



Precision Engineered Fluidics™

Manifolds and Connectors for Fluidic Applications

Manifolds
Fittings
Connectors
Tubing
Tubing Assemblies
Custom Solutions

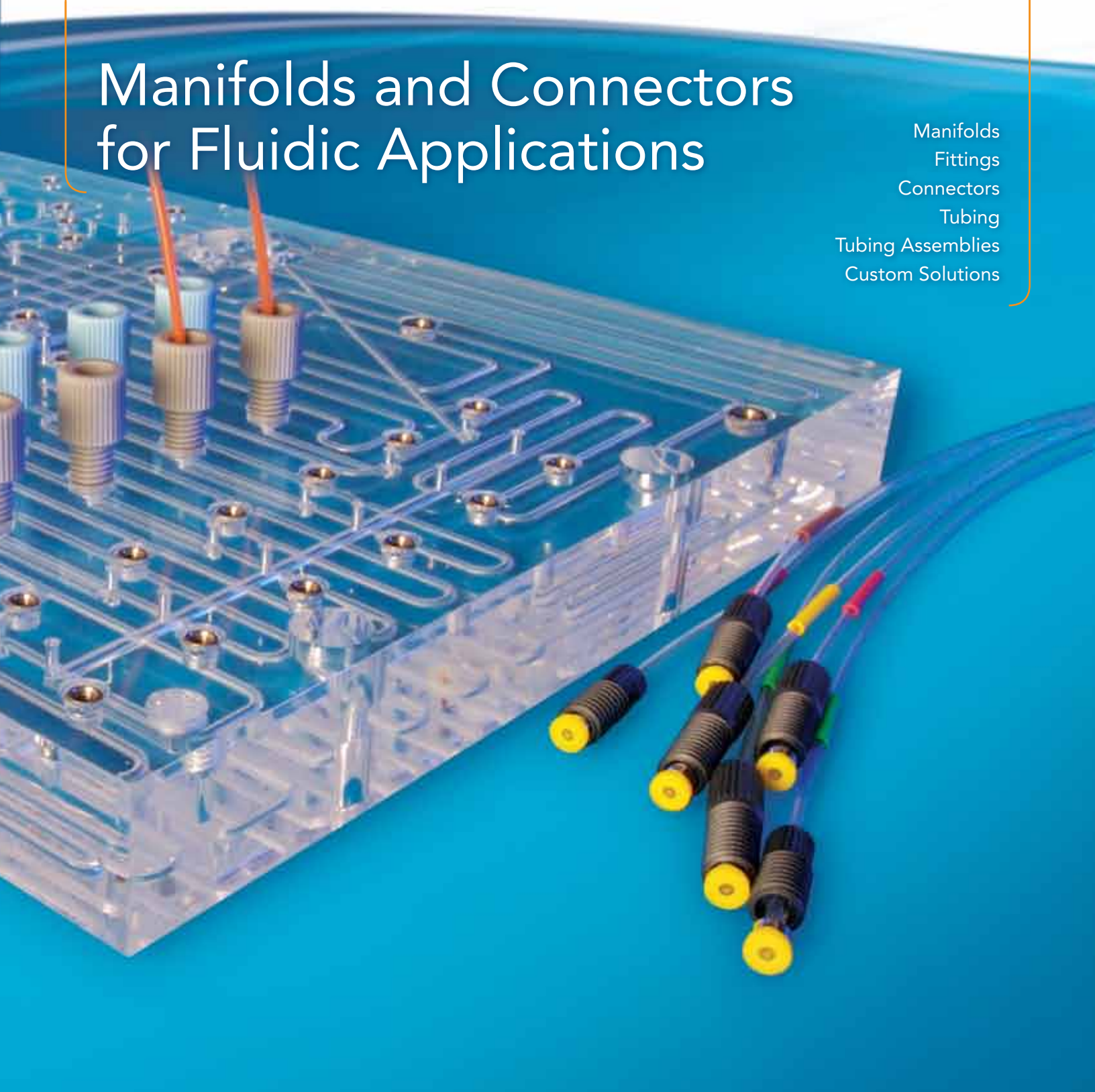




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IDEX Health & Science

Get Connected

IDEX Health & Science defines the world of low-volume fluidic connections. Our custom manifolds, fittings and tubing in addition to our standard line of products, allow for endless integration possibilities.

We also provide full service design, engineering, manufacturing, and traceability. For high pressure, low pressure, and everything in between, IDEX Health & Science can help you get connected.

Doing More with Less

Every day, you're told to do more with less. We can help.

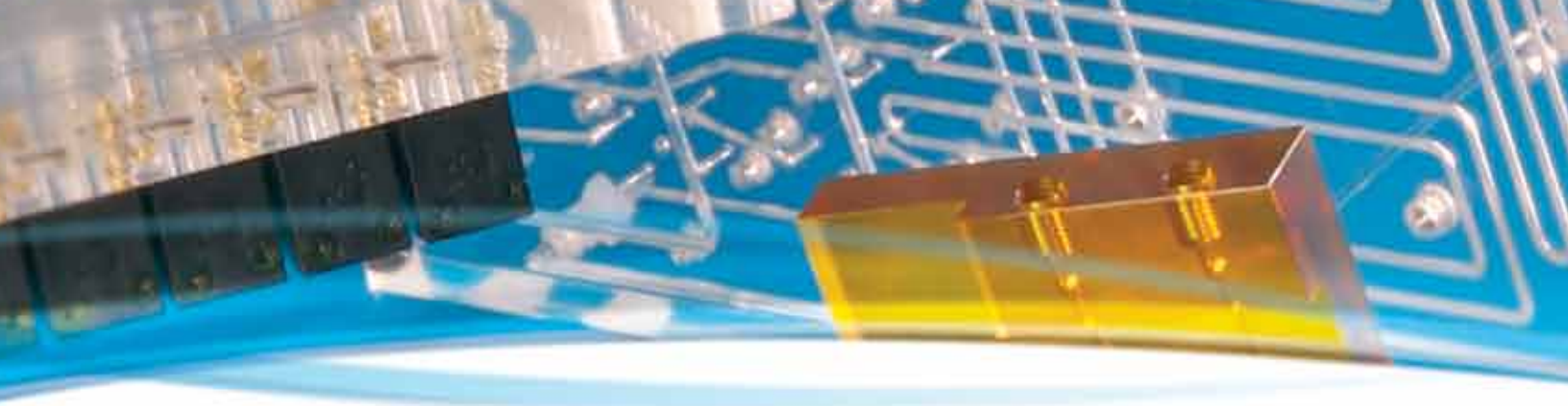
By partnering with our fluidics team, you have one point of contact—one vendor instead of several—yet the full spectrum of fluidic components and experts.

Beyond individual products and components, we leverage technologies and resources globally to offer you complete, integrated fluidic systems that are assembled and tested to your specifications.

Committed to Your Success

In addition to manifolds and connectors, IDEX Health & Science designs and manufactures OEM liquid subassemblies and gas management systems as well as precision components:

- **Eastern Plastics** manifolds and precision machined components.
- **Gast**[®] air motors, compressors and vacuum pumps.
- **Ismatec**[®] peristaltic pumps, advanced microprocessor controllers and drives.
- **Jun-Air** ultra-quiet, clean-air compressors.
- **Micropump**[®] gear and micro-annular gear pumps.
- **Rheodyne**[®] high and low pressure valves.
- **Sapphire Engineering**[™] precision dispense pumps, pump components and flow cells.
- **Systec**[®] vacuum degassing and debubbling systems.
- **Trebor**[®] ultra-high-purity chemical pumps, mixers, and liquid heaters.
- **Upchurch Scientific**[®] tubing, fittings and customized assemblies.



Fluidic Manifolds

The Future of Fluidics

As the demands for performance materials, systems integration, and standardization increase, more fluidics engineers are turning to manifolds. Traditionally used in the automotive and aerospace industries, manifolds are used to integrate fluidic components and consolidate fittings and tubing in a fluid circuit. The design and integration possibilities are endless. Manifolds accommodate thousands of embedded, unique features that would be impossible to create in other apparatus. Opportunities for custom manifold integrations include tubing, fittings, connectors, solenoid valves, pumps, conductive metal elements, mixing elements, heaters and films.

Eastern Plastics Manifolds

Machined and assembled to your specifications, Eastern Plastics manifolds offer increased reliability in a compact fluid package design. Our engineers achieve ultra-close tolerances, complex geometries, small channels, and other difficult-to-achieve shapes and contours. Our single-layer and multi-layer, bonded manifolds are available alone or fully assembled with integrated components. We provide design and development support from concept to manufacture, assistance with materials selection, testing, certification and more.

In addition to assembly, other value-added services include surface finishing, bonding, marking, engraving, inserting, welding, microscopic deburring, stress relieving, polishing, and ultrasonic cleaning.

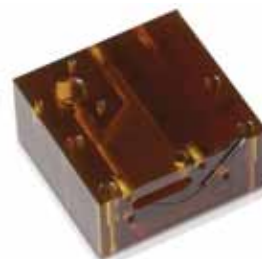




Why Use a Manifold?

- Total fluid package size reduced
- Fewer leak points
- Part count reduction
- Easy field service
- Ability to integrate a variety of components
- Cost of assembly reduced
- Decreased volume requirements for samples and reagents
- Shorter fluid paths
- Repeatable results (flow/pressure drop)
- No overall size restrictions
- Unlimited number of layers
- Easy to clean
- Micro flow paths possible
- Efficient use of fittings and connectors
- Tubing and other plumbing consolidated
- Embedded features (mixing chambers, sensors, heaters)
- Fully tested fluidic subassemblies
- Remarkable clarity

Available in acrylic, polycarbonate, PVC, polyetherimide, PFA and other performance plastics.





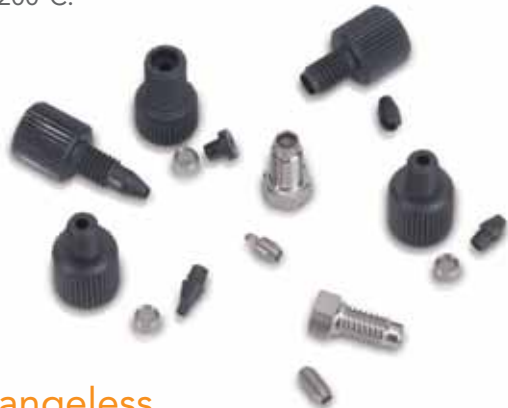
Fittings

A complete line of Upchurch Scientific® fittings is available for fluidic instrumentation. Options include over 300 different nut configurations in standard thread sizes ranging from 6-32 to M10 that connect tubing with ODs ranging from 0.0145" (360 µm) to 5/16". Our fittings are available in a variety of styles and configurations, colors and materials (see chart on p. 11).

A few of our most popular fittings systems include:

Ultra Performance

Polyketone and stainless steel fittings designed to withstand extreme temperatures and pressures. Available in one-piece or two-piece configurations, for coned or flat-bottom ports. High pressure versions are rated to 28,800 psi (1,930 bar) and the high temperature versions withstand temperatures to 200°C.

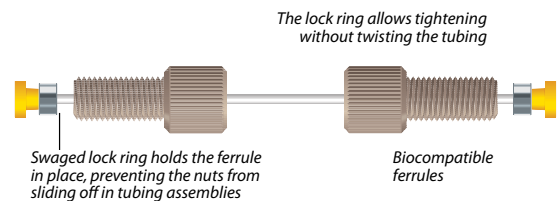


Flangeless

Eliminates the need to flange tubing. Removable, reusable fittings system that is easy to replace, cost-effective, and minimizes downtime. Fittings provide fingertight convenience - no wrenches required. Ferrules provide a leak-proof seal, so there is no need to flange tubing.

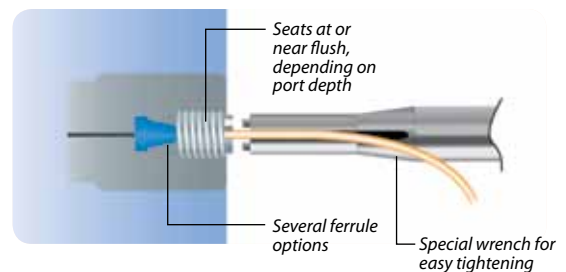
Super Flangeless™

Ideal for tubing assemblies. Also for applications subject to vibration and for connections that need to be broken frequently. Highest levels of leakproof reliability.



FlushNuts™

Tightens at or near flush with the top of the port. For applications where space is limited. Can be configured for use with a variety of ferrule styles.



Flanged

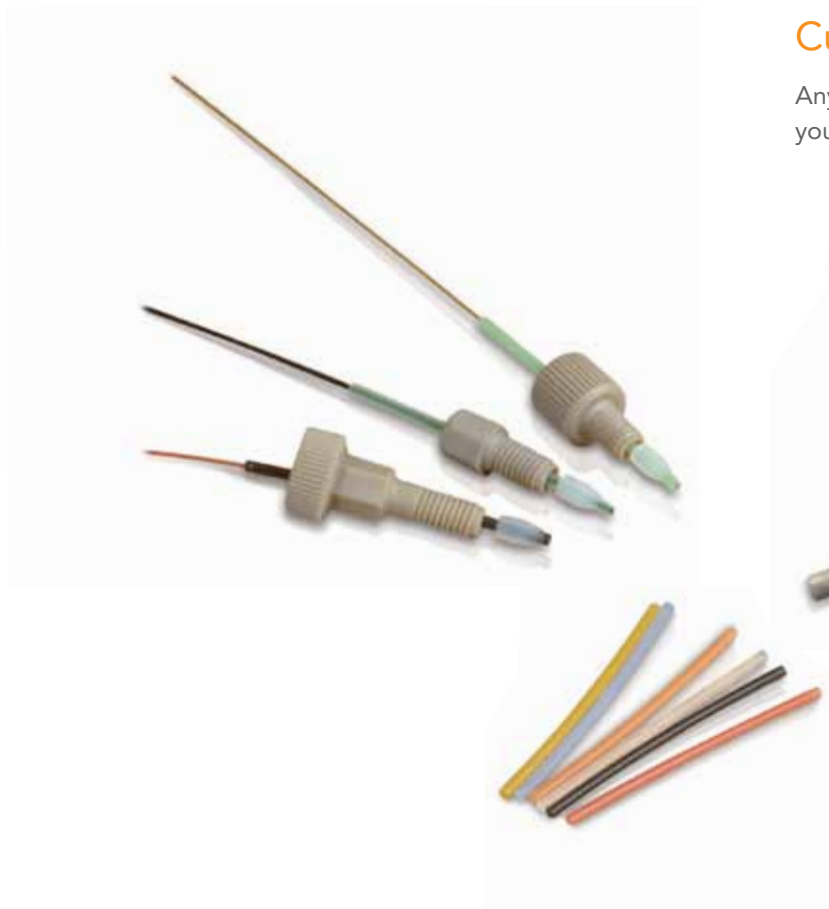
For use with flanged tubing.



NanoTight™ Fittings System

NanoTight fittings provide convenient and reliable connections for fused silica and other capillary tubing. Use them to connect capillary tubing to any standard 10-32 coned ports normally intended for 1/32" or 1/16" OD tubing. Our FEP tubing sleeves are available in multiple ID sizes to accommodate various sizes of tubing, and are color-coded for easy ID identification. In addition to our standard stock materials, sizes and colors, sleeves can be customized for your specific application.

Fittings are also available for specific sizes of capillary tubing, such as 360 μm , 520 μm and 1/32", and are designed for use without sleeves.



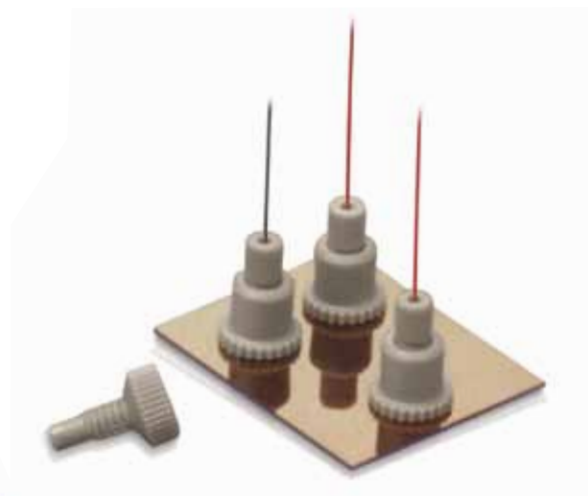
NanoPort™ Assemblies

NanoPort fitting assemblies provide consistent fluid connections for chip-based analyses. They bond easily to chip surfaces such as silicon, quartz, glass and polymers, and once attached, can withstand pressures to 1,500 psi (103 bar). The unique NanoPort design prevents adhesive contamination of and adds no additional volume to the fluid path, thereby eliminating dead volume traditionally associated with chip-based fluidic connections.

Custom NanoPort component configurations are available, including multiport manifolds, alternative thermoplastic materials, special component sizing and specific reservoir volumes.

Custom Options

Any of our fittings can be custom designed to your specifications.





Examples of Fittings Styles and Configurations



One-Piece Standard



One-Piece Short



One-Piece Long



Standard



Short



Long



Headless



Short Headless



FlushNut™



Female



Single Wing



Winged



Short Hex Head



Long Headless



Long Knurl/
Hex Head



Long Hex Head



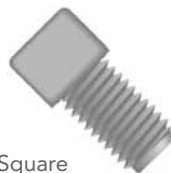
MicroFluidic
Standard Head



MicroFluidic
Headless



MicroFluidic
Small Headless



Square
Head





Connectors

Upchurch Scientific® connectors are available in a wide selection of configurations including unions, adapters, tees, crosses, manifolds and others. Available in a variety of colors and materials (see chart on p. 11), these products can be designed to connect rigid, semi-rigid and peristaltic tubing. Several connection configurations are available, including:

Thread to thread (male and female)

Thread to luer

Luer to luer

Luer to barb

Barb to barb

Barb to thread

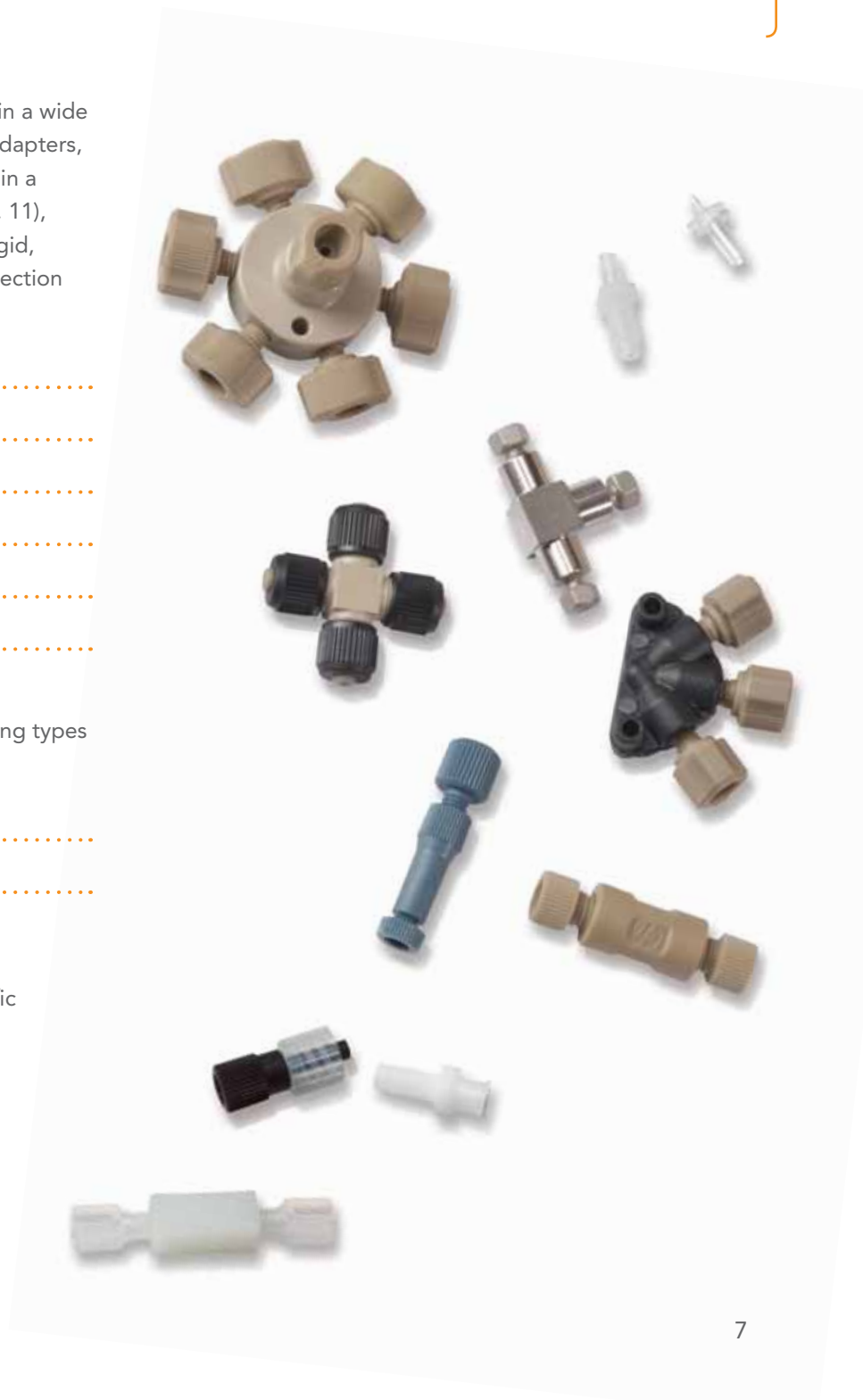
These connectors are designed for the following types of connections:

Tubing to tubing

Tubing to port

Custom Options

Connectors can be customized for your specific application needs.





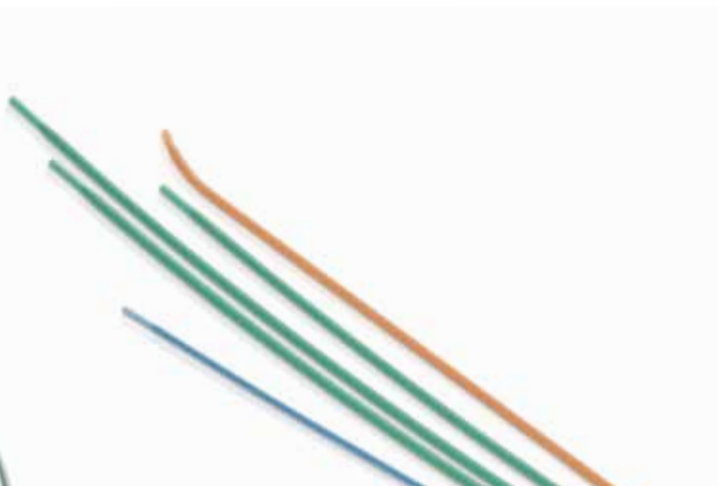
Tubing & Assemblies

Upchurch Scientific® tubing is available in a comprehensive selection of sizes from capillary through large-bore, with ODs from less than 0.0145" (360 µm) to 5/16" and IDs as small as 0.001" (25 µm), available spooled or in cut lengths. We have well over one hundred stock items readily available and create tubing in custom sizes and colors for hundreds of customers. Please see p. 11 for a list of our extrusion materials.

Our polymer specialists and engineers will assist in selecting the tubing material that best suits your application and cost specifications. Then our skilled team of extrusion specialists fabricate all tubing products in-house, drawing on more than 20 years of experience in polymer tubing extrusion expertise. To achieve the tightest dimensional tolerances, we use integrated process controls and a closed loop feedback system to carefully monitor polymer tubing dimensions for both the OD and ID via real time, on-line inspection and SPC data acquisition. We cut stainless steel and titanium tubing using automated electro-discharge equipment to ensure the highest quality, burr-free tubing.

PTFE Tubing

In addition to our wide selection of polymer and metal tubing, IDEX Health & Science now offers PTFE tubing. Used frequently in diagnostic and biotechnology applications, PTFE is an economical alternative to some higher performance materials. Contact us to learn more about our PTFE tubing capabilities.





Custom Assemblies

Upchurch Scientific® tubing assemblies and bundles are custom designed for instrument manufacturers. Each assembly and its components are produced by our own in-house manufacturing team, ensuring the accuracy and integrity of your parts and tighter lead times. Assemblies can be optimized to incorporate:

Specific tubing materials, including a wide array of polymers as well as stainless steel or titanium

Custom IDs, ODs and lengths

Unique bends and other value-added services

Fittings and connectors to meet pressure, chemical and biocompatibility requirements

Bundling, labeling, packaging to meet your needs



Value Added Services

In addition to our core extrusion and assembly capabilities, we offer custom secondary services including:

Profile shapes	Bonding
Tapered tubing	Swaging
Tip forming	Foil marking
Thermoforming	Laser marking
Annealing	Deburring
Necking	Kitting
Flaring	





The IDEX Advantage

IDEX Health & Science has decades of experience in the fluidics industry. We bring a level of expertise and an aptitude for solving tough challenges that you won't find anywhere else. Consider us an extension of your R&D team. We work with you to custom design and manufacture solutions that are tailored for your specific applications and cost considerations. Our comprehensive in-house engineering, prototyping, molding, extrusion and machining services means you have one point of contact, one vendor, for your entire project lifetime.

Most importantly, we partner with instrument manufacturers to help achieve objectives for rapid product development and on-time deliveries within exacting specifications and budget constraints. Services and capabilities we offer to instrument manufacturers include the following:

To-specification and to-concept design and pre-production development

Custom design solutions

Rapid prototyping and market-entry tooling and production

Materials expertise, including custom compounding

Design critique for manufacturing

Low volume runs to millions annually

Product assembly and secondary operations

Lot and batch traceability available

CNC tube bending for customized 3D configurations

Design/concurrent engineering with CAD data transfer

3D design and modeling using SolidWorks®

Design for manufacturability (DFM)

Design for Six Sigma (DFSS)

JIT environment and VMI stocking options available



Materials

Materials Expertise

IDEX Health and Science has years of experience working with high performance as well as other engineering polymers and metals. We can identify and customize resin formulations for specific customer applications.

IDEX Health & Science is skilled in molding, extruding and machining these and many other materials:

Materials	Molding	Extrusion	Machining
Acetal (Delrin®)	x		x
Acrylic			x
ECTFE (Halar®)		x	
ETFE (Tefzel®)	x	x	x
FEP	x	x	x
Methylpentene copolymer (TPX)	x		
PCTFE (Kel-F®)			x
PFA	x	x	
Polycarbonate			x
Polyetheretherketone (PEEK™)	x	x	x
Polyetherimide (Ultem®)	x	x	
Polyethersulphone (PES, Radel® A)	x	x	
Polyethylene	x	x	
Polyketone (PK)	x		x
Polyphenylene sulfide (PPS)	x		x
Polyphenylsulfone (PPSU, Radel® R)	x	x	
Polypropylene	x	x	
Polysulfone (PSU, Udel®)	x	x	
Polyvinyl chloride (PVC)			x
Polyvinylidene fluoride (PVDF)	x	x	x
Stainless steel*			x
Thermoplastic elastomers		x	
Titanium*			x
UHMWPE			x

*cut tubing and parts



Trademarks

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IDEX® is a Registered Trademark and **IDEX Health & Science™** is a Trademark of IDEX Corporation.

Kel-F® is a Registered Trademark of the 3M Company.

PEEK™ polymer is a Trademark of Victrex plc.

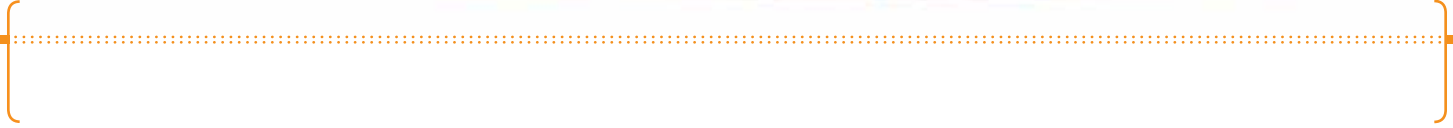
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