

SEMI F36-0299 (Reapproved 1104) GUIDE FOR DIMENSIONS AND CONNECTIONS OF GAS DISTRIBUTION COMPONENTS

This standard was technically approved by the Global Gases Committee and is the direct responsibility of the North American Gases Committee. Current edition approved by the North American Regional Standards Committee on July 11, 2004. Initially available at www.semi.org September 2004; to be published November 2004. Originally published in 1993; last published February 1999.

1 Purpose

1.1 The purpose of this guide is standardization of dimensional and mechanical/electrical connection attributes for components used within gas distribution systems. Standardization of these component interfaces will allow for interchangeability of gas distribution system components. Filters/purifiers, shut-off valves, pressure regulators, MFC/MFMs, and pressure transducers are the types of gas distribution components that would benefit from being interchangeable.

2 Scope

2.1 This guide is for use with 1/4-inch distribution systems at operating pressures no greater than 345 kPa (50 psi).

2.2 The guide includes the following items:

2.2.1 Physical characteristics specific to each component. These include a generalized drawing of the component, specific end-to-end lengths for each type of end connection, maximum envelope dimensions, base-to-centerline dimensions, tolerances, and bottom mounting information.

2.2.2 Electrical connections specific to each component, where applicable. These include pin-outs and types of connectors.

NOTICE: This standard does not purport to address safety issues, if any, associated with its use. It is the responsibility of the users of this standard to establish appropriate safety and health practices and determine the applicability of regulatory or other limitations prior to use.

3 Limitations

3.1 This guide is not intended to dictate how to build a gas distribution system, but to allow for interchangeability of components.

3.2 This standard does not include recommendations for sensor-bus compliant interfaces.

3.3 This standard does not apply to surface mount components used in modular type gas systems.

4 Referenced Standards

4.1 None.

5 Terminology

5.1 Definitions

5.1.1 *component* — an individual piece or a complete assembly of individual pieces capable of being joined with other pieces or components.

5.1.2 *filter* — a porous device, generally constructed of polymer, metal, or ceramics and housed in a metal chamber, which traps particles, preventing them from being transported downstream.

5.1.3 *mass flow controller* (MFC) — a self-contained device (consisting of a transducer, control valve, and control and signal-processing electronics) commonly used in the semiconductor industry to measure and regulate the mass flow of gas.

5.1.4 *mass flow meter* (MFM) — a self-contained device, consisting of a mass flow transducer and signal-processing electronics, commonly used in the semiconductor industry to measure the mass flow of gas.

5.1.5 *pressure regulator* — a valve designed to reduce a high incoming pressure (for example, from a cylinder) to a lower outlet pressure by automatically opening to allow flow until a desired, preset pressure on the outlet side is reached, then automatically throttling closed to stop further pressure increase.

5.1.6 *pressure transducer* — a component which mechanically or electrically senses gas pressure. It typically consists of a sensor and signal-processing electronics which enables remote indication of gas pressure.

5.1.7 *purifier* — an in-line device used for the removal of homogeneous impurities from gases, typically consisting of a packed-bed of active solids contained in a stainless steel housing. The active purification media may remove impurities such as moisture, oxygen, CO, CO₂, hydrocarbons, hydrogen, or nitrogen from specific gases using a variety of chemical reaction, physisorption, or chemisorption mechanisms. Point-of-use purifiers often contain a particle filter within the same housing.

5.1.8 *valve* — a device that controls the flow or pressure of a gas. Valve functions can include shutoff, metering, backflow prevention, and pressure relief.

6 Ordering Information

6.1 Device manufacturers may use this guide when procuring processing equipment to communicate to the equipment supplier the interface specifications required for interchangeability of components. This document may also be used by semiconductor processing equipment suppliers to specify standardized interfaces to component and module suppliers.

6.2 Orders for components in accordance with this standard shall include:

6.2.1 This standard number and date of issue.

6.2.2 Reference to the table number.

6.2.3 Reference to the option number, if applicable.

7 Filters and Purifiers

7.1 Filters less than 30 SLM and purifiers less than 1 SLM should conform to the interface design recommendations appearing in Figure 1 and Table 1.

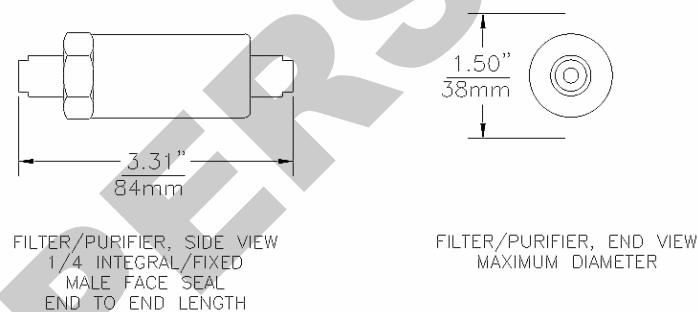


Figure 1
Filter and Purifier Interface Design

Table 1 Filter and Purifier Interface Recommendations

	<i>Filter and Purifier</i>
End-to-End Lengths: 1/4-inch Integral/fixed male face seal 1/4-inch Swivel face seal (male or female) 1/4-inch Tube weld NOTE 1: The tolerance on length for machined components is ± 0.15 mm (0.006 in.) from the component centerline to each end. NOTE 2: The tolerance on length for welded components is ± 0.5 mm (0.020 in.) from the component centerline to each end.	84 mm (3.31 in.) - -
Overall Component Envelope: Maximum Diameter	38 mm (1.5 in.)
Base to Centerline of Flow Path:	-
Mounting provisions: Threaded holes Pattern	None required -
Fittings: Process	1/4-inch
Control:	None required

8 Shut-off Valves

8.1 Shut-off valves should conform to the interface design recommendations appearing in Figure 2 and Table 2.

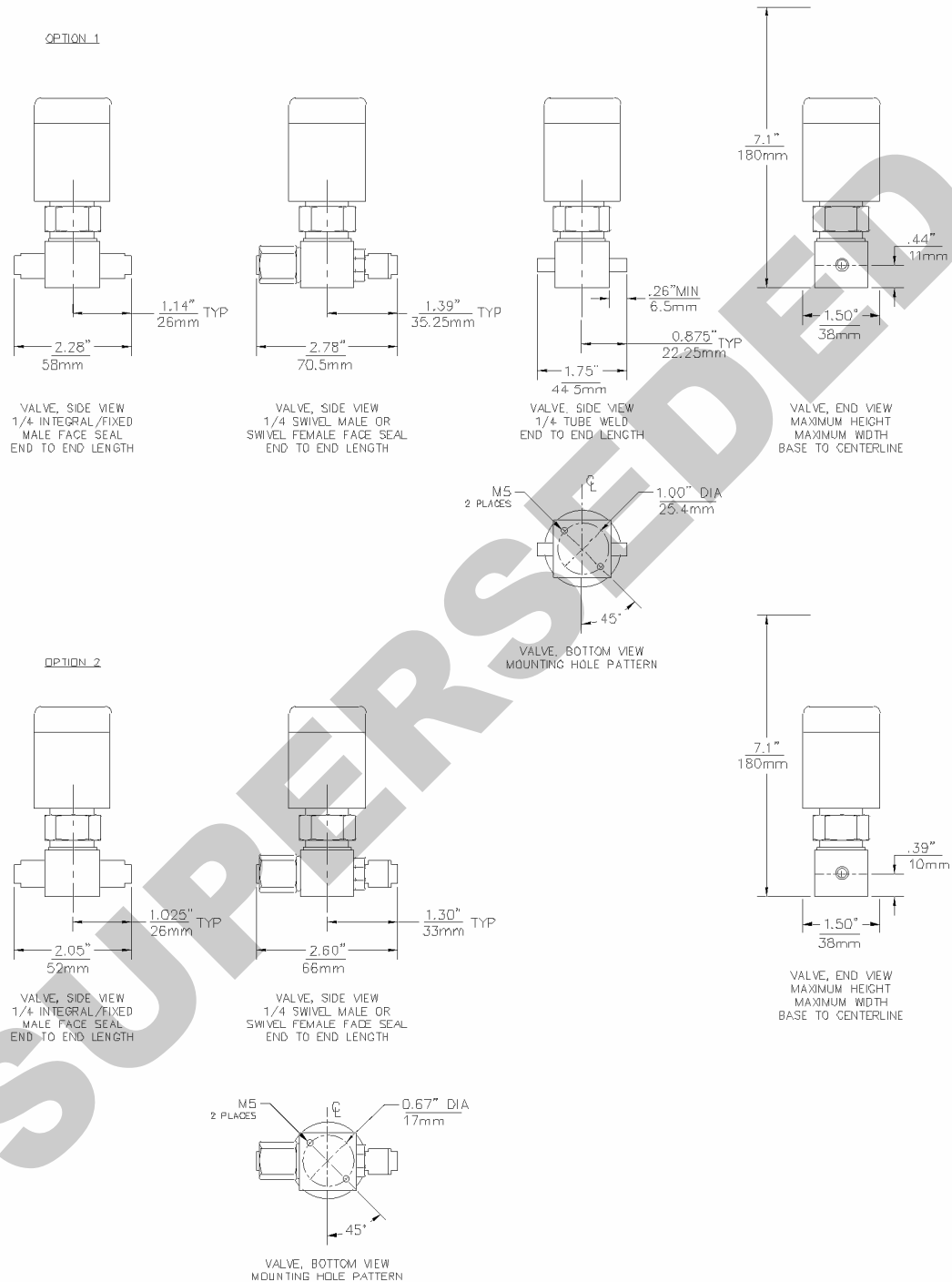


Figure 2
Shut-off Valve Interface Design