

SEMI E19.5-0996 (Withdrawn 1103) SPECIFICATION FOR 300 mm BOTTOM-OPENING STANDARD MECHANICAL INTERFACE (SMIF)

This Standard was technically approved by the Physical Interfaces & Carriers Global Technical Committee.
Available at www.semi.org in November 2003; originally published in 1978; previously published September 1996.

NOTICE: This Document was balloted and approved for withdrawal in 2003.

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1 Purpose

1.1 This Standard specifies a standard interface for containers intended to control the transport environment of contained wafers. The interface must address the proper container orientation for material transfer and maintain continuity between the container and equipment environment in order to control particulate and non-particulate contamination.

2 Scope

2.1 This Specification describes an approach to interfacing a clean transport container (pod) to a clean environmental housing on a piece of semiconductor processing equipment or to other clean environments. The system concept involves mating a pod door to a port door in an equipment interface and transferring the wafers into, and out of, the equipment without exposing the wafers to outside contamination.

2.2 The incorporation of this Standard may require equipment designers to include the features of the interface into the tool design. Spacing between equipment interface ports must be considered when incorporating this interface. Designers are directed to the recommendations made in SEMI E15.1 in this regard.

2.3 This Standard is specific to the size of the designated wafer and references the appropriate SEMI cassette and wafer diameter. This Specification focuses on applications in which the interface port is positioned horizontally.

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 E15.1 — Specification for 300 mm Tool Load Port

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

4 Terminology

4.1 See Figure 1 for a pictorial depiction of most terms.

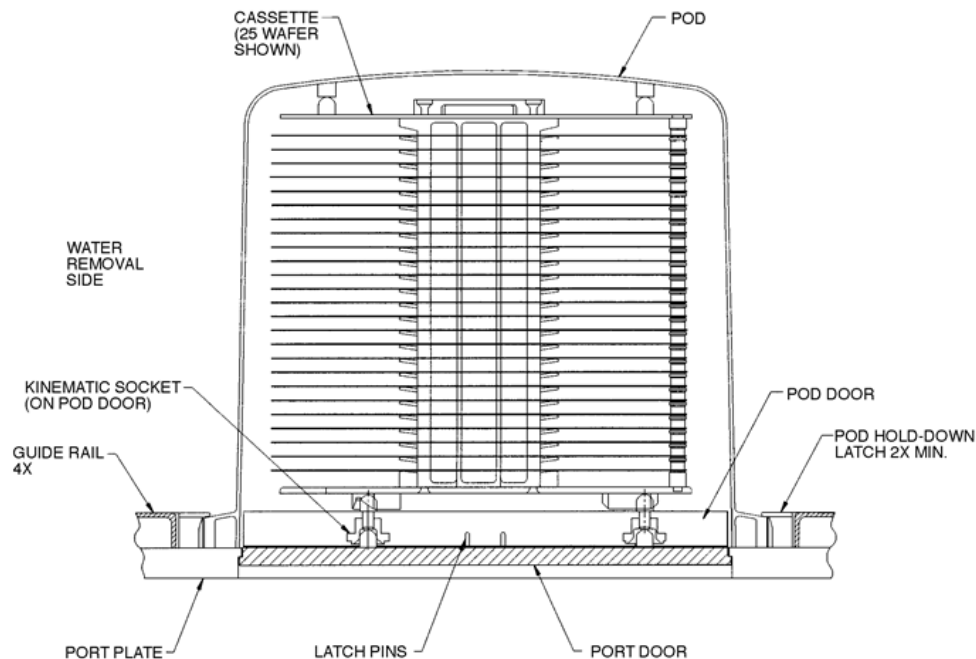


Figure 1 Port Terminology

4.2 Definitions

4.2.1 *box* — a protective portable container for a cassette and/or substrate(s) (as defined in SEMI E44).

4.2.2 *cassette* — an open structure that holds one or more substrates (as defined in SEMI E44).

4.2.3 *horizontal datum plane* — a plane that is parallel to the floor and coincides with the tool interface surface. A more detailed definition will be included in a companion document currently under development.

4.2.4 *guide rail* — a component of a port plate that provides coarse and final location for placing the pod on the port assembly.

4.2.5 *hold-down latch* — a mechanism for securing the pod to the port plate.

4.2.6 *kinematic socket (pod door)* — grooves in the bottom of the pod door that fit over kinematic pins on the top of the port door when the pod is placed on the port door.

4.2.7 *kinematic pins (port door)* — pins that provide fixed position and orientation between the port door and pod door. The kinematic pins fit into the kinematic sockets in the bottom of the pod door.

4.2.8 *latch pins* — pins that engage the pod door latch and accomplish the pod door lock/unlock functions. Latch pins are carried by the port door.

4.2.9 *pod* — a box having a standard mechanical interface (as defined in SEMI E19, SEMI E44).

4.2.10 *pod door* — a removable bottom for the pod that contains a means for properly positioning the wafer cassette.

4.2.11 *pod lock* — a mechanical latch that holds the pod door to the pod until activated by the latch mechanism pins. Upon activation, the pod door is released from the pod.

4.2.12 *port assembly* — an assembly of the port plate and port door.

4.2.13 *port door* — a door for the port plate opening that provides a mating surface for the bottom of the pod door when the pod is in place on the port plate. The port door contains the kinematic location pins and the pod door latch pins.