)* — the arithmetic average of the absolute values of the measure profile height deviations taken within the sampling length and measured from the graphical centerline.

5.1.3 *two fastener configuration* — the component has two fasteners per sealing point. The sealing point is located in the middle of the two fasteners.

6 Common Requirements

6.1 *Dimensional Requirements* — All components shall meet the requirements outlined in Figure 1. All geometric dimensioning and tolerancing are in accordance with ASME Y14.5 and/or the applicable ISO standard.

NOTE 1: All dimensions are in millimeters unless otherwise noted.

NOTE 2: The through hole of the sealing port will be of an elliptical shape if the through hole is drilled at an angle. In this case, the diameter shall apply to the minor diameter of the ellipse.

6.2 *Material* — The material used to manufacture the base of the components shall comply with SEMI F20.

6.3 *Burrs and Sharp Edges* — Unless specifically noted on the drawing, remove all burrs and sharp edges.

6.4 *Handles and Displays* — Rotating handles and removable displays shall stay within the maximum envelope of the base of the component with the exception of toggle and/or lockout/tagout valves at the discretion of the system designer. They shall be movable or removable such that they do not interfere with the access of the mounting fasteners from above.

[1] The American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990, USA; Telephone: +1.973.882.1170, Fax: +1.973.882.1717, https://www.asme.org. ASME trademark is owned by The American Society of Mechanical Engineers.

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