

SEMI F96-0704

SPECIFICATION FOR PORT CONFIGURATION OF CANISTERS TO CONTAIN LIQUID CHEMICAL VAPOR DEPOSITION (CVD) PRECURSORS

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1 Purpose

1.1 This Standard specifies the type, size and spacing of connectors to be used on metal (e.g., stainless steel) canisters for liquid chemical precursors, solutions and solvents.

2 Scope

2.1 This Standard applies to metal (e.g., stainless steel) canisters to be used for liquid precursors including solutions of precursors in solvents. It also applies to containers for solvents used for in situ cleaning of delivery system.

2.2 The liquid connection ports (inlet and outlet) are included, as are pneumatic connections to valves.

2.3 Parameters such as overall canister dimensions are expected to be specified by other standards.

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3 Referenced Standards and Documents

3.1 SEMI Standards and Safety Guidelines

SEMI F66 — Specification for Port Marking and Symbol of Stainless Steel Vessels for Liquid Chemicals

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

4 Terminology

4.1 Definitions

4.1.1 *canister* — a metal (usually stainless steel) container in which a liquid precursor is supplied.

4.1.1.1 *Discussion* — Canisters are also known as ampoules, shuttle drums, tanks, etc.

4.1.2 *liquid precursor* — a chemical supplied as a liquid and used in chemical vapor deposition (CVD). Many liquid precursors are toxic, reactive and air-sensitive.

5 Ports

5.1 A canister has a gas inlet port and a liquid outlet port. The outlet port is equipped with a dip-tube, marked according to SEMI F66. Note that a canister may be used as a bubbler, by using the dip-tube port as the gas inlet. In this standard however, liquid delivery is assumed and the dip-tube port will be referred to as the outlet.

5.2 Canisters up to 100 liters in volume:

5.2.1 The ports will be located with the dip tube at the 3 o'clock position and the gas inlet at the 9 o'clock position, as illustrated in Figure 1.

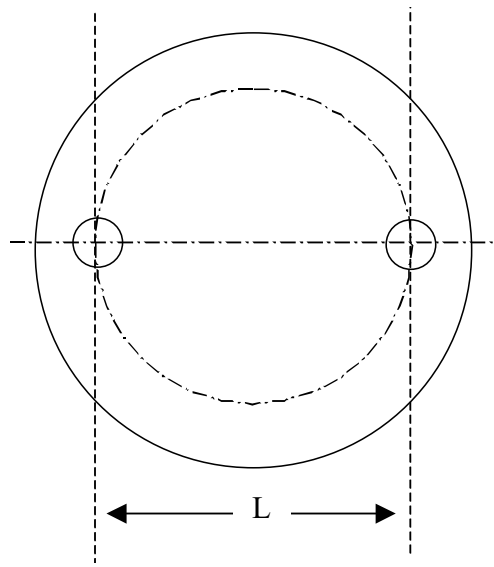


Figure 1
Port Configuration

5.2.2 Both ports shall be fitted with $\frac{1}{4}$ inch O.D. face-seal connectors.

5.2.3 The port separation (L in the Figure) shall be 76 mm or 146 mm, ± 4 mm, the value to be chosen according to the diameter of the canister.

5.3 For canisters greater than 100 liters in volume, the outlet port shall be in the center, the port separation 152 ± 4 mm, and the port connections $\frac{1}{2}$ inch O.D. face-seal.

5.4 The connector shall be male on the gas inlet port and female on the dip tube port.

5.5 The height difference between the tops of the ports will be no more than 0.5 mm.

5.6 Additional ports may be provided so long as they do not interfere with the above specifications.

NOTE 1: The user of this Standard should evaluate the consequences of connecting a given precursor to a point intended for other precursors. The nature of the precursor itself and of the other precursors expected to be in use at the same location should be taken into account. Consider packaging precursors with a non-standard connector on the canister outlet if necessary to avoid a dangerous situation.

6 Valves

6.1 The inlet and outlet port are each provided with a valve but the details of those valves are not specified here. If pneumatic valves are provided, the pneumatic connection shall be a $\frac{1}{8}$ inch quick-connect type.

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