

**TECHNICAL SPECIFICATION FOR FLOW CHANNELS  
FOR USE WITH ANSI / ISA 76.00.02-2002 COMPLIANT**

**MODULAR SURFACE-MOUNT FLUID DISTRIBUTION COMPONENTS**

REQUIREMENTS OF THE FLOW CHANNELS

Flow channels consist of flow components (the wetted flow paths) and substrates (the physical medium in which the flow components reside) which are used to interconnect SP76 compliant surface-mount fluid distribution components. This specification calls out the minimum requirements for these flow channels.

- Flow channels shall be of the ISA / ANSI 76.00.02 modular design to facilitate ease of assembly and field repairability.
- Wetted metal surfaces of the flow components shall be 316 stainless steel with polymeric and/or elastomeric O-ring seals.
- O-ring seals shall be made by means of an axial compression only. Radial O-ring seals shall not be allowed.
- O-rings shall be captured in a recess to reduce the chance of them falling out when systems are mounted against a vertical wall.
- There shall be only one sealing point per port in each surface-mount component and one sealing point per transition to a manifold (perpendicular) flow component. Multiple O-ring seals per flow port and per transition shall not be allowed.
- One tool, a 5/32 in. hex driver, shall be used for assembly and disassembly of all ANSI / ISA 76.00.02 system components including the surface-mount components.
- Flow channel design shall provide for a substrate layer which incorporates separate and removable flow components such that all flow components can be independently removed from the substrate without the removal of the substrate itself to facilitate maintenance of the system.
- Surface-mount components shall seal directly to the flow components and not to the substrate which would provide for an intermediate sealing surface prior to the fluid passing to the flow component. There shall be no additional sealing points between substrate components (face seals or radial O-ring seals) or on the underside of substrate components.

- All system components must be easily removed and replaced without the sequential disassembly of adjacent components. Similarly, all flow components must be integral to the substrate such that external flow paths are minimized. Flow components that are attached to the underside of the substrate so that the sample system must be removed in its entirety in order to remove and/or replace flow components shall not be allowed.
- System design shall be such that only two screws on each end of a substrate are required for affixing the system to an external mounting plate.
- System weight shall be kept to a minimum. Pegboard-type base plates which add weight to the system and which still need to be affixed to some sort of additional mounting plate are not allowed.
- A provision for substrate heating shall be provided for in the substrate design.
- When all system components are assembled, the system shall be rigid in construction without the need for additional mounting plates and hardware. System rigidity is essential to support the pre-assembly of critical sample system function blocks as spares, to facilitate maintenance, and to minimize system downtime.
- Substrate design shall be such that a completed system can be expanded by simply replacing an end flow component with a flow component extension piece and then adding the additional ANSI / ISA 76.00.02 components. Addition of manifolded (perpendicular) streams shall require a single replacement of an existing flow component with one that allows a manifold to be added to the system. This system expansion shall be accomplished by servicing from the top of the pre-existing system. Removal of whole substrate components and/or the sequential disassembly of the system shall not be allowed for system expansion as this would preclude the intended modularity of the ANSI / ISA 76.00.02 design intent.