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4 Check Valves & Pressure Regulators

Column Hardware

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Fittings - UPCHURCH

Pumps

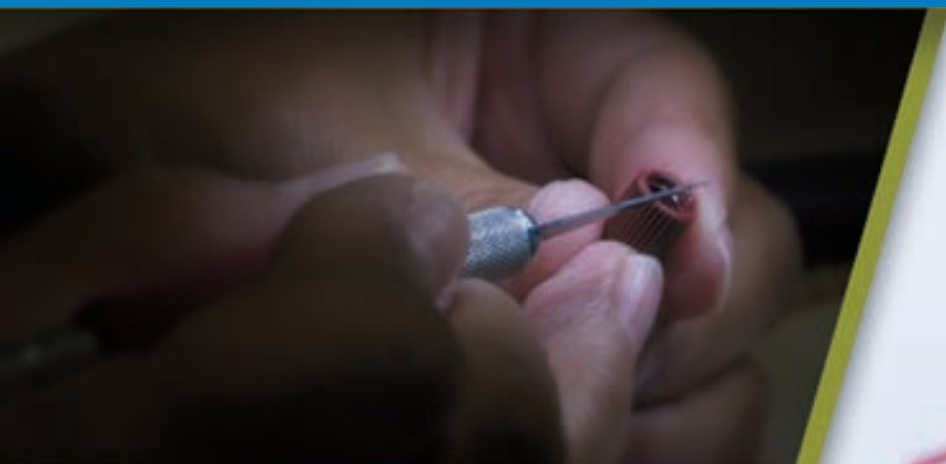
Technical Resources

Tubing

Valves - RHEODYNE



Fittings



Deburring an Upchurch Scientific® fitting in Oak Harbor, WA.



NEW!

The Very High Pressure (VHP) reusable fitting, VHP-320, is one of the exciting new products in the VHP family featured on page 6

New All-Inclusive Fittings Chapter

In this catalog, we've taken a new approach to presenting our extensive line of fittings. In one comprehensive chapter, you will find fittings for several applications — very high pressure (>15,000 psi/1,034 bar), high pressure (>1,000 psi/69 bar), and low pressure (<1,000 psi/69 bar). There is also a separate section for micro and nano-scale applications.

Beyond the pressure rating of the fittings, there are other important features to be aware of as you select the appropriate fitting for your application:

THREADS (10-32, 6-32, M6, etc.)

TUBING SIZE (1/16", 1/32", 360 µm, etc.)

PORT GEOMETRY (Coned, Flat-bottom)

Specification tables at the bottom of each page include the following:

- ▶ Part numbers
- ▶ Part description
- ▶ Materials of construction
- ▶ Standard size packages
- ▶ Pressure ratings
- ▶ Available colors

Additionally, you will find "fitting" related application notes and, if available, special ordering options throughout the chapter.

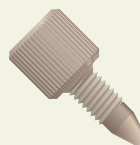
Please Note: in the product descriptions, a "Fitting" refers to a complete product ready to assemble and connect tubing into a part. This could be a one-piece connector or a nut and ferrule packaged together. A "Nut" indicates the male or female threaded product sold separately, and a "Ferrule" is sold separately when indicated in the description. For your convenience we ship most Upchurch Scientific® Fittings and Ferrules in 10-packs, however, you may order individual pieces (an "x" in the product part number designates "10-pk").

You may notice a change in some of our pressure ratings – be assured that the IDEX Health & Science team is dedicated to providing the most reliable, proven products on the market. We have implemented more stringent testing protocols and a generous safety margin to our ratings to ensure your safety.

Please Note: all testing is performed with water at room temperature unless otherwise specified. Results may vary depending on the material of the receiving port and tubing, actual tubing diameters (with stated tolerances), temperature and solvents used. If a pressure range is listed for a product's specification, the pressure rating depends on the tubing material used. The lower end of the range will represent testing performed on softer tubing such as FEP, and the higher end of the range will represent testing performed on harder tubing such as Stainless Steel. For more detail, please see the product specification sheets on our website, www.idex-hs.com, or contact us directly.

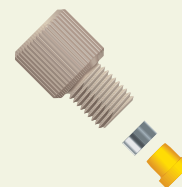
FINGERTIGHT FITTINGS

Found on pages 11 – 15



SUPER FLANGELESS™ FITTINGS

Found on pages 21 – 23



TUBING SLEEVES

Found on pages 19 – 20



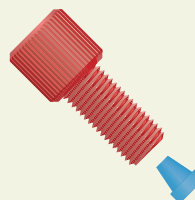
MICROTIGHT® FITTINGS

Found on pages 18 – 19



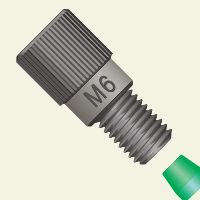
FLANGELESS FITTINGS

Found on pages 24 – 26



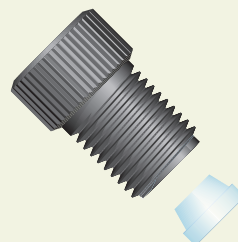
FLANGELESS FITTINGS FOR METRIC SIZED TUBING

Found on page 27



FITTINGS FOR 3/16" TO 5/16" OD TUBING

Found on page 30

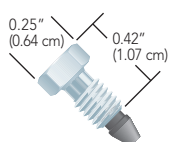


Reusable Very High Pressure (VHP) Fittings

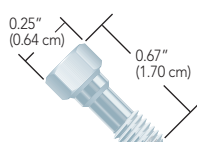
- ▶ Pressure rated up to 25,000 psi (1,720 bar)
- ▶ Patent pending innovative design
- ▶ Capable of up to ten repeat assembly cycles with no impact on pressure holding ability or carry-over
- ▶ Available in 10-32 threads for 1/16" OD tubing and M4 threads for 1/32" OD tubing
- ▶ Materials of construction: stainless steel and proprietary PEEK™ polymer blend (PK)

IDEX Health & Science introduces an innovative line of Upchurch Scientific® Very High Pressure (VHP) fittings, designed to withstand extreme pressures. This patent-pending line of ground-breaking fitting systems is perfect for use within the increasingly demanding requirements of today's high performance analytical systems.

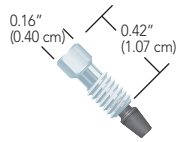
The Reusable VHP fittings can be reused when following the tightening torque specification listed below. With a polymer front ferrule, there is no damage to the tubing or receiving port, also increasing the life of these components.



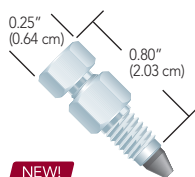
NEW!
VHP-320
10-32 VHP Fitting
for 1/16" OD tubing



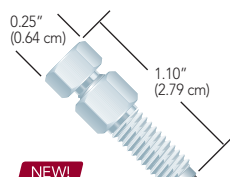
NEW!
VHP-325
10-32 VHP Fitting, Long
for 1/16" OD tubing



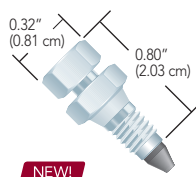
NEW!
VHP-920
M4 VHP Fitting
for 1/32" OD tubing



NEW!
VHP-300
10-32 VHP Fitting
for 1/16" OD tubing



NEW!
VHP-305
10-32 VHP Fitting, Long
for 1/16" OD tubing



NEW!
VHP-310
10-32 VHP Fitting
for 1/16" OD tubing



Application Note

Reusability

- ▶ Using a reusable fitting eliminates the problems described on stainless steel fitting interchangeability on page 196 of the Technical Resources section. A reusable fitting will allow for quick column, sample loop, inline filter or tubing changes with minimal downtime.
- ▶ The VHP-300, VHP-305 and VHP-310 fittings can be used up to 30,000 psi (2,070 bar) if tightened to 14 in-lbs (1.6 N-m). This limits the reusability to 5 cycles. The stacked design of these fittings allows the user to lightly assemble the fitting before tightening into the port. Leaving the tubing extended at least half an inch beyond the end of the ferrule will ensure that the tubing is bottomed out in the port before the fitting is tightened down, avoiding any potential dead volume that could be introduced during fitting installation.

Note

The pressure rating provided is an indication of the capability of the fitting, not the tubing; you should always confirm that your flow path tubing is capable of your system pressures to ensure operator safety.

Related Products

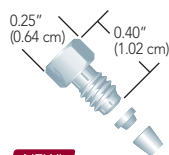
Find tightening tools on page 8 designed to deliver the torque necessary for these fittings.

Part No.	Description	Port	Pressure Rating	Required Torque	Head Style	Material	Qty.
REUSABLE VHP FITTINGS							
NEW! VHP-300x	VHP Fitting for 1/16" OD	10-32 Coned	20,000 psi (1,380 bar)	10 in-lbs (1.10 N-m)	1/4" Hex	SST/PK	10-pk
NEW! VHP-305x	VHP Fitting for 1/16" OD, Long	10-32 Coned	20,000 psi (1,380 bar)	10 in-lbs (1.10 N-m)	1/4" Hex	SST/PK	10-pk
NEW! VHP-310x	VHP Fitting for 1/16" OD	10-32 Coned	20,000 psi (1,380 bar)	10 in-lbs (1.10 N-m)	8 mm Hex	SST/PK	10-pk
NEW! VHP-320x	VHP Fitting for 1/16" OD	10-32 Coned	25,000 psi (1,720 bar)	10 in-lbs (1.10 N-m)	1/4" Hex	SST/PK	10-pk
NEW! VHP-325x	VHP Fitting for 1/16" OD, Long	10-32 Coned	25,000 psi (1,720 bar)	10 in-lbs (1.10 N-m)	1/4" Hex	SST/PK	10-pk
NEW! VHP-920x	VHP Fitting for 1/32" OD	M4 Coned	25,000 psi (1,720 bar)	8 in-lbs (0.90 N-m)	4 mm Hex	SST/PK	10-pk

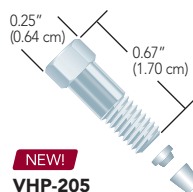
Stainless Steel VHP Fittings

- ▶ Pressure rated to 30,000 psi (2,070 bar)
- ▶ Double compression ferrule design
- ▶ Available with 10-32 threads for 1/16" OD tubing and M4 threads for 1/32" OD tubing

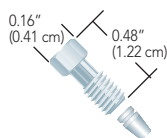
The all Stainless-Steel VHP Fittings include a unique ferrule system with two compression points to provide twice the grip of a standard ferrule. This design also allows the bite on the tubing to be less concentrated and does not restrict the inner diameter, as discussed in the Application Note below. The ferrules for 1/16" OD tubing and 10-32 coned ports are two pieces, while the grooved ferrule for 1/32" OD tubing and M4 coned ports is a one-piece design for easier handling, but it will act as two pieces with double compression on the tubing as it is tightened down.



NEW!
VHP-200
VHP 10-32 Fitting
for 1/16" OD tubing



NEW!
VHP-205
VHP 10-32 Fitting, Long
for 1/16" OD tubing

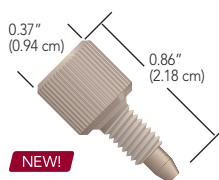


NEW!
VHP-900
VHP M4 Fitting
for 1/32" OD tubing

All-PEEK™ VHP Fitting

- ▶ Manufactured from 100% PEEK
- ▶ Patent pending
- ▶ Available with 10-32 threads for 1/16" OD tubing
- ▶ Pressure rated to 10,000 psi (690 bar)

In a one-piece design, the VHP-150 is an all-PEEK fitting that can operate up to 10,000 psi on PEEK tubing. Using a similar captive ferrule as the VHP-320 series fittings on the previous page, the patent-pending fitting design is also reusable up to 10 cycles, decreasing down time during any hardware changes. Instead of having to replace tubing and fittings if a new column is changed, the re-usable all-PEEK fitting will be able to be adjusted to the new dimension X depth. Created specifically for ion chromatography, the VHP-150 will add connection confidence at ultra high pressures.



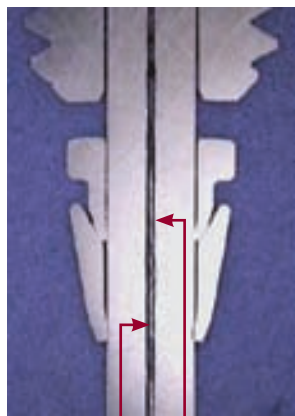
NEW!
VHP-150
VHP 10-32 Fitting
for 1/16" OD tubing

Application Note

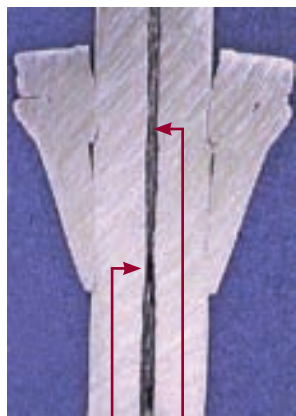
In order to seal up to the stated pressure rating, the VHP-200-01 ferrule requires 20 in-lbs (2.25 N·m) of torque. Similar ferrules on the market require tightening torque of at least 30 in-lbs (3.3 N·m), which can result in a restricted tubing passage, as shown in the picture below. This restriction can increase turbulence and add a 'throttling' effect to the fluid pathway, resulting in mixing and other potential chromatographic problems.

IDEX Health & Science VHP-200

Conventional Two Piece Ferrule Design



Uniform Tubing Passage



Constricted Tubing Passage

Part No.	Description	Port	Pressure Rating	Required Torque	Head Style	Material	Qty.
STAINLESS STEEL VHP FITTINGS (INCLUDES NUT AND FERRULE)							
NEW! VHP-200x	VHP Fitting for 1/16" OD	10-32 Coned	30,000 psi (2,070 bar)	20 in-lbs (2.25 N·m)	1/4" Hex	SST	10-pk
NEW! VHP-205x	VHP Fitting for 1/16" OD, Long	10-32 Coned	30,000 psi (2,070 bar)	20 in-lbs (2.25 N·m)	1/4" Hex	SST	10-pk
NEW! VHP-900x	VHP Fitting for 1/32" OD	M4 Coned	30,000 psi (2,070 bar)	20 in-lbs (2.25 N·m)	4 mm Hex	SST	10-pk
STAINLESS STEEL VHP FERRULES							
NEW! VHP-200-01x	VHP Ferrule for 1/16" OD	10-32 Coned	30,000 psi (2,070 bar)	20 in-lbs (2.25 N·m)	—	SST	10-pk
NEW! VHP-900-01x	VHP Ferrule for 1/32" OD	M4 Coned	30,000 psi (2,070 bar)	20 in-lbs (2.25 N·m)	—	SST	10-pk
PEEK VHP FITTING							
NEW! VHP-150x	VHP Fitting for 1/16" OD	10-32 Coned	6,000 psi (414 bar)/ 10,000 psi (690 bar)	2 in-lbs (0.22 N·m)/5 in-lbs (0.55 N·m)	Standard Knurl	PEEK, Natural	10-pk

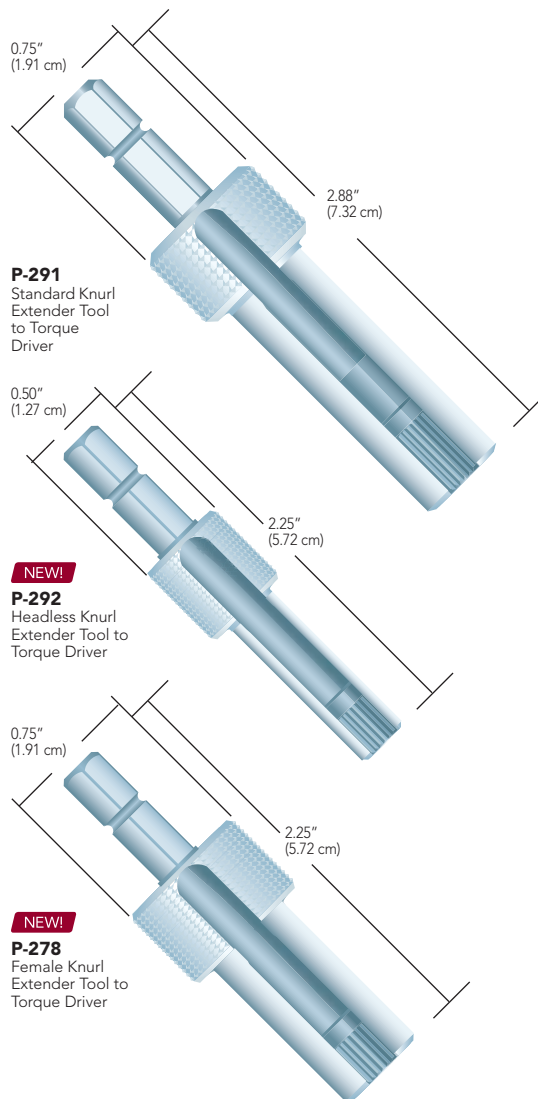
Tightening Tools for VHP Fittings

- Configured for the optimum torque to provide assurance of a strong connection
- Prolongs the lifetime of reusable fittings by not overtightening
- Available for multiple fitting head styles

This new line of tightening tools is designed for the VHP fittings and can also be used with any fitting in this chapter described to have a corresponding head style to the tool listed below. There are three styles of tightening tools available for various applications. The Torque Tools (VHP-1000, VHP-2000 and VHP-3000) are breakaway torque wrenches designed to deliver a precise amount of torque to the fitting system. These torque wrenches come calibrated according to ISO 6789:2003 ($\pm 6\%$ of setting) and have been tested extensively with the reusable VHP fittings on page 6. Choose the appropriate torque delivered and the proper head style to work with the VHP fittings, increasing the ease of use with these fittings.

The VHP-4000 Torque Driver couples with the specially designed Extender Tools listed below and provides an externally adjustable torque setting. This tool along with the appropriate Extender Tools will tighten any Upchurch Scientific® knurled polymer fitting in your system. Reference the head style found in the tables at the bottom of each page for information on the proper Extender Tool to select.

Because of the small hex-head on the M4 fittings (VHP-900 and VHP-920), a custom wrench, the VHP-9000, is available below.

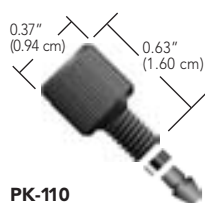


Part No.	Description	Use With Head Style	Torque Delivered	Qty.
VHP TIGHTENING TOOLS				
NEW! P-278	Extender Tool to Torque Driver	Female Nut Knurl	—	ea.
NEW! P-279	Extender Tool to Torque Driver	Micro Nut Knurl	—	ea.
P-291	Extender Tool to Torque Driver	Standard Nut Knurl	—	ea.
NEW! P-292	Extender Tool to Torque Driver	Headless Nut Knurl	—	ea.
NEW! VHP-1000	VHP Torque Tool	1/4" Hex	10 in-lbs (1.13 N-m)	ea.
NEW! VHP-2000	VHP Torque Tool	1/4" Hex	14 in-lbs (1.58 N-m)	ea.
NEW! VHP-3000	VHP Torque Tool	8 mm Hex	10 in-lbs (1.13 N-m)	ea.
NEW! VHP-4000	VHP Torque Driver	Extender Tool 1/4" Drive	Adjustable between 2 - 12 in-lbs (0.23 - 1.35 N-m)	ea.
NEW! VHP-9000	4 mm Wrench	4 mm Hex	—	ea.

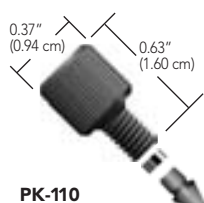
Very High Pressure PK Fittings

Upchurch Scientific® Ultra High Performance fittings are manufactured from a proprietary PEEK™ blend (PK) which allow them to be used at higher temperatures (up to 200 °C) and higher pressures.

The VHP PK One-Piece fittings are available for 10-32 coned, 6-32 coned or M4 coned ports, and Two-Piece fittings are available to connect either 1/16" or 1/32" OD tubing into 10-32 coned ports in multiple styles.



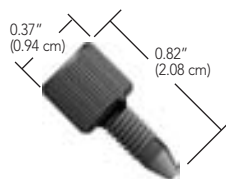
PK-110
10-32 PK Fitting
shown with PK-100
for 1/16" OD tubing



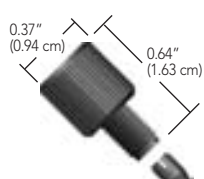
PK-110
10-32 PK Fitting
shown with PK-132
for 1/32" OD tubing



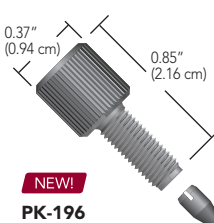
PK-126
6-32 PK MicroTight®
Fitting
for 1/32" OD tubing



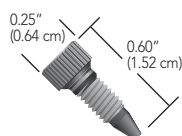
PK-120BLK
10-32 PK Fitting
for 1/16" OD tubing



PK-195
10-32 PK Fitting
with PK 192
for 1/16" OD tubing



PK-196
10-32 PK Fitting
with PK 192
for 1/16" OD tubing



UH-904
M4, 1/32" Fitting
for Rheodyne® MX valves



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VHP MicroFerrules

VHP MicroFerrules are made from a proprietary high performance PEEK polymer blend, a material which is unique in its ability to enable the use of capillary tubing in UHPLC environments. The new high pressure MicroFerrules are available for use with 1/32" or 360 µm OD tubing, and they are incorporated into several of our VHP products for capillary tubing.



PK-112
VHP MicroFerrule
shown with P-416
for 1/32" OD tubing



PK-152
VHP MicroFerrule
shown with P-416BLK
for 360 µm OD tubing

Note

MicroTight fittings and MicroFerrules

While the MicroTight Female Nuts may be used with any of the separate MicroFerrules, the MicroFerrules themselves are port-specific and are thus not interchangeable. Additionally, the one-piece MicroTight fittings are also port-specific and should not be exchanged.

Related Products

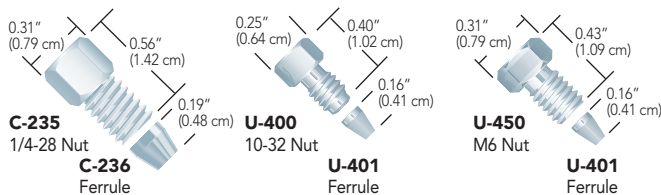
Find unions, tees and crosses for VHP applications on pages 36, 37 and 42.

Part No.	Description	Port	Pressure Rating	Required Torque	Head Style	Material	Qty.
PK VHP ONE-PIECE FITTINGS							
★ PK-120BLKx	PK One-Piece Fitting for 1/16" OD Tubing	10-32 Coned	12,000 psi (827 bar)	8.0 in-lbs (0.90 N-m)	Standard Knurl	PK	10-pk
PK-126x	PK One-Piece Fitting for 1/32" OD Tubing	6-32 Coned	15,000 psi (1,035 bar)	3.0 in-lbs (0.34 N-m)	Standard Micro Knurl	PK	10-pk
UH-904x	PK One-Piece Fitting for 1/32" OD Tubing	M4 Coned	15,000 psi (1,035 bar)	4.0 in-lbs (0.45 N-m)	Headless Knurl	PK	10-pk
PK VHP FITTINGS (SEALTIGHT™ STYLE, FITTINGS INCLUDE PK-192X)							
PK-192x	PK Ferrule for 1/16" OD Tubing	10-32 Coned	11,000 psi (760 bar)	—	—	PK	10-pk
PK-195x	PK Fitting for 1/16" OD Tubing	10-32 Coned	11,000 psi (760 bar)	8.0 in-lbs (0.90 N-m)	Standard Knurl	PK	10-pk
NEW! PK-196x	PK Fitting for 1/16" OD Tubing, Long	10-32 Coned	11,000 psi (760 bar)	8.0 in-lbs (0.90 N-m)	Standard Knurl	PK	10-pk
PK VHP FITTINGS (LITETOUCH® STYLE, NUTS AND FERRULES SOLD SEPARATELY)							
★ PK-100x	PK Ferrule for 1/16" OD Tubing	10-32 Coned	16,500 psi (1,140 bar)	—	—	PK	10-pk
PK-110x	PK Nut for 1/16" OD Tubing	10-32 Coned	16,500 psi (1,140 bar)	8.0 in-lbs (0.90 N-m)	Standard Knurl	PK	10-pk
PK-132x	PK Ferrule for 1/32" OD Tubing	10-32 Coned	16,500 psi (1,140 bar)	—	—	PK	10-pk
PK MICRO FERRULES AND FEMALE NUTS							
P-416	Female Nut for Microferrule	5/16-24 Coned	15,000 psi (1,035 bar)	4.0 in-lbs (0.45 N-m)	Female Knurl	PEEK, Natural	ea.
P-416BLK	Female Nut for Microferrule	5/16-24 Coned	15,000 psi (1,035 bar)	4.0 in-lbs (0.45 N-m)	Female Knurl	PEEK, Black	ea.
★ PK-112	VHP MicroFerrule for 1/32" OD Tubing	5/16-24 Coned	15,000 psi (1,035 bar)	—	—	PK	ea.
PK-152	VHP MicroFerrule for 360 µm OD Tubing	5/16-24 Coned	15,000 psi (1,035 bar)	—	—	PK	ea.

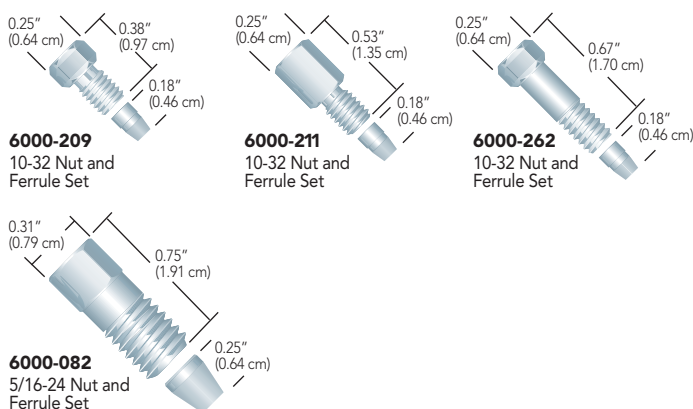
Stainless Steel Fittings

These 316 Stainless Steel Fittings are rated to 20,000 psi (1,380 bar) when wrench tightened. Choose Upchurch Scientific® Standard Fittings, or select from the Rheodyne® or other manufacturer-compatible offerings.

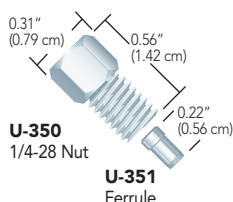
Standard Stainless Steel Fittings



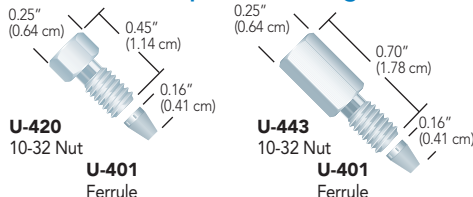
Rheodyne Fittings



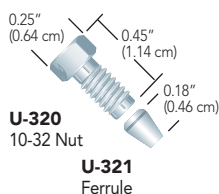
SSI Compatible Fittings



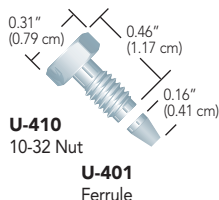
Beckman® Compatible Fittings



VICI® (Valco) Compatible Fittings



Waters® Compatible Fittings



Note

- ▶ Do not use metal fittings in plastic ports, as this can damage the port. Please see the "Fittings Applications" chart on page 195 for more information about fittings compatibility with tubing and port materials.
- ▶ The recommended torque to tighten these fittings is 20 in-lbs.



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Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
STANDARD STAINLESS STEEL FITTINGS						
C-235x	Nut for 1/8" OD Tubing	1/4-28 Coned	20,000 psi (1,380 bar)	5/16" Hex	SST	10-pk
C-236x	Ferrule for 1/8" OD Tubing	1/4-28 Coned	20,000 psi (1,380 bar)	—	SST	10-pk
★ U-400x	Nut for 1/16" OD Tubing	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk
★ U-401x	Ferrule for 1/16" OD Tubing	10-32 or M6 Coned	20,000 psi (1,380 bar)	—	SST	10-pk
U-450x	Nut for 1/16" OD Tubing	M6 Coned	20,000 psi (1,380 bar)	5/16" Hex	SST	10-pk
RHEODYNE FITTINGS						
6000-082	Fitting for 1/8" OD Tubing	5/16-24 Coned	20,000 psi (1,380 bar)	5/16" Hex	SST	ea.
6000-083	Ferrule for 1/8" OD Tubing	5/16-24 Coned	20,000 psi (1,380 bar)	—	SST	5-pk
6000-209	Fitting for 1/16" OD Tubing	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk
6000-210	Ferrule for 1/16" OD Tubing	10-32 Coned	20,000 psi (1,380 bar)	—	SST	10-pk
6000-211	Fitting for 1/16" OD Tubing, Long	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk
6000-262	Fitting for 1/16" OD Tubing, Extra Long	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk
MANUFACTURER COMPATIBLE FITTINGS						
★ U-320x	Nuts for 1/16" OD Tubing, Valco/VICI Compatible	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk
★ U-321x	Ferrule for 1/16" OD Tubing, Valco/VICI Compatible	10-32 Coned	20,000 psi (1,380 bar)	—	SST	10-pk
U-350x	Nuts for 1/16" OD Tubing, SSI Compatible	10-32 Coned	20,000 psi (1,380 bar)	5/16" Hex	SST	10-pk
U-351x	Ferrule for 1/16" OD Tubing, SSI Compatible	10-32 Coned	20,000 psi (1,380 bar)	—	SST	10-pk
★ U-410x	Nuts for 1/16" OD Tubing, Waters Compatible	10-32 Coned	20,000 psi (1,380 bar)	5/16" Hex	SST	10-pk
U-420x	Nuts for 1/16" OD Tubing, Beckman Compatible	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk
U-443x	Nuts for 1/16" OD Tubing, Beckman Compatible, Long	10-32 Coned	20,000 psi (1,380 bar)	1/4" Hex	SST	10-pk

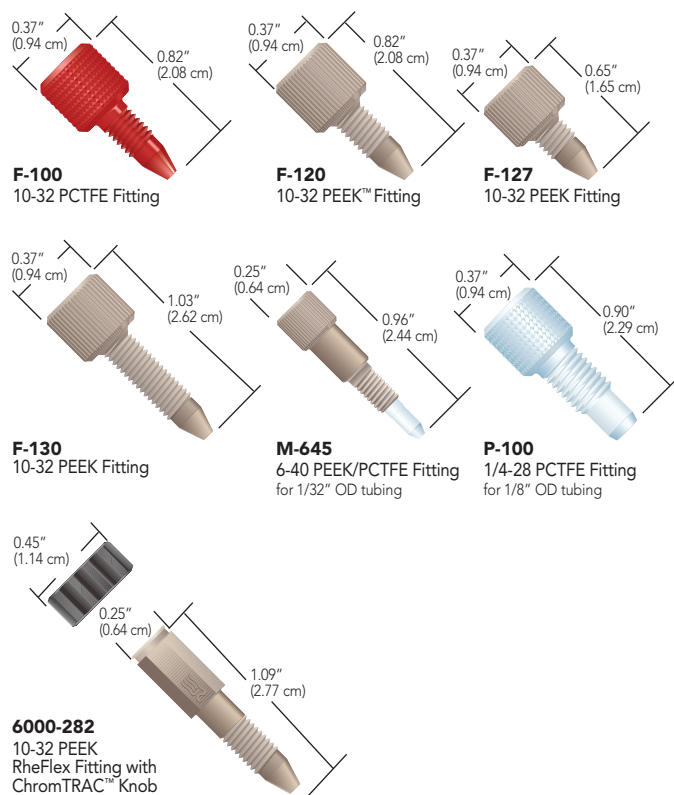
One-Piece Fingertight Fittings

- The original One-Piece Fingertight Fitting
- All polymer construction
- Versions available for 1/16", 1/32" or 1/8" OD tubing

The Upchurch Scientific® One-Piece Fingertight Fittings provide convenience and ease of use because the ferrule will not stick in a receiving port and the fitting is more easily found if dropped. The fittings for 1/16" OD tubing and 10-32 coned ports are available in a variety of colors, materials and lengths to suit virtually every application.

Beyond the standard 10-32 fittings, also featured in this product family are specialty fittings for specific applications. Our M-645 Fitting is a direct replacement for the 6-40 threaded VICI® (Valco) fitting. The P-100 can be used in 1/4-28 coned ports for 1/8" OD tubing including some of the inlet filters starting on page 157.

RheFlex® One-Piece Fittings are included in many of the Rheodyne® manual valves, starting on page 131. The One-Piece RheFlex M4 Fittings, for use with Rheodyne MX Nano-Scale Modules, are listed on page 12.



Note

- For your convenience we ship most Upchurch Scientific Fingertight Fittings in 10-packs. However, you may order individual pieces (the letter "x" in the product part number simply designates "10-pk").
- Some of the Upchurch Scientific fittings on this page are available in additional colors. Please contact your distributor or us for more information.
- The F-120FUN PACK includes six F-120 Fittings in the following colors: natural, blue, black, green, red and yellow.
- Fingertight is generally equal to 3 – 4 in-lbs.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
ONE-PIECE FINGERTIGHT FITTINGS						
6000-282	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	5,000 psi (345 bar)	ChromTRAC knob	PEEK, Natural	10-pk
F-100x	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	4,000 psi (276 bar)	Diamond Knurl	PCTFE, Red	10-pk
F-100Nx	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	4,000 psi (276 bar)	Diamond Knurl	PCTFE, Natural	10-pk
★ F-120x	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	5,000 psi (345 bar)	Standard Knurl	PEEK, Natural	10-pk
F-120FUN PACK	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	5,000 psi (345 bar)	Standard Knurl	PEEK, Natural, Blue, Black, Green, Red, Yellow (one each color)	6-pk
F-127x	Fingertight Fitting for 1/16" OD Tubing, Short	10-32 Coned	5,000 psi (345 bar)	Standard Knurl	PEEK, Natural	10-pk
★ F-130x	Fingertight Fitting for 1/16" OD Tubing, Long	10-32 Coned	5,000 psi (345 bar)	Standard Knurl	PEEK, Natural	10-pk
M-645x	Fingertight Fitting for 1/32" OD Tubing	6-40 Coned	1,750 – 3,250 psi (121 – 224 bar)	Headless Knurl	PEEK, Natural/PCTFE, Natural	10-pk
P-100	Fingertight Fitting for 1/8" OD Tubing	1/4-28 Coned	1,000 psi (69 bar)	Diamond Knurl	PCTFE, Natural	ea.

Sure-Fit™ Connector

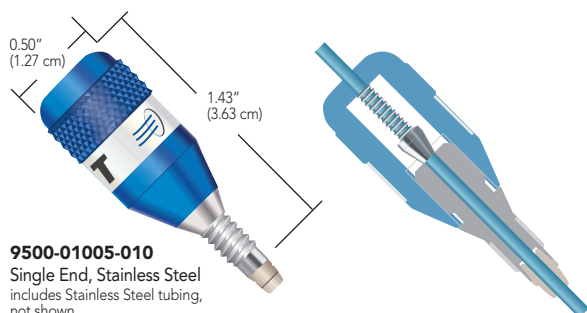
- ▶ Self-adjusting to any port depth regardless of column manufacturer
- ▶ Fingertight to 6,000 psi (414 bar)
- ▶ Available in PEEK™ or stainless steel



Eliminating leaks and dead volume is critical to achieving good chromatographic results. The Sure-Fit connector gives you a perfect fit in nearly every 10-32 coned receiving port — every connection, every time. Typically leaks and dead volume are caused by an improperly plumbed system and can occur for many reasons, including

switching columns. The problem occurs not only when switching from one manufacturer to another, it can also occur when changing columns from the same manufacturer. This is because internal port depths vary, even within the same manufacturing lot. Unless the connector is universal, eliminating leaks and dead volume cannot be guaranteed. The Sure-Fit connector has a unique internal spring-tensioned mechanism that automatically self-adjusts to virtually any port depth while maintaining constant pressure on the 1/16" OD tubing.

Sure-Fit connectors come with either PEEK tubing or stainless steel tubing, in varying lengths and internal diameters, pre-assembled for ease of use. Choose the 9502-01007-HP — a U-shaped Sure-Fit connector — for use in Agilent 1100 systems, or select the 9504-01005-050 for micro-scale applications where biocompatibility is desired.



9500-01005-010
Single End, Stainless Steel
includes Stainless Steel tubing,
not shown

RheFlex® M4 Fittings

- ▶ Incorporates M4 coned threads for 1/32" OD tubing
- ▶ Pressure rated to 5,000 psi (345 bar)

The Rheodyne® RheFlex M4 Fitting is designed to connect 1/32" OD tubing in MX Series II™ Module applications (see High Pressure Valves chapter, starting on page 126). This PEEK fitting has a one piece design, which eliminates the need for a separate nut and ferrule. The M4 Fitting design provides dependable zero dead volume connections for micro and nano applications. Due to the unique RheFlex gripping design, the M4 Fitting will hold to 5,000 psi (345 bar) on PEEK or with a PEEK tubing sleeve on fused silica tubing. A PEEK M4 Plug is also available.

Use Rheodyne ChromTRAC™ knobs with the RheFlex M4 Fitting for fingertight convenience and to color-code connections.



6000-360
M4 Fitting
M4 threads
for 1/32" OD tubing



6000-361
M4 Plug
M4 threads

Related Products

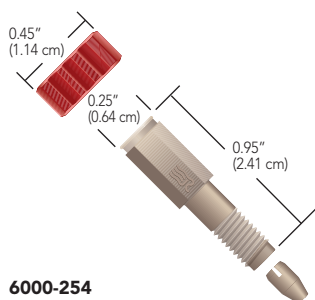
- ▶ For PEEK tubing sleeves that can be used with these M4 RheFlex fittings, see page 20.
- ▶ For reusable fittings that both work in UHPLC applications and can help ensure the tubing is fully inserted into the receiving port, see the VHP-300 fitting shown earlier in this chapter on page 6.

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
SURE-FIT FITTINGS						
9500-01005-010	Single End Fitting, 1/16" x 0.005" x 10 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	SST	ea.
9500-01007-010	Single End Fitting, 1/16" x 0.007" x 10 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	SST	ea.
9500-01010-010	Single End Fitting, 1/16" x 0.010" x 10 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	SST	ea.
9500-01020-030	Single End Fitting, 1/16" x 0.020" x 30 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	SST	ea.
9502-01007-HP	Single End Fitting, 1/16" x 0.007", U-Shape for Agilent 1100 System	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	SST	ea.
9504-01005-050	Single End Fitting, 1/16" x 0.005" x 50 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	PEEK, Natural	ea.
9504-01007-050	Single End Fitting, 1/16" x 0.007" x 50 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	PEEK, Natural	ea.
9504-01010-050	Single End Fitting, 1/16" x 0.010" x 50 cm	10-32 Coned	6,000 psi (414 bar)	Diamond Knurl	PEEK, Natural	ea.
SURE-FIT FITTINGS REPLACEMENT PARTS						
113-01005-050-5	Replacement Tubing, 1/16" x 0.005" x 50 cm	—	6,000 psi (414 bar)	—	PEEK, Natural	5-pk
113-01010-050-5	Replacement Tubing, 1/16" x 0.010" x 50 cm	—	6,000 psi (414 bar)	—	PEEK, Natural	5-pk
113-01007-050-5	Replacement Tubing, 1/16" x 0.007" x 50 cm	—	6,000 psi (414 bar)	—	PEEK, Natural	5-pk
9500-F-10	Replacement Ferrule	10-32 Coned	6,000 psi (414 bar)	—	PPS	10-pk
9500-FP	Replacement Ferrule	10-32 Coned	6,000 psi (414 bar)	—	PEEK, Natural	ea.
RHEFLEX ONE-PIECE FITTINGS						
6000-360	Rheflex Fitting for 1/32" OD Tubing	M4 Coned	5,000 (345 bar)	1/4" Hex	PEEK, Natural	10-pk
6000-361	Rheflex Plug	M4 Coned	5,000 (345 bar)	1/4" Hex	PEEK, Natural	10-pk

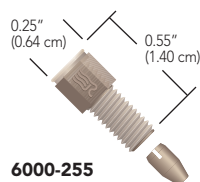
Two-Piece RheFlex® Fingertight Fittings

The Rheodyne® RheFlex Precision Two-Piece PEEK™ Fittings sets provide inert, biocompatible connections for instrumentation. These fittings have a reliable, time-tested design. Each 1/16" fittings set contains a 10-32 threaded nut and a specially-designed PEEK ferrule. Three lengths of the 1/16" nut are available: Standard, Short, and Extra Long. RheFlex Fingertight Fittings are rated for use up to 7,000 psi (483 bar). Also offered in this product line is the 6000-078 fitting, designed to connect 1/8" OD tubing into our manual preparative-scale injectors. (See pages 142 – 143 for more information on these valves.)

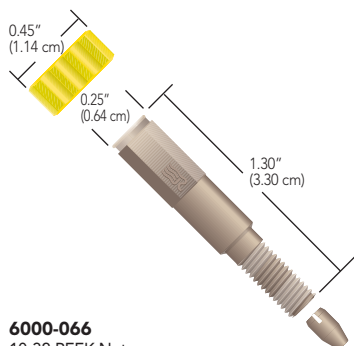
View the online product bulletin at: www.idex-hs.com



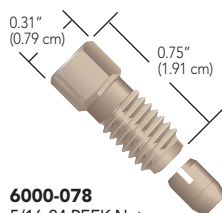
6000-254
10-32 PEEK Nut
with 6000-251 PEEK Ferrule
(RD ChromTRAC suffix)



6000-255
10-32 PEEK Nut
with 6000-251 PEEK Ferrule



6000-066
10-32 PEEK Nut
with 6000-251 PEEK Ferrule
(YL ChromTRAC suffix)



6000-078
5/16-24 PEEK Nut
with 6000-079 PEEK Ferrule

ChromTRAC™

- Brightly colored knobs to easily track inlets and outlets of valves, columns, and detectors

All ChromTRAC-compatible RheFlex fittings offer the ChromTRAC knob option. Specify the ChromTRAC two letter suffix for the color choice when ordering. Please see the ChromTRAC Suffix Codes table below. For example, to order red ChromTRAC knobs with the RheFlex One-Piece Fitting on this page, specify 6000-282RD. No suffix indicates black knobs. The 6000-283 ChromTrac kit contains 20 of the colored knobs for a variety to quickly and easily color code tubing lines leading from a column selection valve.

View the online product bulletin for RheFlex fittings at: www.idex-hs.com

ChromTRAC Suffix Codes

CODE	COLOR
BLK	Black
BL	Blue
GN	Green
GY	Gray
RD	Red
WH	White
YL	Yellow
MC	Multi-color (two each of blue, green, gray, red and yellow)

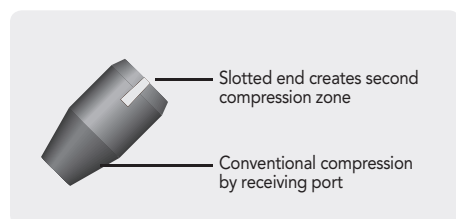
Add these two letter suffixes to the end of the seven-digit part numbers of the 10-32 and M4 threaded RheFlex Fittings on pages 11, 12, and 13.

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
RHEFLEX TWO-PIECE FITTINGS (INCLUDES FERRULES)						
6000-066	Rheflex Fitting for 1/16" OD Tubing, Extra Long	10-32 Coned	7,000 psi (483 bar)	ChromTRAC knob	PEEK, Natural	ea.
6000-078	Rheflex Fitting for 1/8" OD Tubing	5/16-24 Coned	5,000 psi (345 bar)	5/16" Hex	PEEK, Natural	ea.
6000-254	Rheflex Fitting for 1/16" OD Tubing	10-32 Coned	7,000 psi (483 bar)	ChromTRAC knob	PEEK, Natural	10-pk
6000-255	Rheflex Fitting for 1/16" OD Tubing, Short	10-32 Coned	7,000 psi (483 bar)	1/4" Hex	PEEK, Natural	10-pk
6000-283	ChromTRAC Identification Kit	—	—	ChromTRAC knob		20-pk
REPLACEMENT FERRULES						
6000-079	Rheflex Ferrule for 1/8" OD Tubing	5/16-24 Coned	7,000 psi (483 bar)	ChromTRAC knob	PEEK, Natural	5-pk
6000-251	Rheflex Ferrule for 1/16" OD Tubing	10-32 Coned	7,000 psi (483 bar)	ChromTRAC knob	PEEK, Natural	10-pk

Two-Piece SealTight™ Fingertight Fittings

- Several nut lengths and head styles to fit into a variety of applications
- Designed to connect 1/16" OD tubing to 10-32 coned ports
- Hold up to 9,000 psi (620 bar)

The dual compression created by the specially designed nut and ferrule enables the Upchurch Scientific® SealTight Fittings system to outperform standard finger tightened fittings. The forward cone of the SealTight Ferrule provides gripping power and a leak-free seal via conventional compression by the receiving port. The slotted end creates the second compression zone in conjunction with a SealTight Nut. All SealTight Nuts are for use with 1/16" OD tubing and are designed to be used with the F-192 Ferrule. A wide variety of fitting head styles are available for various space constraints. This fittings system is also interchangeable with the Two-Piece RheFlex® Fittings System for 1/16" OD tubing, shown on the previous page.



Note

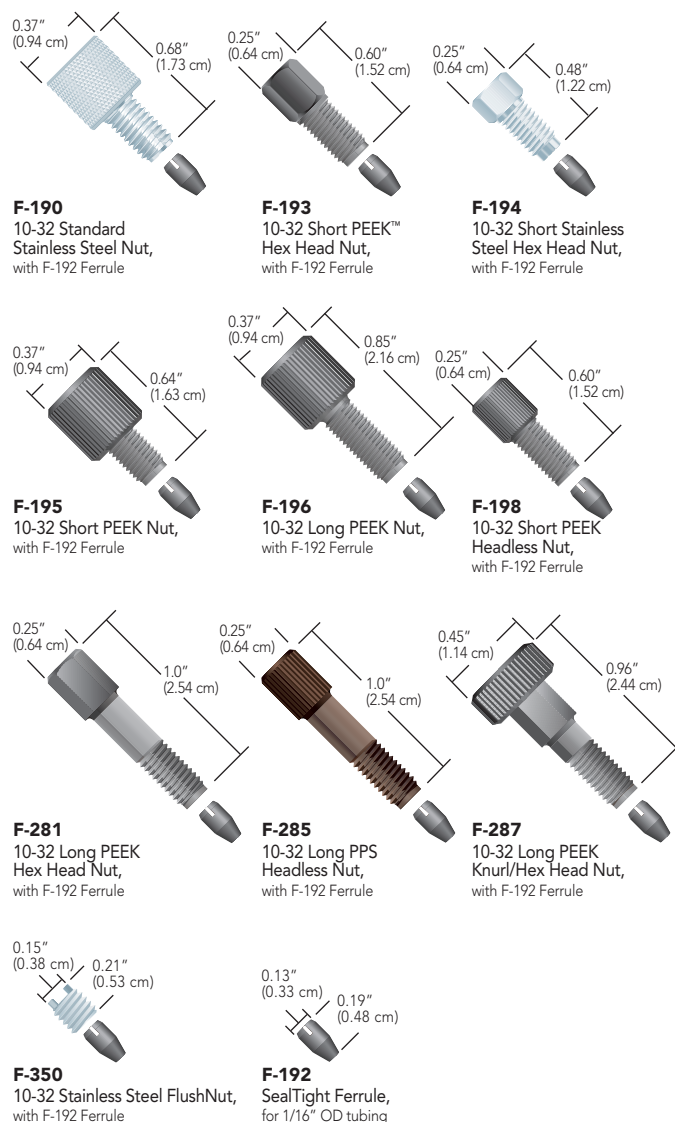
Overtightening these fittings on fluoropolymer (e.g., FEP, PFA and ETFE) tubing can cause the ID of your tubing to collapse.

Related Products

- Find tightening tools for these fittings on page 33.
- Try the F-350 FlushNut™ for the ultimate streamline design. For more information on these innovative products, please see page 31.



Top Seller SEE STARRED PRODUCTS



Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
SEALTIGHT TWO-PIECE FITTINGS (INCLUDES F-192 FERRULES)						
F-190x	SealTight Fitting for 1/16" OD Tubing	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	Standard Knurl	SST	10-pk
★ F-193x	SealTight Fitting for 1/16" OD Tubing, Short	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	1/4" Hex	PEEK Black	10-pk
F-194x	SealTight Fitting for 1/16" OD Tubing, Short	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	1/4" Hex	SST	10-pk
F-195x	SealTight Fitting for 1/16" OD Tubing, Short	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	Standard Knurl	PEEK Black	10-pk
★ F-196x	SealTight Fitting for 1/16" OD Tubing, Long	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	Standard Knurl	PEEK Black	10-pk
F-197x	SealTight Fitting for 1/16" OD Tubing, Long	M6 Coned	7,000 – 9,000 psi (483 – 620 bar)	Standard Knurl	PEEK Black	10-pk
F-198x	SealTight Fitting for 1/16" OD Tubing, Short	10-32 Coned	3,000 – 9,000 psi (207 – 620 bar)	Headless Knurl	PEEK Black	10-pk
F-281x	SealTight Fitting for 1/16" OD Tubing, Long	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	1/4" Hex	PEEK Black	10-pk
F-284x	SealTight Fitting for 1/16" OD Tubing, Long	10-32 Coned	3,000 – 9,000 psi (207 – 620 bar)	Headless Knurl	PEEK Black	10-pk
F-285x	SealTight Fitting for 1/16" OD Tubing, Long	10-32 Coned	3,000 – 9,000 psi (207 – 620 bar)	Headless Knurl	PPS Brown	10-pk
F-287x	SealTight Fitting for 1/16" OD Tubing, Long	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	Knurl-1/4" Hex	PEEK Black	10-pk
F-350x	SealTight Fitting for 1/16" OD Tubing, FlushNut	10-32 Coned	7,000 – 9,000 psi (483 – 620 bar)	FlushNut	SST	10-pk
REPLACEMENT FERRULES						
★ F-192x	SealTight Ferrule for 1/16" OD Tubing	10-32 or M6 Coned	7,000 – 9,000 (483 – 620 bar)	—	PEEK/Black	10-pk

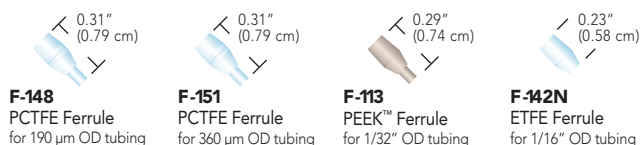
Two-Piece Fingertight Fittings

- Designed to connect tubing to 10-32 coned ports
- Ferrules available for directly connecting 1/16", 1/32", 360 µm or 190 µm OD tubing

Two-Piece Fingertight Fittings feature a separate ferrule. With a two-piece design, you can replace just the ferrule instead of the entire unit, making these Fingertights more economical than the one-piece version. Use a standard knurled head fitting for traditional fingertight applications, or use a fitting with wings built into the head for extra tightening leverage. A stainless steel hex headed fitting can be used for applications where a wrench may be needed for added tightening torque.

To order the fittings as shown to the right, simply reference the part numbers as indicated. To exchange the ferrule typically packaged with our fittings with one of our specialty ferrules shown below, simply replace the letter "x" in the part number with a "-01", and then specify the ferrule needed on a separate line. For example, to order the F-140 fitting with the M-215 ferrule, specify F-140-01 and M-215 separately. Please note: all "-01" fittings are packaged individually, not in 10-packs.

The M-215 Conductive Perfluoroelastomer Ferrule is designed for mass spectrometer electrospray applications. Unlike most graphite ferrules, the elastomeric properties of this ferrule let you use it through many tightening/retightening cycles. It also eliminates any possibility of graphite contamination in your system. Like graphite ferrules, you can apply voltage through a metallic port block or metallic nut, allowing voltage to translate to the flow path through the ferrule.



F-148
PCTFE Ferrule
for 190 µm OD tubing

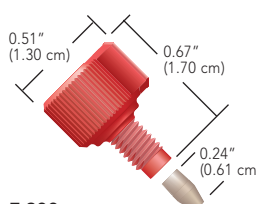
F-151
PCTFE Ferrule
for 360 µm OD tubing

F-113
PEEK™ Ferrule
for 1/32" OD tubing

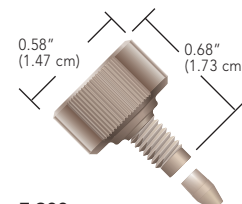
F-142N
ETFE Ferrule
for 1/16" OD tubing



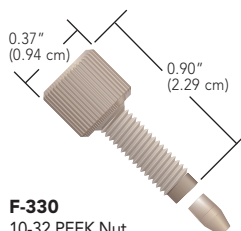
M-215
Conductive Perfluoroelastomer Ferrule
for 360 µm OD tubing



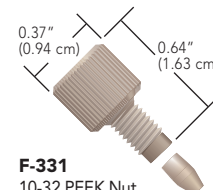
F-200
10-32 Delrin® Winged Nut
with F-142 PEEK Ferrule



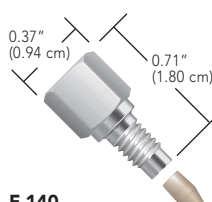
F-300
10-32 PEEK Double-Winged Nut
with F-142 PEEK Ferrule



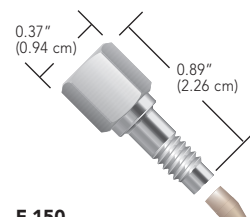
F-330
10-32 PEEK Nut
with F-142 PEEK Ferrule



F-331
10-32 PEEK Nut
with F-142 PEEK Ferrule



F-140
10-32 Stainless Steel Nut
with F-142 PEEK Ferrule



F-150
10-32 Stainless Steel Nut
with F-142 PEEK Ferrule

Application Note



Some Upchurch Scientific® Fingertight Nuts feature wings in addition to a knurled head, which provide more leverage when tightening the fitting into a receiving port. Choose our single or double-winged design.

Please Note: customers can use the standard knurl head fittings with our tightening tools found on page 33.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
TWO-PIECE FINGERTIGHT FITTINGS (INCLUDES F-142 FERRULES)						
F-140x	Fitting for 1/16" OD Tubing	10-32 Coned	6,000 psi (414 bar)	5/16" Hex	SST/PEEK Natural	10-pk
F-150x	Fitting for 1/16" OD Tubing, Long	10-32 Coned	6,000 psi (414 bar)	5/16" Hex	SST/PEEK Natural	10-pk
F-200x	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	6,000 psi (414 bar)	Single Wing	Delrin Red/PEEK Natural	10-pk
★ F-300x	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	6,000 psi (414 bar)	Double Wing	PEEK Natural	10-pk
★ F-330x	Fingertight Fitting for 1/16" OD Tubing, Long	10-32 Coned	6,000 psi (414 bar)	Standard Knurl	PEEK Natural	10-pk
F-331x	Fingertight Fitting for 1/16" OD Tubing	10-32 Coned	6,000 psi (414 bar)	Standard Knurl	PEEK Natural	10-pk
REPLACEMENT FERRULES						
★ F-113	Ferrule for 1/32" OD Tubing	10-32 Coned	6,000 psi (414 bar)	—	PEEK Natural	ea.
★ F-142x	Ferrule for 1/16" OD Tubing	10-32 Coned	6,000 psi (414 bar)	—	PEEK Natural	10-pk
F-142Nx	Ferrule for 1/16" OD Tubing	10-32 Coned	4,000 psi (276 bar)	—	ETFE Natural	10-pk
F-148	Ferrule for 190 µm OD tubing	10-32 Coned	6,000 psi (414 bar)	—	PCTFE Natural	ea.
F-151	Ferrule for 360 µm OD Tubing	10-32 Coned	6,000 psi (414 bar)	—	PCTFE Natural	ea.
★ M-215	Conductive Ferrule for 360 µm OD tubing	10-32 Coned	1,500 psi (103 bar)	—	Conductive Perfluoroelastomer	ea.

LiteTouch® Fittings

- ▶ Helps prevent twisting of polymer tubing
- ▶ High pressure with fingertight convenience
- ▶ Options available for 1/32", 1/16" or 1/8" OD tubing

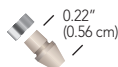
The LiteTouch Fittings System grips tubing at two compression points (see diagram), holding to high pressures with Fingertight convenience. It also prevents polymer tubing from twisting, a potential problem when using standard Fingertight fittings. LiteTouch Fittings are available for use with 1/32", 1/16" or 1/8" OD tubing sizes, and for 10-32 or 1/4-28 coned ports.

For those space-limited applications where nut heads interfere with each other, try the FlushNut™ Fittings. (FlushNut Fittings require a tightening tool. Please see page 31 for more information about these products.)

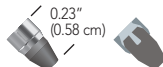
To avoid collapsing the ID of your tubing, the LiteTouch system can be used on hard tubing only, such as stainless steel and PEEK™ polymer tubing. The LiteTouch Ferrule System is not recommended for repeated use in plastic ports.



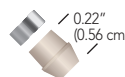
LT-132
PEEK Ferrule with
Stainless Steel Lock Ring
for 1/32" OD tubing



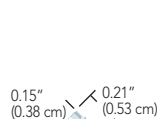
LT-100
PEEK Ferrule with
Stainless Steel Lock Ring
for 1/16" OD tubing



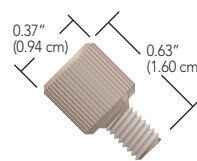
LT-135
One-Piece LiteTouch
SealTight™ Ferrule with
Stainless Steel Lock Ring
for 1/16" OD tubing



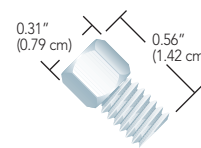
LT-200
PEEK Ferrule with
Stainless Steel Lock Ring
for 1/8" OD tubing



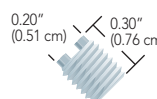
F-354
10-32 Stainless
Steel FlushNut
for 1/32" and 1/16" OD tubing



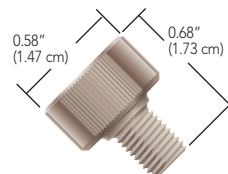
LT-110
10-32 PEEK Nut
for 1/32" and 1/16" OD tubing



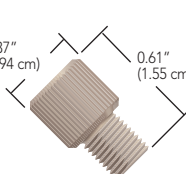
C-235
1/4-28 Stainless
Steel Nut
for 1/8" OD tubing



F-364
1/4-28 Stainless
Steel FlushNut
for 1/8" OD tubing



LT-210
1/4-28 PEEK
Double-Winged Nut
for 1/8" OD tubing

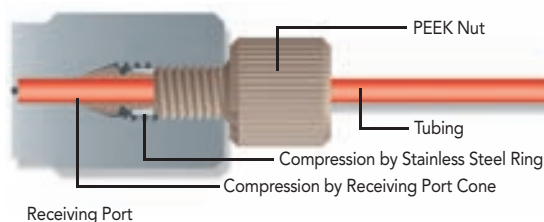


LT-215
1/4-28 PEEK Nut
for 1/8" OD tubing

Related Products

The stainless steel nuts on page 10 can also be used with the LiteTouch ferrules on this page.

LiteTouch Fittings Systems



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
LITETOUCH NUTS						
C-235x	LiteTouch Nut for 1/8" OD Tubing	1/4-28 Coned	4,500 psi (310 bar)	5/16" Hex	SST	10-pk
F-354x	LiteTouch Nut for 1/16" or 1/32" OD Tubing, Flushnut	10-32 Coned	5,000 psi (345 bar)	Flushnut	SST	10-pk
F-364x	LiteTouch Nut for 1/8" OD Tubing, Flushnut	1/4-28 Coned	4,500 psi (310 bar)	Flushnut	SST	10-pk
LT-110x	LiteTouch Nut for 1/16" or 1/32" OD Tubing	10-32 Coned	5,000 psi (345 bar)	Standard Knurl	PEEK Natural	10-pk
LT-210x	LiteTouch Nut for 1/8" OD Tubing	1/4-28 Coned	4,500 psi (310 bar)	Double Wing	PEEK Natural	10-pk
LT-215x	LiteTouch Nut for 1/8" OD Tubing, Short	1/4-28 Coned	4,500 psi (310 bar)	Standard Knurl	PEEK Natural	10-pk
LITETOUCH FERRULES						
★ LT-100x	LiteTouch Ferrule for 1/16" OD Tubing	10-32 Coned	5,000 psi (345 bar)	—	PEEK Natural/SST	10-pk
★ LT-132x	LiteTouch Ferrule for 1/32" OD Tubing	10-32 Coned	5,000 psi (345 bar)	—	PEEK Natural/SST	10-pk
★ LT-135x	LiteTouch Ferrule for 1/16" OD Tubing	10-32 Coned	10,000 psi (690 bar)*	—	PEEK Black/SST	10-pk
LT-200x	LiteTouch Ferrule for 1/8" OD Tubing	1/4-28 Coned	4,500 psi (310 bar)	—	PEEK Natural/SST	10-pk

*When used with a stainless steel 10-32 nut from page 10

NanoTight™ Fittings and Sleeves

- For connecting 1/16" OD or capillary tubing using tubing sleeves to standard 10-32 coned ports
- Multiple nut styles available
- Nuts manufactured from PEEK™ polymer, ferrules manufactured from ETFE

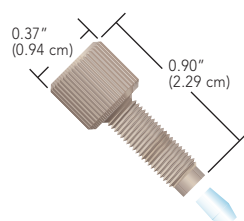
Upchurch Scientific® NanoTight Fittings and Sleeves are designed to connect 70 µm–1 mm OD capillary tubing to any standard 10-32 coned port normally intended for 1/16" OD tubing using the NanoTight Tubing Sleeves on page 19. The fittings can also be used to connect any 1/16" OD tubing. The ETFE ferrule material is softer than PEEK, making it a good candidate for connecting thin walled semi-rigid tubing such as FEP and ETFE into 10-32 ports with minimal constricting the inner diameter.

Select from our expansive line of PEEK NanoTight Fittings, featuring several head style and length options. Each 10-pack of nuts includes ten ETFE F-142N ferrules.

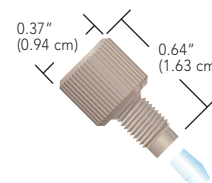


Related Products

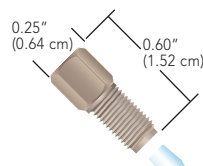
Find tightening tools for these head styles on page 33.



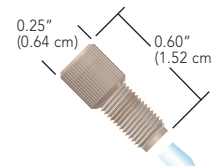
F-330N
Long Standard Head Nut
with F-142N Ferrule



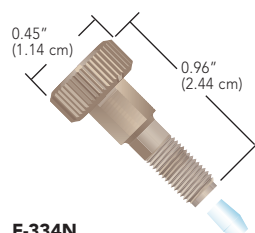
F-331N
Short Standard Head Nut
with F-142N Ferrule



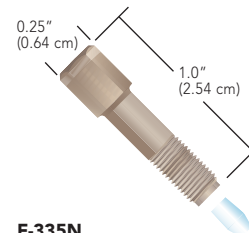
F-332N
Short Hex Head Nut
with F-142N Ferrule



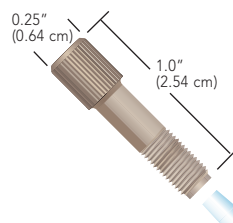
F-333N
Short Headless Nut
with F-142N Ferrule



F-334N
Long Knurl/Hex Head Nut
with F-142N Ferrule



F-335N
Long Hex Head Nut
with F-142N Ferrule



F-336N
Long Headless Nut
with F-142N Ferrule



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material (Nut/Ferrule)	Qty.
NANOTIGHT FITTINGS (INCLUDES F-142N FERRULES)						
★ F-330Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves	10-32 Coned	4,000 psi (276 bar)	Standard Knurl	PEEK Natural/ETFE Natural	10-pk
F-331Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves, Short	10-32 Coned	4,000 psi (276 bar)	Standard Knurl	PEEK Natural/ETFE Natural	10-pk
F-332Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves, Short	10-32 Coned	4,000 psi (276 bar)	1/4" Hex	PEEK Natural/ETFE Natural	10-pk
★ F-333Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves, Short	10-32 Coned	4,000 psi (276 bar)	Headless Knurl	PEEK Natural/ETFE Natural	10-pk
F-334Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves, Long	10-32 Coned	4,000 psi (276 bar)	Knurl-1/4" hex	PEEK Natural/ETFE Natural	10-pk
F-335Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves, Long	10-32 Coned	4,000 psi (276 bar)	1/4" Hex	PEEK Natural/ETFE Natural	10-pk
F-336Nx	NanoTight Fitting for 1/16" OD Tubing and NanoTight Sleeves, Long	10-32 Coned	4,000 psi (276 bar)	Headless Knurl	PEEK Natural/ETFE Natural	10-pk
REPLACEMENT FERRULES						
F-142Nx	NanoTight Ferrule for 1/16" OD Tubing and NanoTight Sleeves	10-32 Coned	4,000 psi (276 bar)	—	ETFE Natural	10-pk

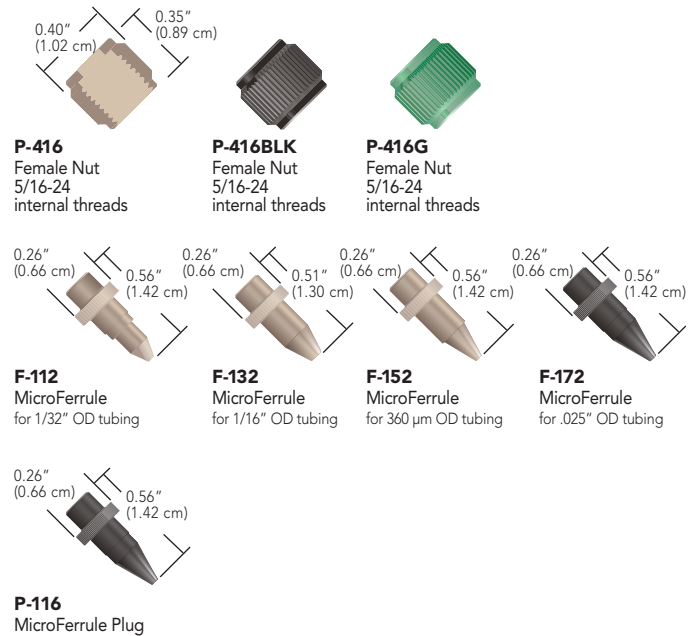
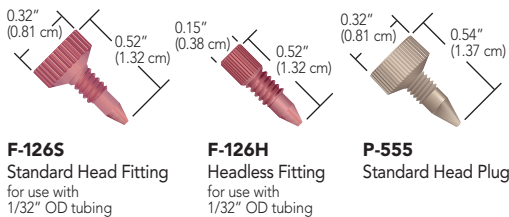
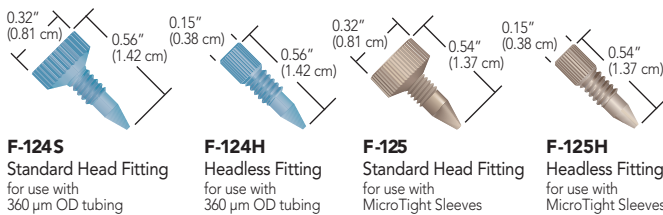
MicroTight® Fittings

- Comprehensive Fitting System for Connecting Capillary Tubing
- Made from PEEK™ Polymer

Upchurch Scientific® MicroTight One-Piece Fittings are designed for use with the NanoPort™ and MicroTight Unions, Adapters and Inline MicroFilters. Specifically made for 360 µm OD tubing, 1/32" OD tubing or our MicroTight Tubing Sleeves (see page 19), these fittings make superior fingertight connections with capillary tubing. MicroTight Fittings withstand temperatures up to 125 °C.

The MicroTight family also includes a female nut matched with one of five dedicated ferrules for connecting specific tubing ODs.

Use the P-277 Extender Tool to tighten standard micro knurl 6-32 fittings in hard-to-reach places. Tighten micro headless 6-32 fittings with our N-290 Tool. See page 33 for more information.



Related Products

- Connectors for Capillary Tubing can be found on pages 37 – 46.
- Very High Pressure fittings for capillary tubing can be found on page 9.
- Capillary tubing is featured on pages 65.

Note

MicroTight fittings and MicroFerrules

While the MicroTight Female Nuts may be used with any of the separate MicroFerrules, the MicroFerrules themselves are port-specific and are thus not interchangeable. Additionally, the one-piece MicroTight fittings are also port-specific and should not be exchanged.



Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
MICROTIGHT FITTINGS						
F-124Hx	MicroTight Fitting for 360 µm OD Tubing	6-32 Coned	5,000 psi (345 bar)	Micro Headless Knurl	PEEK Blue	10-pk
F-124Sx	MicroTight Fitting for 360 µm OD Tubing	6-32 Coned	5,000 psi (345 bar)	Standard Micro Knurl	PEEK Blue	10-pk
F-125Hx	MicroTight Fitting for MicroTight Tubing Sleeves	6-32 Coned	4,000 psi (276 bar)	Micro Headless Knurl	PEEK Natural	10-pk
F-125x	MicroTight Fitting for MicroTight Tubing Sleeves	6-32 Coned	5,000 psi (345 bar)	Standard Micro Knurl	PEEK Natural	10-pk
★ F-126Hx	MicroTight Fitting for 1/32" OD Tubing	6-32 Coned	5,000 psi (345 bar)	Micro Headless Knurl	PEEK Red	10-pk
F-126Sx	MicroTight Fitting for 1/32" OD Tubing	6-32 Coned	5,000 psi (345 bar)	Standard Micro Knurl	PEEK Red	10-pk
P-555	MicroTight Plug	6-32 Coned	5,000 psi (345 bar)	Standard Micro Knurl	PEEK Natural	ea.
MICROFERRULES AND FEMALE NUTS						
F-112	MicroFerrule for 1/32" OD Tubing	5/16-24 Coned	5,000 psi (345 bar)	—	PEEK Natural	ea.
F-132	MicroFerrule for 1/16" OD Tubing	5/16-24 Coned	5,000 psi (345 bar)	—	PEEK Natural	ea.
★ F-152	MicroFerrule for 360 µm OD Tubing	5/16-24 Coned	5,000 psi (345 bar)	—	PEEK Natural	ea.
F-152BLK	MicroFerrule for 360 µm OD Tubing	5/16-24 Coned	5,000 psi (345 bar)	—	PEEK Black	ea.
★ F-172	MicroFerrule for MicroTight Tubing Sleeves	5/16-24 Coned	4,000 psi (276 bar)	—	PEEK Black	ea.
P-116	MicroFerrule Plug	5/16-24 Coned	5,000 psi (345 bar)	—	PEEK Black	ea.
★ P-416	MicroTight Female Nut	5/16-24 Coned	4,000 – 5,000 psi (276 – 345 bar)	Female Knurl	PEEK Natural	ea.
P-416BLK	MicroTight Female Nut	5/16-24 Coned	4,000 – 5,000 psi (276 – 345 bar)	Female Knurl	PEEK Black	ea.
P-416G	MicroTight Female Nut	5/16-24 Coned	4,000 – 5,000 psi (276 – 345 bar)	Female Knurl	PEEK Green	ea.

MicroTight® Tubing Sleeves

- ▶ Manufactured from PEEK™ polymer
- ▶ Pressure rated to 4,000 psi (276 bar)
- ▶ Color-coded for easy inner diameter identification

Upchurch Scientific® MicroTight Tubing Sleeves feature an outer diameter of 0.025" and offer a wide assortment of inner diameters to help facilitate capillary tubing connections with our MicroTight accessories. Because the sleeves are manufactured from PEEK polymer, they carry an upper temperature threshold of 125 °C.

To use these sleeves properly, choose a sleeve with an inner diameter 0.001"–0.002" (25–50 µm) larger than the outer diameter of your capillary tubing. Then, slip the sleeve over your flow path tubing, such that your tubing extends all the way through the sleeve, but not beyond the end of the sleeve. Choose the correct fitting that corresponds with your receiving port, slide it over the sleeved flow path tubing and connect as normal.



NanoTight™ Tubing Sleeves

- ▶ Manufactured from FEP fluoropolymer
- ▶ Pressure rated to 4,000 psi (276 bar)
- ▶ Outer diameter of 1/16" — the most popular size used on most instrumentation

Upchurch Scientific NanoTight Tubing Sleeves are manufactured using FEP fluoropolymer and precisely cut to a 1.6" length. A wide assortment of sleeves is available, ensuring the availability of a NanoTight sleeve for most applications. Many of the sleeves feature a light color tint that can help more easily identify the inner diameter for future orders. Because FEP is the base polymer for these sleeves, there is a maximum recommended continuous operating temperature of 50 °C.

Upchurch Scientific NanoTight sleeves were designed primarily for use with the NanoTight fittings, found on page 17 and also work well with the Super Flangeless™ fittings for 1/16" OD tubing on pages 21 and 22. For tubing sleeves that can be used effectively with stainless steel fittings and at higher temperatures, consider using the Upchurch Scientific PEEK Tubing Sleeves, found on the next page.

Application Note

Why use Sleeves?

Because most capillary tubing connections are made into coned receiving ports, where the port is not designed to be used with capillary tubing directly, special care must be used to ensure a good connection. While custom ferrules can help make these connections, they only offer a fixed-length nose — and because most tubing pockets will vary slightly in length, this can lead to leaking or dead volume.

To help save overall expense while maintaining a concentric connection with minimal dead volume, IDEX Health & Science recommends the use of sleeves. Because sleeves are not permanently attached to a ferrule, they can easily adapt to varying tubing pocket depths. Additionally, because they are manufactured using Upchurch Scientific extruded polymer tubing, you are assured of the concentricity of the resultant connection.



Top Seller SEE STARRED PRODUCTS

Part No.	ID	For Tubing OD Size	Color	Qty.
MICROTIGHT PEEK TUBING SLEEVES AND KITS, 0.025" OD				
F-180x	125 µm (0.005")	70 – 110 µm	Red	10-pk
F-181x	180 µm (0.007")	125 – 165 µm	Yellow	10-pk
F-182x	230 µm (0.009")	175 – 215 µm	Natural	10-pk
F-183x	280 µm (0.011")	225 – 265 µm	Blue	10-pk
F-184x	330 µm (0.013")	275 – 315 µm	Orange	10-pk
F-185x	395 µm (0.0155")	340 – 380 µm	Green	10-pk
F-186x	455 µm (0.018")	400 – 440 µm	Black	10-pk
F-187x	535 µm (0.021")	480 – 520 µm	Natural	10-pk
F-188x	152 µm (0.006")	95 – 135 µm	Purple	10-pk
1328	MicroTight Tubing Sleeve Kit contains (6) each of the sleeve sizes listed above			
1356	MicroTight Connector Kit Kit contains: a 10-pack of each MicroTight Tubing Sleeve (F-180 – F-187); (2) P-770 MicroTight Adapters; and (2) MicroTight P-720 Unions			
NANOTIGHT FEP TUBING SLEEVES, 1/16" OD				
F-237x	125 µm (0.005")	70 – 110 µm	Red	10-pk
F-238x	180 µm (0.007")	125 – 165 µm	Yellow	10-pk
F-239x	215 µm (0.0085")	160 – 200 µm	Natural	10-pk
F-240x	280 µm (0.011")	225 – 265 µm	Blue	10-pk
F-241x	330 µm (0.013")	275 – 315 µm	Orange	10-pk
F-242x	395 µm (0.0155")	340 – 380 µm	Green	10-pk
F-243x	455 µm (0.018")	400 – 440 µm	Black	10-pk
F-244x	535 µm (0.021")	480 – 520 µm	Natural	10-pk
F-245x	610 µm (0.024")	555 – 595 µm	Red	10-pk
F-246x	685 µm (0.027")	630 – 670 µm	Yellow	10-pk
F-247x	840 µm (0.033")	785 – 825 µm	Green	10-pk
F-252x	1.07 mm (0.042")	1 mm	Purple	10-pk

1/16" OD PEEK™ Tubing Sleeves

- ▶ For connecting capillary tubing to standard 10-32 ports
- ▶ Require the use of wrench tightened stainless steel nuts
- ▶ Pressure rated to 6,000 psi (414 bar)

Like the NanoTight™ FEP Sleeves on the previous page, these PEEK Tubing Sleeves are designed to be used with 1/16" OD, 10-32 threaded fittings to adapt capillary tubing to standard coned ports. Made of PEEK polymer, these 1.3" long sleeves can be used up to 125 °C.

These sleeves require a wrench tightened nut to achieve proper sealing. We recommend the F-140 Two-Piece Fingertight Fitting (page 15), which includes a PEEK ferrule or the hex-head SealTight™ fittings on page 16. Many researchers also use a stainless steel nut and ferrule with these sleeves, such as our U-400 and U-401 (page 10).

1/32" OD PEEK Tubing Sleeves

These 1.6" long Upchurch Scientific® 1/32" OD PEEK Tubing Sleeves can be used with any fitting designed for 1/32" OD tubing when smaller tubing must be connected (see the Application Note on this page). Select the appropriate sleeve from the product listing for your capillary tubing OD size. The 1/32" OD PEEK Tubing Sleeves have a maximum recommended temperature of 125 °C and have a pressure rating of 5,000 psi (345 bar).



Related Products

Use 1/32" OD PEEK or FEP Sleeves to connect capillary tubing with the following:

- ▶ The F-113 Ferrule and Two-Piece Fingertight Fittings for 10-32 ports (page 15).
- ▶ The F-112 (page 139) and P-416BLK MicroTight® Fittings (page 140) — 1/32" OD PEEK Tubing Sleeves only.
- ▶ The 1/32" OD MicroTight Fittings on page 18.
- ▶ The Rheodyne® RheFlex® M4 Fitting (page 12) for MX Module applications.
- ▶ The M-645 Valco®-Compatible Fitting (page 11) for Valco Nanovolume® valve applications.

1/32" OD FEP Tubing Sleeves

These 1.6" long sleeves facilitate connecting capillary tubing into ports designed for 1/32" OD tubing. Please refer to the product listing below to select the appropriate sleeve for your capillary OD size. These sleeves can be used at up to 50 °C and have a pressure rating of 1,750 psi (121 bar).



Clockwise, starting at top:

- ▶ 1/16" OD PEEK Tubing Sleeves, shown with F-140 Fitting
- ▶ 1/32" OD PEEK Tubing Sleeves, shown with F-126H Fitting
- ▶ 1/32" OD FEP Tubing Sleeves, shown with F-126S Fitting
- ▶ Fittings and tubing only shown to highlight how sleeves are designed to be used; they are not included with the sleeves



Top Seller SEE STARRED PRODUCTS

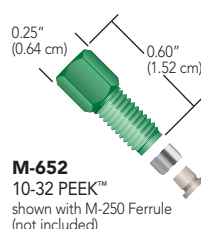
Part No.	ID	For Tubing OD Size	Color	Qty.
PEEK TUBING SLEEVES FOR 1/16" OD FITTINGS				
F-225	125 µm (0.005")	70 – 110 µm	Red	ea.
F-226	180 µm (0.007")	125 – 165 µm	Yellow	ea.
F-227	230 µm (0.009")	175 – 215 µm	Yellow	ea.
F-228	250 µm (0.011")	225 – 265 µm	Blue	ea.
F-229	330 µm (0.013")	275 – 315 µm	Natural	ea.
★ F-230	405 µm (0.016")	350 – 390 µm	Orange	ea.
F-231	560 µm (0.022")	505 – 545 µm	Natural	ea.
F-232	785 µm (0.031")	730 – 770 µm	Natural	ea.
F-233	865 µm (0.034")	785 – 825 µm	Blue	ea.
F-234	685 µm (0.027")	630 – 670 µm	Yellow	ea.
PEEK TUBING SLEEVES FOR 1/32" OD FITTINGS				
F-380x	125 µm (0.005")	70 – 110 µm	Red	10-pk
F-381x	180 µm (0.007")	125 – 165 µm	Yellow	10-pk
F-382x	205 µm (0.008")	150 – 190 µm	Natural	10-pk
F-383x	230 µm (0.009")	175 – 215 µm	Gray	10-pk
F-384x	255 µm (0.010")	200 – 240 µm	Blue	10-pk
★ F-385x	380 µm (0.015")	325 – 365 µm	Natural	10-pk
F-386x	510 µm (0.020")	455 – 495 µm	Orange	10-pk
F-387x	250 µm (0.011")	225 – 265 µm	Red	10-pk
F-388x	330 µm (0.013")	275 – 315 µm	Black	10-pk
FEP TUBING SLEEVES FOR 1/32" OD FITTINGS				
F-370x	75 µm (0.003")	20 – 60 µm	Natural	10-pk
F-371x	125 µm (0.005")	70 – 110 µm	Red	10-pk
F-372x	180 µm (0.007")	125 – 165 µm	Yellow	10-pk
F-373x	230 µm (0.009")	175 – 215 µm	Natural	10-pk
F-374x	280 µm (0.011")	225 – 265 µm	Blue	10-pk
F-375x	330 µm (0.013")	275 – 315 µm	Orange	10-pk
★ F-376x	395 µm (0.0155")	340 – 380 µm	Green	10-pk

Super Flangeless™ Fittings

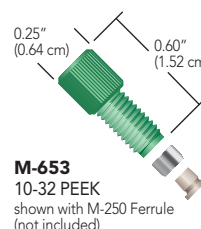
- Designed to hold to higher pressures than standard flangeless fittings
- Eliminates loosening of nuts caused by tubing twist

The design of the Super Flangeless fitting system includes a two-piece ferrule with a lock ring which operates as a bearing against the nut. The nut can then spin freely without turning the ferrule while rotating, preventing the tubing from twisting during the tightening process. This feature helps eliminate subsequent loosening of the nut, making the Super Flangeless system ideal for applications subject to vibration. These products are also well suited for connections that need to be broken frequently, since the lock ring holds the ferrule in place on the tubing until intentionally removed. Use the LT-300 Removal Tool – found on page 33 – to release Super Flangeless Ferrules from tubing for repositioning.

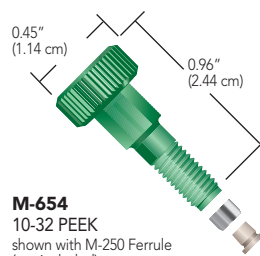
The fittings systems on this page connect 1/16" OD tubing into any flat-bottom 6-40, 6-32 or 10-32 flat-bottom port. Use the FEP NanoTight™ Sleeves from page 19 with these fittings to connect capillary tubing with OD sizes between 70 µm and 1 mm. Choose from a variety of nut styles for the 10-32 nuts, depending on the application. The headless 6-40 and 6-32 nuts can be tightened using the N-290 extender tool found on page 33.



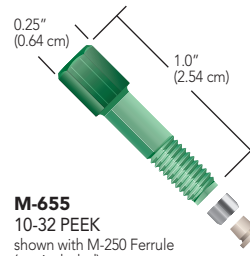
M-652
10-32 PEEK™
shown with M-250 Ferrule
(not included)



M-653
10-32 PEEK
shown with M-250 Ferrule
(not included)



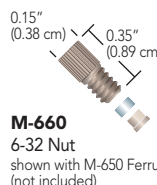
M-654
10-32 PEEK
shown with M-250 Ferrule
(not included)



M-655
10-32 PEEK
shown with M-250 Ferrule
(not included)



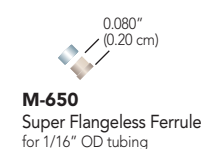
M-644-03
6-40 Nut
shown with M-650 Ferrule
(not included)



M-660
6-32 Nut
shown with M-650 Ferrule
(not included)



NEW!
M-250
Super Flangeless Ferrule
for 1/16" OD tubing



M-650
Super Flangeless Ferrule
for 1/16" OD tubing



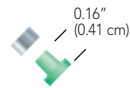
Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
SUPER FLANGELESS NUTS						
★ M-644-03x	Super Flangeless Nut for 1/16" OD Tubing	6-40 Flat Bottom	750 – 3,750 psi (52 – 259 bar)	Micro Headless	PEEK Green	10-pk
M-652x	Super Flangeless Nut for 1/16" OD Tubing	10-32 Flat Bottom	1,000 – 5,000 psi (69 – 345 bar)	1/4" Hex	PEEK Green	10-pk
M-653x	Super Flangeless Nut for 1/16" OD Tubing	10-32 Flat Bottom	1,000 – 5,000 psi (69 – 345 bar)	Headless Knurl	PEEK Green	10-pk
M-654x	Super Flangeless Nut for 1/16" OD Tubing, Long	10-32 Flat Bottom	1,000 – 5,000 psi (69 – 345 bar)	Knurl-1/4" Hex	PEEK Green	10-pk
M-655x	Super Flangeless Nut for 1/16" OD Tubing, Long	10-32 Flat Bottom	1,000 – 5,000 psi (69 – 345 bar)	1/4" Hex	PEEK Green	10-pk
M-660x	Super Flangeless Nut for 1/16" OD Tubing	6-32 Flat Bottom	750 – 3,750 psi (52 – 259 bar)	Micro Headless	PEEK Natural	10-pk
SUPER FLANGELESS FERRULES						
NEW! M-250x	Super Flangeless Ferrule for 1/16" OD Tubing	10-32 Flat Bottom	1,000 – 5,000 psi (69 – 345 bar)	—	PEEK Natural/SST	10-pk
★ M-650x	Super Flangeless Ferrule for 1/16" OD Tubing	6-32 or 6-40 Flat Bottom	750 – 3,750 psi (52 – 259 bar)	Micro Headless	PEEK Natural/SST	10-pk

Super Flangeless™ Fittings

- ▶ 1/4-28 and M6 flat bottom fittings for 1/32" or 1/16" OD tubing
- ▶ Fitting system designed to not loosen during vibration

With the benefits mentioned on the previous page, the Super Flangeless Fittings for 1/4-28 or M6 flat bottom ports are quickly becoming the standard for instrumentation, displacing many flanged tube assemblies. Once swaged, the fitting system is perfect in applications where repeated connections are required. Unlike with flanged tubing, the Super Flangeless fittings withstand several retightening cycles with no change in performance or damage to the tubing. Find a variety of nut styles and materials on this page, plus contact your local distributor or us for additional nut colors.



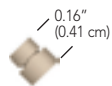
P-248
ETFE Ferrule with
Stainless Steel Lock Ring
for 1/32" OD tubing



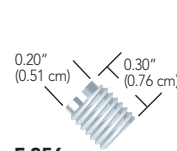
P-250
PEEK™ Ferrule with
Stainless Steel Lock Ring
for 1/16" OD tubing



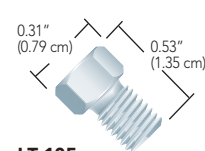
P-259
ETFE Ferrule with
Stainless Steel Lock Ring
for 1/16" OD tubing



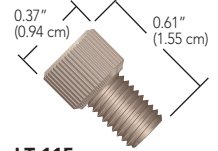
P-260
PEEK One-Piece
Ferrule with Lock Ring
for 1/16" OD tubing



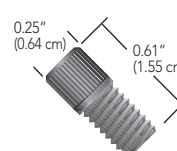
F-356
1/4-28 Stainless Steel
FlushNut™



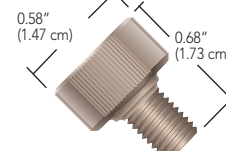
LT-105
1/4-28 Stainless Steel Nut



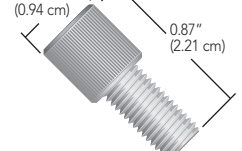
LT-115
1/4-28 Short PEEK Nut



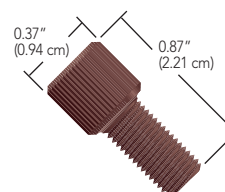
P-213
M6 PEEK Nut



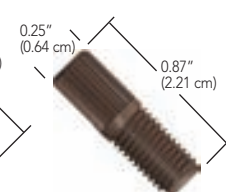
P-251
1/4-28 PEEK Winged Nut



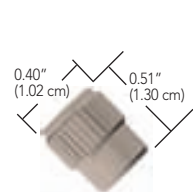
P-252
1/4-28 Delrin® Nut



P-281
1/4-28 PPS Nut

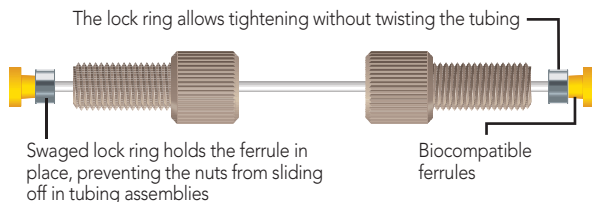


P-287
1/4-28 PPS Nut



P-420
1/4-28 PEEK Female Nut

Super Flangeless Fittings System



Related Products

Capillary tubing can also be connected using these fittings and the NanoTight™ Tubing Sleeves on page 19.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
SUPER FLANGELESS NUTS						
F-356x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, FlushNut	1/4-28 Flat Bottom	*	FlushNut	SST	10-pk
LT-105x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, Short	1/4-28 Flat Bottom	*	1/4" Hex	SST	10-pk
★ LT-115x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, Short	1/4-28 Flat Bottom	*	Standard Knurl	PEEK Natural	10-pk
P-213	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, Short	M6 Flat Bottom	*	Headless Knurl	PEEK Black	ea.
P-217	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	M6 Flat Bottom	*	Standard Knurl	PPS Black	ea.
P-219	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, Short	M6 Flat Bottom	*	Standard Knurl	PEEK Black	ea.
★ P-232	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, Short	1/4-28 Flat Bottom	*	Headless Knurl	PEEK Natural	ea.
P-246x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	PFA Natural	10-pk
P-251x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	1/4-28 Flat Bottom	*	Double Wings	PEEK Natural	10-pk
P-252x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	Delrin Gray	10-pk
★ P-255x	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	PEEK Natural	10-pk
P-281	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	PPS Natural	ea.
P-287	Super Flangeless Nut for 1/16" or 1/32" OD Tubing	1/4-28 Flat Bottom	*	Headless Knurl	PPS Natural	ea.
P-420	Super Flangeless Nut for 1/16" or 1/32" OD Tubing, Female	1/4-28 Flat Bottom	*	Female Knurl	PEEK Natural	ea.
SUPER FLANGELESS FERRULES						
P-248x	Super Flangeless Ferrule for 1/32" OD Tubing	1/4-28 or M6 Flat Bottom	2,500 psi (172 bar)	—	ETFE Green/SST	10-pk
★ P-250x	Super Flangeless Ferrule for 1/16" OD Tubing	1/4-28 or M6 Flat Bottom	2,500 psi (172 bar)	—	PEEK Natural/SST	10-pk
★ P-259x	Super Flangeless Ferrule for 1/16" OD Tubing	1/4-28 or M6 Flat Bottom	1,350 psi (93 bar)	—	ETFE Yellow/SST	10-pk
P-260x	Super Flangeless Ferrule for 1/16" OD Tubing	1/4-28 Flat Bottom	1,850 psi (128 bar)	—	PEEK Natural	10-pk

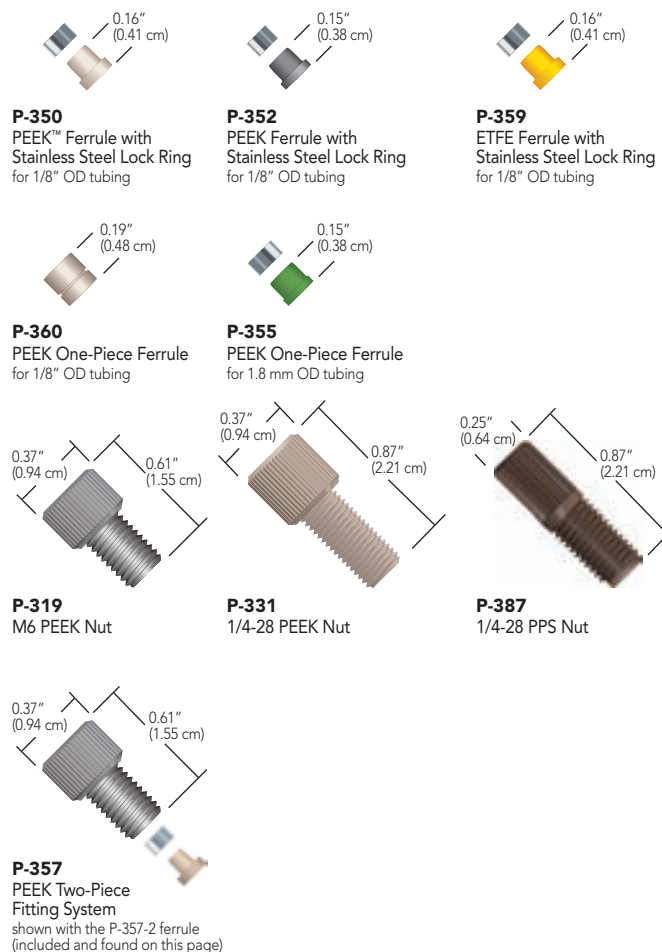
*Pressure rating of nut depends on the ferrule used.

Super Flangeless™ Fittings

- 1/4-28 and M6 flat-bottom fittings for 1.8 mm or 1/8" OD tubing
- M6 flat-bottom fitting for 2.0 mm OD tubing
- Pressure rated up to 2,500 psi (172 bar)

These fittings offer all of the benefits of Super Flangeless Fittings for 1.8 mm, 1/8" or 2.0 mm OD tubing. Due to the double compression by the lock ring and ferrule on the tubing, this fitting system boasts the highest pressure rating for 1/8" OD tubing into flat-bottom ports. These fittings can be used in any of the IDEX Health & Science products featured in the catalog with a 1/4-28 or M6 flat-bottom port for increased pressure holding ability. A variety of nut styles and materials are available, plus contact us for additional nut color options.

Please note the design of the Super Flangeless Fittings for 1/8" OD tubing prevents them from being used in shallow ports. For these applications, we recommend using the small valve Flangeless Ferrule on pages 24 – 26.



Related Products

- Tightening Tools for all the nut head styles featured on this page can be found on page 33.
- Super Flangeless fittings for 3/16" OD tubing can be found on page 30.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
SUPER FLANGELESS NUTS						
C-235x	Super Flangeless Nut for 1/8" OD Tubing	1/4-28 Flat Bottom	*	1/4" Hex	SST	10-pk
F-156	Super Flangeless Nut for 1/8" OD Tubing, Female	1/4-28 Flat Bottom	*	Female Knurl	PEEK Black	ea.
F-364x	Super Flangeless Nut for 1/8" OD Tubing, FlushNut™	1/4-28 Flat Bottom	*	FlushNut	SST	10-pk
LT-210x	Super Flangeless Nut for 1/8" OD Tubing	1/4-28 Flat Bottom	*	Double Wings	PEEK Natural	10-pk
LT-215x	Super Flangeless Nut for 1/8" OD Tubing, Short	1/4-28 Flat Bottom	*	Standard Knurl	PEEK Natural	10-pk
P-317	Super Flangeless Nut for 1/8" OD Tubing	M6 Flat Bottom	*	Standard Knurl	PPS Black	ea.
P-319	Super Flangeless Nut for 1/8" OD Tubing, Short	M6 Flat Bottom	*	Standard Knurl	PEEK Black	ea.
★ P-331	Super Flangeless Nut for 1/8" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	PEEK Natural	ea.
★ P-332x	Super Flangeless Nut for 1/8" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	Delrin® Black	10-pk
★ P-336	Super Flangeless Nut for 1/8" OD Tubing, Short	1/4-28 Flat Bottom	*	Headless Knurl	PEEK Natural	ea.
★ P-337x	Super Flangeless Nut for 1/8" OD Tubing, Short	1/4-28 Flat Bottom	*	Headless Knurl	PEEK Black	10-pk
★ P-357x	Super Flangeless Fitting for 2.0 mm OD Tubing	M6 Flat Bottom	*	Standard Knurl	PEEK Black, Natural/SST	10-pk
★ P-381	Super Flangeless Nut for 1/8" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	PPS Natural	ea.
P-387	Super Flangeless Nut for 1/8" OD Tubing	1/4-28 Flat Bottom	*	Standard Knurl	PPS Natural	ea.
SUPER FLANGELESS FERRULES						
★ P-350x	Super Flangeless Ferrule for 1/8" OD Tubing	1/4-28 Flat Bottom	2,500 psi (172 bar)	—	PEEK Natural/SST	10-pk
P-352x	Super Flangeless Ferrule for 1/8" OD Tubing	1/4-28 or M6 Flat Bottom	2,500 psi (172 bar)	—	PEEK Black/SST	10-pk
P-355x	Super Flangeless Ferrule for 1.8 mm OD Tubing	1/4-28 or M6 Flat Bottom	2,500 psi (172 bar)	—	PCTFE Green/SST	10-pk
P-357-2x	Super Flangeless Ferrule for 2.0 mm OD Tubing	M6 Flat Bottom	5,000 psi (345 bar)	—	PEEK Natural/SST	10-pk
★ P-359x	Super Flangeless Ferrule for 1/8" OD Tubing	1/4-28 Flat Bottom	1,000 psi (69 bar)	—	ETFE Yellow/SST	10-pk
P-360x	Super Flangeless Ferrule for 1/8" OD Tubing	1/4-28 Flat Bottom	1,500 psi (102 bar)	—	PEEK Natural	10-pk

*Pressure rating of nut depends on the ferrule used.

Flangeless Fittings

Upchurch Scientific® Flangeless Fittings eliminate the need to flange tubing. This removable and reusable system provides several benefits:

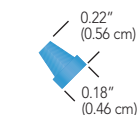
Convenience: Flangeless Fittings are easy to use. Just slip the nut and ferrule over the tubing and finger tighten the assembly into your receiving port. In tests, it is shown that the ideal amount of torque to achieve expected part performance should be approximately 3 – 4 in-lbs (0.34 – 0.45 N·m). Check out the line of special tightening tools designed to adapt to many standard torque wrenches, on page 33 and the new adjustable torque driver, VHP-4000 on page 8.

Minimal Down-Time: Component replacement is quick, taking only a few seconds — unlike the significant time required to flange tubing.

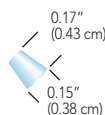
Cost-Effectiveness: Repairing a flanged tubing assembly requires a costly flanging tool or the purchase of a complete replacement assembly, including a new length of tubing and a set of fittings. The Flangeless Fittings system typically requires only one new ferrule at minimal cost when repairing a connection.

The 1/4-28 and M6 Flangeless Fittings for 1/16", 1/8" and metric sized OD tubing are summarized on this page and listed on pages 25 – 27.

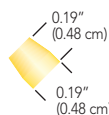
Ferrules



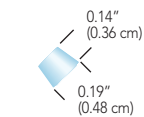
Standard 1/16"
P-200 P-200R
P-200N P-221



Small Valve 1/16"
P-240



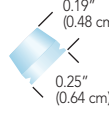
Standard 1/8" and Metric Ferrules
P-300 P-300N P-342
P-353 P-363R P-343



Small Valve 1/8"
P-340



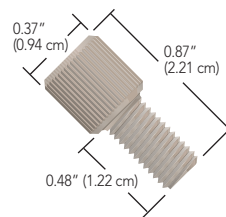
Flangeless SealTight™
F-290



Standard 4.0 mm
P-139

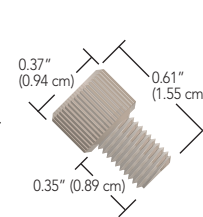
Dimensions for 1/4-28 Flangeless Fittings (pages 25 – 27)

Nuts



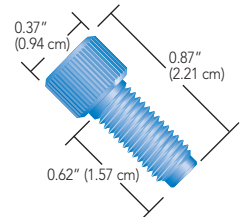
Standard

XP-201–XP-206 XP-301–XP-306
XP-220 XP-320
XP-230 XP-330
XP-238 XP-338
XP-245 XP-345
XP-245B



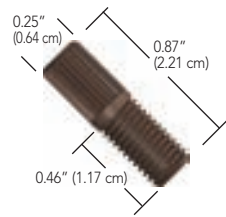
Short

XP-208 P-207S
XP-218 P-247
XP-235 P-307S
XP-308 P-347
XP-335



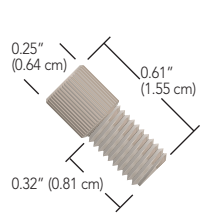
Extra-Long Threaded

XP-210



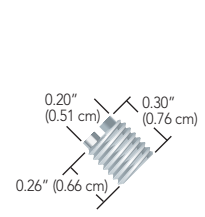
Headless

XP-286 XP-386
P-288



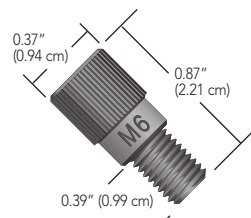
Short Headless

XP-283 XP-348
P-362



FlushNut™

XF-358 XF-368



Standard Metric

P-207 P-226
P-307 P-326

Related Products

For the Large Bore Flangeless Fittings, please refer to page 30.

The Convenience of Flangeless Fittings

Our Flangeless Nuts provide fingertight convenience — no wrenches required.

Our Flangeless Ferrules provide a leak-proof seal. There is no need to spend time flanging tubing.



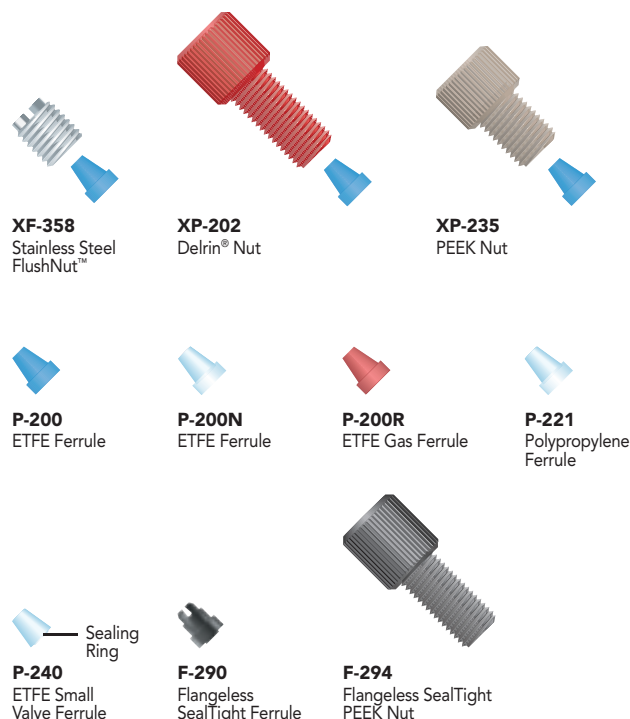
Flangeless Fittings for 1/16" OD Tubing

- Wide variety of materials and geometries to fit most applications
- Fittings and ferrules packaged together for easy ordering convenience

The Upchurch Scientific® Flangeless Fittings are excellent replacements for flanged fittings. Flangeless Fittings are dependable, easy to use and easy to replace.

Additionally, all fittings on this page come pre-packaged with appropriate ferrules (1/4-28 threaded fittings are packaged with P-200 ferrules; however, the XLT-111 — a 10-32 threaded fitting — is packaged with P-240 ferrules). Nuts are available in a wide variety of materials, and replacement ferrules are available in ETFE and polypropylene. The P-200R gas ferrule has an enhanced sealing surface to ensure an improved seal for gas transfer applications. The designs of many small, low pressure valves incorporate many shallow ports. The P-240 ferrule is designed to seal tightly in such ports and the special sealing ring on this ferrule helps ensure a minimum dead-volume seal between the tubing, ferrule and port. (Please refer to our website, www.idex-hs.com for polymer chemical compatibility information.)

For higher pressure and temperature applications where a Flangeless connection is desired, consider the Flangeless SealTight™ Fitting System. Both fitting and ferrule are manufactured from PEEK™ polymer; additionally, the ferrule has been specially engineered to incorporate the dual-compression mechanism of the F-192 SealTight ferrule in a design that allows its use in a 1/4-28 flat-bottom port.



Please see page 24 for the dimensions of the products on this page.

Please Note: The nuts can be ordered separately — simply remove the preceding "X" from the part number to reference the nut separate from the pre-packaged ferrules.



Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
FLANGELESS FITTINGS (INCLUDES P-200 FERRULES)						
XF-358x	Flangeless Fitting for 1/16" OD Tubing, FlushNut	1/4-28 Flat-Bottom	2,000 psi (138 bar)	FlushNut	SST/ETFE Blue	10-pk
XLT-111x	Flangeless Fitting for 1/16" OD Tubing	10-32 Flat-Bottom	2,500 psi (172 bar)	Standard Knurl	PEEK Natural/ETFE Natural	10-pk
★ XP-201x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Black/ETFE Blue	10-pk
XP-202x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Red/ETFE Blue	10-pk
XP-203x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin White/ETFE Blue	10-pk
XP-204x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Cream/ETFE Blue	10-pk
XP-205x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Green/ETFE Blue	10-pk
XP-206x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Blue/ETFE Blue	10-pk
XP-208x	Flangeless Fitting for 1/16" OD Tubing, Short	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Black/ETFE Blue	10-pk
XP-210x	Flangeless Fitting for 1/16" OD Tubing, Long	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	ETFE Blue/ETFE Blue	10-pk
XP-215x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	ETFE Natural/ETFE Blue	10-pk
★ XP-218x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	ETFE Black/ETFE Blue	10-pk
XP-218BLKx	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	ETFE Black/ETFE Blue	10-pk
XP-220x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Polypropylene Natural/ETFE Blue	10-pk
XP-230x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PEEK Natural/ETFE Blue	10-pk
★ XP-235x	Flangeless Fitting for 1/16" OD Tubing, Short	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PEEK Natural/ETFE Blue	10-pk
XP-238x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Purple/ETFE Blue	10-pk
XP-245x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PFA Natural/ETFE Blue	10-pk
XP-245Bx	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PFA Blue/ETFE Blue	10-pk
XP-283x	Flangeless Fitting for 1/16" OD Tubing, Short	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Headless Knurl	PEEK Natural/ETFE Blue	10-pk
★ XP-286x	Flangeless Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	Headless Knurl	PPS Natural/ETFE Blue	10-pk
F-294x	SealTight Flangeless Nut for 1/16" OD Tubing	1/4-28 Flat-Bottom	5,000 psi (345 bar)	Standard Knurl	PEEK Black	10-pk
REPLACEMENT FERRULES						
★ P-200x	Flangeless Ferrule for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	—	ETFE Blue	10-pk
★ P-200Nx	Flangeless Ferrule for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	—	ETFE Natural	10-pk
P-200Rx	Flangeless Ferrule for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	—	ETFE Red	10-pk
P-221x	Flangeless Ferrule for 1/16" OD Tubing	1/4-28 Flat-Bottom	2,000 psi (138 bar)	—	Polypropylene Natural	10-pk
P-240x	Flangeless Ferrule for 1/16" OD Tubing, Small Valve	1/4-28 or 10-32 Flat-Bottom	2,500 psi (172 bar)	—	ETFE Natural	10-pk
F-290x	SealTight Flangeless Ferrule for 1/16" OD Tubing	1/4-28 Flat-Bottom	5,000 psi (345 bar)	—	PEEK Black	10-pk

Flangeless Fittings for 1/8" OD Tubing

- ▶ Wide variety of materials and geometries to fit most applications
- ▶ Fittings and ferrules packaged together for easy ordering convenience

Upchurch Scientific® Flangeless Fittings for 1/8" OD tubing feature a wide assortment of nut geometries and materials from which to choose. Fittings shown on this page come in convenient 10-packs and also include P-300 Flangeless Ferrules. (The nuts can be ordered separately — simply remove the preceding "X" from the part number to reference the nut separate from the pre-packaged ferrules.)

All nuts on this page have 1/4-28 threads.

Lock Nut

The P-312 Lock Nut is for use with any 1/4-28 male Flangeless Fitting. Use this product in applications where vibrations can loosen fittings.

To Use: Thread the lock nut onto the male fitting. When the male fitting is firmly seated into the receiving port, tighten the lock nut down against the receiving port to securely hold the male fitting in place.



Please see page 24 for the dimensions of the products on this page.

Related Products

Nuts for M6 threaded ports are on page 27; nuts for 5/16-24 threaded ports are on page 30.



Top Seller SEE STARRED PRODUCTS

Note

- ▶ The P-340 ferrule is designed for use with shallow receiving ports, such as those used on some low pressure valves.
- ▶ The XF-368 FlushNut is an excellent choice for applications where port-to-port spacing is limited; see page 31 for more information on this innovative product line. As an alternative, consider one of the "headless" fittings shown on this page.

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
FLANGELESS FITTINGS (INCLUDES P-300 FERRULES)						
XF-368x	Flangeless Fitting for 1/8" OD Tubing, FlushNut	1/4-28 Flat-Bottom	500 psi (34 bar)	FlushNut	SST/ETFE Yellow	10-pk
★ XP-301x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Black/ETFE Yellow	10-pk
XP-302x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Red/ETFE Yellow	10-pk
XP-303x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin White/ETFE Yellow	10-pk
XP-304x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Cream/ETFE Yellow	10-pk
XP-305x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Green/ETFE Yellow	10-pk
XP-306x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Blue/ETFE Yellow	10-pk
★ XP-308x	Flangeless Fitting for 1/8" OD Tubing, Short	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Black/ETFE Yellow	10-pk
XP-315x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	ETFE Natural/ETFE Yellow	10-pk
XP-320x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Polypropylene Natural/ETFE Yellow	10-pk
★ XP-330x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Natural/ETFE Yellow	10-pk
★ XP-335x	Flangeless Fitting for 1/8" OD Tubing, Short	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Natural/ETFE Yellow	10-pk
XP-338x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Purple/ETFE Yellow	10-pk
XP-345x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PFA Natural/ETFE Yellow	10-pk
XP-348x	Flangeless Fitting for 1/8" OD Tubing, Short	1/4-28 Flat-Bottom	500 psi (34 bar)	Headless Knurl	PEEK Natural/ETFE Yellow	10-pk
★ XP-386x	Flangeless Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	Headless Knurl	PPS Natural/ETFE Yellow	10-pk
REPLACEMENT FERRULES						
★ P-300x	Flangeless Ferrule for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Yellow	10-pk
★ P-300Nx	Flangeless Ferrule for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Natural	10-pk
★ P-340x	Flangeless Ferrule for 1/8" OD Tubing, Small Valve	1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Natural	10-pk
P-312x	Lock Nut for Flangeless Nuts	1/4-28 Flat-Bottom	—	—	Delrin White	10-pk

Metric Flangeless Fittings

- For 1/16", 1.8 mm, 2.0 mm, 2.5 mm, 3.0 mm, 4.0 mm or 1/8" OD tubing
- Convenience of flangeless fittings for metric tubing sizes and M6 flat-bottom ports

Upchurch Scientific® Metric Flangeless Ferrules are designed to connect 1.8, 2.0, 2.5, 3.0 or 4.0 mm OD tubing to flat-bottom ports when paired with the appropriate M6, 1/4-28 or 5/16-24 Flangeless Nuts. We also offer M6-threaded nuts to connect 1/16" or 1/8" OD tubing, plus a tubing sleeve to facilitate 1.0 mm OD tubing connections. Please refer to the "Metric Connections" chart on this page for information regarding which nuts and ferrules to use with your tubing.



P-342
ETFE Ferrule
for 1.8 OD tubing



NEW!
P-363R
ETFE Ferrule
for 2.0 mm OD tubing



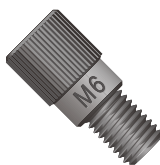
P-353
ETFE Ferrule
for 2.5 mm OD tubing



P-343
ETFE Ferrule
for 3.0 mm OD tubing



P-139
PCTFE Ferrule
for 4.0 mm OD tubing



P-207
Delrin® Nut
for 1/16" OD tubing



P-288
PPS Nut
for 1/16" OD tubing



P-347
PEEK™ Nut
for 1.8, 2.0, 3.0 mm or
1/8" OD tubing



P-362
PEEK Nut
for 1.8, 2.0, 3.0 mm or
1/8" OD tubing

Please see page 24 for the dimensions of the products on this page.



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Metric Connections

Use this chart to determine the low pressure fittings needed to connect metric and English-sized tubing into the indicated ports.

Tubing Size	Port	Ferrules	Nuts
1.0 mm	M6	P-200 (w/F-252 sleeve, not included)	P-207, P-207S, P-226, P-247, P-288
	1/4-28	P-200 (w/F-252 sleeve, not included)	Any 1/4-28 nut from page 25 ¹
1.8 mm	M6	P-342	P-307, P-307S, P-326, P-347, P-362
	1/4-28	P-342	Any nut from page 26 ¹
2.0 mm	M6	P-363R	P-307, P-307S, P-326, P-347, P-362
	1/4-28	P-363R	Any nut from page 26
2.5 mm	M6	P-353	P-307, P-307S, P-326, P-347, P-362
	1/4-28	P-353	Any nut from page 26 ¹
3.0 mm	M6	P-343	P-307, P-307S, P-326, P-347, P-362
	1/4-28	P-343	Any nut from page 30 ¹
4.0 mm	5/16-24	P-139	XP-132x, XP-138x from page 28
1/16"	M6	P-200	P-207, P-207S, P-226, P-247, P-288
	M6	P-840	P-931, P-933, P-935 from page 28
1/8"	M6	P-300	P-307, P-307S, P-326, P-347, P-362
	M6	P-940	P-943, P-945, P-947 from page 24

¹ To order 1/4-28 threaded Flangeless Nuts separately from the Flangeless Ferrules, simply remove the preceding "X" from the appropriate part number — for example, order P-301x instead of XP-301x.

Related Products

More Metric-Sized Products

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High Pressure Polymer Fittings	9, 12
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Bulkhead Unions	41
PEEK (1.8 mm OD and Capillary) and Fused Silica Tubing	65
PEEKsil™ Tubing	66
FEP Tubing (1.0–4.0 mm OD) and PFA Capillary Tubing	71
Frit-In-A-Ferrule™	166

In addition, many of our 1/4-28 threaded Filters, Valves and Flow Control Accessories can be converted to accept 1.8, 2.0, 2.5 and 3.0 mm tubing, using the ferrules listed for 1/4-28 ports in the "Metric Connections" table, above right.

Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
METRIC FLANGELESS NUTS						
P-207x	Flangeless Nut for 1/16" OD Tubing	M6 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Black	10-pk
P-2075x	Flangeless Nut for 1/16" OD Tubing, Short	M6 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	Delrin Black	10-pk
P-226x	Flangeless Nut for 1/16" OD Tubing	M6 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PFA Black	10-pk
P-247x	Flangeless Nut for 1/16" OD Tubing, Short	M6 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PEEK Black	10-pk
P-288x	Flangeless Nut for 1/16" OD Tubing	M6 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PPS Black	10-pk
P-307x	Flangeless Nut for 1.8 mm, 2.0 mm, 3.0 mm, 1/8" OD Tubing	M6 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Black	10-pk
P-3075x	Flangeless Nut for 1.8 mm, 2.0 mm, 3.0 mm, 1/8" OD Tubing	M6 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin Black	10-pk
P-326x	Flangeless Nut for 1.8 mm, 2.0 mm, 3.0 mm, 1/8" OD Tubing	M6 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PFA Black	10-pk
P-347x	Flangeless Nut for 1.8 mm, 2.0 mm, 3.0 mm, 1/8" OD Tubing	M6 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Black	10-pk
P-362x	Flangeless Nut for 1.8 mm, 2.0 mm, 3.0 mm, 1/8" OD Tubing	M6 Flat-Bottom	500 psi (34 bar)	Headless Knurl	PEEK Black	10-pk
FLANGELESS FERRULES						
F-252x	1/16" OD Tubing Sleeve for 1.0 mm ID Tubing	M6 or 1/4-28 Flat-Bottom	500 psi (34 bar)	—	FEP Purple	10-pk
P-139x	Flangeless Ferrule for 4.0 mm OD Tubing	M6 or 1/4-28 Flat-Bottom	250 psi (17 bar)	—	PCTFE Natural	10-pk
★ P-200x	Flangeless Ferrule for 1/16" OD Tubing	M6 or 1/4-28 Flat-Bottom	2,000 psi (138 bar)	—	ETFE Blue	10-pk
★ P-300x	Flangeless Ferrule for 1/8" OD Tubing	M6 or 1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Yellow	10-pk
★ P-342x	Flangeless Ferrule for 1.8 mm OD Tubing	M6 or 1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Green	10-pk
P-343x	Flangeless Ferrule for 3.0 mm OD Tubing	M6 or 1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Orange	10-pk
P-353x	Flangeless Ferrule for 2.5 mm OD Tubing	M6 or 1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Natural	10-pk
NEW! P-363Rx	Flangeless Ferrule for 2.0 mm OD Tubing	M6 or 1/4-28 Flat-Bottom	500 psi (34 bar)	—	ETFE Red	10-pk

VacuTight™ Fittings

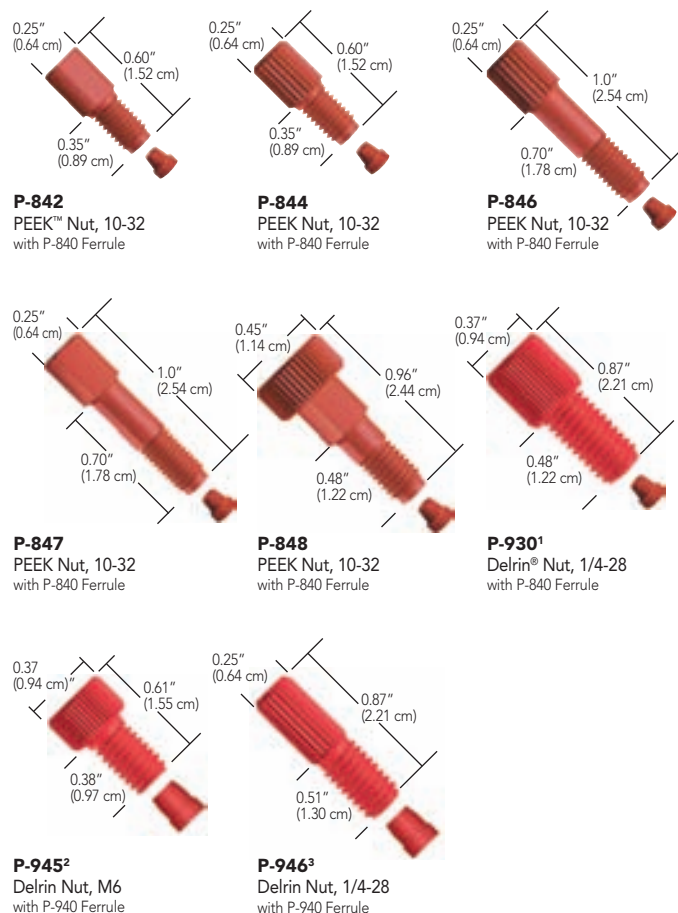
- ▶ For 1/16" or 1/8" OD tubing connections into 10-32, 1/4-28 or M6 flat-bottom ports
- ▶ Vacuum Rated to 25 in-Hg (84 kPa)
- ▶ Improve transfer volume consistency

Upchurch Scientific® VacuTight Fittings are designed to provide airtight, dependable connections under vacuum and low pressure conditions. Many of the VacuTight Nuts have streamlined profiles for use in systems requiring a large number of connections in a small area. Furthermore, the VacuTight Ferrule's small size ensures sufficient nut/thread engagement, even in shallow ports. These features make VacuTight Fittings ideal for "combichem" high throughput screening, clinical diagnostic and other automated liquid handling applications.

The configuration of the VacuTight flat-bottom ferrules prevents overcompression and tubing ID reduction that can occur with many coned fittings. The result is more consistent aspirating and dispensing volumes across all system connections.

The VacuTight fittings can also work well in some positive pressure applications. The pressure range for each fitting is listed below and depends upon the tubing used for the connection. Please contact your distributor or IDEX Health & Science for more information. Additionally, please note that some of the VacuTight fittings have changed in color from red to black; however, this color change does not affect product performance.

All VacuTight Nuts must be used exclusively with VacuTight Ferrules.



¹ The dimensions shown apply to P-930, P-931, P-938, P-942, P-943 and P-948.

² The dimensions shown apply to P-932, P-933, P-944 and P-945.

³ The dimensions shown apply to P-934, P-935, P-946 and P-947.



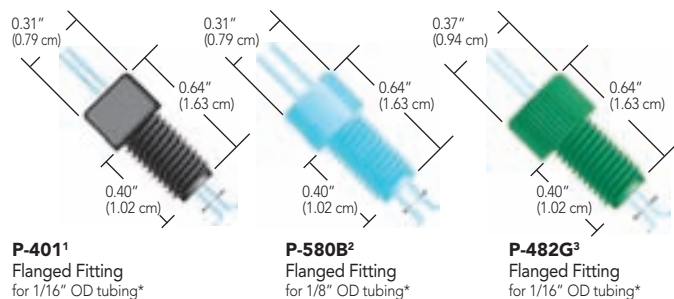
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Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
VACUTIGHT FITTINGS (INCLUDES P-840 OR P-940 FERRULES)						
★ P-842x	VacuTight Fitting for 1/16" OD Tubing, Short	10-32 Flat-Bottom	400 – 800 psi (27 – 55 bar)	1/4" Hex	PEEK Red	10-pk
★ P-844x	VacuTight Fitting for 1/16" OD Tubing, Short	10-32 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Headless Knurl	PEEK Red	10-pk
P-846x	VacuTight Fitting for 1/16" OD Tubing, Long	10-32 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Headless Knurl	PEEK Red	10-pk
P-847x	VacuTight Fitting for 1/16" OD Tubing, Long	10-32 Flat-Bottom	400 – 800 psi (27 – 55 bar)	1/4" Hex	PEEK Red	10-pk
P-848x	VacuTight Fitting for 1/16" OD Tubing, Long	10-32 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Knurl-1/4" Hex	PEEK Red	10-pk
P-930x	VacuTight Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Standard Knurl	Delrin Red	10-pk
P-931x	VacuTight Fitting for 1/16" OD Tubing	M6 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Standard Knurl	Delrin Red	10-pk
P-932x	VacuTight Fitting for 1/16" OD Tubing, Short	1/4-28 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Standard Knurl	Delrin Black	10-pk
P-933x	VacuTight Fitting for 1/16" OD Tubing, Short	M6 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Standard Knurl	Delrin Red	10-pk
P-934x	VacuTight Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Headless Knurl	Delrin Black	10-pk
P-938x	VacuTight Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	400 – 800 psi (27 – 55 bar)	Standard Knurl	PEEK Natural	10-pk
P-942x	VacuTight Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	Standard Knurl	Delrin Red	10-pk
P-943x	VacuTight Fitting for 1/8" OD Tubing	M6 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	Standard Knurl	Delrin Red	10-pk
P-944x	VacuTight Fitting for 1/8" OD Tubing, Short	1/4-28 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	Standard Knurl	Delrin Black	10-pk
P-945x	VacuTight Fitting for 1/8" OD Tubing, Short	M6 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	Standard Knurl	Delrin Red	10-pk
P-946x	VacuTight Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	Headless Knurl	Delrin Red	10-pk
P-948x	VacuTight Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	Standard Knurl	PEEK Natural	10-pk
REPLACEMENT FERRULES						
P-840x	VacuTight Ferrule for 1/16" OD Tubing	M6 or 1/4-28 Flat-Bottom	400 – 800 psi (27 – 55 bar)	—	ETFE Red	10-pk
★ P-940x	VacuTight Ferrule for 1/8" OD Tubing	M6 or 1/4-28 Flat-Bottom	500 – 1,000 psi (34 – 69 bar)	—	ETFE Red	10-pk

Flanged Fittings

- ▶ Fittings for 1/16" or 1/8" OD tubing, supplied with nut and 316 stainless steel washer
- ▶ Multiple head styles and materials available
- ▶ For 1/4-28 and M6 flat-bottom ports

Upchurch Scientific® Flanged Fittings are compatible with most standard 1/4-28 or M6 Flat-Bottom flanged fittings. The hard, inert Delrin® (acetal resin) nut resists cross threading or loosening during use, while the ETFE nuts work well in chemically aggressive environments.



P-401¹
Flanged Fitting
for 1/16" OD tubing*

P-580B²
Flanged Fitting
for 1/8" OD tubing*

P-482G³
Flanged Fitting
for 1/16" OD tubing*

¹ The dimensions shown apply to all square-head Flanged Fittings

² The dimensions shown apply to all hex-head Flanged Fittings

³ The dimensions shown apply to all knurled-head Flanged Fittings

* Flanged tubing not included

Related Products

For an alternative to flanging tubing, we highly recommend the Flangeless Fittings found on pages 24 – 27, the Super Flangeless™ Fittings found on pages 21 – 23, or the VacuTight™ Fittings on page 28.

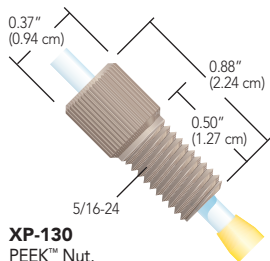


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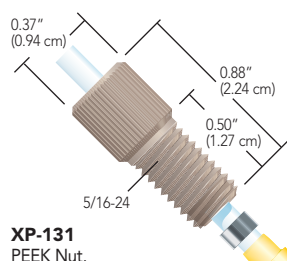
Part No.	Description	Port Geometry	Head Style	Material (Nut/Washer)	Qty.
FLANGED FITTINGS (INCLUDES STAINLESS STEEL WASHERS)					
P-401x	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Black/SST	10-pk
P-402x	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Red/SST	10-pk
P-403x	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin White/SST	10-pk
P-405x	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Gree/SST	10-pk
P-406x	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Blue/SST	10-pk
P-480B	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Blue/SST	ea.
★ P-480BLK	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Black/SST	ea.
P-480G	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Green/SST	ea.
P-480R	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Red/SST	ea.
P-480T	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	ETFE Natural/SST	ea.
P-480W	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin White/SST	ea.
P-482B	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Blue/SST	ea.
P-482BLK	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Black/SST	ea.
P-482G	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Green/SST	ea.
P-482R	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Red/SST	ea.
P-482T	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	ETFE Natural/SST	ea.
P-482W	Flanged Fitting for 1/16" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin White/SST	ea.
P-501x	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Black/SST	10-pk
P-502x	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Red/SST	10-pk
P-503x	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin White/SST	10-pk
P-505x	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Green/SST	10-pk
P-506x	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Blue/SST	10-pk
P-508x	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Square	Delrin Gray/SST	10-pk
P-580B	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Blue/SST	ea.
P-580BLK	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Black/SST	ea.
P-580G	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Green/SST	ea.
P-580GRY	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Gray/SST	ea.
P-580R	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin Red/SST	ea.
P-580T	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	ETFE Natural/SST	ea.
P-580W	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	5/16" Hex	Delrin White/SST	ea.
P-582B	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Blue/SST	ea.
P-582BLK	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Black/SST	ea.
P-582G	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Green/SST	ea.
P-582R	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin Red/SST	ea.
P-582T	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	ETFE Natural/SST	ea.
P-582W	Flanged Fitting for 1/8" OD Tubing	1/4-28 Flat-Bottom	Standard Knurl	Delrin White/SST	ea.
NEW! P-982BLKx	Flanged Fitting for 1/16" OD Tubing	M6 Flat-Bottom	Standard Knurl	Delrin Black/SST	10-pk
NEW! P-1082BLKx	Flanged Fitting for 1/8" OD Tubing	M6 Flat-Bottom	Standard Knurl	Delrin Black/SST	10-pk
REPLACEMENT WASHERS					
P-407x	Washer for 1/16" OD Tubing	1/4-28 Flat-Bottom	—	SST	10-pk
P-507x	Washer for 1/8" OD Tubing	1/4-28 Flat-Bottom	—	SST	10-pk
NEW! P-987x	Washer for 1/16" OD Tubing	M6 Flat-Bottom	—	SST	10-pk
NEW! P-1087x	Washer for 1/8" OD Tubing	M6 Flat-Bottom	—	SST	10-pk

Large Bore Fittings

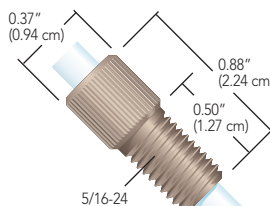
- ▶ 5/16-24 or 1/2-20 threads
- ▶ For use with 1/16", 1/8", 3/16", 1/4", 5/16", 3.0 mm or 4.0 mm OD tubing



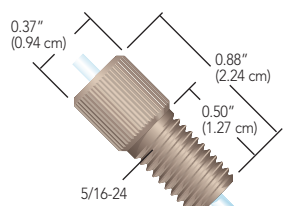
XP-130
PEEK™ Nut,
for 1/8" OD tubing
shown with P-300 Flangeless Ferrule
(page 26)



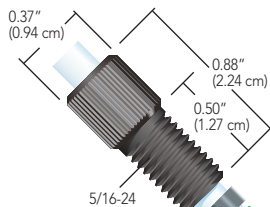
XP-131
PEEK Nut,
for 1/8" OD tubing
shown with P-359 Super Flangeless™
Ferrule (included and found on page 23)



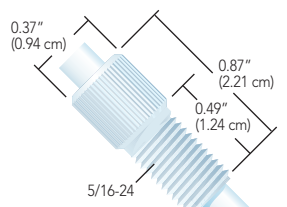
XP-132
PEEK Nut, for 3/16" and
4.0 mm OD tubing
shown with P-133 Flangeless Ferrule
(included and found on this page)



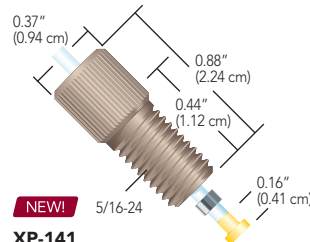
XP-136
PEEK Nut,
for 1/16" OD tubing
shown with P-200 Flangeless Ferrule
(included and found on page 25)



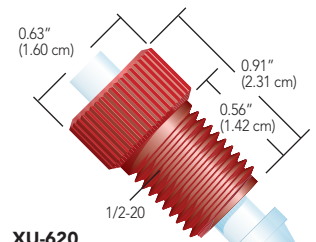
XP-137
PEEK Nut,
for 3/16" OD tubing
shown with P-140 Super Flangeless Ferrule
(included and found on this page)



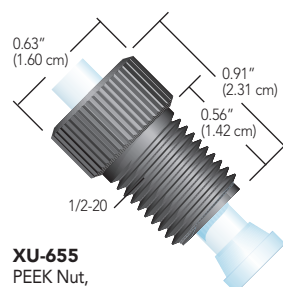
XP-138
Delrin® Nut, for 3/16" and
4.0 mm OD tubing
shown with P-139 Flangeless Ferrule
(included and found on page 27)



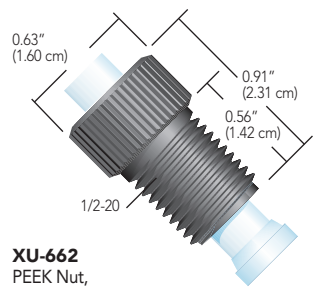
NEW!
XP-141
PEEK Nut,
for 1/16" OD tubing
shown with P-259 Super Flangeless Ferrule
(included and found on page 22)



XU-620
PEEK Nut,
for 1/4" OD tubing
shown with inverted U-650 Flangeless
Ferrule for coned ports
(included and found on this page)



XU-655
PEEK Nut,
for 1/4" OD tubing
shown with U-650 Flangeless Ferrule
(included and found on this page)



XU-662
PEEK Nut,
for 5/16" OD tubing
shown with U-660 Flangeless Ferrule
(included and found on this page)

Please Note: Each of the Large Bore Fittings shown on this page comes in a convenient 10-pack and is packaged with the most popularly chosen Ferrule option. The Fittings can be ordered separately by removing the preceding letter "X" from the part number. Additionally, to connect metric-sized tubing with outer diameters less than 4.0 mm to 5/16-24 threaded ports, reference the chart on page 27 to choose the correct nut/ferrule combination.

Related Products

More Large Bore Products

	Page		Page
5/16-24 Coned Fittings	18	FEP, PFA Tubing	71, 72
Barbed Adapters	58	Tubing Cutter	74
Threaded Adapters	49	Pressure Relief Valve	154
Plugs	32, 172	Solvent Inlet Filters	157
Y Connector	48	Bottle Caps	172
ETFE Tubing	73	Semi-Prep Inline Filters	163



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Port	Pressure Rating	Head Style	Material (Nut/Washer)	Qty.
LARGE BORE FITTINGS						
XP-130x	Flangeless Fitting for 1/8" OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Natural/ETFE Yellow	10-pk
XP-131x	Super Flangeless Fitting for 1/8" OD tubing	5/16-24 Flat-Bottom	1,000 psi (69 bar)	Standard Knurl	PEEK Natural/ETFE Yellow/SST	10-pk
★ XP-132x	Flangeless Fitting for 4.0 mm OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Natural/ETFE Blue	10-pk
XP-136x	Flangeless Fitting for 1/16" OD tubing	5/16-24 Flat-Bottom	2,000 psi (138 bar)	Standard Knurl	PEEK Natural/ETFE Blue	10-pk
XP-137x	Super Flangeless Fitting for 3/16" OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Black/ETFE Green/SST	10-pk
XP-138x	Flangeless Fitting for 3/16" OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	Standard Knurl	Delrin White/ETFE Natural	10-pk
NEW! XP-141x	Super Flangeless Fitting for 1/16" OD tubing	5/16-24 Flat-Bottom	1,350 psi (93 bar)	Standard Knurl	PEEK Natural/ETFE Yellow/SST	10-pk
NEW! XP-143x	Flangeless Fitting for 3.0 mm OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	Standard Knurl	PEEK Natural/ETFE Orange	10-pk
XU-620x	Flangeless Fitting for 1/4" OD tubing	1/2-20 Coned	250 psi (17 bar)	Large Knurl	PEEK Red/ETFE Natural	10-pk
XU-655x	Flangeless Fitting for 1/4" OD tubing	1/2-20 Flat-Bottom	250 psi (17 bar)	Large Knurl	PEEK Black/ETFE Natural	10-pk
XU-662x	Flangeless Fitting for 5/16" OD tubing	1/2-20 Flat-Bottom	250 psi (17 bar)	Large Knurl	PEEK Black/ETFE Natural	10-pk
REPLACEMENT FERRULES						
★ P-133x	Flangeless Ferrule for 3/16" OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	—	ETFE Blue	10-pk
P-133Nx	Flangeless Ferrule for 3/16" OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	—	ETFE Natural	10-pk
P-140x	Super Flangeless Ferrule for 3/16" OD tubing	5/16-24 Flat-Bottom	500 psi (34 bar)	—	ETFE Green	10-pk
U-650x	Flangeless Ferrule for 1/4" OD tubing	1/2-20 Flat-Bottom	250 psi (17 bar)	—	ETFE Natural	10-pk
U-660x	Flangeless Ferrule for 5/16" OD tubing	1/2-20 Flat-Bottom	250 psi (17 bar)	—	ETFE Natural	10-pk

FlushNut™ Fittings

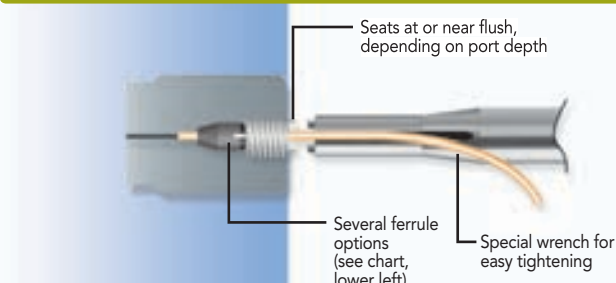
- Tightens flush with the top of the receiving port
- Several ferrule options

Upchurch Scientific® FlushNut Fittings are designed for those tight-space applications where nut heads often interfere with each other. When coupled with an appropriate ferrule and tightened into a receiving port, the FlushNut's slotted head seats at or near flush with the top of the port. This feature allows FlushNut Fittings to reside in closer proximity than any other option on the market. All FlushNut Fittings are manufactured from 316 stainless steel, except the P-321 Plug, which is made of PEEK™ polymer.

Tighten or remove FlushNut Fittings with our specially designed FlushNut Wrenches, available in 10-32 or 1/4-28 versions. For more information on the FlushNut wrenches, see page 33.



FlushNut Fittings System



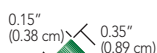
Top Seller SEE STARRED PRODUCTS

Lee Company "MINSTAC®" Compatible Fittings

- Super Flangeless™ style ferrules designed specifically to work with 6-40 nuts in Lee MINSTAC valve ports
- For 1/16" OD tubing

Upchurch Scientific TinyTight™ Fittings are easy-to-use alternatives for Lee Company 062 MINSTAC fittings systems. These fittings consist of a TinyTight Ferrule which works with the 6-40 threaded nut on this page, M-644-03. Choose from two ferrule options, with 0.020" (0.50 mm) or 0.030" (0.75 mm) thru-holes. To use, simply slide a fitting head-first onto your tubing, followed by the ring and ferrule, and thread this assembly into the solenoid valve receiving port, while making sure the tubing is bottomed out. No collets, colletting tools or chamfering tools required; however, if needed for easier assembly of the TinyTight fittings, the M-150 tool is available. To use, first place the tool in a vise, then tighten tubing, fitting and ferrule into the tool as you would into any port. Once removed, the swaged ferrule will be held in place on the tubing.

The TinyTight fittings have a pressure range that depends upon the tubing used for the connection. Please contact your distributor or IDEX Health & Science for more information.



M-644-03
Headless Nut
6-40 threads



M-647
TinyTight Ferrule
for 1/16" OD tubing
0.020" thru-hole



M-657
TinyTight Ferrule
for 1/16" OD tubing
0.030" thru-hole

Related Products

FlushNut Ferrule Options

FlushNut	Threads/ Port*	For Tubing OD	Ferrule Options	Page
F-350	10-32 C	1/16"	SealTight™ F-192	14
F-354	10-32 C	1/32"	LiteTouch® LT-132	16
	10-32 C	1/16"	LiteTouch LT-100	16
	10-32 C	1/16"	LiteTouch SealTight LT-135	16
F-364	1/4-28 C	1/8"	LiteTouch LT-200	16
	1/4-28 FB	1/8"	Super Flangeless P-350, P-352, P-359, P-360	23
	1/4-28 FB	2.0 mm	Super Flangeless P-355	23
F-356	1/4-28 FB	1/32"	Super Flangeless P-248	22
	1/4-28 FB	1/16"	Super Flangeless P-250, P-259, P-260	22
XF-358	1/4-28 FB	1/16"	Flangeless P-200, P-200N, P-200R, P-221, P-240	24
XF-368	1/4-28 FB	1/8"	Flangeless P-300, P-300N, P-340	24
	1/4-28 FB	1.8 mm	Flangeless P-342	24
	1/4-28 FB	2.0 mm	Flangeless P-363R	24
	1/4-28 FB	2.5 mm	Flangeless P-353	24
	1/4-28 FB	3.0 mm	Flangeless P-343	24
P-321	1/4-28 FB	N/A	Plug — No ferrule required	32

* C = Coned; FB = Flat-bottom

To order FlushNuts separately from the included ferrules, simply remove the preceding "X" from the appropriate part number — for example, order F-358 instead of XF-358.

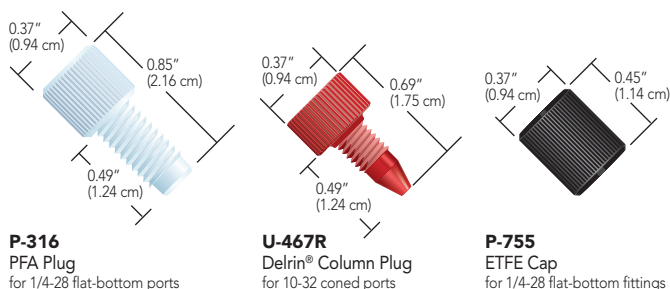
Part No.	Description	Port	Pressure Rating	Head Style	Material	Qty.
TINYTIGHT FITTINGS						
M-150	Swaging Tool for TinyTight Fittings	6-40 MINSTAC	—	—	SST	ea.
M-644-03x	Super Flangeless Nut for 1/16" OD Tubing	6-40 Flat Bottom or MINSTAC	750 – 3,750 psi (52 – 259 bar)	Micro Headless	PEEK Green	10-pk
M-647x	TinyTight Ferrule for 1/16" OD Tubing, 0.020" Thru-Hole	6-40 MINSTAC	750 – 3,750 psi (52 – 259 bar)	—	PEEK Natural/SST	10-pk
★ M-657x	TinyTight Ferrule for 1/16" OD Tubing, 0.030" Thru-Hole	6-40 MINSTAC	750 – 3,750 psi (52 – 259 bar)	—	PEEK Natural/SST	10-pk

Plugs and Caps

- Seal 6-32, 6-40, 10-32, 1/4-28, M6 or 5/16-24 threaded ports or fittings

Use Upchurch Scientific® plugs to close off unused ports in valves and multi-port connectors. Our color-coded 10-32 threaded plugs are perfect for identifying stored columns that have different packing materials, or in which different mobile phases have been utilized. Cap off tubing with one of the PEEK™ or ETFE caps presented on this page and the appropriate fittings from this chapter.

To help determine which plug or cap is best suited for your application, please visit www.idex-hs.com for detailed chemical compatibility data.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Head Style	Material	Qty.
PLUGS				
P-120	Plug for 1/4-28 Coned Ports for 1/8" OD Tubing	Standard Knurl	PCTFE Natural	ea.
P-123	Plug for 1/4-28 Flat-Bottom Ports	5/16" Hex	ETFE Natural	ea.
★ P-309x	Plug for 1/4-28 Flat-Bottom Ports	Standard Knurl	Delrin Black	10-pk
★ P-311	Plug for 1/4-28 Flat-Bottom Ports	Standard Knurl	ETFE Natural	ea.
P-314	Plug for M6 Flat-Bottom Ports	Standard Knurl	ETFE Black	ea.
★ P-316	Plug for 1/4-28 Flat-Bottom Ports	Standard Knurl	PFA Natural	ea.
P-321	Plug for 1/4-28 Flat-Bottom Ports, FlushNut™	FlushNut	PEEK Natural	ea.
P-520	Plug for 6-32 Coned Ports	5/16" Hex	SST	ea.
P-550	Plug for 10-32 Coned Ports, Extra Long	Standard Knurl	PEEK Natural	ea.
★ P-551	Plug for 10-32 Coned Ports	Standard Knurl	PEEK Natural	ea.
P-552	Plug for 6-40 Coned Ports	Headless Knurl	PEEK Natural/PCTFE	ea.
P-555	Plug for 6-32 Coned Ports	Standard Micro Knurl	PEEK Natural	ea.
P-556	Plug for 5/16-24 Flat-Bottom Ports	5/16" Hex	PEEK Natural	ea.
P-557	Plug for 5/16-24 Flat-Bottom Ports	5/16" Hex	Delrin White	ea.
NEW! P-558	Plug for 6-40 Flat-Bottom Ports	Micro Headless Knurl	PEEK Green	ea.
NEW! P-559	Plug for 6-32 Flat-Bottom Ports	Micro Headless Knurl	PEEK Natural	ea.
P-849	Plug for 10-32 Flat-Bottom Ports	Standard Knurl	Delrin Black	ea.
U-467Bx	Plug for 10-32 Coned Ports	Standard Knurl	Delrin Blue	10-pk
U-467BLKx	Plug for 10-32 Coned Ports	Standard Knurl	Delrin Black	10-pk
U-467DBx	Plug for 10-32 Coned Ports	Standard Knurl	Delrin Dark Blue	10-pk
U-467Rx	Plug for 10-32 Coned Ports	Standard Knurl	Delrin Red	10-pk
U-467Wx	Plug for 10-32 Coned Ports	Standard Knurl	Delrin White	10-pk
U-468Bx	Plug for 10-32 Coned Ports	Standard Knurl	ETFE Blue	10-pk
U-468BLKx	Plug for 10-32 Coned Ports	Standard Knurl	ETFE Black	10-pk
U-468Nx	Plug for 10-32 Coned Ports	Standard Knurl	ETFE Natural	10-pk
CAPS				
P-754	Cap for 10-32 Coned Ports	Standard Knurl	ETFE Yellow	ea.
★ P-755	Cap for 1/4-28 Flat-Bottom Ports	Standard Knurl	ETFE Black	ea.
P-756	Cap for M6 Flat-Bottom Ports	Standard Knurl	ETFE Blue	ea.

Extender Tools

These tools can be used to tighten most of our knurled nuts in hard to reach places. See the application note on this page for knurl size and corresponding extender tool.

For precise tightening, the extender tools listed with 1/4" hex drives are designed to adapt to any torque wrench with a female 1/4" socket, such as the VHP-4000 Torque Driver on page 8. The tools featured on this page also include the FlushNut™ wrenches, used to tighten the FlushNuts found throughout this chapter and described in detail on page 31.



Removal Tool

Use the LT-300 Removal Tool to detach LiteTouch® and Super Flangeless™ Ferrules from tubing. Simply slide the appropriate tool blade slot between the lock ring and the ferrule body. With a slight twist, the ring will pop off, releasing the ferrule from the tubing.

Please Note: This Removal Tool will not work with the LT-135 Ferrule System.



Wrenches

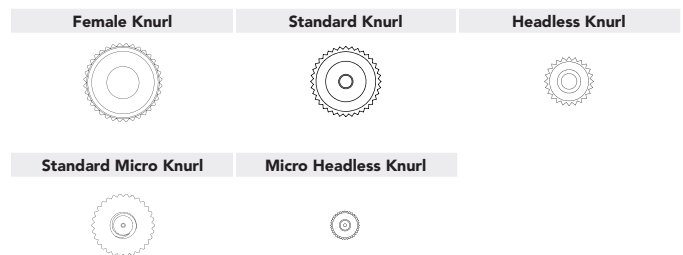
For your convenience, we offer wrenches in three standard sizes. You will need two A-304 wrenches to tighten most nuts into unions found on page 36 (for unions 1593 and U-352, you need one A-304 and one A-320 wrench).



The IDEX Wrench is slotted to fit over 1/16" and 1/8" OD tubing, and has 1/4" and 5/16" internal hex ends, to engage with the heads of the hex-head fittings most commonly used with Rheodyne® valves and the stainless steel fittings listed on page 10.

Application Note

The drawings represent actual size of the various knurled head designs of the Upchurch Scientific® nuts featured in this chapter. Select the appropriate extender tool for the knurl pattern of the nut you've selected.



Part No.	Description	Material	Qty.
EXTENDER TOOLS			
P-291	Extender Tool for Standard Head Nuts, with 1/4" Hex Drive	Aluminum	ea.
P-298	Extender Tool for Standard Head Nuts	Delrin®	ea.
P-299	Extender Tool for Standard Head Nuts	Aluminum	ea.
P-399	Extender Tool for Standard Head Nuts, Short	Aluminum	ea.
P-297	Extender Tool for Headless Nuts	Aluminum	ea.
P-292	Extender Tool for Headless Nuts, with 1/4" Hex Drive	Aluminum	ea.
P-277	Extender Tool for Standard Micro Nuts	Aluminum	ea.
N-290	Extender Tool for Micro Headless Nuts	Aluminum	ea.
P-278	Extender Tool for Female Nuts, with 1/4" Hex Drive	Aluminum	ea.
MISCELLANEOUS TOOLS			
A-304	Wrench, 1/4" x 5/16"	Steel	ea.
A-305	Wrench, 1/2" x 9/16"	Steel	ea.
A-320	Wrench, 3/8" x 7/16"	Steel	ea.
6810	IDEX Wrench, 1/4" x 5/16"	Steel	ea.
F-345	FlushNut Wrench for 10-32 Threaded Fittings	Steel/Plastic Handle	ea.
F-346	FlushNut Wrench for 1/4-28 Threaded Fittings	Steel/Plastic Handle	ea.
LT-300	Removal Tool for LiteTouch and Super Flangeless Ferrules	Steel/Plastic Handle	ea.

Connectors



Testing Upchurch Scientific® VHP unions in Oak Harbor, WA.

NEW!

Eliminate tubing twist!
The new Swivel Barb
Adapters won't twist
peristaltic tubing as you
tighten the adapter into
a threaded port. See
page 58 for details!



Connectors Reference

This chart offers suggestions for connecting two pieces of inline tubing. The required product numbers are listed, with the appropriate page numbers listed below them in respective order. In most cases other options exist. For more information, please contact IDEX Health & Science or your local distributor.

TUBING SIZE (OD)	CAPILLARY (<1/32" OD)	1/32"	1 mm	1/16"	1.8–2 mm, 2.5 mm, 3 mm	1/8"	4 mm, 3/16"	1/4"	5/16"
CAPILLARY (<1/32" OD)	P-720 + MTSlv or P-882 or P-772 or P-779 + (2) NTSlv Pages: 39, 19, 53, 39, 38, 19	P-779 + (2) NTSlv Pages: 38, 19	P-779 + (2) NTSlv Pages: 38, 19	P-779 + NTSlv Pages: 38, 19	P-627-01 + NTSys + MFF + XP-335 ¹ Pages: 49, 19, 27, 26	P-627 + NTSys + XP-335 ¹ Pages: 49, 19, 26	P-135 + P-259 + NTSys + LT-115 ² + LBFF + XP-132 Pages: 49, 22, 61, 17, 22, 153, 27, 30, 30	U-665 + P-259 + NTSlv + LT-115 ² Pages: 49, 22, 61, 19, 22, 153	U-665-01 + XU-662 + P-259 + NTSlv + LT-115 ² Pages: 49, 30, 22, 61, 19, 22, 153
1/32"	P-779 + (2) NTSlv Pages: 38, 19	P-771 Page: 39	P-779 + F-247 + F-252 Pages: 38, 19, 19, 27	P-881 Page: 53	P-702-01 + P-248 + LT-115 ² + MFF + XP-335 ¹ Pages: 40, 22, 22, 153, 27, 26	P-702-01 + P-248 + LT-115 ² + XP-335 ¹ Pages: 40, 22, 22, 22, 153, 26	P-135 + P-248 + LT-115 ² + LBFF + XP-132 Pages: 49, 22, 22, 153, 37, 30, 30	U-665 + P-248 + LT-115 ² Pages: 49, 22, 22, 153	U-665-01 + XU-662 + P-248 + LT-115 ² Pages: 49, 30, 22, 22, 153
1 mm	P-779 + (2) NTSlv Pages: 38, 19	P-779 + F-247 + F-252 Pages: 38, 19, 19, 27	P-702-01 + (2) XP-235 ³ + (2) F-252 Pages: 40, 25, 19, 27	P-702 + F-252 Pages: 40, 19, 27	P-622 + P-200 + F-252 + P-247 + MFF + P-347 Pages: 40, 24, 25, 19, 27, 27, 27, 27	P-702 + F-252 + XP-335 ¹ Pages: 40, 19, 27, 26	P-135 + XP-235 ³ + F-252 + LBFF + XP-132 Pages: 49, 25, 19, 27, 30, 30	U-665 + XP-235 ³ + F-252 Pages: 49, 25, 19, 27	U-665-01 + XU-662 + XP-235 ³ + F-252 Pages: 49, 30, 25, 19, 27
1/16"	P-779 + NTSlv Pages: 38, 19	P-881 Page: 53	P-702 + F-252 Pages: 40, 19, 27	P-742 or P-702 Pages: 38, 40	P-622 + P-200 + P-247 + MFF + P-347 Pages: 40, 24, 25, 27, 27, 27	P-703 + XP-235 ³ Pages: 40, 25	P-135 + XP-235 ³ + LBFF + XP-132 Pages: 49, 25, 27, 30, 30	U-665 + XP-235 ³ Pages: 49, 25	U-665-01 + XU-662 + XP-235 ³ Pages: 49, 30, 25
1.8–2 mm, 2.5 mm, 3 mm	P-627-01 + NTSys + MFF + XP-335 ¹ Pages: 49, 17, 27, 26	P-702-01 + P-248 + LT-115 ² + MFF + XP-335 ¹ Pages: 40, 22, 22, 153, 27, 26	P-622 + P-200 + F-252 + P-247 + MFF + P-347 Pages: 40, 25, 19, 27, 27, 27	P-622 + P-200 + P-247 + MFF + P-347 Pages: 40, 25, 27, 27, 27	P-622 + (2) MFF + (2) P-347 Pages: 40, 27, 27	P-622 + MFF + P-300 + (2) P-347 Pages: 40, 27, 26, 27	P-135 + MFF + P-355 + LBFF + XP-132 Pages: 49, 27, 23, 27, 30, 30	U-665 + MFF + XP-335 ¹ Pages: 49, 27, 26	U-665-01 + XU-662 + MFF + XP-335 ¹ Pages: 49, 30, 27, 26
1/8"	P-627 + NTSys + XP-335 ¹ Pages: 49, 17, 26	P-702-01 + P-248 + LT-115 ² + XP-335 ¹ Pages: 40, 22, 22, 153, 26	P-702 + F-252 + XP-335 ¹ Pages: 40, 19, 27, 26	P-703 + XP-235 ³ Pages: 40, 25	P-622 + MFF + P-300 + (2) P-347 Pages: 40, 27, 26, 27	P-703 Page: 40	P-135 + XP-335 ¹ + LBFF + XP-132 Pages: 49, 26, 27, 30, 30	U-665 + XP-335 ¹ Pages: 49, 26	U-665-01 + XU-662 + XP-335 ¹ Pages: 49, 30, 26
4 mm, 3/16"	P-135 + P-259 + NTSys + LT-115 ² + LBFF + XP-132 Pages: 49, 22, 61, 17, 22, 153, 30	P-135 + P-248 + LT-115 ² + LBFF + XP-132 Pages: 49, 22, 22, 153, 27, 30, 30	P-135 + XP-235 ³ + F-252 + LBFF + XP-132 Pages: 49, 25, 19, 27, 27, 30, 30	P-135 + XP-235 ³ + LBFF + XP-132 Pages: 49, 25, 27, 30, 30	P-135 + MFF + XP-335 ¹ + LBFF + XP-132 Pages: 49, 27, 26, 27, 30, 30	P-135 + XP-335 ¹ + LBFF + XP-132 Pages: 49, 26, 27, 30, 30	P-134 + (2) LBFF + (2) XP-132 Pages: 41, 27, 30, 30	U-659 + LBFF + XP-132 Pages: 49, 27, 30, 20	U-659-01 + XU-662 + LBFF + XP-132 Pages: 49, 30, 27, 30, 30
1/4"	U-665 + P-259 + NTSlv + LT-115 ² Pages: 49, 22, 61, 19, 22, 153	U-665 + P-248 + LT-115 ² Pages: 49, 22, 22, 153	U-665 + XP-235 ³ + F-252 Pages: 49, 25, 19, 27	U-665 + XP-235 ³ Pages: 49, 25	U-665 + MFF + XP-335 ¹ Pages: 49, 27, 26	U-665 + XP-335 ¹ Pages: 49, 26	U-659 + LBFF + XP-132 Pages: 49, 27, 30, 30	U-658 Page: 41	U-658 + XU-662 Pages: 41, 30
5/16"	U-665-01 + XU-662 + P-259 + NTSlv + LT-115 ² Pages: 49, 30, 22, 61, 19, 22, 153	U-665-01 + XU-662 + P-248 + LT-115 ² Pages: 49, 30, 22, 22, 153	U-665-01 + XU-662 + XP-235 ³ + F-252 Pages: 49, 30, 25, 19, 27	U-665-01 + XU-662 + XP-235 ³ Pages: 49, 30, 25	U-665-01 + XU-662 + MFF + XP-335 ¹ Pages: 49, 30, 27, 26	U-665-01 + XU-662 + XP-335 ¹ Pages: 49, 30, 26	U-659-01 + XU-662 + LBFF + XP-132 Pages: 49, 30, 27, 30, 30	U-658 + XU-662 Pages: 41, 30	U-664 Page: 41

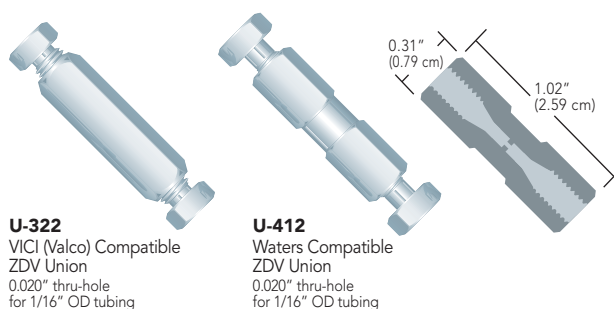
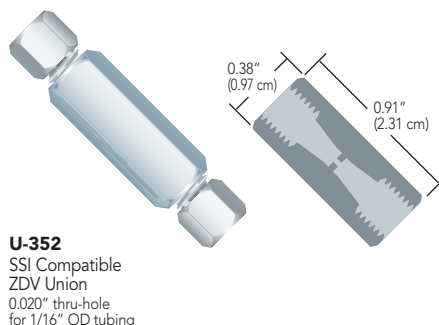
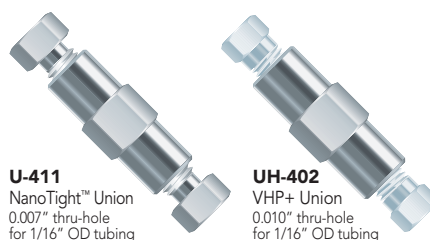
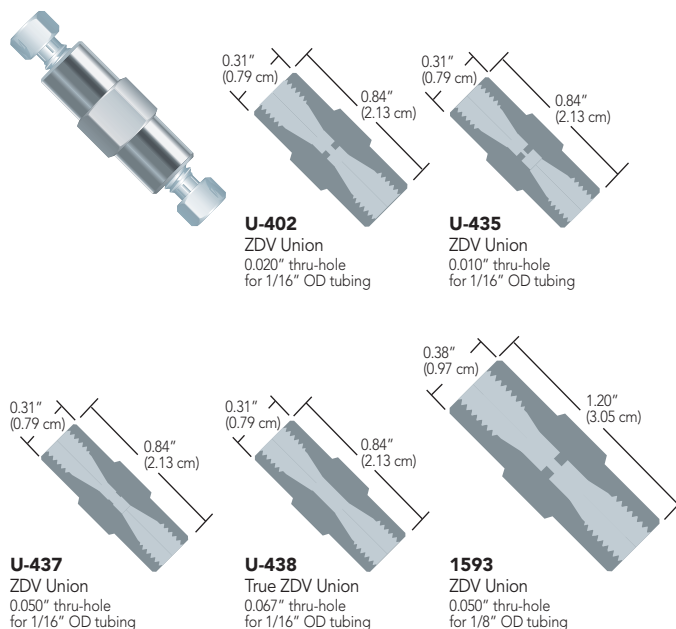
MTSlv MicroTight® Sleeves. Select the appropriate MicroTight Sleeve(s) for your tubing OD size.
NTSys NanoTight™ System. Select the appropriate NanoTight Sleeve(s) for your tubing OD size, and NanoTight fitting(s).
NTSlv Select the appropriate NanoTight Sleeves for your tubing OD size.
MFF Select the appropriate Metric Flangeless Ferrule(s) for your tubing OD size.
LBFF Choose from P-342, P-343 and P-353.
 Select from the following Large-Bore Flangeless Ferrules: P-133 (3/16" OD) or P-139 (4.0 mm OD).

-01 Denotes a union or adapter without fittings.
 1 While XP-335 is listed, any of our Flangeless Fittings for 1/8" OD tubing from page 26 will work in this application.
 2 While LT-115 is listed, any 1/4-28 Super Flangeless™ Nut for 1/16" OD tubing from page 22 will work in this application.
 3 While XP-235 is listed, any 1/4-28 Flangeless Fitting for 1/16" OD tubing from page 25 will work in this application.

VHP Stainless Steel ZDV Unions

- Supplied with fittings for 1/16" OD or 1/8" OD tubing
- Manufactured from 316 stainless steel
- All union assemblies rated to 20,000 psi (1,380 bar) or higher

These Upchurch Scientific®, high pressure, zero-dead-volume (ZDV) unions, manufactured by IDEX Health & Science, are precision machined from 316 stainless steel, carefully passivated, then thoroughly rinsed. Each comes complete with stainless steel nuts and ferrules.



Top Seller SEE STARRED PRODUCTS

Note

It is possible to order the products on this page without the fittings. Simply use a -01 at the end of the product number to order the union body without fittings.

Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
VHP STAINLESS STEEL ZDV UNIONS						
1593	Stainless Steel Union for 1/8" OD Tubing	1/4-28 Coned	(2) C-235/C-236	0.050" (1.25 mm)	1.48 µL	20,000 psi (1,380 bar)
★ U-402	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-400/U-401	0.020" (0.50 mm)	0.13 µL	20,000 psi (1,380 bar)
★ U-411	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-400/U-401	0.007" (178 µm)	13 nL	20,000 psi (1,380 bar)
★ U-435	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-400/U-401	0.010" (0.25 mm)	20 nL	20,000 psi (1,380 bar)
U-437	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-400/U-401	0.050" (1.25 mm)	0.84 µL	20,000 psi (1,380 bar)
U-438	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-400/U-401, (1) P-554 Gauge Plug	0.067" (1.70 mm)	Near 0 µL	20,000 psi (1,380 bar)
UH-402	VHP+ Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) VHP-200	0.010" (0.25mm)	20 nL	30,000 psi (2,070 bar)
SSI COMPATIBLE ZDV UNION						
U-352	Stainless Steel Union for 1/16" OD Tubing	1/4-28 Coned	(2) U-350/U-351	0.020" (0.50 mm)	0.18 µL	20,000 psi (1,380 bar)
VICI® (VALCO) COMPATIBLE ZDV UNION						
★ U-322	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-320/U-321	0.020" (0.50 mm)	0.15 µL	20,000 psi (1,380 bar)
WATERS® COMPATIBLE ZDV UNION						
U-412	Stainless Steel Union for 1/16" OD Tubing	10-32 Coned	(2) U-410/U-401	0.020" (0.50 mm)	0.10 µL	20,000 psi (1,380 bar)

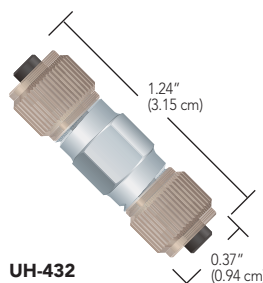
VHP Unions for Capillary Tubing

- ▶ Featuring stainless steel bodies and PK/PEEK™ fittings
- ▶ Pressure rated up to 15,000 psi (1,034 bar)
- ▶ Options to direct-connect both 1/32" OD tubing and 360 µm OD tubing

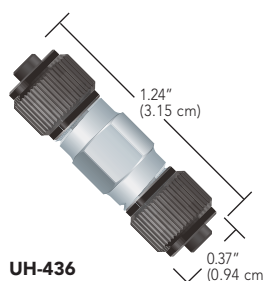
Upchurch Scientific® has expanded its line of specialized fittings and connectors for UHPLC applications to include several innovative unions and adapters.

Two of these products — the UH-432 and UH-436 — follow the design of our popular Mini MicroFilters (see page 165) and allow a convenient union between either 1/32" OD tubing or 360 µm OD tubing. Each features a stainless steel union body and a unique stainless steel union capsule, enabling both excellent chemical compatibility as well as conductivity, making these a great choice for electrical interfacing in certain LC-MS applications. Each is also coupled with direct-connect ferrules made from our proprietary PEEK polymer blend (PK), allowing tubing connections up to 15,000 psi (1,034 bar). (Please Note: While these connectors can be used at elevated pressures, they are not recommended for applications above 100 °C.)

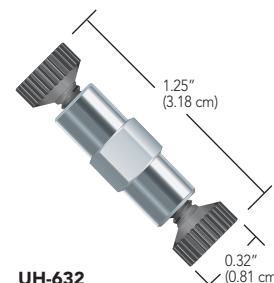
The UH-632 is a more traditionally designed connector, incorporating internally threaded ports. The union (UH-632) features a true ZDV (zero dead volume) connection between both tubes. This unique product is coupled with our one-piece Ultra-High Performance Fingertight fittings manufactured from our proprietary PEEK polymer blend, allowing them to be used in high temperature applications (up to 200 °C) at pressures up to 6,000 psi (414 bar) — or use these connectors at room temperature up to 15,000 psi (1,034 bar)!



UH-432
UHP MicroTight® Union
for 1/32" OD tubing
with fittings and capsule union included



UH-436
UHP MicroTight Union
for 360 µm OD tubing
with fittings and capsule union included



UH-632
UHP MicroTight Union
for 1/32" OD tubing
with fittings included

Related Products

- ▶ Find replacement VHP fittings on page 9
- ▶ Find Fused Silica tubing on page 65
- ▶ Find 1/32" OD Stainless Steel tubing on page 68 – 69
- ▶ To achieve 15,000 psi (1,034 bar) with these fittings, use the P-278 extender tool found on page 8

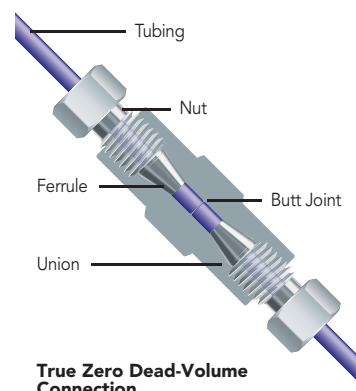
Order Online  WWW.IDEX-HS.COM

Application Note

What is a True ZDV Union?

True zero dead volume (ZDV) unions are designed so that the two joined pieces of tubing butt perfectly together as shown in the image to the right. These products have no swept volume contained within the union body. The fluid moves directly from one tube into another in this type of connector.

When using true ZDV unions, it is important to take care to ensure connecting tubing has burr-free 90 degree ends. Find tubing cutters on page 74 to assist with cleanly cutting polymer and fused silica tubing. Gauge plugs are supplied with True ZDV Unions to assist with assembly. With the gauge plug inserted into one side of the union, a hard stop is created for the tubing to bottom out against as it is connected to the opposite port. The gauge plug is removed and then the second piece of tubing is connected, using the first piece of tubing to bottom out against resulting in the two tubes joined together in the center of the union.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
VHP UNIONS FOR CAPILLARY TUBING						
★ UH-432	MicroTight Union for 1/32" OD Tubing, PEEK/SST	5/16-24 Coned	(2) PK-112, (2) P-416	0.006" (0.150 mm)	5 nL	15,000 psi (1,034 bar)
UH-436	MicroTight Union for 360 µm OD Tubing, PEEK/SST	5/16-24 Coned	(2) PK-152, (2) P-416BLK	0.006" (0.150 mm)	5 nL	15,000 psi (1,034 bar)
UH-632	MicroTight True ZDV Union for 1/32" OD Tubing, PEEK/SST	6-32 Coned	(2) PK-126, (1) P-553 Gauge Plug	N/A	N/A	15,000 psi (1,034 bar)

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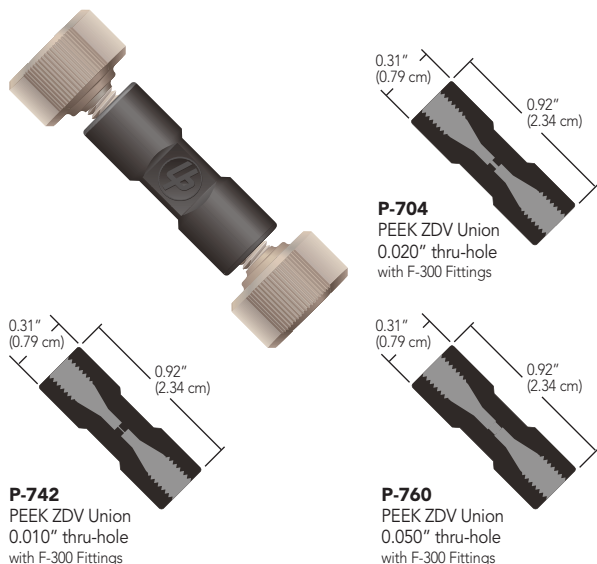
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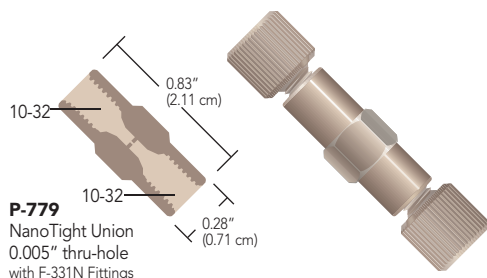
PEEK™ ZDV Unions

Upchurch Scientific® PEEK zero-dead-volume (ZDV) Unions come complete with two F-300 Fingertight Fittings for 1/16" OD tubing and are pressure rated to 5,000 psi (344 bar).



NanoTight™ Unions

Upchurch Scientific NanoTight Union improves capillary tubing connections in several ways. The internal design of the unions greatly reduces the incidence of tubing misalignment. When using 1/16" OD tubing sleeves (found on page 19) to connect capillary tubing, the webbed thru-hole minimizes breaking of fused silica while adding only miniscule swept volume. The results are fewer blockages, fewer flow rate reductions and fewer back pressure problems.

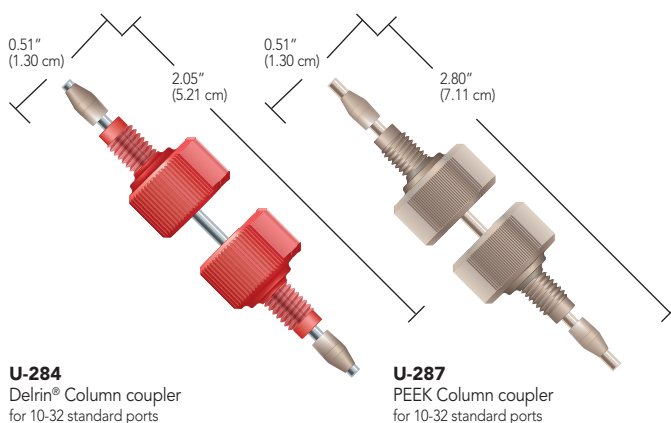
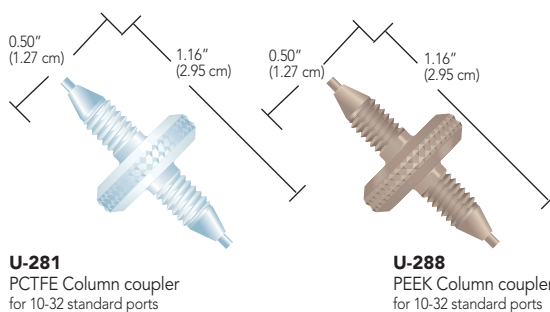


Column Couplers

► Low swept-volume connections

These universal column couplers permit a low swept-volume connection, with minimal loss in column efficiency. These couplers will connect most columns with 10-32 internal threads to a precolumn filter or guard column with the same threads. They may also be used to join two columns in series.

Upchurch Scientific manufactures two styles of column couplers. One version is a single piece that makes coupling columns to guard columns or precolumn filters easy and hassle-free. We also offer our traditional couplers that consist of two Fingertight fittings and a short length of 1/16" OD tubing—an excellent option for reducing overall flow path volume while coupling two devices together reliably.

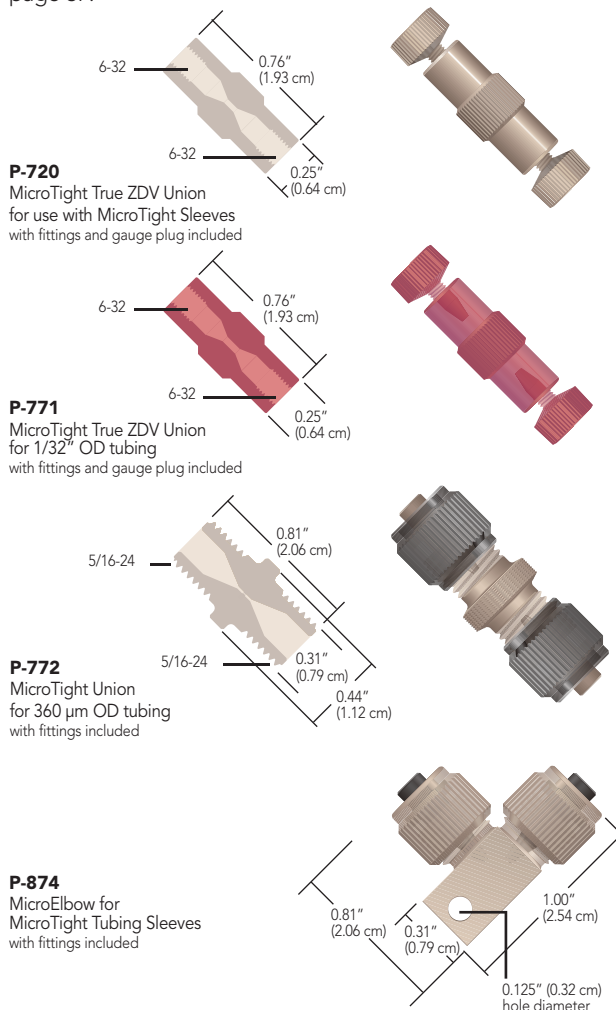


Top Seller SEE STARRED PRODUCTS

Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
PEEK ZDV UNIONS						
★ P-704	PEEK Union for 1/16" OD Tubing	10-32 Coned	(2) F-300	0.020" (0.50 mm)	0.28 µL	5,000 psi (344 bar)
★ P-742	PEEK Union for 1/16" OD Tubing	10-32 Coned	(2) F-300	0.010" (0.25 mm)	0.07 µL	5,000 psi (344 bar)
★ P-760	PEEK Union for 1/16" OD Tubing	10-32 Coned	(2) F-300	0.050" (1.25 mm)	1.2 µL	5,000 psi (344 bar)
NANOTIGHT UNION						
★ P-779	PEEK NanoTight Union for 1/16" OD Tubing and Tubing Sleeves	10-32 Coned	(2) F-331N	0.005" (125 µm)	8 nL	5,000 psi (344 bar)
COLUMN COUPLERS						
★ U-281	PCTFE Column Coupler	10-32 Coned	N/A	0.020" (0.50 mm)	6.0 µL	4,000 psi (276 bar)
U-283	PCTFE Column Coupler with 0.007" ID Stainless Steel Tubing	10-32 Coned	(2) F-100	0.007" (0.17 mm)	1.3 µL	4,000 psi (276 bar)
U-284	Delrin Column Coupler with 0.007" ID Stainless Steel Tubing	10-32 Coned	(2) F-200	0.007" (0.17 mm)	1.3 µL	5,000 psi (345 bar)
U-287	PEEK Column Coupler with 0.010" ID PEEK Tubing	10-32 Coned	(2) F-300	0.010" (0.25 mm)	3.6 µL	5,000 psi (345 bar)
U-288	PEEK Column Coupler	10-32 Coned	N/A	0.022" (0.56 mm)	7.2 µL	5,000 psi (345 bar)

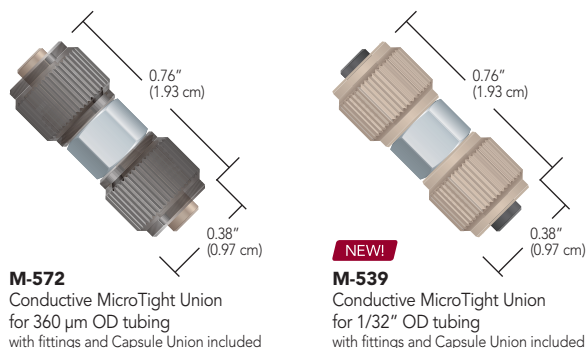
MicroTight® Connectors for Capillary Tubing

Connect two pieces of capillary tubing with these Upchurch Scientific® PEEK™ MicroTight Connectors. The True ZDV Unions allow two pieces of tubing to connect directly to each other — using the included gauge plug to ensure proper alignment. The standard union and elbow both feature a 0.006" (0.150 mm) thru-hole, adding only a small amount of additional flow-path volume to help ensure proper chromatographic results. For MicroTight unions designed for UHPLC applications, see page 37.



Conductive MicroTight Unions

The Upchurch Scientific Conductive MicroTight Unions manufactured by IDEX Health & Science provide an excellent opportunity to introduce voltage into an electrospray or capillary electrophoresis system. With an extremely low internal volume of 16 nL or 5 nL, these unions can be placed inline with 360 µm or 1/32" OD capillary tubing. Mount and apply voltage to these unions using our Insulating Mounting Bracket below.



Insulating Mounting Bracket

Use our Insulating Mounting Bracket to easily integrate the Conductive Mini MicroFilters shown above into your system or lab.

The product snaps into place. Voltage from your lead wire is conducted through the attaching stainless steel nut and screw (included), then onto the mounted product via the stainless steel clip.



Insulating Mounting Bracket, shown with lead wire and Conductive MicroTight Union, not included.

The bracket's base includes two holes (#2 screw clearance) for easy mounting onto any lab surface. Dimensions are 1.25" L x 0.45" W x 0.63" H.

Application Note

For an example of using a conductive MicroTight Union in a pressure driven ion preconcentration application see: "Self-Sealed Vertical Polymeric Nanoporous Junctions for High Throughput Nanofluidic Applications."

Sun Jae Kim and Jong Yoon Han. *Analytical Chem.* 2008, 80: 3507-3511



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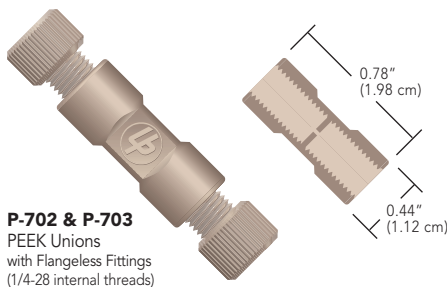
Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
MICROTIGHT UNIONS						
★ P-720	PEEK True ZDV Union for MicroTight Sleeves	6-32 Coned	(2) F-125, (1) P-553	N/A	N/A	4,000 psi (276 bar)
★ P-771	PEEK True ZDV Union for 1/32" OD Tubing	6-32 Coned	(2) F-126S, (1) P-553	N/A	N/A	5,000 psi (345 bar)
★ P-772	PEEK Union for 360 µm OD Tubing	5/16-24 Coned	(2) F-152, (2) P-416BLK	0.006" (0.150 mm)	5 nL	5,000 psi (345 bar)
P-874	PEEK MicroElbow for MicroTight Sleeves	5/16-24 Coned	(2) F-172, (2) P-416	0.006" (0.150 mm)	20 nL	4,000 psi (276 bar)
REPLACEMENT GAUGE PLUGS (TO ACHIEVE TRUE ZDV CONNECTIONS WITH OUR P-720 AND P-771 UNIONS)						
P-553	Gauge Plug, Delrin®	6-32 Coned	N/A	N/A	N/A	N/A
CONDUCTIVE MICROTIGHT UNIONS						
NEW! M-539	Conductive Union for 1/32" OD tubing, PEEK/SST	5/16-24 Coned	(2) F-112, (2) P-416, (1) M-138NF	0.006" (0.150 mm)	5nL	5,000 psi (345 bar)
M-572	Conductive Union for 360 µm OD Tubing, PEEK/SST	5/16-24 Coned	(2) F-152, (2) P-416BLK, (1) M-128NF	0.011" (0.279 mm)	16 nL	5,000 psi (345 bar)
INSULATING MOUNTING BRACKET						
M-447	Insulating Mounting Bracket	N/A	N/A	N/A	N/A	N/A

Low Pressure Unions

- ▶ Manufactured from PEEK™, ETFE, Delrin®, polypropylene or PCTFE
- ▶ Available with 1/4-28, M6 or 10-32 flat-bottom threads

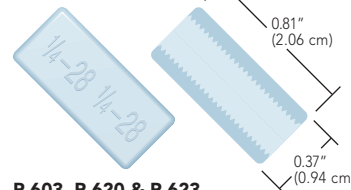
Upchurch Scientific® Low Pressure Unions are available in a variety of polymers, providing several low-cost and chemically-resistant options. The union assemblies below include fittings as shown in the table. The unions in the right column do not include fittings, allowing for customizing the fitting selection. In some cases, a union can be configured to connect two different tubing sizes – for example, if 1/4-28 Flangeless fittings for 1/16" and 1/8" OD tubing were selected from pages 25 and 27 they can be used with the P-603 union to connect the two different tubing sizes.

Low Pressure PEEK Union Assemblies



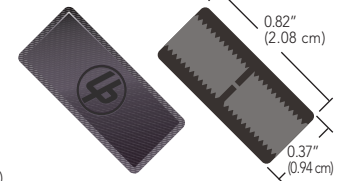
P-702 & P-703
PEEK Unions
with Flangeless Fittings
(1/4-28 internal threads)

Low Pressure Standard Unions



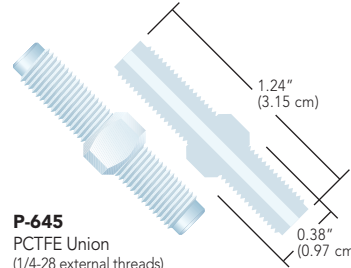
P-603, P-620 & P-623
Standard Unions
(1/4-28 internal threads)

Low Pressure Metric Unions



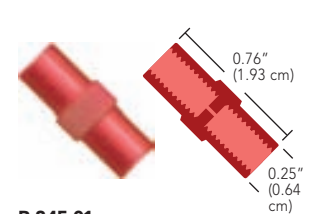
P-602 & P-622
Metric Unions
(M6 internal threads)

Low Pressure Male Union



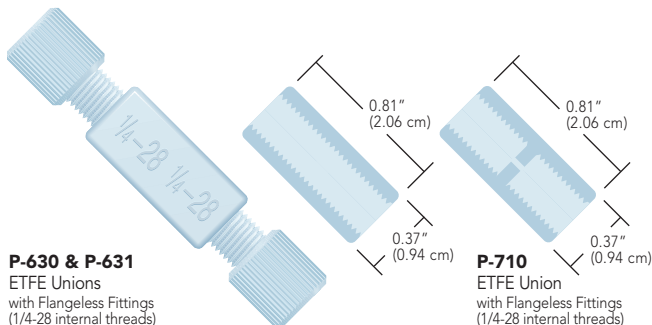
P-645
PCTFE Union
(1/4-28 external threads)

VacuTight™ Union



P-845-01
PEEK Union
(10-32 internal threads)

Low Pressure ETFE Union Assemblies



P-630 & P-631
ETFE Unions
with Flangeless Fittings
(1/4-28 internal threads)

P-710
ETFE Union
with Flangeless Fittings
(1/4-28 internal threads)

Related Products

- ▶ To use connectors in higher pressure applications, simply replace the provided fittings with Super Flangeless™ Nuts and Ferrules, found on pages 21 – 23.
- ▶ Use any of the 10-32 flat-bottom fittings on page 21 and 28 to make an inline connection with our VacuTight Union. This product is designed for use with 1/16" OD tubing.



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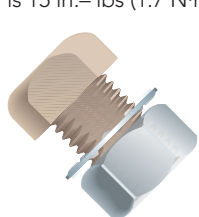
Part No.	Description	Color	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
PEEK UNION ASSEMBLIES							
★ P-702	PEEK Union for 1/16" OD Tubing	Natural	1/4-28 FB	(2) XP-235	0.020" (0.50 mm)	0.41 µL	1,000 psi (69 bar)
★ P-703	PEEK Union for 1/8" OD Tubing	Natural	1/4-28 FB	(2) XP-335	0.050" (1.25 mm)	2.57 µL	1,000 psi (69 bar)
ETFE UNION ASSEMBLIES							
P-630	ETFE True ZDV Union for 1/16" OD Tubing	Natural	1/4-28 FB	(2) P-200N/P-245	N/A	N/A	1,000 psi (69 bar)
P-631	ETFE True ZDV Union for 1/8" OD Tubing	Natural	1/4-28 FB	(2) P-300N/P-345	N/A	N/A	1,000 psi (69 bar)
P-710	ETFE Union for 1/16" OD Tubing	Natural	1/4-28 FB	(2) XP-245	0.030" (0.75 mm)	0.93 µL	1,000 psi (69 bar)
STANDARD UNIONS							
★ P-603	Delrin True ZDV Standard Union	Natural	1/4-28 FB	N/A	N/A	N/A	N/A*
★ P-620	Polypropylene True ZDV Standard Union	Natural	1/4-28 FB	N/A	N/A	N/A	N/A*
★ P-623	ETFE True ZDV Standard Union	Natural	1/4-28 FB	N/A	N/A	N/A	N/A*
METRIC UNIONS							
P-602	Delrin Metric Union	Black	M6 FB	N/A	0.020" (0.50 mm)	0.41 µL	N/A*
P-622	ETFE Metric Union	Blue	M6 FB	N/A	0.020" (0.50 mm)	0.41 µL	N/A*
MALE UNION							
★ P-645	PCTFE Male Union	Natural	1/4-28 FB	N/A	0.062" (1.60 mm)	61.3 µL	500 psi (34 bar)
VACUTIGHT UNION							
P-845-01	PEEK Union for 1/16" OD Tubing	Red	10-32 FB	N/A	0.020" (0.50 mm)	0.20 µL	N/A*

* Pressure Rating depends on Fittings selected. See pressure rating for fittings on appropriate page.
FB = Flat-Bottom

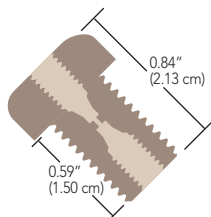
Bulkhead Unions

- Designed for plumbing tubing through equipment housing
- For use with standard 10-32 coned, 1/4-28 or M6 flat-bottom threaded fittings

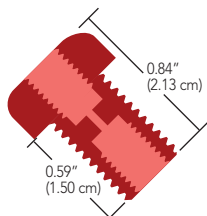
Thread Upchurch Scientific® PEEK™ Bulkhead Unions directly through your equipment housing to connect internal tubing to the outside. Each union has unique 3/8-24 external threads and comes complete with a stainless steel nut and lock washer to hold it in place. Requires a 3/8" hole to mount. The recommended torque limit for these unions is 15 in.-lbs (1.7 N-m).



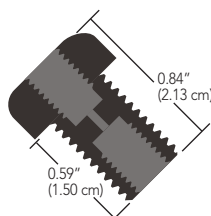
Bulkhead Union
includes stainless steel nut/lock washer



P-440
10-32 internal threads



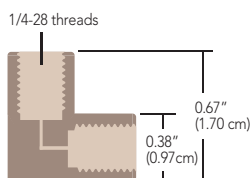
P-441
1/4-28 internal threads



P-442
M6 internal threads

Elbow Connectors

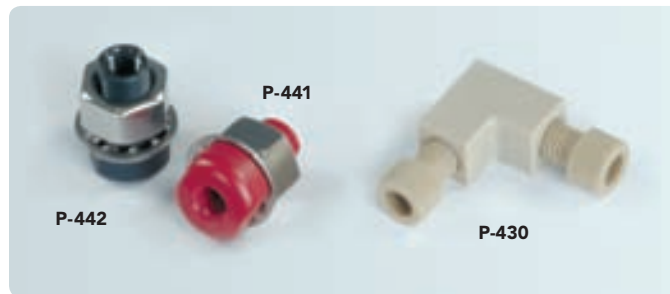
Use these Elbow Connectors to easily navigate tight corners. One Elbow is designed for use with 1/16" OD tubing and has a 0.020" (0.50 mm) thru-hole. Use 1/8" OD tubing with the other Elbow, which has a 0.062" (1.60 mm) thru-hole. Both come complete with 1/4-28 PEEK nuts and ETFE ferrules, and are pressure rated to 1,000 psi (69 bar).



P-430
PEEK Elbow
comes with Flangeless Fittings



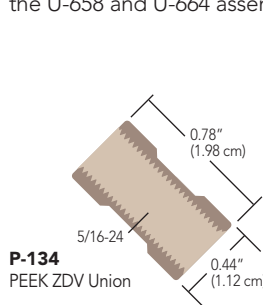
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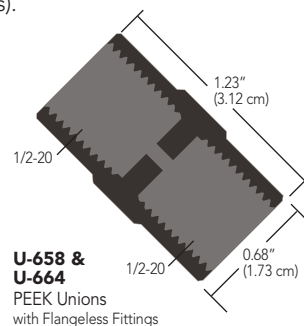
Large Bore Unions

- 5/16-24 and 1/2-20 flat-bottom threads

Use any of the 5/16-24 fittings on page 56 and the appropriate ferrule to create a true zero dead volume (ZDV) connection with the P-134 Union. Our U-658 and U-664 Unions are designed to be used with our standard 1/2-20 flat-bottom threaded nuts and ferrules (included with the U-658 and U-664 assemblies).



P-134
PEEK ZDV Union



U-658 & U-664
PEEK Unions
with Flangeless Fittings

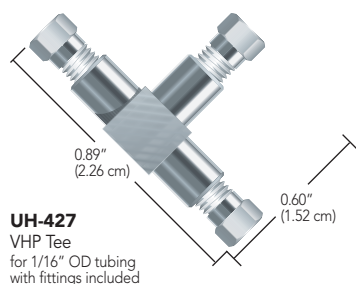
Related Products

- Stainless Steel Bulkhead Unions are also available. Please contact us for more information.
- To use Elbows in higher pressure applications, simply replace the provided fittings with Super Flangeless™ Nuts and Ferrules, found on pages 21 – 23.

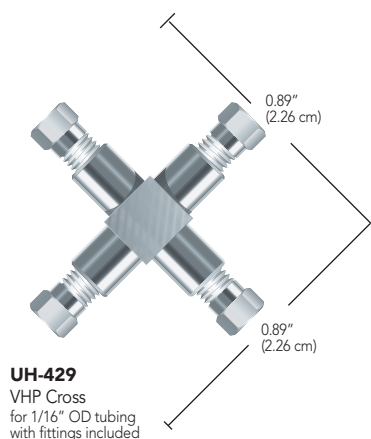
Part No.	Description	Threads	Color	Includes	Thru-hole	Swept Volume
BULKHEAD UNIONS						
★ P-440	PEEK Bulkhead Union	10-32 Coned	Natural	(1) SST Nut/Washer	0.020" (0.50 mm)	1.9 µL
★ P-441	PEEK Bulkhead Union	1/4-28 Flat-Bottom	Red	(1) SST Nut/Washer	0.040" (1.00 mm)	2.9 µL
★ P-441N	PEEK Bulkhead Union	1/4-28 Flat-Bottom	Natural	(1) SST Nut/Washer	0.040" (1.00 mm)	2.9 µL
P-442	PEEK Bulkhead Union	M6 Flat-Bottom	Black	(1) SST Nut/Washer	0.040" (1.00 mm)	2.9 µL
ELBOW CONNECTORS						
P-430	PEEK Elbow for 1/16" OD Tubing	1/4-28 Flat-Bottom	Natural	(2) XP-235	0.020" (0.50 mm)	1.4 µL
P-432	PEEK Elbow for 1/8" OD Tubing	1/4-28 Flat-Bottom	Natural	(2) XP-335	0.062" (1.60 mm)	13.6 µL
LARGE BORE UNIONS						
P-134	PEEK True ZDV Union	5/16-24 Flat-Bottom	Natural	N/A	N/A	N/A
U-658	PEEK Union for 1/4" OD Tubing	1/2-20 Flat-Bottom	Black	N/A	0.188" (4.80 mm)	57 µL
U-664	PEEK Union for 5/16" OD Tubing	1/2-20 Flat-Bottom	Black	N/A	0.188" (4.80 mm)	57 µL

VHP Tees & Crosses for 1/16" OD Tubing

IDEX Health & Science offers Very High Pressure Connectors, designed to bring three or four pieces of tubing together. The all-316 stainless steel connectors are designed for 1/16" OD tubing, and are pressure rated to 30,000 psi (2,070 bar).



UH-427
VHP Tee
for 1/16" OD tubing
with fittings included



UH-429
VHP Cross
for 1/16" OD tubing
with fittings included

Application Note

Why 1/32" OD Tubing and 360 µm OD Tubing?

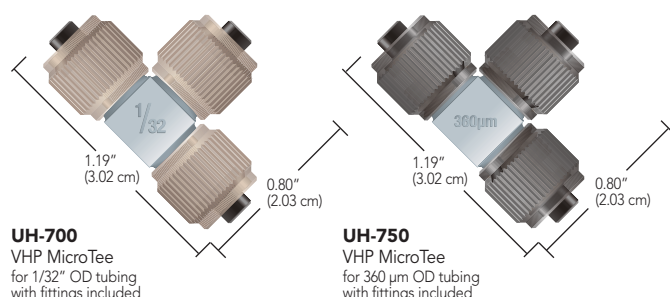
IDEX Health & Science has focused strongly on the development of a variety of connectors and accessories for 1/32" OD tubing and 360 µm OD tubing. We have focused on these specific sizes due to their overwhelming popularity in analytical instruments, especially where micro and nano-scale analyses are being performed. By creating products designed for these popular sizes, the overall connection is easier to make and generally holds to increased pressures over connections where tubing sleeves are involved.

VHP Tees & Crosses for Capillary Tubing

- ▶ Direct-connect either 360 µm or 1/32" OD tubing — no sleeves required!
- ▶ Available in both tee and cross configurations
- ▶ Pressure rated to 15,000 psi (1,034 bar)

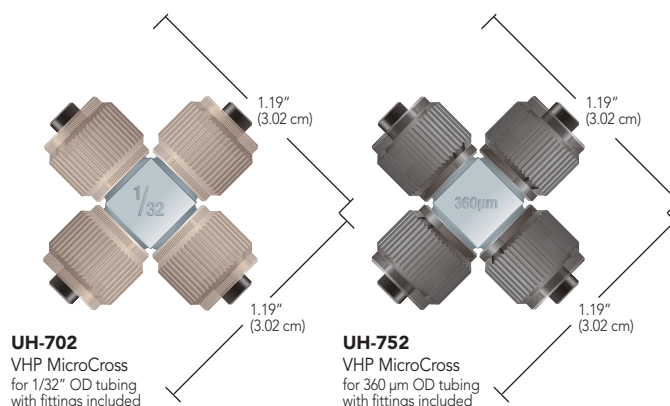
To help facilitate multi-port connections in UHPLC applications, Upchurch Scientific® has developed a line of MicroTees and MicroCrosses, manufactured from stainless steel and featuring small thru-holes and very low internal volume. Additionally, the stainless steel construction allows these products to be used in applications where electrical conductivity is desired.

Included with the MicroTees and MicroCrosses are the VHP MicroFerrules found on page 9. The P-278 Extender Tool on page 33 can be used to tighten the female nuts that are included with these connectors.



UH-700
VHP MicroTee
for 1/32" OD tubing
with fittings included

UH-750
VHP MicroTee
for 360 µm OD tubing
with fittings included



UH-702
VHP MicroCross
for 1/32" OD tubing
with fittings included

UH-752
VHP MicroCross
for 360 µm OD tubing
with fittings included

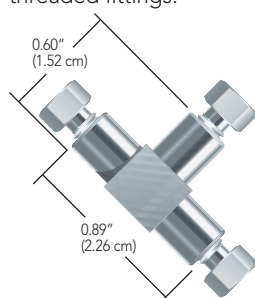


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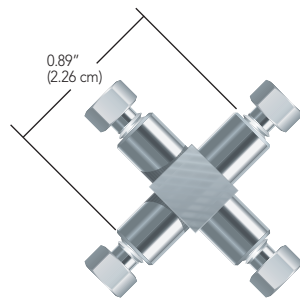
Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
STAINLESS STEEL UNIONS, TEES, CROSSES						
UH-427	VHP Tee for 1/16" OD Tubing, SST	10-32 Coned	(3) VHP-200	0.020" (0.50 mm)	0.57 µL	30,000 psi (2,070 bar)
UH-429	VHP Cross for 1/16" OD Tubing, SST	10-32 Coned	(4) VHP-200	0.020" (0.50 mm)	0.72 µL	30,000 psi (2,070 bar)
VHP TEES & CROSSES FOR CAPILLARY TUBING						
★ UH-700	VHP MicroTee for 1/32" OD Tubing, PEEK™/SST	5/16-24 Coned	(3) PK-112, (3) P-416	0.010" (0.25 mm)	84 nL	15,000 psi (1,034 bar)
UH-702	VHP MicroCross for 1/32" OD Tubing, PEEK/SST	5/16-24 Coned	(4) PK-112, (4) P-416	0.010" (0.25 mm)	101 nL	15,000 psi (1,034 bar)
UH-750	VHP MicroTee for 360 µm OD Tubing, PEEK/SST	5/16-24 Coned	(3) PK-152, (3) P-416BLK	0.010" (0.25 mm)	84 nL	15,000 psi (1,034 bar)
UH-752	VHP MicroCross for 360 µm OD Tubing, PEEK/SST	5/16-24 Coned	(4) PK-152, (4) P-416BLK	0.010" (0.25 mm)	101 nL	15,000 psi (1,034 bar)

Stainless Steel Tees & Crosses

These 316 stainless steel connectors come complete with 10-32 stainless steel fittings for use with 1/16" OD tubing and are rated to 20,000 psi (1,380 bar). They are compatible with any 10-32 coned threaded fittings.



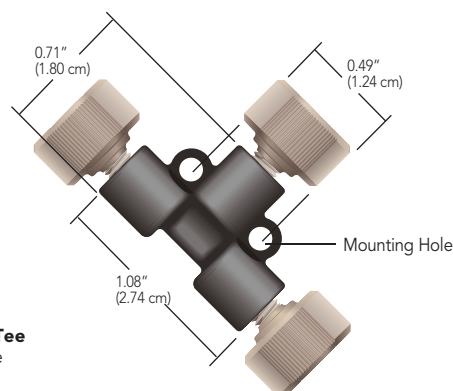
U-428 Stainless Steel Tee
0.020" thru-hole
with U-400 and U-401 Fittings



U-430 Stainless Steel Cross
0.020" thru-hole
with U-400 and U-401 Fittings

PEEK Tees & Crosses

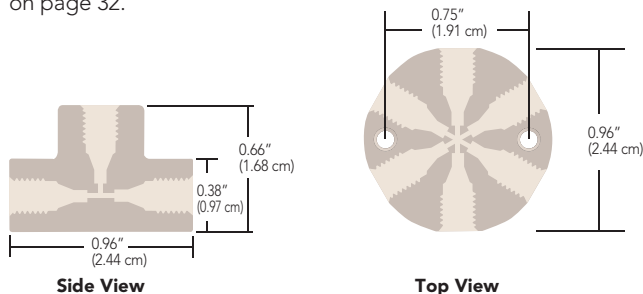
Our PEEK Tees and Crosses include high pressure F-300 PEEK Fingertight Fittings — allowing maximum operating pressures to 3,500 psi (241 bar) when used with 1/16" OD PEEK or stainless steel tubing.



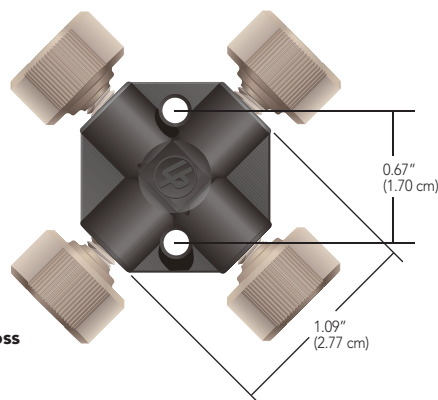
P-727 PEEK Tee
0.020" thru-hole
with F-300 Fittings

PEEK™ 7-Port Manifold

Combine several streams into one or split one fluid stream into several. This PEEK 7-Port Manifold comes complete with F-331 Fingertight Fittings for 1/16" OD tubing and offers a pressure rating of 5,000 psi (345 bar). Seal unused ports with any of our polymer 10-32 plugs on page 32.



P-170
PEEK 7-Port Manifold
0.020" thru-holes
with F-331 Fittings



P-729 PEEK Cross
0.020" thru-hole
with F-300 Fittings



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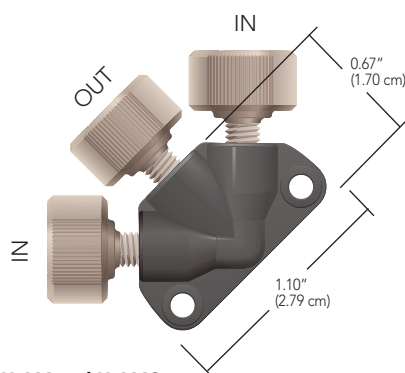
Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
STAINLESS STEEL TEES AND CROSSES						
★ U-428	Stainless Steel Tee for 1/16" OD Tubing	10-32 Coned	(3) U-400, (3) U-401	0.020" (0.50 mm)	0.57 µL	20,000 psi (1,380 bar)
★ U-429	Stainless Steel Tee for 1/16" OD Tubing	10-32 Coned	(3) U-400, (3) U-401	0.040" (1.00 mm)	2.1 µL	20,000 psi (1,380 bar)
★ U-430	Stainless Steel Cross for 1/16" OD Tubing	10-32 Coned	(4) U-400, (4) U-401	0.020" (0.50 mm)	0.72 µL	20,000 psi (1,380 bar)
★ U-431	Stainless Steel Cross for 1/16" OD tubing	10-32 Coned	(4) U-400, (4) U-401	0.040" (1.00 mm)	2.5 µL	20,000 psi (1,380 bar)
PEEK MANIFOLD						
P-170	PEEK 7-Port Manifold for 1/16" OD Tubing	10-32 Coned	(7) F-331	0.020" (0.50 mm)	2.2 µL	5,000 psi (345 bar)
PEEK TEES AND CROSSES						
★ P-727	PEEK Tee for 1/16" OD Tubing	10-32 Coned	(3) F-300	0.020" (0.50 mm)	0.57 µL	3,500 psi (241 bar)
P-728	PEEK Tee for 1/16" OD Tubing	10-32 Coned	(3) F-300	0.050" (1.25 mm)	3.0 µL	3,500 psi (241 bar)
P-729	PEEK Cross for 1/16" OD Tubing	10-32 Coned	(4) F-300	0.020" (0.50 mm)	0.72 µL	3,500 psi (241 bar)
P-730	PEEK Cross for 1/16" OD Tubing	10-32 Coned	(4) F-300	0.050" (1.25 mm)	3.5 µL	3,500 psi (241 bar)

Static Mixing Tees

- ▶ PEEK™ body with two-piece fingertight fittings
- ▶ Low swept volume

Upchurch Scientific® Static Mixing Tees are ideal for microbore or analytical gradient HPLC. They have a low swept volume of 2.2 µL (includes frit volume) and are designed for flow rates of 0.5 to 3 mL/min and a maximum pressure of 5,000 psi (345 bar). The back pressure caused by the tee is typically only 10 to 20 psi (0.7 to 1.4 bar) at these flow rates. The thru-holes are 0.020" (0.50 mm) and the center port features a 10 µm UHMWPE or stainless steel frit that aids mixing.

Please Note: Turbulent mixing of solvents often increases outgassing. To maintain a bubble-free fluid pathway, we recommend solvent degassing when using this product (see the Systec® Vacuum Degassing Systems on pages 177–178).



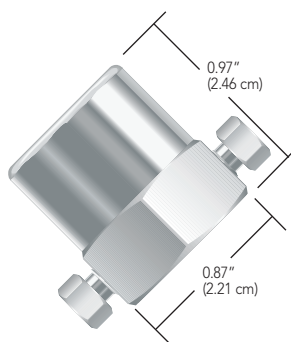
**U-466 and U-466S
Static Mixing Tees**
with F-300 Fingertight Fittings
for 1/16" OD tubing

Pressure Gauge Tee

- ▶ Complete with stainless steel fittings

Many HPLC systems have pumps that provide a digital readout of the inline system pressure. However, a number of systems do not, creating the need for a gauge along your 1/16" OD tubing pathway to monitor pressure. The Upchurch Scientific U-433 Pressure Gauge Tee is the solution. This Tee comes complete with 10-32 coned stainless steel fittings for 1/16" OD tubing and has an internal port suitable to connect to 1/4" pipe threads (NPT), standard to most gauges. *Please Note: A pressure gauge is not included with this Tee; however, they are available from a number of laboratory supply companies.*

Before installing your gauge into this Tee, simply wrap PTFE tape around the male threads of your pressure gauge four times. This will ensure a leak-free seal, even at standard HPLC operating pressures.



**U-433
Pressure Gauge Tee**
with U-400/U-401 Stainless Steel Fittings
for 1/16" OD tubing

Note

- ▶ The frit incorporated into our U-466 and U-466S Static Mixing Tees is not replaceable. If it becomes clogged, the Mixing Tee must be replaced.

Related Products

- ▶ Our Micro Static Mixing Tee can be found on the next page. It is designed for microflow applications.



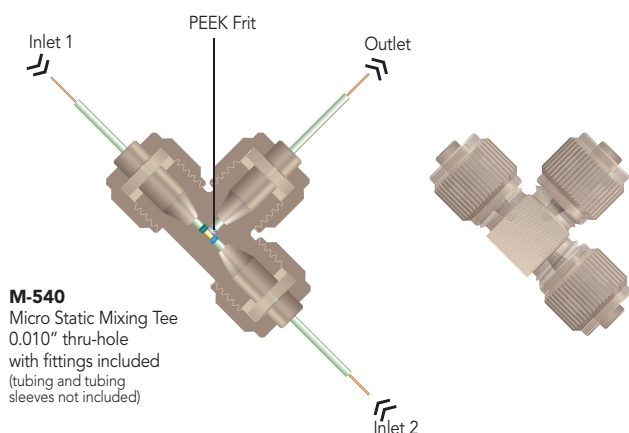
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Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
STATIC MIXING TEE						
★ U-466	PEEK Static Mixing Tee for 1/16" OD Tubing, 10 µm UHMWPE Frit	10-32 Coned	(3) F-300	0.020" (0.50 mm)	2.2 µL	5,000 psi (345 bar)
U-466S	PEEK Static Mixing Tee for 1/16" OD Tubing, 10 µm SST Frit	10-32 Coned	(3) F-300	0.020" (0.50 mm)	2.2 µL	5,000 psi (345 bar)
PRESSURE GAUGE TEE						
U-433	Stainless Steel Pressure Gauge Tee for 1/16" OD Tubing	10-32 Coned	(2) U-400, (2) U-401	0.040" (1.00 mm)	1.2 µL	10,000 psi (690 bar)

Micro Static Mixing Tee

- Constructed of inert PEEK™ and PCTFE
- Low swept volume of 0.95 µL
- Designed for flow rates of 20 – 250 µL/min

The Upchurch Scientific® Micro Static Mixing Tee utilizes a specifically engineered internal geometry to efficiently mix two fluid streams into one combined stream. The center port also features a 0.5 µm porosity PEEK polymer frit to aid in mixing. This frit adds a maximum of 20 psi (1.4 bar) back pressure to most systems (within the stated flow rate range). The Mixing Tee handles a maximum pressure of 5,000 psi (345 bar) when directly connecting 1/16" OD tubing, or up to 4,000 psi (276 bar) with capillary tubing when using our NanoTight™ Tubing Sleeves (pages 17 and 19).



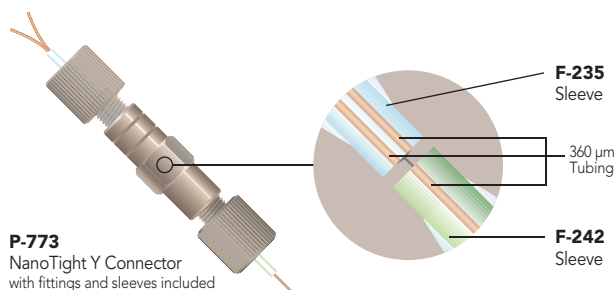
NanoTight Y Connector

- Only 17 nL of swept volume

This product improves laminar flow over traditional MicroTee designs. The result is less turbulence and mixing when combining two fluid paths into one, or splitting one fluid path into two.

The NanoTight Y Connector uses an included 1.6" (4.1 cm) long Dual-Lumen Silica SealTight™ Tubing Sleeve to accommodate two 360 µm OD capillary tubing lines. The single inlet/outlet end of the Y Connector uses the included F-242 Silica SealTight Tubing Sleeve, also designed for 360 µm OD capillary tubing. This assembly holds to 4,000 psi (276 bar), has a 0.004" (0.100 mm) thru-hole, and a swept volume of only 17 nL.

The NanoTight Y Connector comes complete with NanoTight Fittings. The body of this product is made of PEEK polymer, while both of the included tubing sleeves are made of FEP. Replacement Silica SealTight Tubing Sleeves and fittings are available on page 19 — buy F-242 replacement sleeves or choose from the other available sleeves to connect capillary tubing with ODs ranging from 70 µm to 1 mm. Dual-Lumen F-235 Sleeves are listed on this page.



Note

- Turbulent mixing of solvents often increases outgassing. Therefore, we recommend solvent degassing when using this product.

Related Products

- See the Systec® Vacuum Degassing Systems on pages 177 –178.
- Our Static Mixing Tee on the previous page is designed for flow rates from 500 µL/min to 3 mL/min.



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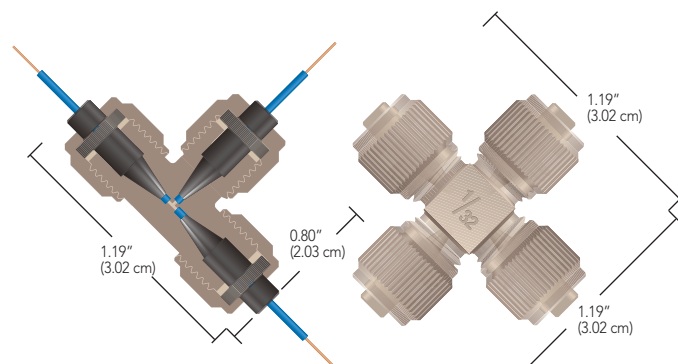
Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
MICRO STATIC MIXING TEE						
★ M-540	PEEK Micro Static Mixing Tee, for 1/16" OD Tubing	5/16-24 Coned	(3) F-132/P-416	0.010" (0.250 mm)	0.95 µL	5,000 psi (345 bar)
NANOTIGHT Y CONNECTOR						
P-773	NanoTight Y Connector, for 360 µm OD Tubing	10-32 Coned	(1) F-235, (1) F-242, (2) F-331N	0.006" (0.150 mm)	17 nL	4,000 psi (276 bar)
F-235x	Dual-Lumen NanoTight Tubing Sleeves, Natural FEP, for 360 µm OD tubing, 10-pk	—	—	—	—	4,000 psi (276 bar)

MicroTee and Cross for Capillary Tubing

- ▶ Direct connect 1/16", 1/32", 360 µm OD tubing, plus other capillary tubing
- ▶ Low swept volume

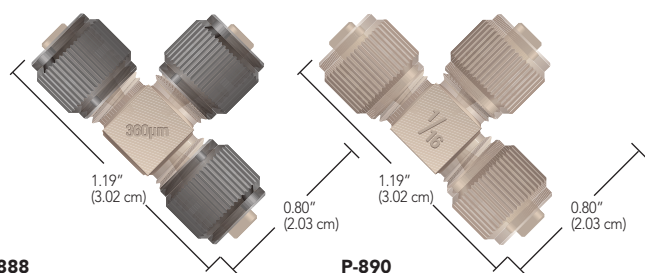
Use Upchurch Scientific® MicroTees and MicroCrosses to join capillary tubing. All of these products are made entirely of PEEK™ and have 0.006" (0.150 mm) thru-holes, with resulting swept volumes ranging from 29 to 81 nL.

Please Note: Use only the ferrules supplied with each connector — they are not interchangeable. Replacement ferrules and female nuts are available on page 18. For MicroUnions, MicroTees and MicroCrosses for UHPLC applications, see page 42.



P-775
MicroTee for MicroTight® Tubing Sleeves
0.006" thru-holes
with fittings included
(tubing sleeves not included)

P-887
MicroCross
for 1/32" OD tubing
0.006" thru-holes
with fittings included



P-888
MicroTee
for 360 µm OD tubing
0.006" thru-holes
with fittings included

P-890
MicroTee
for 1/16" OD tubing
0.006" thru-holes
with fittings included

Application Note

Several researchers use our PEEK MicroTee to introduce ionizing voltage to their fluid stream just prior to a Mass Spectrometer¹. MicroTees are well suited for this application due to advantageous internal geometry and PEEK polymer's electrical resistance. The materials required for this setup are as follows: one gold or platinum conducting wire, one P-775 or P-875 MicroTee (this page), one MicroTight Tubing Sleeve (page 19) for the conducting wire (as needed to accommodate wire diameter), and at least two more MicroTight Tubing Sleeves (page 19) to connect your capillary tubing.

Connect the wire to the center port of the MicroTee. First, thread your wire through the appropriate tubing sleeve, if necessary, with the wire extending beyond both ends of the sleeve. Slip the female nut included with the MicroTee over the wire or sleeved wire, followed by the ferrule — ensuring the wire (and its sleeve) extends well past the end of the ferrule tip. Align the tip of the wire with the thru-hole of the MicroTee and gently insert the wire until it bottoms out. Now finger tighten the female nut into place. Attach your flow path tubing to the MicroTee's two other available ports, following the instructions provided with the MicroTee.

Begin fluid flow through the tee and apply voltage to the conducting wire lead. This setup typically provides effective electrospray ionization in applications having a flow rate of 100 µL/min or greater.

¹ One such paper describing pioneering electrospray work: **Protein Identification at the Low Femtomole Level from Silver-Stained Gels Using a New Fritless Electrospray Interface for Liquid Chromatography-Microspray and Nanospray Mass Spectrometry.** Christine L. Gatlin, Gerd R. Kleemann, Lara G. Hays, Andrew J. Link, John R. Yates III (1998) *Analytical Biochemistry* 263, 93-101.

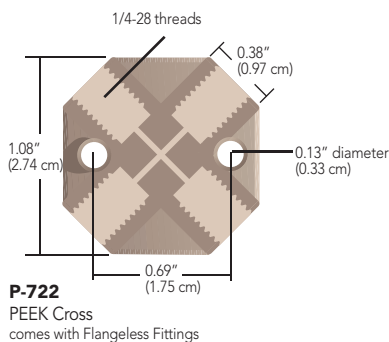
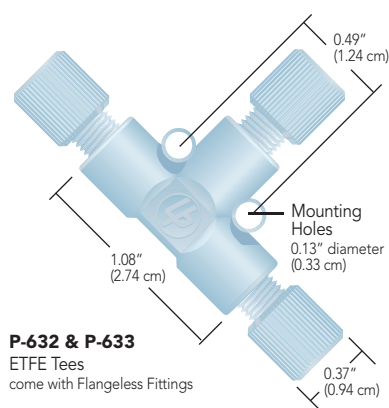


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Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
MICROTEE, MICROCROSS AND MICROELBOW						
★ P-775	PEEK MicroTee for MicroTight Sleeves	5/16-24 Coned	(3) F-172, (3) P-416	0.006" (0.150 mm)	29 nL	4,000 psi (276 bar)
★ P-777	PEEK MicroCross for MicroTight Sleeves	5/16-24 Coned	(4) F-172, (4) P-416	0.006" (0.150 mm)	38 nL	4,000 psi (276 bar)
P-875	PEEK MicroTee with Mounting Hole, for MicroTight Sleeves	5/16-24 Coned	(3) F-172, (3) P-416	0.006" (0.150 mm)	29 nL	4,000 psi (276 bar)
★ P-885	PEEK MicroTee for 1/32" OD Tubing	5/16-24 Coned	(3) F-112, (3) P-416	0.006" (0.150 mm)	29 nL	5,000 psi (345 bar)
P-887	PEEK MicroCross for 1/32" OD Tubing	5/16-24 Coned	(4) F-112, (4) P-416	0.006" (0.150 mm)	38 nL	5,000 psi (345 bar)
★ P-888	PEEK MicroTee for 360 µm OD Tubing	5/16-24 Coned	(3) F-152, (3) P-416BLK	0.006" (0.150 mm)	29 nL	5,000 psi (345 bar)
P-889	PEEK MicroCross for 360 µm OD Tubing	5/16-24 Coned	(4) F-152, (4) P-416BLK	0.006" (0.150 mm)	38 nL	5,000 psi (345 bar)
★ P-890	PEEK MicroTee for 1/16" OD Tubing	5/16-24 Coned	(3) F-132, (3) P-416	0.006" (0.150 mm)	58 nL	5,000 psi (345 bar)
P-891	PEEK MicroCross for 1/16" OD Tubing	5/16-24 Coned	(4) F-132, (4) P-416	0.006" (0.150 mm)	81 nL	5,000 psi (345 bar)

Tees and Crosses

Upchurch Scientific® Tees and Crosses manufactured by IDEX Health & Science are available in two inert polymers and can handle pressures to 1,000 psi (69 bar). Each is designed with handy mounting holes. All ETFE Tees and Crosses ship complete with 1/4-28 PFA Flangeless nuts and ETFE ferrules, while their PEEK™ polymer counterparts ship with 1/4-28 PEEK nuts and ETFE ferrules. Replacement fittings are located on pages 25 and 26.



Note

- To order just the body of one of our tees and crosses without fittings, simply add a '-01' to the part number – e.g., P-632-01.

Related Products

- Seal off unused ports with any of our 1/4-28 flat-bottom plugs found on page 32.
- To use the PEEK polymer versions of our Tees and Crosses in higher pressure applications, simply replace the provided fittings with Super Flangeless™ Nuts and Ferrules, found on pages 21 – 23.
- High Pressure Tees, Crosses and a 7-Port Manifold (all with 10-32 threaded ports) are on page 43.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Threads	Includes:	Thru-hole	Swept Volume	Pressure Rating
TEES AND CROSSES						
★ P-632	ETFE Tee for 1/16" OD Tubing	1/4-28 Flat-Bottom	(3) P-245, (3) P-200N	0.020" (0.50 mm)	2.9 µL	1,000 psi (69 bar)
★ P-633	ETFE Tee for 1/8" OD Tubing	1/4-28 Flat-Bottom	(3) P-345, (3) P-300N	0.050" (1.25 mm)	17.5 µL	500 psi (34 bar)
P-634	ETFE Cross for 1/16" OD Tubing	1/4-28 Flat-Bottom	(4) P-245, (4) P-200N	0.020" (0.50 mm)	3.8 µL	1,000 psi (69 bar)
P-635	ETFE Cross for 1/8" OD Tubing	1/4-28 Flat-Bottom	(4) P-345, (4) P-300N	0.050" (1.25 mm)	22.8 µL	500 psi (34 bar)
★ P-712	PEEK Tee for 1/16" OD Tubing	1/4-28 Flat-Bottom	(3) XP-235	0.020" (0.50 mm)	2.9 µL	1,000 psi (69 bar)
★ P-713	PEEK Tee for 1/8" OD Tubing	1/4-28 Flat-Bottom	(3) XP-335	0.050" (1.25 mm)	17.5 µL	500 psi (34 bar)
★ P-714	PEEK Tee for 1/16" OD Tubing	1/4-28 Flat-Bottom	(3) XP-235	0.040" (1.00 mm)	11.4 µL	1,000 psi (69 bar)
P-722	PEEK Cross for 1/16" OD Tubing	1/4-28 Flat-Bottom	(4) XP-235	0.020" (0.50 mm)	3.8 µL	1,000 psi (69 bar)
P-723	PEEK Cross for 1/8" OD Tubing	1/4-28 Flat-Bottom	(4) XP-335	0.050" (1.25 mm)	22.8 µL	500 psi (34 bar)

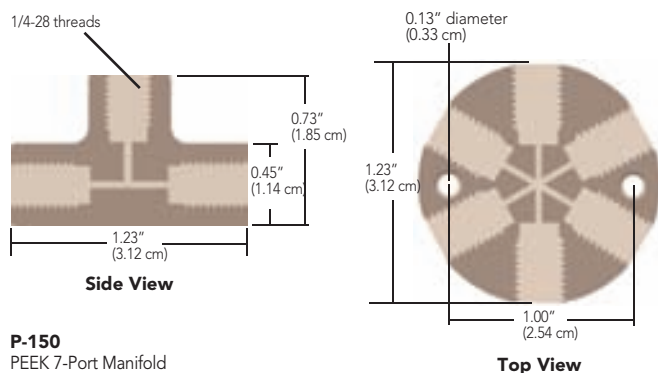
Manifolds

Choose a 5, 6, 7 or 9 Port Manifold to combine several streams into one, or split one fluid stream into several. Each PEEK™ manifold comes complete with 1/4-28 Super Flangeless™ Fittings for either 1/16" or 1/8" OD tubing, with pressure ratings of 2,000 psi (138 bar) and 500 psi (34 bar), respectively.

Bulkhead mountable 6-Port versions are available, and come with a stainless steel nut and lock washer to hold them in place. These manifolds have 1/2-20 external threads, requiring a 1/2" diameter hole to mount. The recommended torque limit while mounting these products is 15 in-lbs.

A few useful applications include:

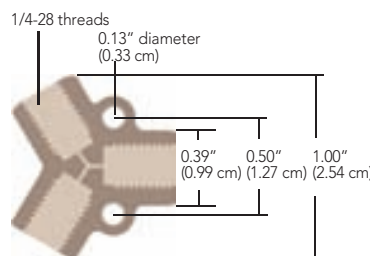
- ▶ Multiport mixing chamber
- ▶ Gas sparging splitting union
- ▶ Sample injection onto multi-well plates or a multiple direction flow path union



Y Connectors

Upchurch Scientific® PEEK Y Connectors are designed to split a stream or join two streams together, just like a tee. However, the configuration of a tee can lead to turbulent flow and solvent outgassing, which increases baseline noise and reduces sensitivity. The geometry of a Y connector creates much less turbulence and thus can improve analytical results.

All of these Y Connectors use 1/4-28 Flangeless fittings, except P-515 which uses 5/16-24 fittings.



P-512
PEEK Y
comes with Flangeless Fittings

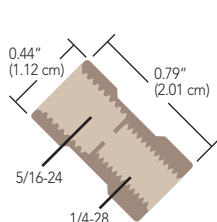


Top Seller SEE STARRED PRODUCTS

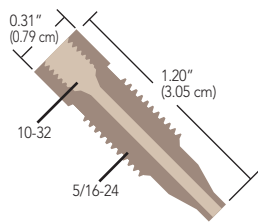
Part No.	Description	Threads	Includes	Thru-hole	Swept Volume	Pressure Rating
MANIFOLDS						
Standard						
★ P-150	PEEK 7-Port Manifold for 1/16" OD Tubing	1/4-28 FB	(7) P-255, (7) P-250	0.040" (1.00 mm)	42.0 µL	1,000 psi (69 bar)
P-151	PEEK 7-Port Manifold for 1/8" OD Tubing	1/4-28 FB	(7) P-331, (7) P-359	0.062" (1.60 mm)	83.0 µL	500 psi (34 bar)
P-152	PEEK 6-Port Manifold for 1/16" OD Tubing	1/4-28 FB	(6) P-255, (6) P-250	0.040" (1.00 mm)	26.8 µL	1,000 psi (69 bar)
P-153	PEEK 6-Port Manifold for 1/8" OD Tubing	1/4-28 FB	(6) P-331, (6) P-359	0.062" (1.60 mm)	62.3 µL	500 psi (34 bar)
P-154	PEEK 5-Port Manifold for 1/16" OD Tubing	1/4-28 FB	(5) P-255, (5) P-250	0.040" (1.00 mm)	22.3 µL	1,000 psi (69 bar)
P-155	PEEK 5-Port Manifold for 1/8" OD Tubing	1/4-28 FB	(5) P-331, (5) P-359	0.062" (1.60 mm)	53.8 µL	500 psi (34 bar)
★ P-190	PEEK 9-Port Manifold for 1/8" OD Tubing	1/4-28 FB	(9) P-331, (9) P-359	0.062" (1.60 mm)	160 µL	500 psi (34 bar)
P-191	PEEK 9-Port Manifold for 1/16" OD Tubing	1/4-28 FB	(9) P-255, (9) P-250	0.040" (1.00 mm)	139 µL	1,000 psi (69 bar)
Bulkhead						
P-156	PEEK 6-Port Manifold for 1/16" OD Tubing	1/4-28 FB	(6) P-255, (6) P-250, (1) SST Nut and Lock Washer	0.040" (1.00 mm)	31.3 µL	1,000 psi (69 bar)
P-157	PEEK 6-Port Manifold for 1/8" OD Tubing	1/4-28 FB	(6) P-331, (6) P-359, (1) SST Nut and Lock Washer	0.062" (1.60 mm)	73.2 µL	500 psi (34 bar)
Y CONNECTORS						
★ P-512	PEEK Y for 1/16" OD Tubing	1/4-28 FB	(3) XP-235	0.020" (0.50 mm)	1.7 µL	1,000 psi (69 bar)
P-513	PEEK Y for 1/8" OD Tubing	1/4-28 FB	(3) XP-335	0.040" (1.00 mm)	6.0 µL	500 psi (34 bar)
★ P-514	PEEK Y for 1/8" OD Tubing	1/4-28 FB	(3) XP-335	0.060" (1.50 mm)	13.6 µL	500 psi (34 bar)
P-515	PEEK Y for 3/16" OD Tubing	5/16-24 FB	(3) XP-132	0.125" (3.20 mm)	47.7 µL	500 psi (34 bar)

FB = Flat-Bottom

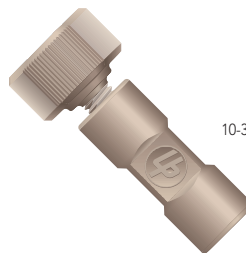
English Threaded Adapters



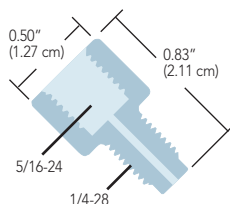
P-135
0.080" (2.05 mm) thru-hole



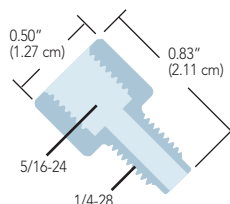
6000-076
0.066" (1.70 mm) thru-hole



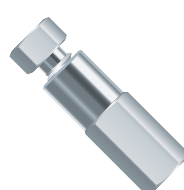
P-627
0.020" (0.50 mm) thru-hole
Includes (1) F-300 for 1/16" OD tubing



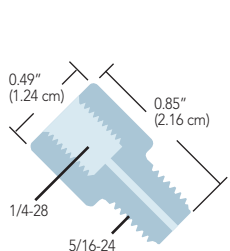
P-674
0.040" (1.00 mm) thru-hole



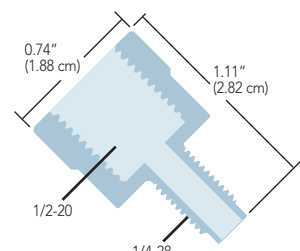
P-681
0.125" (3.20 mm) thru-hole



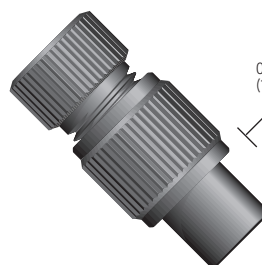
1583
0.040" (1.00 mm) thru-hole
Includes (1) U-400/U-401 for 1/16" OD tubing



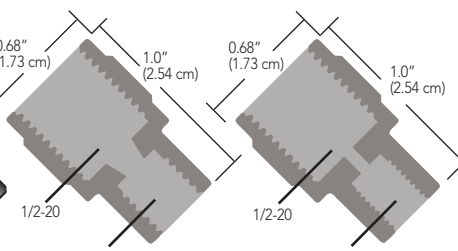
P-718
0.040" (1.00 mm) thru-hole



P-684
0.130" (3.30 mm) thru-hole



U-659
Tapered thru-hole
Includes (1) U-650/U-655 for 1/4" OD tubing



U-665
0.063" (1.60 mm) thru-hole
Includes (1) U-650/U-655 for 1/4" OD tubing



Top Seller SEE STARRED PRODUCTS

Related Products

- ▶ Please refer to our Connections Reference Chart on page 35 for assistance with choosing the right product for your needs.
- ▶ Use the Rheodyne® 6000-076 Adapter to connect 1/16" OD tubing to the Rheodyne Preparative-Scale Injector Valve (pages 131 – 133).

Part No.	Description	Includes	Thru-hole	Swept Volume	Pressure Rating
ENGLISH THREADED ADAPTERS					
1583	SST Adapter, 10-32 C, F to 1/4-28 FB, F	(1) U-400, (1) U-401	0.040" (1.00 mm)	0.60 µL	*
6000-076	PEEK™ Adapter, 5/16-24 C, M to 10-32 C, F	N/A	0.066" (1.70 mm)	49.8 µL	3,000 psi (207 bar)
P-135	PEEK Adapter, 5/16-24 FB, F to 1/4-28 F	N/A	0.080" (2.05 mm)	4.1 µL	1,000 psi (69 bar)
★ P-627	PEEK Adapter, 10-32 C, F to 1/4-28 FB, F	(1) F-300	0.020" (0.50 mm)	0.30 µL	1,000 psi (69 bar)
P-649	PCTFE Adapter, 5/16-24 FB, F to 1/4-28 FB, M	N/A	0.063" (1.60 mm)	24.5 µL	1,000 psi (69 bar)
P-674	PCTFE Adapter, 5/16-24 FB, F to 1/4-28 FB, M	N/A	0.040" (1.00 mm)	9.9 µL	1,000 psi (69 bar)
★ P-681	PCTFE Adapter, 5/16-24 FB, F to 1/4-28 FB, M	N/A	0.125" (3.20 mm)	96.6 µL	1,000 psi (69 bar)
P-684	PCTFE Adapter, 1/2-20 FB, F to 1/4-28 FB, M	N/A	0.130" (3.30 mm)	121.7 µL	250 psi (17 bar)
P-718	PCTFE Adapter, 5/16-24 FB, M to 1/4-28 FB, F	N/A	0.040" (1.00 mm)	10.3 µL	1,000 psi (69 bar)
U-659	PEEK Adapter, 5/16-24 FB, F to 1/2-20 FB, F	(1) XU-655	Tapered**	42.0 µL	250 psi (17 bar)
U-665	PEEK Adapter, 1/2-20 FB, F to 1/4-28 FB, F	(1) XU-655	0.063" (1.60 mm)	6.6 µL	250 psi (17 bar)

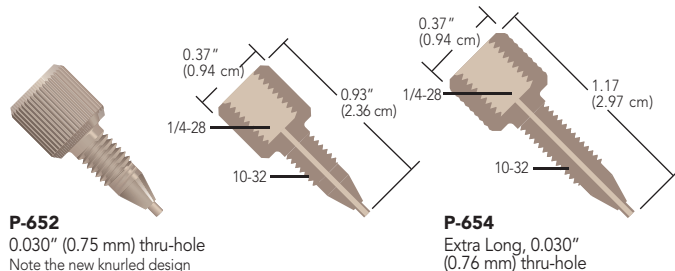
F = Female (internal) threads; M = Male (external) threads; C = Coned; FB = Flat-Bottom

* The pressure rating of this stainless steel adapter exceeds the pressure holding ability of the fittings and tubing used with it.

** Thru-hole tapers from 0.188" (4.80 mm) to 0.125" (3.20 mm)

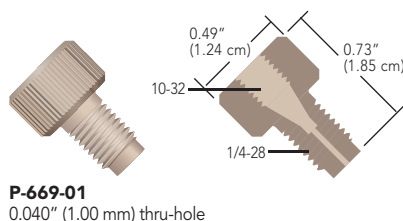
English Threaded Adapters

Female to Male 10-32 to 1/4-28 Adapters

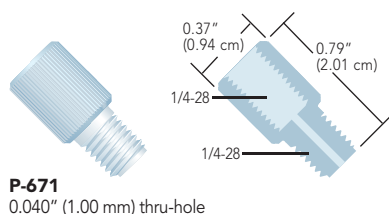


P-652
0.030" (0.75 mm) thru-hole
Note the new knurled design

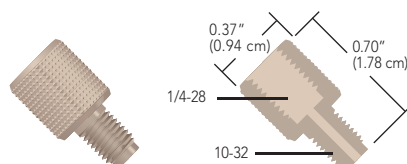
P-654
Extra Long, 0.030" (0.76 mm) thru-hole



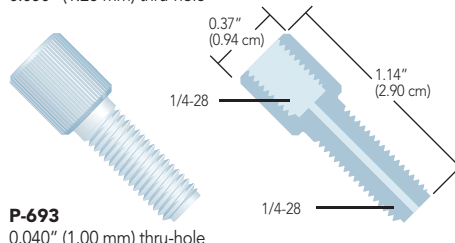
P-669-01
0.040" (1.00 mm) thru-hole



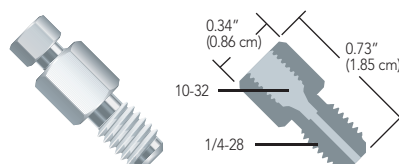
P-671
0.040" (1.00 mm) thru-hole



P-672
0.050" (1.25 mm) thru-hole



P-693
0.040" (1.00 mm) thru-hole



1591
0.040" (1.00 mm) thru-hole
Includes (1) U-400 / U-401 for 1/16" OD tubing

Note

- When using an adapter with male (external) threads, we recommend you first attach the adapter body into the receiving port, and then connect your tubing and fitting into the head of the adapter body.

Related Products

- You may not need an adapter to connect 1/16" OD tubing into your flat-bottom port. A less expensive alternative is to use a Flangeless Nut and Ferrule starting on page 24 or a Super Flangeless™ Nut and Ferrule starting on page 21. Our Connections Reference chart on page 35 is also a good resource to consult when making connections.



Top Seller SEE STARRED PRODUCTS

Application Note

Here are application ideas using two of our popular adapters:

- Many injection valves used in HPLC systems have 10-32 coned ports designed to accept 1/16" OD tubing. However, this may be a problem if large injection volumes are required (in excess of 10 mL). The most popular loops for large volume samples are made from 1/8" OD tubing, making it impossible to connect these larger volume loops to your injection valve. The solution: use our P-654 Adapter and the appropriate fittings for your sample loop. This set-up allows connection of 1/8" OD sample loop leads to your injection valve.
- Another potential application is connecting tubing to low-pressure solenoid valves with 1/4-28 flat-bottom ports. Most low-pressure valves of this type have very shallow threaded ports, which typically preclude the use of our Flangeless Fittings. However, by first threading our P-671 Adapter into the valve port(s), you can effectively use standard 1/4-28 fittings to connect your tubing into the backside of the adapter body. This also saves "wear and tear" on the threads in the valve ports.

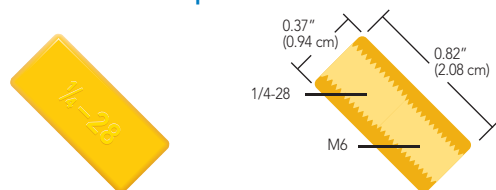
Part No.	Description	Includes	Thru-hole	Swept Volume	Pressure Rating
ENGLISH THREADED ADAPTERS					
★ P-652	PEEK™ Adapter, 1/4-28 FB, F to 10-32 C, M	N/A	0.030" (0.75 mm)	6.7 µL	1,000 psi (69 bar)
★ P-654	PEEK Adapter, 1/4-28 FB, F to 10-32 C, M, Extra Long	N/A	0.030" (0.75 mm)	9.5 µL	1,000 psi (69 bar)
★ P-669-01	PEEK Adapter, 10-32 C, F to 1/4-28 FB, M	N/A	0.040" (1.00 mm)	6.6 µL	1,000 psi (69 bar)
P-671	PTFE Adapter, 1/4-28 FB, F to 1/4-28 FB, M	N/A	0.040" (1.00 mm)	8.0 µL	1,000 psi (69 bar)
P-672	PEEK Adapter, 1/4-28 FB, F to 10-32 FB, M	N/A	0.050" (1.25 mm)	11.4 µL	1,000 psi (69 bar)
P-693	PTFE Adapter, 1/4-28 FB, F to 1/4-28 FB, M, Long	N/A	0.040" (1.00 mm)	16.27 µL	1,000 psi (69 bar)
1591	SST Adapter, 10-32 C, F to 1/4-28 FB, M	(1) U-400, (1) U-401	0.040" (1.00 mm)	6.0 µL	*

F = Female (internal) threads; M = Male (external) threads; XL = extra long; C = Coned; FB = Flat-Bottom

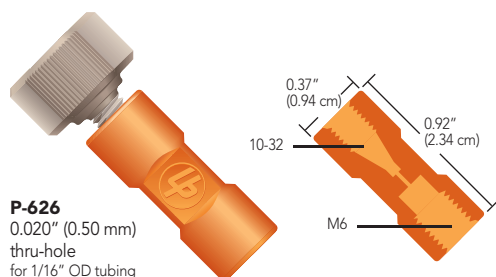
* The pressure ratings of these adapters exceed the pressure holding ability of the fittings and tubing used with them.

Metric Threaded Adapters

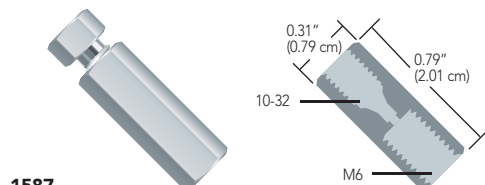
Female M6 Adapters



P-621

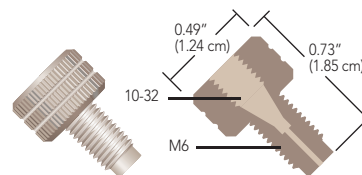


P-626
0.020" (0.50 mm) thru-hole
for 1/16" OD tubing
Includes (1) F-300

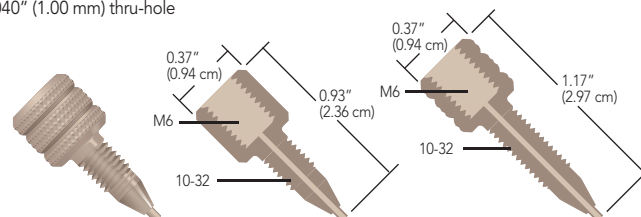


1587
0.040" (1.00 mm) thru-hole
for 1/16" OD tubing Includes (1) U-400 / U-401

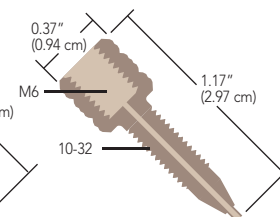
Female to Male M6 Adapters



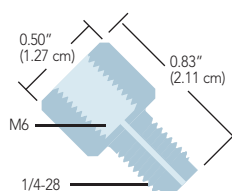
P-920-01
0.040" (1.00 mm) thru-hole



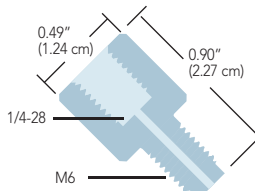
P-650
0.030" (0.75 mm) thru-hole



P-653
Extra Long
0.030" (0.75 mm) thru-hole



P-670
0.030" (0.75 mm) thru-hole



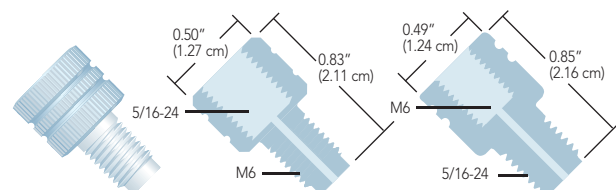
NEW!
P-694
0.040" (1.00 mm) thru-hole

Related Products

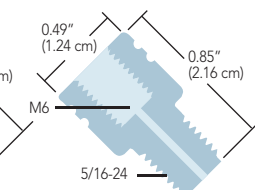
- For an alternative to the Female M6 Adapters presented in the left column of this page, try a P-602 or P-622 Low Pressure Metric Union from page 40, along with the appropriate Metric Flangeless Fittings on page 27.
- To direct connect your tubing into a flat-bottom port, find the appropriate Flangeless or Super Flangeless™ Fittings on pages 24 – 26 and 21 – 23 respectively.
- Need metric fittings for your connections? See page 27.



Top Seller SEE STARRED PRODUCTS



P-673
0.040" (1.00 mm) thru-hole



P-724
0.040" (1.00 mm) thru-hole

Part No.	Description	Includes	Thru-hole	Swept Volume	Pressure Rating
METRIC M6 THREADED ADAPTERS					
Female M6 Adapters					
P-621	ETFE Adapter, 1/4-28 FB, F to M6 FB, F	N/A	N/A	N/A	1,000 psi (69 bar)
P-626	PEEK™ Adapter, 10-32 C, F to M6 FB, F	(1) F-300	0.020" (0.50 mm)	0.3 µL	1,000 psi (69 bar)
1587	SST Adapter, 10-32 C, F to M6 FB, F	(1) U-400, (1) U-401	0.040" (1.00 mm)	0.6 µL	*
Female to Male M6 Adapters					
★ P-650	PEEK Adapter, M6 FB, F to 10-32 C, M Standard	N/A	0.030" (0.75 mm)	6.7 µL	1,000 psi (69 bar)
P-651	PEEK Adapter, M6 FB, F to 10-32 C, M Waters®-compatible	N/A	0.030" (0.75 mm)	7.2 µL	1,000 psi (69 bar)
P-653	PEEK Adapter, M6 FB, F to 10-32 C, M Extra Long	N/A	0.030" (0.75 mm)	9.5 µL	1,000 psi (69 bar)
P-670	PCTFE Adapter, M6 FB, F to 1/4-28 FB, M	N/A	0.030" (0.75 mm)	2.6 µL	1,000 psi (69 bar)
P-673	PCTFE Adapter, 5/16-24 FB, F to M6 FB, M	N/A	0.040" (1.00 mm)	9.9 µL	1,000 psi (69 bar)
NEW! P-694	PCTFE Adapter, 1/4-28 FB, F to M6 FB, M	N/A	0.040" (1.00 mm)	11.3 µL	1,000 psi (69 bar)
P-724	PCTFE Adapter, M6 FB, F to 5/16-24 FB, M	N/A	0.040" (1.00 mm)	10.3 µL	1,000 psi (69 bar)
P-920-01	PEEK Adapter, 10-32 C, F to M6 FB, M	N/A	0.040" (1.00 mm)	8.0 µL	1,000 psi (69 bar)

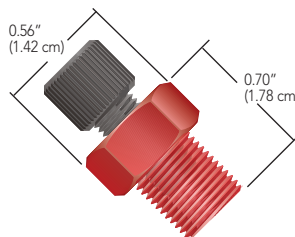
F = Female (internal) threads; M = Male (external) threads; C = Coned; FB = Flat-Bottom
 * The pressure rating of this adapter exceeds the pressure holding ability of the fittings and tubing used with it.

External National Pipe Thread Adapters

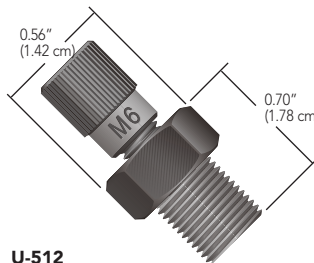
These adapters make connections to female 1/8" and 1/4" National Pipe Thread (NPT) ports.

Manufactured from PEEK™ polymer by IDEX Health & Science, Upchurch Scientific® NPT Adapters are durable and chemically resistant. We provide a variety of female threads, as well as a male threaded version, suitable for most low pressure applications.

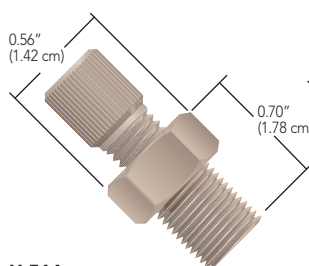
Please Note: Wrap the threads on the NPT side of these adapters with thread seal tape (plumber's tape) to ensure a leak-free seal.



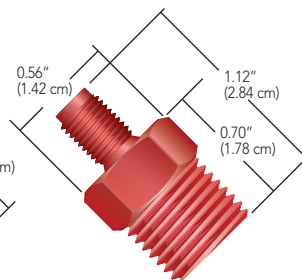
U-510
1/8" NPT to 1/4-28 Flat-Bottom
Female Adapter
for 1/8" OD tubing
Includes (1) XP-308 Fitting



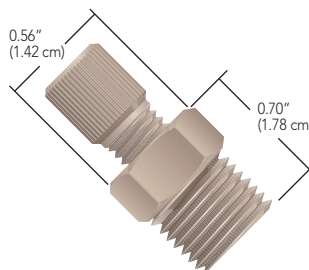
U-512
1/8" NPT to M6 Flat-Bottom
Female Adapter
for 1/8" OD tubing
Includes (1) P-300/P-307 Fittings



U-514
1/8" NPT to 5/16-24 Flat-Bottom
Female Adapter
for 3/16" OD tubing
Includes (1) XP-132 Fitting



U-501
1/4" NPT to 1/4-28 Flat-Bottom
Male Adapter



U-503
1/4" NPT to 5/16-24 Flat-Bottom
Female Adapter
for 1/8" OD tubing
Includes (1) P-360/P-131 Fittings

Application Note

Our U-500 and U-510 NPT Adapters are great for attaching 1/8" OD fluoropolymer sparging lines to sparging gas tank regulating valves. Simply thread the appropriately-sized NPT Adapter into the valve's receiving port and then attach your sparging tubing to the adapter body using the fittings provided.

Related Products

Replacement fittings for these adapters are located on the pages indicated below:

	Page(s)
1/4-28 for 1/8" OD tubing	26
M6 for 1/8" OD tubing	26, 27
5/16-24 for 1/8" OD tubing	23, 30
5/16-24 for 3/16" OD tubing	30

Other tubing/fitting combinations are available. For more information, please contact your local Distributor or IDEX Health & Science directly.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Color	Tubing OD	Includes	Thru-hole	Swept Volume	Pressure Rating
1/8" MALE NPT ADAPTERS							
★ U-510	PEEK 1/8" NPT, M to 1/4-28 FB, F Adapter	Red	1/8"	(1) XP-308	0.062" (1.60 mm)	17.3 µL	500 psi (34 bar)
U-511	PEEK 1/8" NPT, M to 1/4-28 FB, M Adapter	Red	N/A	N/A	0.062" (1.60 mm)	40.2 µL	500 psi (34 bar)
U-512	PEEK 1/8" NPT, M to M6 FB, F Adapter	Black	1/8"	(1) P-307, (1) P-300	0.062" (1.60 mm)	17.3 µL	500 psi (34 bar)
U-513	PEEK 1/8" NPT, M to 5/16-24 FB, F Adapter	Natural	1/8"	(1) P-131, (1) P-360	0.062" (1.60 mm)	17.3 µL	500 psi (34 bar)
U-514	PEEK 1/8" NPT, M to 5/16-24 FB, F Adapter	Natural	3/16"	(1) XP-132	0.125" (3.2 mm)	70.4 µL	500 psi (34 bar)
1/4" MALE NPT ADAPTERS							
U-500	PEEK 1/4" NPT, M to 1/4-28 FB, F Adapter	Red	1/8"	(1) XP-308	0.062" (1.60 mm)	17.3 µL	500 psi (34 bar)
U-501	PEEK 1/4" NPT, M to 1/4-28 FB, M Adapter	Red	N/A	N/A	0.062" (1.60 mm)	40.2 µL	500 psi (34 bar)
U-502	PEEK 1/4" NPT, M to M6 FB, F Adapter	Black	1/8"	(1) P-307, (1) P-300	0.062" (1.60 mm)	17.3 µL	500 psi (34 bar)
U-503	PEEK 1/4" NPT, M to 5/16-24 FB, F Adapter	Natural	1/8"	(1) P-131, (1) P-360	0.062" (1.60 mm)	17.3 µL	500 psi (34 bar)
U-504	PEEK 1/4" NPT, M to 5/16-24 FB, F Adapter	Natural	3/16"	(1) XP-132	0.125" (3.2 mm)	70.4 µL	500 psi (34 bar)

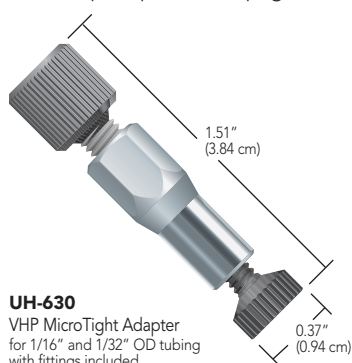
F = Female (internal) threads; M = Male (external) threads; FB = Flat-Bottom

MicroTight Adapters

- Convenient adapters for common 1/16" OD to capillary tubing
- Direct connect to 1/32" OD or 360 µm OD tubing options available
- VHP adapter pressure rated to 12,000 psi (828 bar)

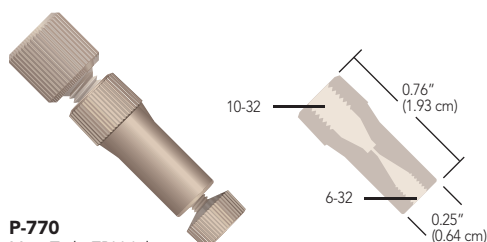
Create a true zero dead volume (ZDV) connection between 1/16" OD tubing and capillary tubing with these Upchurch Scientific® MicroTight Adapters.

For Very High Pressure applications – the UH-630 will connect 1/16" OD to 1/32" OD tubing in an inline true ZDV connection with the ability to withstand 12,000 psi (828 bar)! The materials of construction also allow this product to be used up to 200 °C, which reduces the pressure rating to 8,000 psi (552 bar). For more information on the fittings used with the VHP adapter, please see page 9.



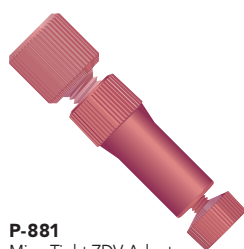
UH-630

VHP MicroTight Adapter for 1/16" and 1/32" OD tubing with fittings included



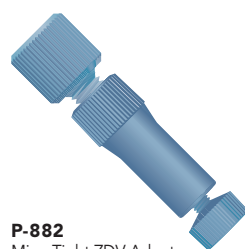
P-770

MicroTight ZDV Adapter for 1/16" OD to MicroTight Sleeves with fittings included



P-881

MicroTight ZDV Adapter for 1/16" to 1/32" OD tubing with fittings included



P-882

MicroTight ZDV Adapter for 1/16" to 360 µm OD tubing with fittings included

Related Products

- Replacement 6-32 fittings are on page 55.
- Replacement F-120 style nuts are on page 11 (when ordering, replace the "x" with an "R" or "B" to order either red or blue fittings).
- Use this list to find micro flow products outside this chapter.

	Page
360 µm, 510 µm (0.020") and 1/32" OD PEEK Tubing	65
360 µm OD Fused Silica Tubing	65
1/16" and 1/32" OD PEEKsil™ Tubing	66
1/32" OD FEP Tubing	71
360 µm OD High Purity PFA Tubing	72
510 µm (0.020") and 1/32" OD Stainless Steel Tubing	68
Polymer Capillary and Fused Silica Tubing Cutters	74
Rheodyne® MX Series II™ Micro-Scale Injector and Switching Valves	126
Rheodyne Manual Micro-Scale Injectors	129
Micro Injection Port Adapters	140
Micro-Splitter Valves	146
Micro-Metering Valves	147
Microbore Guard Column	184
Ultra-Low Volume Back-Pressure Regulators	154
Nonmetallic 10-32 Micro-Volume Inline Check Valve	149
Ismatec® Peristaltic Tubing Pumps	94

Note

Use only the style of 6-32 threaded fitting supplied with each adapter — they are not interchangeable.



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Threads	Includes	Color	Swept Volume	Pressure Rating
MICROTIGHT ADAPTERS						
★ P-770	PEEK™ Micro Adapter, True ZDV, for 1/16" OD Tubing to MicroTight Tubing Sleeve	10-32 C to 6-32 C	(1) F-120, (1) F-125, (1) P-554	Natural	N/A	4,000 psi (276 bar)
P-881	PEEK Micro Adapter, True ZDV, for 1/16" to 1/32" OD Tubing	10-32 C to 6-32 C	(1) F-120R, (1) F-126S, (1) P-554	Red	N/A	5,000 psi (345 bar)
★ P-882	PEEK Micro Adapter, True ZDV, for 1/16" to 360 µm OD Tubing	10-32 C to 6-32 C	(1) F-120B, (1) F-124S, (1) P-554	Blue	N/A	5,000 psi (345 bar)
UH-630	Stainless Steel VHP Micro Adapter, for 1/16" to 1/32" OD Tubing	10-32 C to 6-32 C	(1) PK-120BLK, (1) PK-126, (1) P-554	SST/Black	N/A	12,000 psi (827 bar)
REPLACEMENT GAUGE PLUGS (TO ACHIEVE TRUE ZDV CONNECTIONS WITH THE ABOVE ADAPTERS)						
P-554	Delrin® Gauge Plug	10-32 C		White	N/A	N/A

C = Coned

NanoPort Assemblies

- For lab-on-a-chip applications
- Options to connect 360 µm, MicroTight® tubing sleeves, 1/32" OD or 1/16" OD tubing
- Wetted materials: PEEK™ and perfluoroelastomer

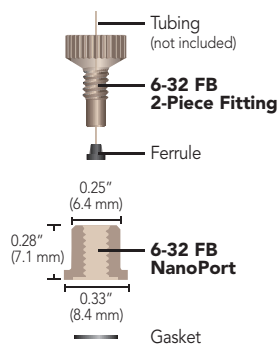
Upchurch Scientific® NanoPort Assemblies are the first commercially available products to provide consistent fluid connections for chip-based analyses. Once attached, NanoPort connections can withstand pressures to 1,000 psi (69 bar).* NanoPorts will adhere to silicon, quartz, glass and some polymers.

All NanoPort components are made of inert, biocompatible PEEK polymer (nuts and ports) and Perlast® perfluoroelastomer (ferrules and gaskets). These products bond easily to chip surfaces with the provided Preformed Adhesive Rings (see Application Note on the following page). Their unique design also prevents adhesive contamination of the fluid path. And NanoPort connections add no additional volume to the fluid path, virtually eliminating dead volume traditionally associated with chip-based fluid connections.

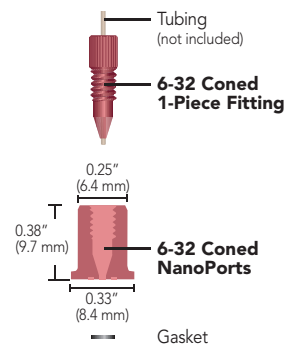
Our NanoPort Reservoir Assembly is designed for open well applications, such as CE.

**Except the N-333 NanoPort Assembly, which is rated to 500 psi (34.5 bar).*

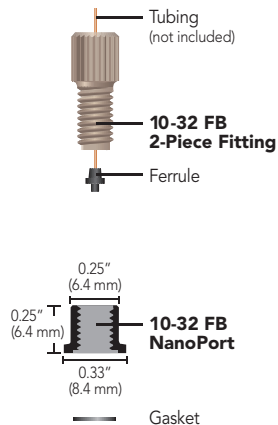
6-32 Flat-Bottom Assemblies



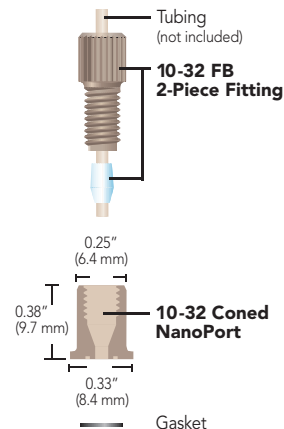
6-32 Coned Assemblies



10-32 Flat-Bottom Assemblies



10-32 Coned Assembly



Application Note

NanoPort Adhesive Cure Requirements

- Preformed Adhesive Rings (included with each order)

Cure Temperature	Cure Time
165 – 177 °C (330 – 350 °F)	1 hour

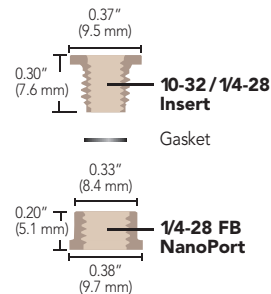
- Place clamped Ports in oven at a temperature of 165 – 177 °C (330 – 350 °F) for one hour to develop a complete bond between the Port and the substrate.
- Please contact us regarding adherence to specific polymer substrates and other adhesive options.

Please Note: For alternative epoxy adhesive options, please contact IDEX Health & Science directly.

NanoPort Reservoir Applications

- Sample reservoir
- Open wells for capillary electrophoresis
- Syringe injection or flushing/priming, using our P-604 Luer Adapter, page 56, and luer syringe (such as our B-310) on page 155

Reservoir Assembly



NanoPort Assemblies (cont.)



Note

To select the appropriate NanoPort assembly you will need to consider:

- ▶ Size of tubing you are connecting
- ▶ Dimensions of the chip hole
- ▶ Fitting style (one-piece or two-piece fittings)
- ▶ Nut head style (standard or headless nut)

Please Note: Each NanoPort Assembly includes a fitting (one- or two-piece), a NanoPort, gasket, a 2-pack of preformed adhesive rings, and a clamp for holding the port in place while the adhesive cures.



Top Seller SEE STARRED PRODUCTS

Part No.	Nut	Ferrule	For Chip Hole (dia. x depth)	For Tubing OD	Qty.
NANOPORT ASSEMBLIES					
6-32 Flat-Bottom NanoPort Assemblies					
N-121H	F-123H	N-123-04	0.04" x 0.04" (1.0 mm x 1.0 mm)	360 µm	ea.
N-121S	F-123S	N-123-04	0.04" x 0.04" (1.0 mm x 1.0 mm)	360 µm	ea.
N-122H	F-123H	N-123-05	0.04" x 0.06" (1.0 mm x 1.5 mm)	360 µm	ea.
N-122S	F-123S	N-123-05	0.04" x 0.06" (1.0 mm x 1.5 mm)	360 µm	ea.
N-123H	F-123H	N-123-03	0.04" (1.0 mm) dia. or less	360 µm	ea.
N-123S	F-123S	N-123-03	0.04" (1.0 mm) dia. or less	360 µm	ea.
6-32 Coned NanoPort Assemblies					
N-124H	F-124H	None	Up to 0.063" (1.6 mm)	360 µm	ea.
N-124S	F-124S	None	Up to 0.063" (1.6 mm)	360 µm	ea.
N-125H	F-125H	None	Up to 0.063" (1.6 mm)	70 – 520 µm ¹	ea.
N-125S	F-125	None	Up to 0.063" (1.6 mm)	70 – 520 µm ¹	ea.
N-126H	F-126H	None	Up to 0.063" (1.6 mm)	1/32"	ea.
N-126S	F-126S	None	Up to 0.063" (1.6 mm)	1/32"	ea.
10-32 Flat-Bottom NanoPort Assemblies					
N-129H	F-122H	N-123-04	0.04" x 0.04" (1.0 mm x 1.0 mm)	360 µm	ea.
10-32 Coned NanoPort Assembly					
★ N-333	F-333N	F-142N	Up to 0.063" (1.6 mm)	1/16"	ea.
NanoPort Reservoir Assembly					
N-131	80 µL Reservoir with Insert				ea.
NANOPORT REPLACEMENT PARTS					
Part No.	Description	Threads	For Chip Hole	Tubing OD	Qty.
Fittings					
F-121Hx	Headless Nuts	10-32 FB	N/A	360 µm	10-pk
F-122Hx	Headless Nuts	10-32 FB	N/A	360 µm	10-pk
F-123Hx	Headless Nuts	6-32 FB	N/A	360 µm	10-pk
F-123Sx	Standard Head Nuts	6-32 FB	N/A	360 µm	10-pk
F-124Hx	Headless Fittings	6-32 C	N/A	360 µm	10-pk
F-124Sx	Standard Head Fittings	6-32 C	N/A	360 µm	10-pk
★ F-125Hx	Headless Fittings	6-32 C	N/A	70 – 520 µm ¹	10-pk
★ F-125x	Standard Head Fittings	6-32 C	N/A	70 – 520 µm ¹	10-pk
F-126Hx	Headless Fittings	6-32 C	N/A	1/32"	10-pk
F-126Sx	Standard Head Fittings	6-32 C	N/A	1/32"	10-pk
F-333Nx	Headless Fittings	10-32 C	Up to 0.063" (1.6 mm)	1/16"	10-pk
F-142Nx	Ferrules	10-32 C	Up to 0.063" (1.6 mm)	1/16"	10-pk
★ N-123-03x	Ferrules	6-32 FB	0.04" (1.0 mm) dia. or less	360 µm	10-pk
★ N-123-04x	Ferrules	6-32, 10-32 FB	0.04" x 0.04" (1.0 mm x 1.0 mm)	360 µm	10-pk
N-123-05x	Ferrules	6-32 FB	0.04" x 0.06" (1.0 mm x 1.5 mm)	360 µm	10-pk
Gaskets					
N-123-02	Gasket, For all assemblies <i>except</i> 6-32 Coned Assemblies		N/A	N/A	ea.
N-124-02	Gasket, For 6-32 Coned Assemblies		N/A	N/A	ea.
Adhesives and Clamp					
N-006	Clamp		N/A	N/A	ea.
★ N-100-01	Preformed Adhesive Rings		N/A	N/A	2-pk

¹ Designed to use our MicroTight® Tubing Sleeves (page 19) to connect tubing OD sizes from 70–520 µm
Abbreviation Definitions: FB = Flat-Bottom; C = Coned; N/A = Not Applicable

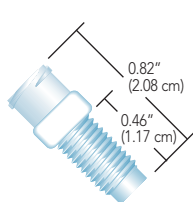
Quick Connect Luer Adapters

- Delrin®, polypropylene, ETFE or PEEK™ Versions
- Adapts luers to 1/4-28, 10-32, 5/16-24 or M6 threaded ports

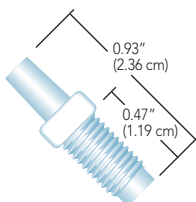
These luer adapters were designed to work in a variety of applications. By connecting any male luer to any female luer, you can create your own quick connect union or adapter. Each Upchurch Scientific® Quick Connect Luer Adapter conforms to ISO requirements for medical luer taper configuration and performance (45 psi/3.1 bar).

Find fittings to connect tubing to the threaded ports of these adapters in the Fittings chapter, starting on page 4.

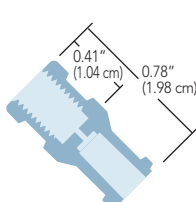
Please Note: Our Female Quick Connect Luer Adapters can be used with any of the Male Luers on this page, i.e., those with and without lock hubs.



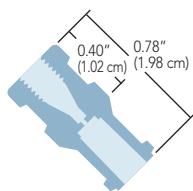
P-604, P-618, P-624
Female Luer to 1/4-28 Male
(luer end of P-604 different than shown)



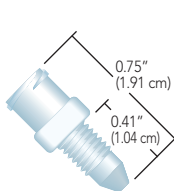
P-605, P-619, P-625
Male Luer to 1/4-28 Female



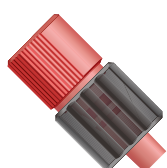
P-628
Female Luer to 1/4-28 Female



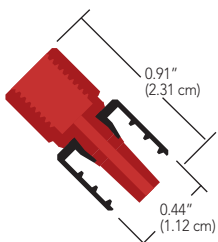
P-629, P-629BLK
Female Luer to 10-32 Female



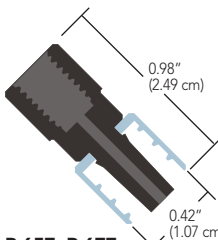
P-642
Female Luer to 10-32 Male



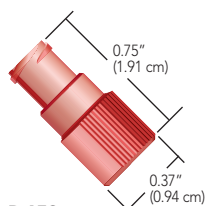
P-655, P-675
Male Luer to 1/4-28 Female



P-656
Male Luer to 10-32 Female



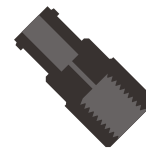
P-657, P-677
Male Luer to M6 Female



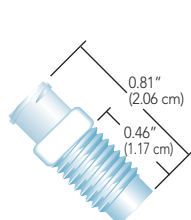
P-658, P-678
Female Luer to 1/4-28 Female



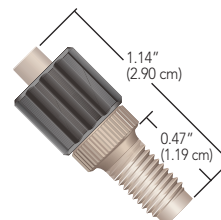
P-659
Female Luer to 10-32 Female



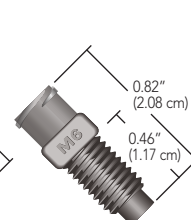
P-660, P-680
Female Luer to M6 Female



P-661
Female Luer to 5/16-24 Male



P-683
Male Luer to 1/4-28 Male



P-686
Female Luer to M6 Male

Application Note

- Our A-626 Bottle Cap Plug (page 172) can be used to plug any of the female luer adapters on this page.
- To prevent a chemical spill when disconnecting your solvent reservoir tubing from the pump, try our Quick-Stop Luer Check Valve on page 151.
- To economically prime an HPLC pump, simply remove the 10-32 fitting on the outlet check valve (standard on most models), insert a P-642 luer adapter, attach a syringe (such as our B-310) and draw the mobile phase through the pumphead.

Part No.	Description	Body Material	Lock Hub Material	Thru-hole
QUICK CONNECT LUER ADAPTERS				
P-604	F Luer to 1/4-28 FB, M	Nat. Delrin	N/A	0.05" (1.3 mm)
P-605	M Luer to 1/4-28 FB, M	Nat. Delrin	None *	0.05" (1.3 mm)
P-618	F Luer to 1/4-28 FB, M	Nat. PP	N/A	0.05" (1.3 mm)
P-619	M Luer to 1/4-28 FB, M	Nat. PP	None *	0.05" (1.3 mm)
★ P-624	F Luer to 1/4-28 FB, M	Nat. ETFE	N/A	0.05" (1.3 mm)
★ P-625	M Luer to 1/4-28 FB, M	Nat. ETFE	None *	0.04" (1.0 mm)
★ P-628	F Luer to 1/4-28 FB, F	Nat. ETFE	N/A	0.04" (1.0 mm)
P-629	F Luer to 10-32 C, F	Nat. ETFE	N/A	0.04" (1.0 mm)
P-629BLK	F Luer to 10-32 C, F	Black ETFE	N/A	0.04" (1.0 mm)
★ P-642	F Luer to 10-32 C, M	Nat. ETFE	N/A	0.05" (1.3 mm)
★ P-655	M Luer to 1/4-28 FB, F	Red PEEK	Black PEEK	0.04" (1.3 mm)
★ P-656	M Luer to 10-32 C, F	Nat. PEEK	Black PEEK	0.05" (1.3 mm)
P-657	M Luer to M6 FB, F	Black PEEK	Black PEEK	0.05" (1.3 mm)
★ P-658	F Luer to 1/4-28 FB, F	Red PEEK	N/A	0.05" (1.3 mm)
★ P-659	F Luer to 10-32 C, F	Nat. PEEK	N/A	0.05" (1.3 mm)
P-660	F Luer to M6 FB, F	Black PEEK	N/A	0.05" (1.3 mm)
P-661	F Luer to 5/16-24 FB, M	Nat. ETFE	N/A	0.05" (1.3 mm)
★ P-675	M Luer to 1/4-28 FB, F	Red ETFE	Natural PP	0.05" (1.3 mm)
P-677	M Luer to M6 FB, F	Black ETFE	Natural PP	0.05" (1.3 mm)
★ P-678	F Luer to 1/4-28 FB, F	Red ETFE	N/A	0.05" (1.3 mm)
P-680	F Luer to M6 FB, F	Black ETFE	N/A	0.05" (1.3 mm)
★ P-683	M Luer to 1/4-28 FB, M	Nat. PEEK	Black PEEK	0.04" (1.0 mm)
★ P-686	F Luer to M6 FB, M	Black ETFE	N/A	0.05" (1.3 mm)

SYRINGE WITH MALE LUER LOCK			
B-310	10cc Disposable Luer-Lock Syringe		0.05" (1.3 mm)
For use with any Female Luer Adapter			
F = Female (internal) threads; M = Male (external) threads; Nat. = Natural; N/A = Not Applicable; PP = Polypropylene; FB = Flat-Bottom; C = Coned			
* Slip-type male luer			



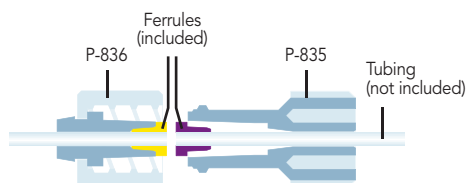
Top Seller SEE STARRED PRODUCTS

LuerTight™ Fittings

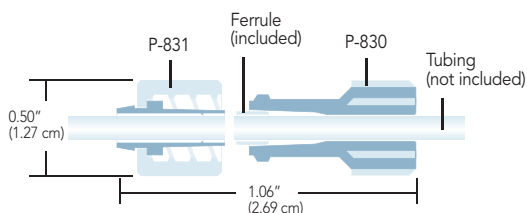
- Luer fittings for fluoropolymer tubing
- Quick disconnect and barbless
- For 1/16" and 1/8" OD tubing

Upchurch Scientific® LuerTight fittings are specifically designed to connect fluoropolymer tubing without barbs or nuts! By integrating ferrules into the luer bodies, LuerTights will reliably hold your tubing in place while giving you the convenience of a luer connection. An inline set of LuerTight fittings provides a quick and easy disconnection option. LuerTight connections are also less bulky and more economical than nut-to-luer style fittings.

The bodies of these products are manufactured from polypropylene and the ferrules, where used, are made of ETFE.



P-837
LuerTight Fittings System
for 1/16" OD tubing



P-838
LuerTight Fittings System
for 1/8" OD tubing



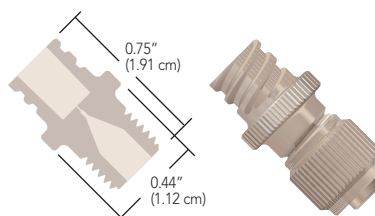
Luer-To-MicroTight® Adapter

- Easily connect 360 µm OD tubing to a syringe

The Upchurch Scientific Luer-to-Microtight Adapter is ideal for infusing sample into lab-on-a-chip devices. This product is made entirely of biocompatible PEEK™ polymer and introduces only 14 nL of additional volume to the flow path. Use it to directly connect a luer-tip syringe or other product that terminates with a standard male luer to 360 µm OD capillary tubing without tubing sleeves (see photo). MicroTight Fittings are included.



P-662 Luer-to-MicroTight Adapter, shown with a B-310 Syringe (page 155) and PEEK capillary tubing (page 65), not included.



P-662
Luer-to-MicroTight Adapter
for Luer to 360 µm OD tubing
with fittings included

Order Online  WWW.IDEX-HS.COM



Top Seller SEE STARRED PRODUCTS

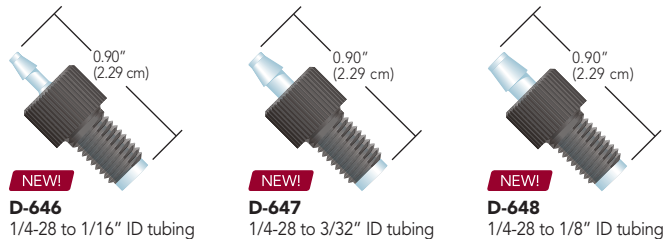
Part No.	Description	Includes	Thru-hole	Pressure Rating
LUERTIGHT FITTINGS SYSTEMS				
★ P-837	LuerTight System for 1/16" OD Tubing	(1) P-835, (1) P-836, (1) P-830T	N/A	100 psi (7 bar)
P-838	LuerTight System for 1/8" OD Tubing	(1) P-830, (1) P-831, (1) P-830T	N/A	100 psi (7 bar)
LUERTIGHT FITTING COMPONENTS				
P-830	Female Fitting for 1/8" OD Tubing	(1) Ferrule	N/A	N/A
P-830T	Set Plug to swage Ferrules into P-835 and P-830	N/A	N/A	N/A
P-831	Male Fitting for 1/8" OD Tubing	No Ferrule Required	N/A	N/A
P-835	Female Fitting for 1/16" OD Tubing	(1) Ferrule	N/A	N/A
P-836	Male Fitting for 1/16" OD Tubing	(1) Ferrule	N/A	N/A
LUER-TO-MICROTIGHT ADAPTER				
★ P-662	Luer-to-MicroTight Adapter	(1) F-152, (1) P-416	0.006" (0.150 mm)	45 psi (2.4 bar)

Female = internal receiving luer pocket; Male = external luer nose (surrounded by internally-threaded locking ring)

Swivel Barb Adapters

- ▶ Barb connection spins freely from the nut to prevent twist during installation
- ▶ Manufactured from polypropylene

The new Swivel Barb Adapters from Upchurch Scientific® are made up of two captive pieces acting as a one-piece fitting for ease of use. Manufactured from Polypropylene and available in three barb sizes, the Swivel Barb will facilitate connection between flexible tubing to a 1/4-28 flat-bottom port. The barbed insert spins freely from the threaded nut in order to prevent the tubing from twisting during installation.



Related Products

- ▶ To connect low pressure fluoropolymer tubing, try the LuerTight™ Adapters on page 57.
- ▶ To connect peristaltic tubing to low pressure fluoropolymer tubing, see page 61.
- ▶ For peristaltic tubing, see pages 75 – 89.

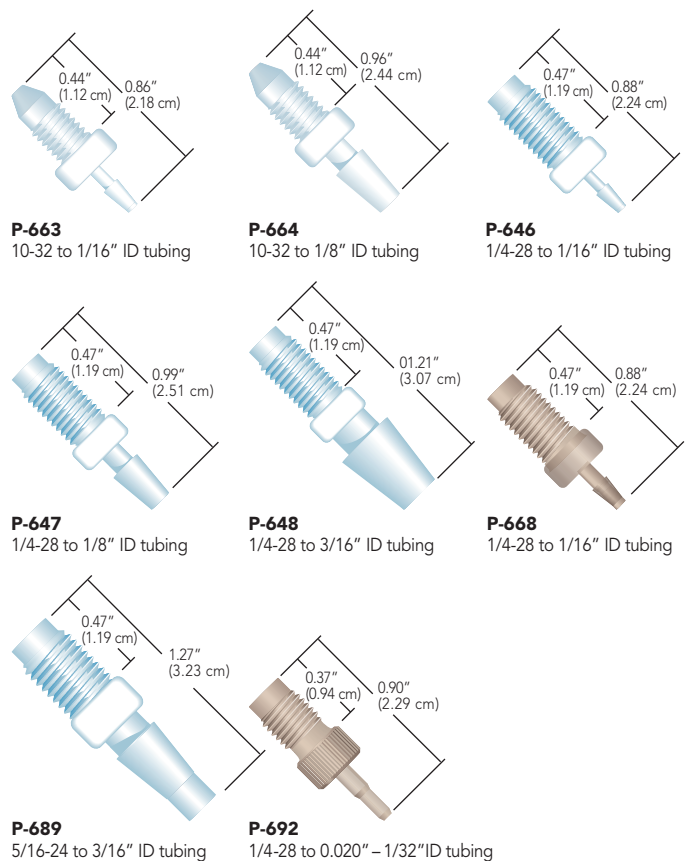


Top Seller SEE STARRED PRODUCTS

Barbed Adapters

- ▶ Three barb sizes, for 1/16", 1/8" and 3/16" ID flexible tubing
- ▶ Adapt to 1/4-28 flat-bottom, 5/16-24 flat-bottom or 10-32 coned receiving ports

These Upchurch Scientific adapters make it easy to connect flexible tubing to any standard 1/4-28 flat-bottom or 10-32 coned receiving port. Simply thread the adapter into a receiving port and slip tubing over the barbed stem to create a reliable low pressure connection.

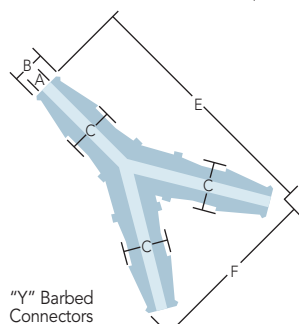
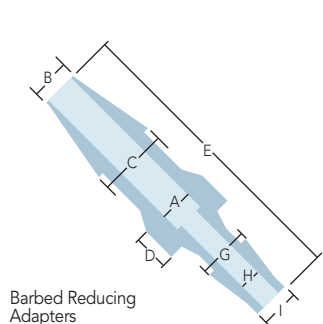
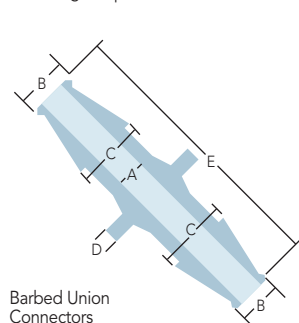
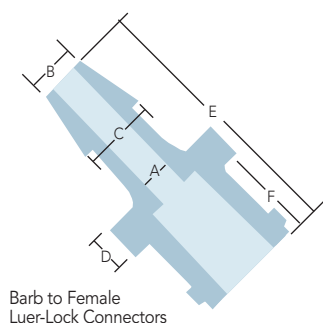
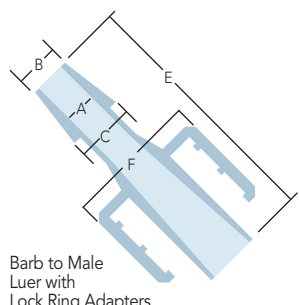
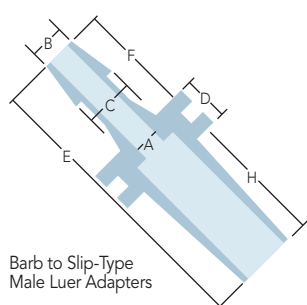


Part No.	Description	Material	Threads	Thru-hole
SWIVEL BARB ADAPTERS				
D-646	Swivel Barb Adapter, 1/16" (1.55 mm) ID Tubing	Polypropylene	1/4-28 Flat-Bottom	0.03" (0.75 mm)
D-647	Swivel Barb Adapter, 3/32" (2.40 mm) ID Tubing	Polypropylene	1/4-28 Flat-Bottom	0.06" (1.5 mm)
D-648	Swivel Barb Adapter, 1/8" (3.20 mm) ID Tubing	Polypropylene	1/4-28 Flat-Bottom	0.08" (2.0 mm)
BARBED ADAPTERS				
P-663	Barb Adapter, 1/16" (1.55 mm) ID Tubing	ETFE	10-32 Coned	0.04" (1.0 mm)
P-664	Barb Adapter, 1/8" (3.20 mm) ID Tubing	ETFE	10-32 Coned	0.04" (1.0 mm)
P-646	Barb Adapter, 1/16" (1.55 mm) ID Tubing	ETFE	1/4-28 Flat-Bottom	0.04" (1.0 mm)
P-647	Barb Adapter, 1/8" (3.20 mm) ID Tubing	ETFE	1/4-28 Flat-Bottom	0.08" (2.0 mm)
P-648	Barb Adapter, 3/16" (4.75 mm) ID Tubing	ETFE	1/4-28 Flat-Bottom	0.10" (2.5 mm)
P-668	Barb Adapter, 1/16" (1.55 mm) ID Tubing	PEEK™	1/4-28 Flat-Bottom	0.04" (1.0 mm)
P-689	Barb Adapter, 3/16" (4.75 mm) ID Tubing	ETFE	5/16-24 Flat-Bottom	0.10" (2.5 mm)
P-692	Barb Adapter, 0.020" to 1/32" (0.50 to 0.80 mm) ID Tubing	PEEK	1/4-28 Flat-Bottom	0.02" (0.5 mm)

Barbed Adapters

Use these barbed adapters to connect peristaltic-type flexible tubing for general, low pressure applications, such as plumbing Ismatec® Peristaltic Pumps (listed on pages 92 – 108).

The polypropylene used to manufacture the majority of these products is a Class VI material. Due to the low melt point of polypropylene (PP), these adapters are not autoclavable, however, they can be sterilized via gamma radiation. There are also Barb to Female Luer-Lock connectors available from ETFE, which has superior solvent resistance and a higher temperature rating (80 °C).



Top Seller SEE STARRED PRODUCTS

Part No.	Description	Material
BARB TO SLIP-TYPE MALE LUER ADAPTERS (10-pk)		
P-854x	Male Luers (Slip-type) for use with 1/16" ID (1.55 mm) Tubing A=0.046" B=0.064" C=0.090" D=0.129" E=0.711" F=0.198" H=0.384"	PP
P-855x	Male Luers (Slip-type) for use with 3/32" ID (2.40 mm) Tubing A=0.069" B=0.097" C=0.138" D=0.128" E=0.803" F=0.290" H=0.385"	PP
P-856x	Male Luers (Slip-type) for use with 1/8" ID (3.20 mm) Tubing A=0.096" B=0.129" C=0.182" D=0.129" E=0.889" F=0.383" H=0.377"	PP
<i>These slip-type male luer fittings are for use in systems for which luer lock rings are not desired.</i>		
BARB TO MALE LUER WITH LOCK RING ADAPTERS (10-pk)		
P-850x	Male Luers with Lock Ring for use with 1/16" ID (1.55 mm) Tubing A=0.049" B=0.065" C=0.090" E=0.583" F=0.434"	PP
P-851x	Male Luers with Lock Ring for use with 3/32" ID (2.40 mm) Tubing A=0.071" B=0.100" C=0.139" E=0.681" F=0.436"	PP
P-852x	Male Luers with Lock Ring for use with 1/8" ID (3.20 mm) Tubing A=0.099" B=0.132" C=0.184" E=0.777" F=0.436"	PP
P-853x	Male Luers with Lock Ring for use with 5/32" ID (4.00 mm) Tubing A=0.108" B=0.164" C=0.231" E=0.874" F=0.436"	PP
BARB TO FEMALE LUER-LOCK CONNECTORS (10-pk)		
★ P-857x	Female Luer Connectors for use with 1/16" ID (1.55 mm) Tubing A=0.030" B=0.063" C=0.106" D=0.100" E=0.598" F=0.253"	PP
P-858x	Female Luer Connectors for use with 3/32" ID (2.40 mm) Tubing A=0.056" B=0.102" C=0.145" D=0.100" E=0.648" F=0.253"	PP
P-859x	Female Luer Connectors for use with 1/8" ID (3.20 mm) Tubing A=0.080" B=0.135" C=0.187" D=0.100" E=0.733" F=0.253"	PP
P-870	For use with 1/16" (1.55 mm) ID Tubing A=0.030" B=0.063" C=0.106" D=0.100" E=0.598" F=0.253"	ETFE
P-871	For use with 3/32" (2.40 mm) ID Tubing A=0.056" B=0.102" C=0.145" D=0.100" E=0.648" F=0.253"	ETFE
P-872	For use with 1/8" (3.20 mm) ID Tubing A=0.080" B=0.137" C=0.187" D=0.100" E=0.733" F=0.253"	ETFE
BARBED UNION CONNECTORS (10-pk)		
P-801x	Barbed Connectors to connect 1/16" ID (1.55 mm) Tubing to 1/16" ID (1.55 mm) Tubing A=0.046" B=0.063" C=0.101" D=0.100" E=0.658"	PP
P-802x	Barbed Connectors to connect 1/8" ID (3.20 mm) Tubing to 1/8" ID (3.20 mm) Tubing A=0.085" B=0.126" C=0.182" D=0.098" E=0.791"	PP
P-803x	Barbed Connectors to connect 3/16" ID (4.75 mm) Tubing to 3/16" ID (4.75 mm) Tubing A=0.122" B=0.157" C=0.275" D=0.126" E=1.179"	PP
P-804x	Barbed Connectors to connect 1/4" ID (6.35 mm) Tubing to 1/4" ID (6.35 mm) Tubing A=0.185" B=0.247" C=0.342" D=0.163" E=1.279"	PP
P-805x	Barbed Connectors to connect 3/8" ID (9.55 mm) Tubing to 3/8" ID (9.55 mm) Tubing A=0.248" B=0.373" C=0.466" D=0.249" E=2.103"	PP
P-806x	Barbed Connectors to connect 1/2" ID (12.7 mm) Tubing to 1/2" ID (12.7 mm) Tubing A=0.390" B=0.496" C=0.598" D=0.249" E=2.047"	PP
BARBED REDUCING ADAPTERS (10-pk)		
P-807x	Barbed Reducing Adapters to connect 1/8" ID (3.20 mm) Tubing to 1/16" ID (1.55 mm) Tubing A=0.081" B=0.120" C=0.170" D=0.104" E=0.755" G=0.102" H=0.048" I=0.067"	PP
P-808x	Barbed Reducing Adapters to connect 3/16" ID (4.75 mm) tubing to 1/8" ID (3.20 mm) tubing A=0.126" B=0.187" C=0.285" D=0.131" E=1.245" G=0.181" H=0.085" I=0.125"	PP
P-809x	Barbed Reducing Adapters to connect 1/4" ID (6.35 mm) Tubing to 3/16" ID (4.75 mm) Tubing A=0.139" B=0.209" C=0.355" D=0.125" E=1.561" G=0.270" H=0.139" I=0.184"	PP
P-810x	Barbed Reducing Adapters to connect 3/8" ID (9.55 mm) Tubing to 1/4" ID (6.35 mm) Tubing A=0.248" B=0.371" C=0.466" D=0.249" E=2.057" G=0.345" H=0.188" I=0.249"	PP
"Y" BARBED CONNECTORS (10-pk)		
★ P-860x	"Y" Barbed Connectors for use with 1/16" ID (1.55 mm) Tubing A=0.047" B=0.066" C=0.092" E=0.508" F=0.345"	PP
P-861x	"Y" Barbed Connectors for use with 3/32" ID (2.40 mm) Tubing A=0.070" B=0.099" C=0.137" E=0.757" F=0.521"	PP
P-862x	"Y" Barbed Connectors for use with 1/8" ID (3.20 mm) Tubing A=0.095" B=0.126" C=0.183" E=1.017" F=0.70"	PP
P-863x	"Y" Barbed Connectors for use with 3/16" ID (4.75 mm) Tubing A=0.157" B=0.197" C=0.280" E=1.470" F=1.051"	PP
P-864x	"Y" Barbed Connectors for use with 1/4" ID (6.35 mm) Tubing A=0.189" B=0.266" C=0.372" E=2.400" F=1.405"	PP

An "x" in the product part number designates "10-pk."

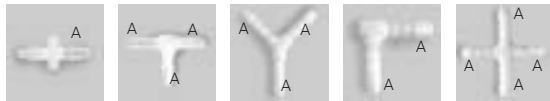
Barbed Connectors

- Specifically designed for Ismatec® pump tubing
- Wide variety of unions, adapters and multi-port connectors in multiple material choices

There are several Ismatec connectors for connecting multiple pieces of peristaltic tubing. Reference the tubing size of the barb in the tables below to select from unions (to connect same tubing size), reducers (to connect two different tubing sizes) in both straight, tee, Y, elbow and cross configurations.

For very small peristaltic tubing, steel connectors are available to couple two pieces of the same size tubing together. Match the OD of the steel tubing connector to be slightly larger than the ID of the peristaltic tubing.

Standard Tube Connectors in Plastic



Type 1

Type 2

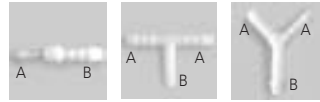
Type 3

Type 4

Type 5

Part No.	Tubing ID	Material	Qty.
STANDARD TUBE CONNECTORS IN PLASTIC			
Type 1			
ISM556A	0.06" (1.5 mm)	Acetal	10-pk
ISM557A	0.10" (2.5 mm)	Acetal	10-pk
ISM558A	0.12" (3.0 mm)	Polypropylene	10-pk
ISM559	0.16" (4.0 mm)	Polypropylene	10-pk
ISM560	0.20" (5.0 mm)	Polypropylene	10-pk
ISM561	0.24" (6.0 mm)	Polypropylene	10-pk
ISM562	0.31" (8.0 mm)	Polypropylene	10-pk
ISM563	0.40" (10.0 mm)	Polypropylene	10-pk
ISM564	0.47" (12.0 mm)	Polypropylene	10-pk
ISM565	0.51" (13.0 mm)	Polypropylene	10-pk
ISM566	0.55" (14.0 mm)	Polypropylene	10-pk
ISM567	0.63" (16.0 mm)	Polypropylene	10-pk
ISM568	0.75" (19.0 mm)	Polypropylene	10-pk
Type 2			
ISM693A	0.06" (1.5 mm)	Acetal	10-pk
ISM694	0.10" (2.5 mm)	Acetal	10-pk
ISM510	0.12" (3.0 mm)	Polypropylene	10-pk
ISM511	0.16" (4.0 mm)	Polypropylene	10-pk
ISM512	0.20" (5.0 mm)	Polypropylene	10-pk
ISM513	0.24" (6.0 mm)	Polypropylene	10-pk
ISM514	0.28" (7.0 mm)	Polypropylene	10-pk
ISM515	0.31" (8.0 mm)	Polypropylene	10-pk
ISM516	0.40" (10.0 mm)	Polypropylene	10-pk
ISM517	0.47" (12.0 mm)	Polypropylene	10-pk
ISM518	0.51" (13.0 mm)	Polypropylene	10-pk
ISM519	0.55" (14.0 mm)	Polypropylene	10-pk
ISM520	0.59" (15.0 mm)	Polypropylene	10-pk
ISM521	0.63" (16.0 mm)	Polypropylene	10-pk
ISM522	0.75" (19.0 mm)	Polypropylene	10-pk
Type 3			
ISM524	0.12" (3.0 mm)	Polypropylene	10-pk
ISM525	0.16" (4.0 mm)	Polypropylene	10-pk
ISM526	0.20" (5.0 mm)	Polypropylene	10-pk
ISM527	0.24" (6.0 mm)	Polypropylene	10-pk
ISM528	0.31" (8.0 mm)	Polypropylene	10-pk
ISM529	0.40" (10.0 mm)	Polypropylene	10-pk
ISM530	0.47" (12.0 mm)	Polypropylene	10-pk
ISM531	0.51" (13.0 mm)	Polypropylene	10-pk
ISM532	0.55" (14.0 mm)	Polypropylene	10-pk
ISM533	0.63" (16.0 mm)	Polypropylene	10-pk
ISM534	0.75" (19.0 mm)	Polypropylene	10-pk

Reducer Tube Connectors in Plastic

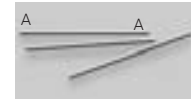


Type 6

Type 7

Type 8

Steel 18/8 Standard Tube Connectors



Part No.	Tubing ID	Material	Qty.
STANDARD TUBE CONNECTORS IN PLASTIC			
Type 4			
ISM507	0.10" (2.5 mm)	Acetal	10-pk
ISM493	0.12" (3.0 mm)	Polypropylene	10-pk
ISM494	0.16" (4.0 mm)	Polypropylene	10-pk
ISM495	0.20" (5.0 mm)	Polypropylene	10-pk
ISM496	0.24" (6.0 mm)	Polypropylene	10-pk
ISM497	0.31" (8.0 mm)	Polypropylene	10-pk
ISM498	0.40" (10.0 mm)	Polypropylene	10-pk
ISM499	0.47" (12.0 mm)	Polypropylene	10-pk
ISM500	0.51" (13.0 mm)	Polypropylene	10-pk
ISM501	0.55" (14.0 mm)	Polypropylene	10-pk
ISM502	0.59" (15.0 mm)	Polypropylene	10-pk
ISM503	0.63" (16.0 mm)	Polypropylene	10-pk
ISM523	0.75" (19.0 mm)	Polypropylene	10-pk
Type 5			
ISM535	0.16" (4.0 mm)	Polypropylene	10-pk
ISM536	0.20" (5.0 mm)	Polypropylene	10-pk
ISM537	0.24" (6.0 mm)	Polypropylene	10-pk

REDUCER TUBE CONNECTORS IN PLASTIC					
Part No.	Tubing ID			Material	Qty.
Type 6					
ISM569A	A	B			
	0.06" (1.5 mm)	0.10" (2.5 mm)	Acetal	10-pk	
ISM570A	0.06" (1.5 mm)	0.12" (3.0 mm)	Acetal	10-pk	
ISM571A	0.10" (2.5 mm)	0.12" (3.0 mm)	Acetal	10-pk	
ISM572	0.12" (3.0 mm)	0.16" (4.0 mm)	Polypropylene	10-pk	
ISM573A	0.16" (4.0 mm)	0.24" (6.0 mm)	Polypropylene	10-pk	
ISM574	0.16" (4.0 mm)	0.31" (8.0 mm)	Polypropylene	10-pk	
ISM575	0.24" (6.0 mm)	0.31" (8.0 mm)	Polypropylene	10-pk	
ISM576	0.24" (6.0 mm)	0.40" (10.0 mm)	Polypropylene	10-pk	
ISM577	0.31" (8.0 mm)	0.40" (10.0 mm)	Polypropylene	10-pk	
ISM578	0.31" (8.0 mm)	0.47" (12.0 mm)	Polypropylene	10-pk	
ISM579	0.40" (10.0 mm)	0.47" (12.0 mm)	Polypropylene	10-pk	
Type 7					
ISM538	A	B			
	0.12" (3.0 mm)	0.16" (4.0 mm)	Polypropylene	10-pk	
ISM539	0.16" (4.0 mm)	0.24" (6.0 mm)	Polypropylene	10-pk	
ISM540	0.24" (6.0 mm)	0.16" (4.0 mm)	Polypropylene	10-pk	
ISM541	0.31" (8.0 mm)	0.16" (4.0 mm)	Polypropylene	10-pk	
ISM542	0.31" (8.0 mm)	0.24" (6.0 mm)	Polypropylene	10-pk	
ISM544	0.40" (10.0 mm)	0.24" (6.0 mm)	Polypropylene	10-pk	
ISM545	0.40" (10.0 mm)	0.31" (8.0 mm)	Polypropylene	10-pk	
ISM546	0.40" (10.0 mm)	0.51" (13.0 mm)	Polypropylene	10-pk	
ISM547	0.47" (12.0 mm)	0.31" (8.0 mm)	Polypropylene	10-pk	
ISM548	0.47" (12.0 mm)	0.40" (10.0 mm)	Polypropylene	10-pk	
ISM549	0.59" (15.0 mm)	0.24" (6.0 mm)	Polypropylene	10-pk	
Type 8					
ISM553	A	B			
	0.16" (4.0 mm)	0.24" (6.0 mm)	Polypropylene	10-pk	
ISM554	0.24" (6.0 mm)	0.31" (8.0 mm)	Polypropylene	10-pk	

Part No.	Tubing ID	Tubing OD	Connector Length	Material	Qty.
ISM580	0.01" (0.30 mm)	0.02" (0.63 mm)	0.59" (15.0 mm)	SST	6-pk
ISM581	0.02" (0.58 mm)	0.04" (0.90 mm)	0.59" (15.0 mm)	SST	6-pk
ISM582	0.02" (0.58 mm)	0.04" (0.90 mm)	0.43" (11 mm)	SST	6-pk
ISM583	0.03" (0.84 mm)	0.05" (1.27 mm)	0.43" (11 mm)	SST	6-pk
ISM584	0.03" (0.84 mm)	0.05" (1.27 mm)	0.63" (16.0 mm)	SST	6-pk
ISM585A	0.01" (0.30 mm)	0.02" (0.63 mm)	0.98" (25 mm)	SST	6-pk
ISM586A	0.02" (0.58 mm)	0.04" (0.90 mm)	0.98" (25 mm)	SST	6-pk
ISM587	0.02" (0.58 mm)	0.04" (0.90 mm)	0.75" (19.0 mm)	SST	6-pk