CAPABILITIES GUIDE

# Fluidics for Spatial Transcriptomics

## Enhance Your Instrument Design with IDEX Health & Science Fluidic Components

Whether you are targeting protein, RNA, or DNA, your spatial transcriptomics instrument should offer a rapid, reliable, unbiased view of the molecular content. Partnering with IDEX Health & Science on the design of your platform unlocks the fluidic tools you need to develop your transformational spatial omics platform.

We will work with you to design a robust custom solution, developed around your specific sample and reagent distribution needs. Our rotary valves adeptly handle the cyclic nature of binding molecular probes, aptamers, and antibodies, while the precisely manufactured channels of our tubing and bonded manifolds minimize your reagent usage for maximum efficiency. Incorporating a degasser into the system de-risks the platform by removing dissolved gasses that can interrupt fluidic distribution and optical detection.

With over 60 years of fluidic engineering expertise, our computational modeling and performance testing tools ensure that your spatial transcriptomics system generates high-quality data with maximum uptime and system-to-system reproducibility.

Valves

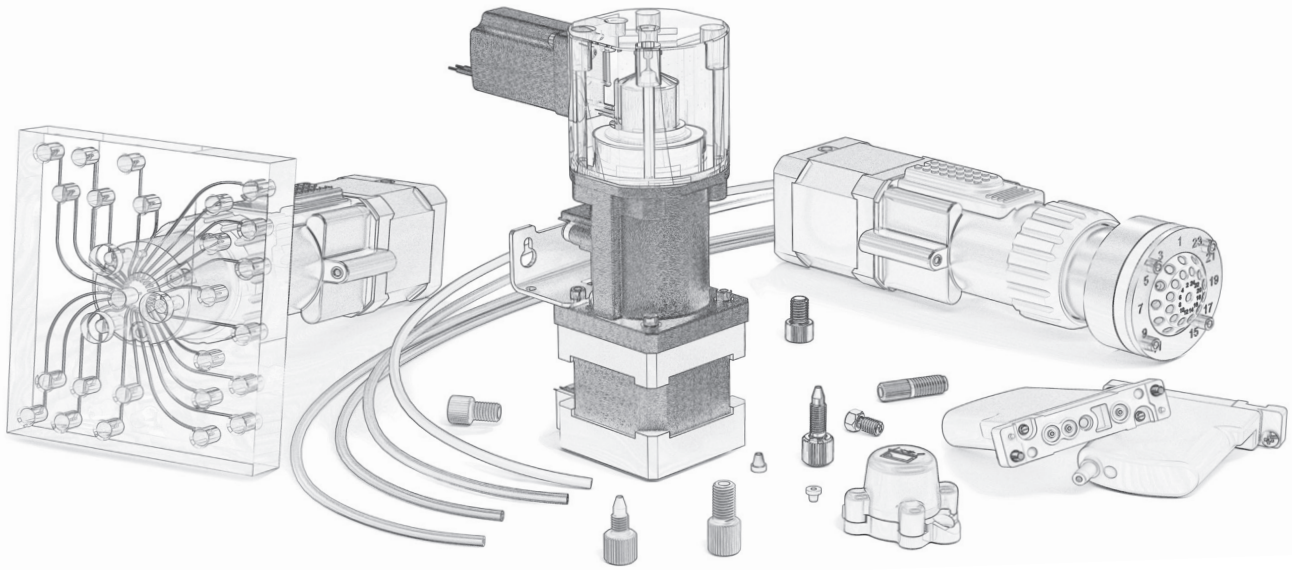
Manifolds

Pumps

Sensors

Degassers

Tubing



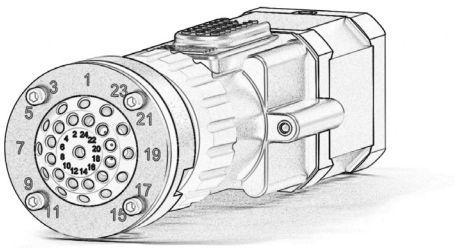
IDEX HEALTH & SCIENCE

Intelligent Solutions for Life®

Fluidics | Optics | Consumables | Assemblies

IDEX Health & Science specializes in taking complex concepts to reality. We partner with you to remove the risks in controlling reagents, optimizing samples, and designing unique fluidic pathways, turning your theory into a working solution that advances science.

- We are experts in manipulating fluids, controlling dynamic flow performance, and optimizing the overall user experience for instrument consistency
- Achieve predictability and minimize project risk through advanced modeling, computational simulation, and testing
- Reliably solve for challenges before they disrupt your instrument schedule

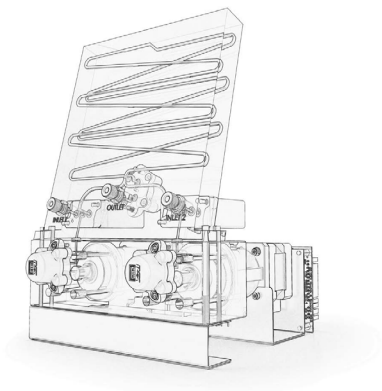


## VALVES

### Reagent Selection with Certainty

Elevate your complex flow path with a valve customized to your needs. A single rotary valve can control up to 24 reagents with ease and negligible reagent crossover concerns. Valves are fully biocompatible and can be offered as standalone components or integrated onto a manifold assembly to meet the specific needs of your unique design.

**Learn More**
idex-hs.com/rotary-shear-valves

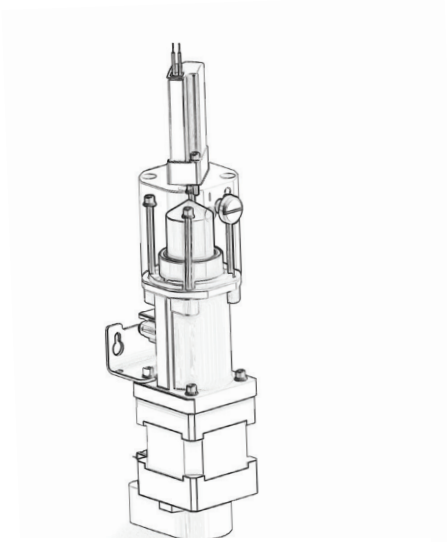


## MANIFOLDS AND SUBSYSTEMS

### Streamline Your Complex Fluidics

Our design team works with you to develop an optimized manifold for your unique fluidics system, whether you are designing for sample preparation or for recovery of sample post-spatial analysis for analysis by orthogonal techniques (NGS, proteomics). IDEX Health & Science manifolds are reliable, easily serviceable, and provide a consolidated fluid path. Multi-layer manifolds design possibilities are endless, with integration including tubing & fittings, probes, valving (rotary and solenoid), pumps, degassers, and sensors.

**Learn More**
idex-hs.com/manifolds

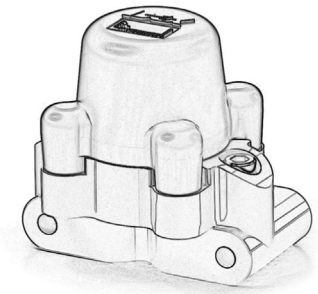


## PUMPS

### Your Precise Advantage

Our long life positive displacement pumps deliver buffers and reagents with a high degree of fidelity for both sample preparation and analysis of your samples. An ultra-smooth ceramic piston with precise tolerances lowers dynamic friction delivering excellent flow stability and gentle handling of sensitive samples, while minimizing the need for field service.

**Learn More**
idex-hs.com/pumps

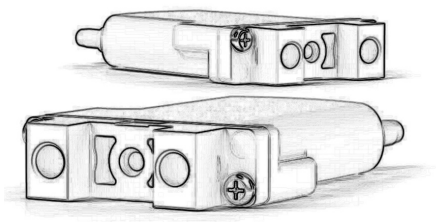


## SENSORS

### Gain Confidence Under Pressure

Inline pressure sensors monitor system performance, providing real-time diagnostic feedback to flow anomalies. The extremely low internal volume and a fully encapsulated MEMS sensor can be integrated standalone or mounted to a fluidic manifold for front-end or backend flow monitoring inside your spatial system.

**Learn More**
idex-hs.com/sensors

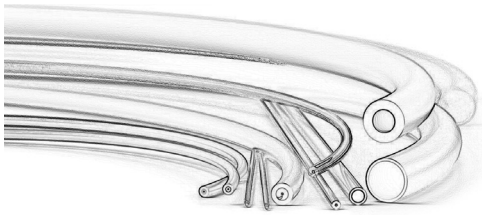


## DEGASSERS

### Maintain Clear Consistency

The presence of bubbles in a fluidic line can disrupt the precision and accuracy of your system. Incorporating a degasser into the stream provides trouble-free operation, ensuring the fluidic system is free of air bubbles by actively removing dissolved gases that interfere with optical detection and hamper flow precision. Options are manifold mountable or standalone with a vacuum pump assembly.

**Learn More**
idex-hs.com/degassers



## TUBING ASSEMBLIES

### Reduce Complexity in a Changing Environment

We offer a comprehensive line of biocompatible tubing and connection options that meet the demanding requirements of today's high-performance spatial systems. As a manufacturer of tubing and connections, IDEX Health & Science is uniquely positioned to help you integrate your tubing into kits and assemblies for the simplified installation and serviceability of your platform.

**Learn More**
idex-hs.com/tubing-assemblies

# FAQs

## When Configuring Fluidics For a Spatial Omics Instrument

1. How small can you make your fluidic pathways?

   We commonly precision manufacture internal diameters of our components, including valves and manifolds, to 500µm ±125µm (0.020" ±0.005"). Should you need smaller channel IDs we are happy to work with you on your custom needs

2. What is the advantage of using IDEX Health & Science versus obtaining separate materials and assembling them myself or at a Contract Manufacturer?

   Accurate tolerancing of all components along the fluidic path is critical to a robust, reproducible instrument design. At IDEX Health & Science we not only work with you to design a robust fluidic subsystem, we can also simulate your design before manufacture and assembly to show you potential fluidic issues. We work with you to identify and correct problems before they arise, saving you valuable time in your early stages. Additionally, an integrated subsystem from IDEX Health & Science helps you consolidate the number of SKUs you have to manage.

3. I have never used a degasser before, why should I consider one now?

   When a reagent undergoes a pressure change, there is a risk of outgassing. Additionally, temperature changes and/or mixing of reagents can cause gas bubble formation in the fluidic stream. Bubbles can introduce flow rate variation and disrupt optical detection. Integrating an active degasser into the fluidic channel prevents risk for error due to dissolved gases

4. How critical is a pressure sensor in these designs?

   Pressure monitoring is key for flow control as well as diagnostic evaluation of flow path stability. Our small footprint pressure sensors are designed to be easily integrated into your instrument for accurate pressure measurements along the stream.

5. What functional testing is available to ensure instrument performance?

   IDEX Health & Science offers a range of testing to provide our customers confidence in their fluidic architecture. Typical testing includes pressure decay to guarantee leak free components and subsystems, flow occlusion to test for passage blockages, and system pressure to ensure the fluidics function as intended in your application.

6. What materials are available for manifolds?

   For complex bonded manifolds, IDEX Health & Science typically utilizes PMMA (Acrylic) and PEI (Ultem 1000). PMMA is recommended for systems with inert reagents; PEI is better suited for applications utilizing more aggressive reagents (i.e. solvents). IDEX can offer a wide variety of polymers (e.g., PEEK, PVC) for simple, cross drilled manifolds.

IDEX HEALTH & SCIENCE

**For ordering, technical support, and contact information please visit www.idex-hs.com**

Semrock

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Our Avant Filter Set Family delivers improved fluorescence signal and signal-to-noise ratio to NGS systems that prioritize efficiency, speed, and performance in single-band filter sets.

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- Cy3™ / Alexa Fluor® 555
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- Alexa Fluor® 700
- Cy7™ / Alexa Fluor® 750
- Alexa Fluor® 546
- Cy5™ / Alexa Fluor® 647

### LEARN MORE ABOUT OUR AVANT™ FILTER SET FAMILY

idex-hs.com/avant

### Partner with IDEX Health & Science

If you're ready to make your visions a reality, contact us and we'll show you how to take your company to the next level.

**www.idex-hs.com/partner**

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