

1. Purpose
 - 1.1. This standard establishes the properties and physical dimensions that define the interface for surface mount fluid distribution components. The design of the actual system components and the flow conveyance is not specified here.
2. Scope
 - 2.1. This standard applies to all types of surface mount, fluid distribution components with metal sealing devices used within process analyzers and their sample handling systems. This includes components such as valves, filters, regulators, transducers, and controllers. This standard applies to components that convey fluids at less than 50 standard liters per minute (slm). The maximum pressure limitation for these systems is 6900 KPa (1000 psig) at 25 deg. C (77 deg. F).
 - 2.2. Limitations to Scope
 - 2.2.1. This standard only addresses the actual components and proper sealing methods. This standard is limited to the sealing methods using particular types of material/metallurgy of the seals.
 - 2.2.2. The user shall be aware that based on the stream conditions of their process, there are other technologies and components readily available.
 - 2.2.3. This standard does not address the effects of various stream conditions on the technical functionality of the component.
 - 2.2.4. The user shall be aware that this standard does not address maintenance concerns for the components.
 - 2.2.5. This standard does not refer to design issues pertaining to specific safety requirements. These issues shall be referenced to other standards, organizations and/or recommended guidelines.
 - 2.2.6. International, national, and local codes, regulations, and laws shall be consulted to ensure that each component meets the user's regulatory requirements.
3. Referenced Documents

NOTE: As listed or revised, all documents cited shall be the latest publication date.

 - 3.1. ASTM Documents¹
 - 3.1.1. ASTM A276- Standard Specification for Stainless Steel Bars and Shapes
 - 3.1.2. ASTM A314 - Standard Specification for Stainless Steel Billets and Bars for Forging
 - 3.1.3. ASTM A580/A580M– Standard Specification for Stainless Steel Wire
 - 3.1.4. ASTM A581/A581M – Standard Specification for Free-Machining Stainless Steel Wire and Wire Rods
 - 3.1.5. ASTM A582/A582M– Standard Specification for Free-Machining Stainless Steel Bars
 - 3.2. ASME Documents²
 - 3.2.1. ASME Y14.5 – Dimensioning and Tolerancing
 - 3.2.2. ASME B16.34 – Valves – Flanged, Threaded and Welding End
 - 3.2.3. ISO 6507 – Metallic Materials – Vickers Hardness Test
 - 3.2.4. ISO 4288 – Geometrical Products Specification (GPS) – Surface Texture: Profile Method – Rules and Procedures for the Assessment of Surface Texture.
4. Terminology
 - 4.1. Surface Finish – The final surface specifications of the substrate block, interface plate, sealing grooves, and seal devices.
 - 4.2. Surface Mount – The arrangement of independent sample conditioning system modules upon a defined flow conveyance.

¹ American Society for Testing and Materials, 100 Barr Harbor Drive, W. Conshohocken, PA 19428-2959

² American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990

- 4.3. Modular Interface - The boundary between an independently operable part of the sample conditioning system and the flow conveyance to which it is connected.
- 5. Ordering Components with the Modular Interface
 - 5.1. This document may be used when ordering systems employing the modular component design. It conveys both the concept of the Modular System and provides “footprint” dimensions to permit interchangeability of components.
 - 5.2. 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 equipment suppliers to specify standardized interfaces to component and module suppliers.
 - 5.3. Orders for components in accordance with this standard shall include this standard number and date of issue and reference to the figure number.
- 6. Requirements

6.1. *Material Requirements*

- 6.1.1. The following materials are acceptable for use.
 - 6.1.1.1. Materials listed in ASME B16.34
 - 6.1.1.2. Materials listed in Table 1
- 6.1.2. Material certifications shall be obtained and shall include chemical analysis and mechanical properties. For materials ordered to specifications which do not include mechanical properties, the manufacturer shall specify minimum mechanical properties.
- 6.1.3. In order to ensure the performance of these systems the user is cautioned to adhere to the bolt torquing requirements as specified by the manufacturer.
- 6.1.4. Other materials are acceptable for use as agreed upon by manufacturer and user. These additions will include the necessary material and material processing references as noted above.

TABLE 1
APPLICABLE MATERIAL SPECIFICATIONS

Material	Form	ASTM Specification	Grade or Type
Austenitic Stainless Steel (a)	Forging Bars	A 314	303 304, 304L 316, 316L
		A 581 A 582	303
	Bars and Shapes	A 276	304, 304L
		A 580	316, 316L

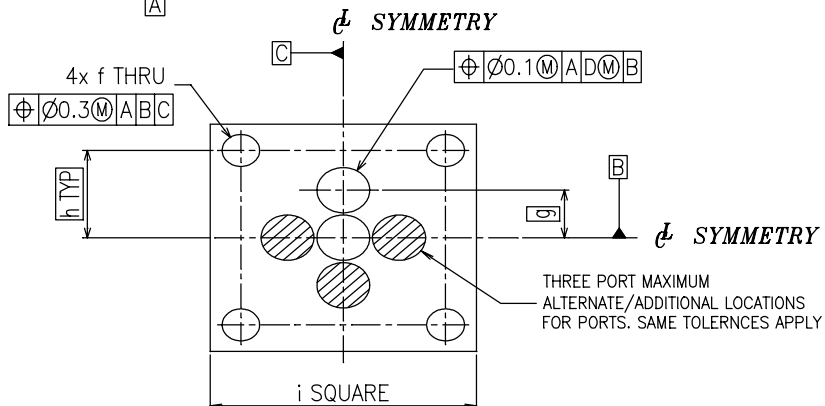
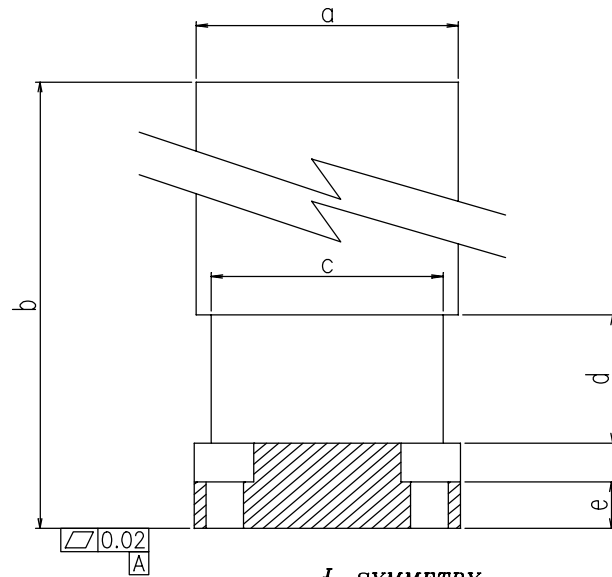
- (a) Type 303 shall not be used where welding is required.

6.1. Sealing Surface Requirements

- 6.1.1. Surface Hardness – The sealing surface (the bottom of the counterbore) minimum hardness requirement, regardless of material, is 170 Vickers. Testing is to be performed per ISO 6507.
 - 6.1.1.1. Note: This test will damage the sealing surface and should be considered destructive in nature.
- 6.1.2. Surface Roughness – The sealing surface (the bottom of the counterbore) maximum surface roughness is 0.4 micrometers Ra max. Testing is to be performed per ISO 4288.
 - 6.1.2.1. Note: This test may damage the sealing surface and may be destructive in nature.

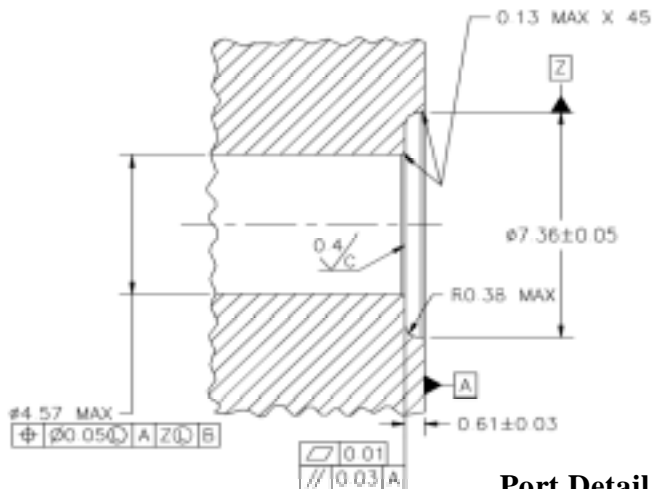
Modular Component Interfaces for Surface Mount Fluid Distribution Components: Part 1, Metal Seals
11/29/00

- 6.1.3. Surface Condition – The sealing surface (the bottom of the counterbore) shall not have any lateral scratches that are visible to non-magnified normal vision.
- 6.2. Dimensional Requirements - Figures
 - 6.2.1. Standard blocks -1.5" square and 1.125" square (Fig. 1)
 - 6.2.2. Mass Flow Controller block - 1.5 inch square and 1.125" square (Fig. 2)
- 7. Safety/Legal - To be completed by ISA



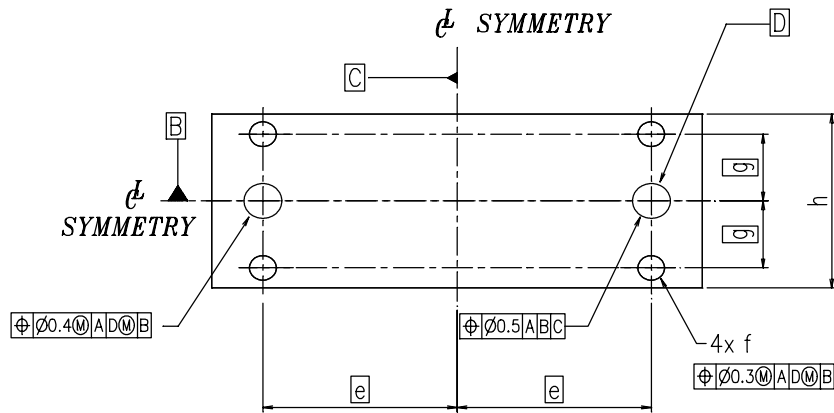
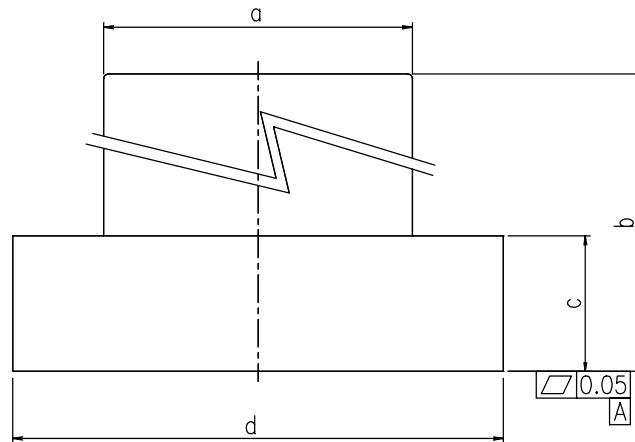
	a	b	c	b	e	f	g	h	i
1.125"	$\phi 28.6$ MAX	127 MAX	$\phi 23$ MAX	20.6 MIN	6.5 ± 0.2	$\phi 4.4$ ± 0.1	7.75	10.9	28.6 $+0.3$ -0.5
1.5"	$\phi 38.4$ MAX	180 MAX	$\phi 34$ MAX	22 MIN	8.0 ± 0.2	$\phi 5.6$ ± 0.1	7.75	15	38.15 ± 1.15

Units: mm



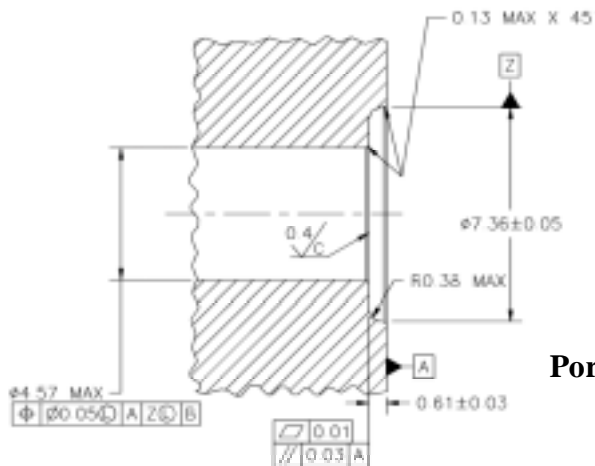
Port Detail

Figure 1: Standard Block for Surface-Mounted Distribution Components Excluding Mass Flow Controllers / Mass Flow Meters



	a	b	c	d	e	f	g	h
1.125"	82.7 MAX.	127 MAX	25.4 ±0.5	105±0.5	46	φ4.4 ±0.1	10.9	28.6 + 0.3/-0.5
1.5" Compact	70.5 MAX.	180 MAX.	40 MAX.	99.5±6.5	39.9	φ5.6 ±0.1	15	38.15 ±1.15
1.5" Standard	82.7 MAX.	180 MAX.	40 MAX.	110±5.0	46	φ5.6 ±0.1	15	38.15 ±1.15

Units: mm



Port Detail

Figure 2: Standard Block for Surface-Mounted Mass Flow Controllers and Mass Flow Meters

