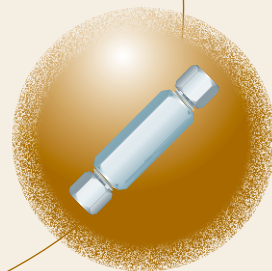
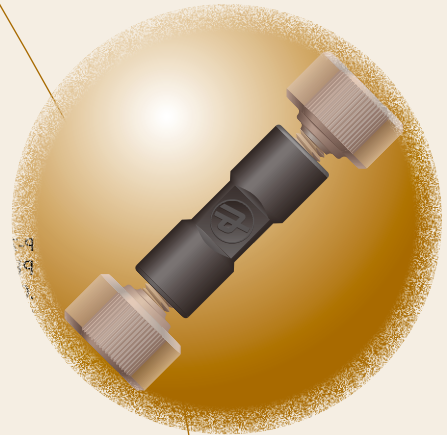
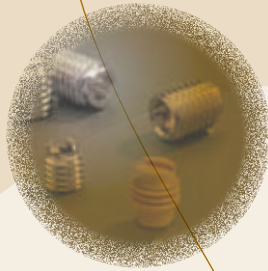


Upchurch® High Pressure Fittings & Connectors



ONE-PIECE FINGERTIGHT FITTINGS INTRODUCTION

For Coned Ports

For convenience and ease of use, try a One-Piece Fitting. The one-piece design means the ferrule cannot stick in a receiving port, and the fitting is more easily found if dropped. The fittings on this page work best with semi-rigid or rigid tubing materials.

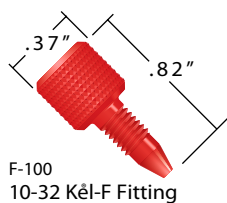
UPCHURCH ONE-PIECE FINGERTIGHT FITTINGS

Upchurch Scientific's original One-Piece Fingertight Fittings have 10-32 threads and are designed to be used with 1/16" OD tubing, except the M-645 (6-40, 1/32") and P-100 (1/4-28, 1/8").

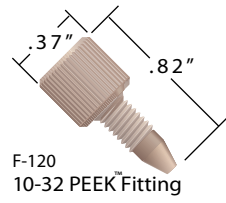
The F-120 is Upchurch Scientific's most popular high pressure Fingertight, while the F-195 and F-331 are two-piece versions of this product.

Our M-645 Fitting is a direct replacement for the 6-40 threaded VICI® (Valco) fitting. For more information on this product and other 6-40 threaded fittings, please.

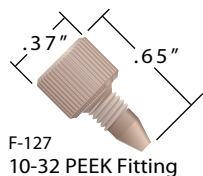
Upchurch Scientific One-Piece Fingertight Fittings are rated between 1,000 – 6,000 psi (69 – 414 bar), depending on the fitting. Please see the specific pressure ratings for these and other high pressure fittings.



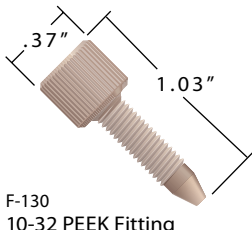
F-100
10-32 Kel-F Fitting



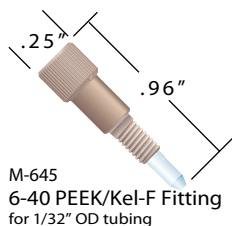
F-120
10-32 PEEK Fitting



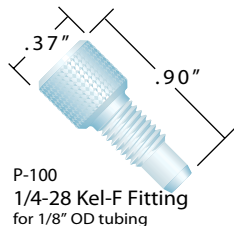
F-127
10-32 PEEK Fitting



F-130
10-32 PEEK Fitting



M-645
6-40 PEEK/Kel-F Fitting
for 1/32" OD tubing



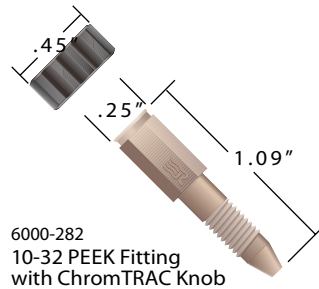
P-100
1/4-28 Kel-F Fitting
for 1/8" OD tubing



RHEFLEX® ONE-PIECE FINGERTIGHT FITTING

Rheodyne's 10-32, 1/16" One-Piece Fitting can be used with stainless steel, PEEK, and Teflon® tubing. The One-Piece Fitting includes ChromTRAC™ knobs in the color of your choice for visual identification and finger tightening of fluid connections. The reusable One-Piece Fitting can be finger tightened to hold 5,000 psi (345 bar).

RheFlex One-Piece Fittings are designed for use with many of the Rheodyne manual valves, starting. The One-Piece RheFlex M4 Fittings, designed for use with Rheodyne MX Nano-Scale Modules, are listed.



6000-282
10-32 PEEK Fitting
with ChromTRAC Knob

ONE-PIECE UPCHURCH FINGERTIGHT FITTINGS^{1,2} Qty.

F-100x	Kel-F, Red, 10-32, for 1/16" OD tubing	10-pk
F-100Nx	Kel-F, Natural, 10-32, for 1/16" OD tubing	10-pk
F-120x	PEEK, Natural, 10-32, for 1/16" OD tubing	10-pk
F-120BLK	PEEK, Black, 10-32, for 1/16" OD tubing	ea.
F-120FUNPACK	PEEK, Assorted Colors ³ , 10-32, for 1/16" OD tubing	6-pk
F-127x	PEEK, Natural, 10-32, Short, for 1/16" OD tubing	10-pk
F-130x	PEEK, Natural, 10-32, Long, for 1/16" OD tubing	10-pk
M-645x	PEEK/Kel-F, Natural, 6-40, for 1/32" OD tubing	10-pk
P-100	Kel-F, Natural, 1/4-28, for 1/8" OD tubing	ea.

ONE-PIECE RHEFLEX FINGERTIGHT FITTING⁴ Qty.

6000-282	PEEK, Natural, 10-32, for 1/16" OD tubing	10-pk
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¹ For your convenience we ship most Upchurch Scientific Fingertight Fittings in 10-packs. However, if you prefer, you may order individual pieces (an "x" in the product part number simply designates "10-pk").

² Some of the Upchurch Scientific fittings on this page are available in additional colors. Please contact us for more information.

³ Includes six F-120 Fittings in the following colors: natural, blue, black, green, red and yellow.

⁴ ChromTRAC™ compatible. Specify the two-letter suffix (see ChromTRAC Suffix Codes Table, page 11) after the fittings's seven-digit part number for the ChromTRAC knob color of your choice. No suffix indicates black knobs.

CHROMTRAC™

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

Rheodyne®'s innovative ChromTRAC color-coding system is the industry standard for simplifying your fluid connections. Seven ChromTRAC colors clearly identify tubing lines and visually distinguish different components in the same system. The colored knobs on RheFlex® Fittings allow you to coordinate port to fittings and fittings to system components without confusion.



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. "MC" refers to "multi-color" which includes two each of blue, green, gray, red, and yellow). For example, to order red ChromTRAC knobs with the RheFlex One-Piece Fitting, specify 6000-282RD. No suffix indicates black knobs.

View the online product product bulletin at:
<http://www.rheodyne.com/products/fluidic/accessories/chromfittings.asp>

ChromTRAC Suffix Codes:

CODE	COLOR
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 10, 12, 15 and 42

Pressure Ratings for HIGH PRESSURE Fingertight Fittings:

Use this table to help select the Fingertight Fittings best suited for your high-pressure coned or flat-bottom port applications. For Two Piece Fittings, only ferrules are included since they determine pressure ratings.

Item	Material	Max. Pressure (psi/bar)	Tubing Size, Threads/Port ¹	Notes
High Temperature Fitting (pages 8 – 9)				
PK-120BLK	PK	6,000 (414)	1/16", 10-32 C	2, 3
Fittings (page 10)				
F-100, F-100N	Kel-F®	4,000 (276)	1/16", 10-32 C	
F-120, F-120BLK, F-127, F-130	PEEK™	6,000 (414)	1/16", 10-32 C	2
M-645	PEEK/Kel-F	1,750-3,250 (121-224)	1/32", 6-40 C	2, 4
P-100	Kel-F	1,000 (69)	1/8", 1/4-28 C	
6000-282	PEEK	5,000 (345)	1/16", 10-32 C	2
Ferrules for Rheodyne® Two-Piece Fittings (page 12)				
6000-251	PEEK	7,000 (483)	1/16", 10-32 C	2
6000-079	PEEK	5,000 (345)	1/8", 5/16-24 C	2
SealTight™ Ferrule (page 13)				
F-192	PEEK	3,000-9,000 (207-620)	1/16", 10-32 C, M6 C	2
Ferrules for Upchurch Two-Piece Fittings (page 14)				
F-113	PEEK	3,500-6,000 (241-414)	1/32", 10-32 C	2, 5
F-142	PEEK	6,000 (414)	1/16", 10-32 C	2, 6
F-142N	Tefzel®	1,750 (121)	1/16", 10-32 C	
F-148	Kel-F	6,000 (414)	190µm, 10-32 C	
F-151	Kel-F	6,000 (414)	360µm, 10-32 C	
M-215	Perfluoroelastomer	1,500 (103)	360µm, 10-32 C	7
LiteTouch® Ferrules (page 16)				
LT-132	PEEK w/SST ring	5,000 (345)	1/32", 10-32 C	2
LT-100	PEEK w/SST ring	5,000 (345)	1/16", 10-32 C	2
LT-135	PEEK w/SST ring	15,000 (1,034)	1/16", 10-32 C	2
LT-200	PEEK w/SST ring	4,500 (310)	1/8", 1/4-28 C	2
Ferrules for FlushNut™ Fittings (page 17)				
Uses ferrules from our other systems		700-9,000 (48-620)	1/32", 1/16", 1/8", 10-32 C, 1/4-28 C, FB	2
Flangeless SealTight Ferrules (page 17)				
F-290	PEEK	5,000 (345)	1/16", 1/4-28 FB	2
Super Flangeless™ Ferrules (pages 18 – 20)				
M-650	PEEK w/SST ring	750-3,750 (52-259)	1/16", 10-32 FB	2
P-248	Tefzel w/SST ring	2,500 (172)	1/32", 1/4-28/M6 FB	
P-250, P-259, P-260	PEEK or Tefzel w/SST ring	1,800-7,000 (124-483)	1/16", 1/4-28/M6 FB	2
P-350, P-352, P-359, P-360	PEEK or Tefzel w/SST ring	700-5,800 (48-400)	1/8", 1/4-28/M6 FB	2
P-355	Kel-F w/SST ring	1,500 (103)	1.8/2.0mm, 1/4-28/M6 FB	

NOTES:

These data are generated under optimal conditions, using water at room temperature (except as noted). The data presented refers to the capability of the fittings, not the tubing. Your results may vary, depending on variables such as: the solvent used; the materials of the tubing, port, nut and ferrule used; and the temperature at which your analyses are run.

1. C = Coned; FB = Flat-bottom.
2. PEEK and PK are not recommended for use with concentrated nitric or sulfuric acids, or halogenated acids (ex.HCl).
3. Designed for 4,000 psi (414 bar) at high temperatures (200° C); 12,000 psi (872 bar) at ambient temperatures.
4. See page 42 for more details.
5. Pressure rated to 3,500 psi (241 bar) in plastic ports and to 6,000 psi (414 bar) in metal ports.
6. Wrench tightens to 10,000 psi (690 bar) when used with SST nut, such as F-140.
7. Conductive — for electrospray applications.

TWO-PIECE FINGERTIGHT FITTINGS INTRODUCTION

For Coned Ports

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.

TWO-PIECE RHEFLEX® FINGERTIGHT FITTINGS

For Coned Ports

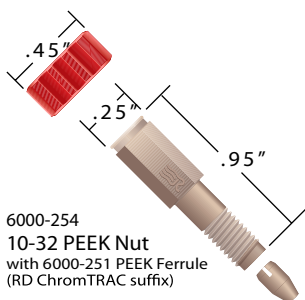
The Rheodyne® RheFlex Precision Two-Piece PEEK™ Fittings sets provide inert, biocompatible connections for instrumentation. These dependable 1/16" PEEK fittings have a reliable, time-tested design. Each 1/16" fittings set contains a 10-32 threaded nut and a ferrule. Three lengths of the 1/16" nut are available: Standard, Short, and Extra Long.

Due to the unique RheFlex gripping design, the 1/16" ferrule will hold PEEK and stainless steel tubing to 7,000 psi (483 bar). The RheFlex PEEK nut and ferrule can be reused several times. 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.

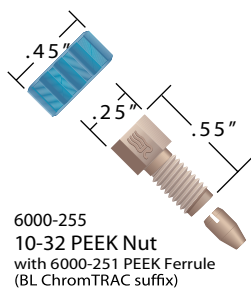
The Two-Piece RheFlex Fittings are designed for use with many of the Rheodyne manual valves.

RheFlex PEEK Fittings include ChromTRAC™ knobs in the color of your choice for visual identification of fluid connections and finger tightening without undesirable twisting of the PEEK tubing. Replacement 1/16" RheFlex PEEK ferrules and ChromTRAC knobs are available.

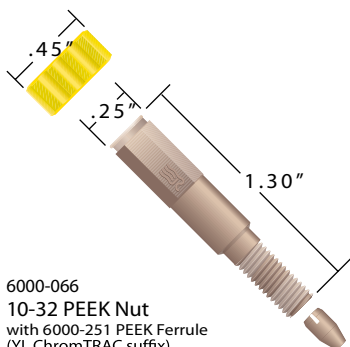
View the online product product bulletin at:
<http://www.rheodyne.com/products/fluidic/accessories/rhefittings.asp>



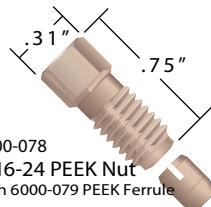
6000-254
10-32 PEEK Nut
with 6000-251 PEEK Ferrule
(RD ChromTRAC suffix)



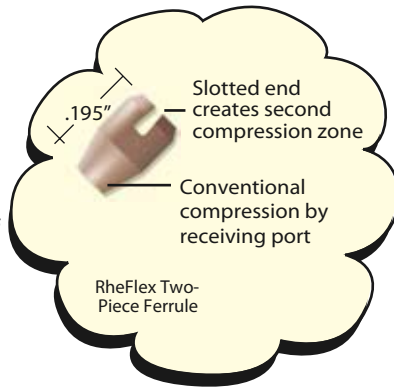
6000-255
10-32 PEEK Nut
with 6000-251 PEEK Ferrule
(BL ChromTRAC suffix)



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



Application Note

Installing High Pressure fittings

Before connecting fittings, ensure the end of the tubing has a clean, square, burr-free cut. This is very important, as the square cut makes a flat surface for the tubing to contact the bottom of the mating port. Neglecting to properly cut the tubing could lead to dead volume, resulting in peak distortion such as fronting, tailing or broadening.

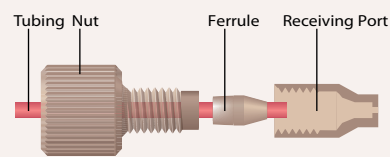
Polymer ONE-PIECE FITTINGS

1. Slide the fitting at least 3/16" from the end of the clean cut tubing.
2. Insert the assembly into the receiving port, pushing the tubing into the port until it bottoms out.
3. Finger tighten the nut into the port until snug.¹
4. After several uses (especially at high pressures) the fitting should be replaced. Two-PIECE FITTINGS WITH Polymer Ferrules

1. Slide the nut then ferrule at least 3/16" from the end of the clean cut tubing (see figure below).
2. Follow steps 2-3, above.
3. After several uses (especially at high pressures) the ferrule should be replaced.

Stainless Steel Nuts And Ferrules

1. Follow steps 1-2 in the "Two-Piece Fittings with Polymer Ferrules" section above.
2. Using an appropriate wrench, tighten an additional 1/4 – 1/2 turn past fingertight. Remove the fitting to confirm the ferrule is swaged onto the tube.
3. Because the ferrule is permanently attached to the tubing we highly recommend that the fitting only be used in the mating port into which it was initially swaged. Failure to do this may result in dead volume and/or leaks.



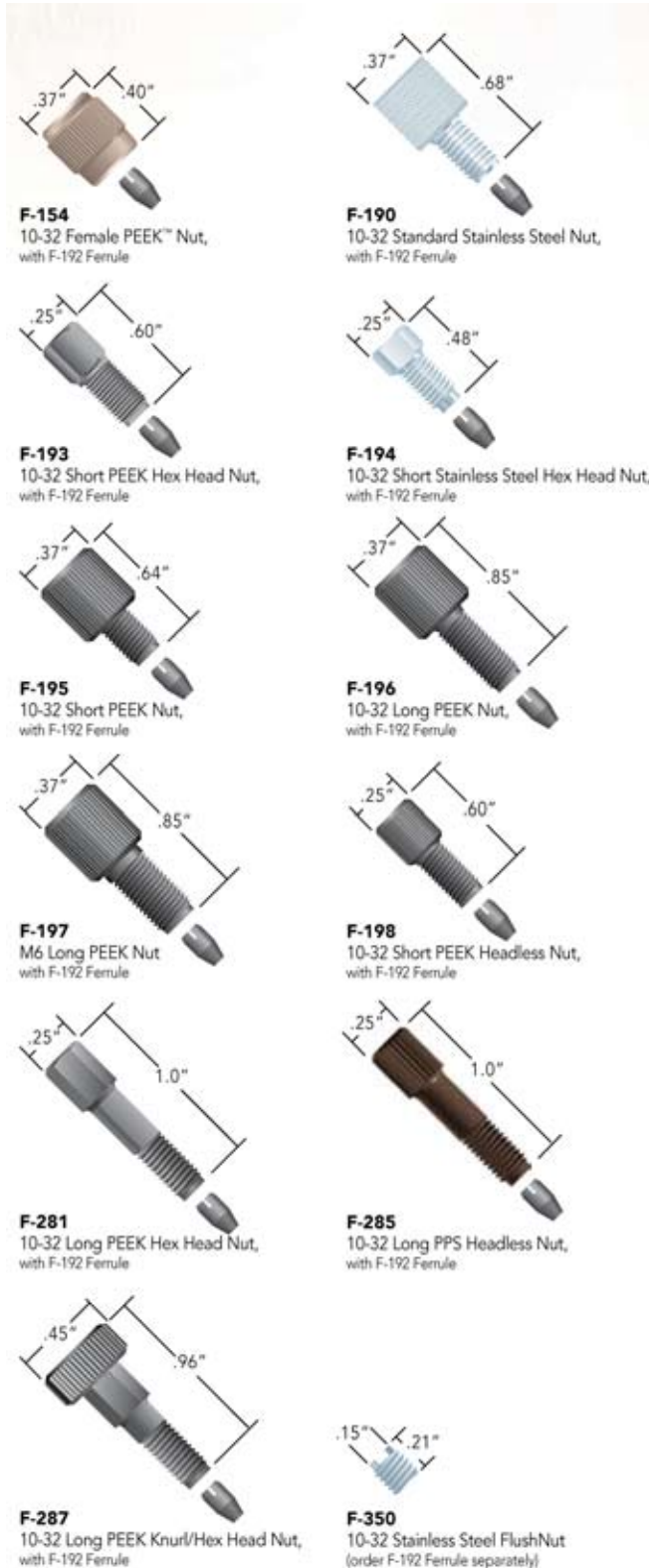
¹ Overtightening can cause leakage.

TWO-PIECE RHEFLEX FINGERTIGHT FITTINGS

Ferrule		Qty.
6000-251	PEEK Ferrules, for 1/16" OD tubing	10-pk
6000-079	PEEK Ferrules, for 1/8" OD tubing	5-pk
Nuts* (All Two-Piece RheFlex Nuts include the appropriate ferrule(s))		
6000-254	Std. Length, Natural PEEK, 10-32, for 1/16" OD tubing	10-pk
6000-255**	Short, Natural PEEK, 10-32, for 1/16" OD tubing	10-pk
6000-066	Extra Long, Natural PEEK, 10-32, for 1/16" OD tubing	ea.
6000-078	Std. Length, Natural PEEK, 5/16-24, for 1/8" OD tubing	ea.
6000-283	ChromTRAC Fittings Identification Kit	20-pk

* ChromTRAC compatible, except 6000-078. Specify the two-letter suffix (see ChromTRAC Suffix Codes Table, page 11) after the fittings's seven-digit part number for the ChromTRAC knob color of your choice. No suffix indicates black knobs, with the exception of 6000-255.

** 6000-255 comes without knobs (even black) unless a color is specified.



F-154
10-32 Female PEEK™ Nut,
with F-192 Ferrule

F-190
10-32 Standard Stainless Steel Nut,
with F-192 Ferrule

F-193
10-32 Short PEEK Hex Head Nut,
with F-192 Ferrule

F-194
10-32 Short Stainless Steel Hex Head Nut,
with F-192 Ferrule

F-195
10-32 Short PEEK Nut,
with F-192 Ferrule

F-196
10-32 Long PEEK Nut,
with F-192 Ferrule

F-197
M6 Long PEEK Nut
with F-192 Ferrule

F-198
10-32 Short PEEK Headless Nut,
with F-192 Ferrule

F-281
10-32 Long PEEK Hex Head Nut,
with F-192 Ferrule

F-285
10-32 Long PPS Headless Nut,
with F-192 Ferrule

F-287
10-32 Long PEEK Knurl/Hex Head Nut,
with F-192 Ferrule

F-350
10-32 Stainless Steel FlushNut
(order F-192 Ferrule separately)

**TWO-PIECE SEALTIGHT™
FINGERTIGHT FITTINGS**

For Coned Ports

*** Hold up to 9,000 psi (620 bar) with Fingertight Convenience!**

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 via conventional compression by the receiving port. The slotted end creates the second compression zone in conjunction with a SealTight Nut (The SealTight Ferrule design is similar to that of the RheFlex® Two-Piece Ferrule). All SealTight Nuts are for use with 1/16" OD tubing and are designed to be used with the F-192 Ferrule. This fittings system is also interchangeable with Two-Piece RheFlex Fittings.

Try our F-350 FlushNut™ for the ultimate streamline design. For more information on these innovative products, please.

**SealTight Pressure Ratings
(psi/bar)¹:**

Product	Tightening Method ²	On PEEK Tubing ³	On Stainless Steel Tubing ⁴
F-154, F-190, F-195, F-196, F-197	Finger tightened	7,000 (483)	9,000 (620)
F-193, F-194, F-281, F-282	1/2 turn past finger tightened	7,000 (483)	9,000 (620)
F-198, F-284, F-285	Finger tightened Wrench tightened ⁴	3,000 (207) 7,000 (483)	3,000 (207) 9,000 (620)
F-287, F-288	Finger tightened	7,000 (483)	9,000 (620)
F-350	Wrench tightened ⁵	7,000 (483)	9,000 (620)

¹ This chart is intended for reference purposes only. Your results may vary depending on nut, receiving port and tubing materials, actual tubing diameter (due to manufacturer's tolerances), chemical compatibility, etc.

² Tightened into a stainless steel port.

³ Using 1/16" OD x .010" ID tubing.

⁴ One-half turn past finger tightened, with our P-297 Headless Nut Extender Tool (page 18).

⁵ Tightened with our F-345 FlushNut Tool (page 17).

TWO-PIECE SEALTIGHT FITTINGS FOR 1/16" OD TUBING

Ferrule	Qty.
F-192x SealTight Ferrules, Black PEEK	10-pk
Nuts (All SealTight Nut 10-pks include a 10-pk of F-192x Ferrules — except F-350x)	
F-154x Female Nuts, Stnd. Head, Natural PEEK, 10-32	10-pk
F-190x Stnd. Length Nuts, Stnd. Head, SST, 10-32	10-pk
F-193x Short Nuts, Hex Head, Black PEEK, 10-32	10-pk
F-194x Short Nuts, Hex Head, SST, 10-32	10-pk
F-195x Short Nuts, Stnd. Head, Black PEEK, 10-32	10-pk
F-196x Long Nuts, Stnd. Head, Black PEEK, 10-32	10-pk
F-197x Long Nuts, Stnd. Head, Black PEEK, M6	10-pk
F-198x Short Nuts, Headless, Black PEEK, 10-32	10-pk
F-281x Long Nuts, Hex Head, Black PEEK, 10-32	10-pk
F-282x Long Nuts, Hex Head, Brown PPS, 10-32	10-pk
F-284x Long Nuts, Headless, Black PEEK, 10-32	10-pk
F-285x Long Nuts, Headless, Brown PPS, 10-32	10-pk
F-287x Long Nuts, Knurl/Hex Fat Head, Black PEEK, 10-32	10-pk
F-288x Long Nuts, Knurl/Hex Fat Head, Brown PPS, 10-32	10-pk
F-350x FlushNuts*, SST, 10-32 (order F-192 Ferrules separately)	10-pk

* A tightening tool is required for this fitting (see page 17).

SST = Stainless Steel

Please Note: Overtightening these fittings on Teflon® or Tefzel® tubing can cause the ID of your tubing to collapse.

TWO-PIECE FINGERTIGHT FITTINGS

For Coned Ports

Upchurch Scientific®'s original Two-Piece Fingertight Fittings were designed exclusively for 1/16" OD tubing. We offer optional ferrules for connecting 1/32", 360µm and 190µm OD tubing into coned ports designed for 1/16" OD tubing. These special ferrules work with any Fingertight nut on this page. Our M-215 Conductive Perfluoroelastomer Ferrule is designed for mass spectrometer electrospray applications. For more information on this product.

To order, please follow these guidelines:

1/16" OD tubing – Select the desired nut, which comes complete with the appropriate ferrule. Or, order the optional F-142N Ferrule, along with the desired nut by replacing the "x" at the end of its product number with "-01". For instance, if you want an F-200 Nut, order F-200-01, not F-200x. Please Note: "-01" denotes a single nut without the ferrule.

1/32" OD tubing – Select the F-113 Ferrule. Order the desired nut by replacing the "x" at the end of its product number with "-01", as described above.

360µm OD tubing – Select the F-151 Ferrule. For electrospray applications, choose the M-215 Conductive Ferrule. Order the desired nut by replacing the "x" at the end of its product number with "-01", as described above.

190µm OD tubing – Select the F-148 Ferrule. Order the desired nut by replacing the "x" at the end of its product number with "-01", as described above.

See the pressure rating for these and other high pressure fittings.



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



F-142N
Optional Tefzel® Ferrule
for 1/16" OD tubing



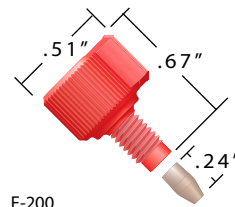
F-148
Optional Kel-F® Ferrule
for 190µm OD tubing



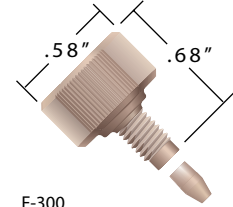
F-151
Optional Kel-F Ferrule for
360µm OD tubing



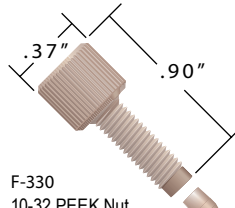
M-215
Optional Conductive
Perfluoroelastomer Ferrule
for 360µm OD tubing



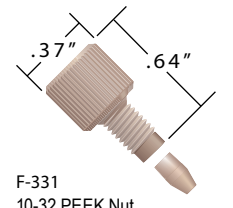
F-200
10-32 Delrin® Winged Nut
with F-142 PEEK Ferrule



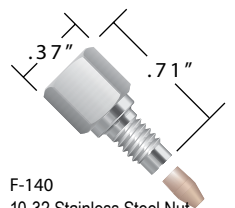
F-300
10-32 PEEK
Double-Winged Nut
with F-142 PEEK Ferrule



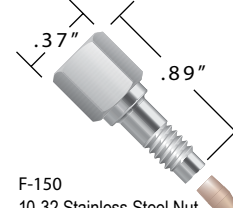
F-330
10-32 PEEK Nut
with F-142 PEEK Ferrule



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



TWO-PIECE POLYMER FINGERTIGHT FITTINGS Qty.

F-200x	Delrin Nuts, Red, with F-142 Ferrules, 10-32	10-pk
F-300x	PEEK Nuts, Natural, with F-142 Ferrules, 10-32	10-pk
F-330x	Long PEEK Nuts, Natural, with F-142 Ferrules, 10-32	10-pk
F-331x	Short PEEK Nuts, Natural, with F-142 Ferrules, 10-32	10-pk

TWO-PIECE SST* FINGERTIGHT FITTINGS Qty.

F-140x	Stainless Steel Nuts with F-142 Ferrules, 10-32	10-pk
F-150x	Long Stainless Steel Nuts with F-142 Ferrules, 10-32	10-pk

REPLACEMENT FERRULES Qty.

For 1/16" OD Tubing		
F-142x	PEEK Ferrules, Natural	10-pk
F-142Nx	Tefzel Ferrules, Natural	10-pk
For 1/32" OD Tubing		
F-113	PEEK Ferrule, Natural	ea.
For 360µm OD Tubing		
F-151	Kel-F Ferrule, Natural	ea.
M-215	Conductive Perfluoroelastomer Ferrule, Black	ea.
For 190µm OD Tubing		
F-148	Kel-F Ferrule, Natural	ea.

* Stainless Steel

Note

>> For higher pressure Fingertight performance, please see the one-Piece High Temperature or Two-Piece rheFlex® and sealTight™ Fittings, respectively.

>> If you need Fingertight fittings to connect 1/16" OD tubing into 1/4-28 coned ports, please order one of the following products: F-201x, F-301x, or F-160x. For more information, please contact us or search on these product numbers at our website, www.upchurch.com.

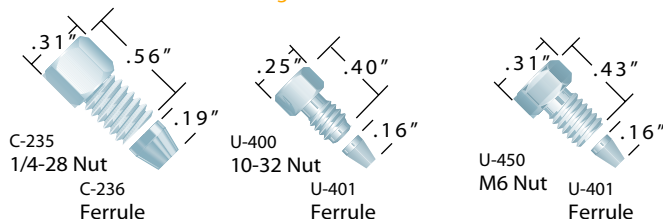


STAINLESS STEEL FITTINGS

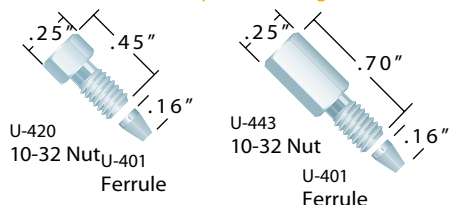
For Coned Ports

These 316 Stainless Steel Fittings are rated to 10,000 psi (690 bar) when rench tightened. Choose Upchurch Scientific® Standard Fittings, or select from the Rheodyne® RheFlex® or other manufacturer-compatible offerings.

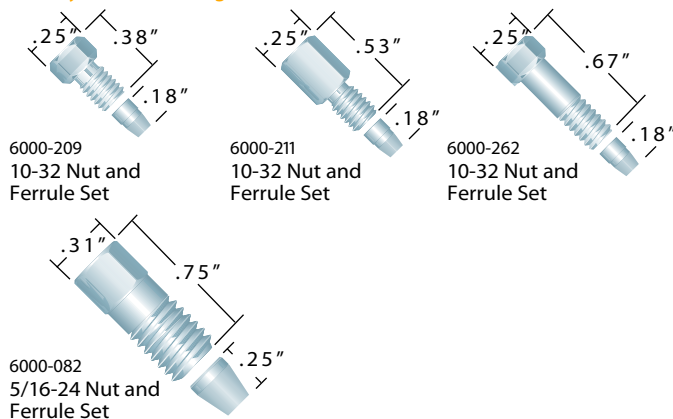
Standard Stainless Steel Fittings



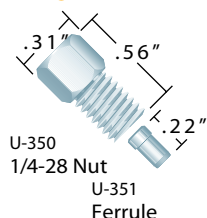
Beckman * Compatible Fittings



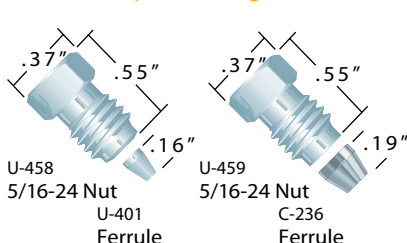
Rheodyne * Fittings



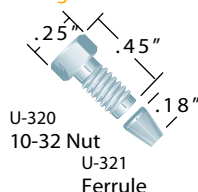
SSI Compatible Fittings



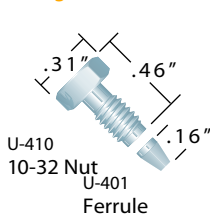
TSP/LDC Compatible Fittings



VICI * (Valco) Compatible Fittings



Waters * Compatible Fittings



WRENCHES

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



The Rheodyne Wrench is slotted to fit over 1/16" and 1/8" OD tubing, and has 1/4" and 5/16" ends.

Note

>> Do not use metal fittings in plastic ports, as this can damage the port! Please see the "Fittings Applications" chart for more information about fittings compatibility with tubing and port materials.

>> See our new Ultra-High Pressure Fittings ! Our 10-32 stainless steel plug, P-520.

STANDARD STAINLESS STEEL FITTINGS		Qty.
C-235x	Nuts, 1/8", 1/4-28 (use with C-236 Ferrule)	10-pk
C-236x	Ferrules, 1/8"	10-pk
U-400x	Nuts, 1/16", 10-32 (use with U-401 Ferrule)	10-pk
U-401x	Ferrules, 1/16"	10-pk
U-450x	Nuts, 1/16", M6 (use with U-401 Ferrule)	10-pk
BECKMAN COMPATIBLE FITTINGS		Qty.
U-401x	Ferrules, 1/16"	10-pk
U-420x	Nuts, 1/16", 10-32	10-pk
U-443	Long Nut, 1/16", 10-32	ea.
RHEODYNE RHEFLEX FITTINGS ¹		Qty.
6000-209	Standard Nuts, with 6000-210 Ferrules, 1/16", 10-32	10-pk
6000-211	Long Nuts, with 6000-210 Ferrules, 1/16", 10-32	10-pk
6000-262	Extra-Long Nuts, with 6000-210 Ferrules, 1/16", 10-32	10-pk
6000-210	Ferrules, 1/16"	10-pk
6000-082	Nuts with 6000-083 Ferrules, 1/8", 5/16-24	ea.
6000-083	Ferrules 1/8"	5-pk
SSI COMPATIBLE FITTINGS		Qty.
U-350x	Nuts, 1/16", 1/4-28	10-pk
U-351x	Ferrules, 1/16"	10-pk
TSP/LDC COMPATIBLE FITTINGS		Qty.
C-235x	Nuts, 1/8", 1/4-28 (use with C-236 Ferrule)	10-pk
C-236x	Ferrules, 1/8" (for pump inlet)	10-pk
U-401x	Ferrules, 1/16" (for pump outlet)	10-pk
U-458	Nut, 1/16", 5/16-24 (for pump outlet) (use with U-401 Ferrule)	ea.
U-459	Nut, 1/8", 5/16-24 (for pump inlet) (use with U-401 Ferrule)	ea.
VICI (VALCO) COMPATIBLE FITTINGS		Qty.
U-320x	Nuts, 1/16", 10-32	10-pk
U-321x	Ferrules, 1/16"	10-pk
WATERS COMPATIBLE FITTINGS		Qty.
U-401x	Ferrules, 1/16"	10-pk
U-410x	Nuts, 1/16", 10-32	10-pk
WRENCHES		
A-304	Fittings Wrench, 1/4" x 5/16"	
A-305	Fittings Wrench, 1/2" x 9/16"	
A-320	Fittings Wrench, 3/8" x 7/16"	
6810	Rheodyne Wrench, 1/4" x 5/16" ²	

¹ Designed for use with Rheodyne's manual valves with metal stators. These valves start on page 83.
² For more information, please see page 97.

LITETOUCH® FITTINGS

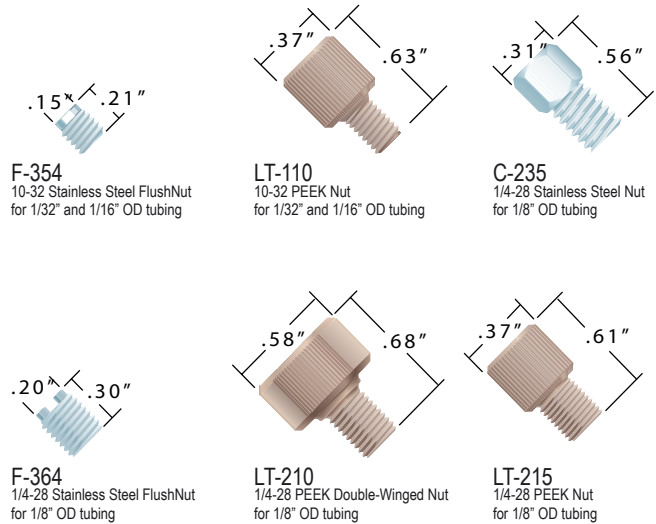
For Coned Ports

- * Prevents Twisting of Polymer Tubing
- * High Pressure with Fingertight Convenience
- * For 1/32", 1/16" and 1/8" OD Tubing

The LiteTouch Fittings System from Upchurch Scientific® 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" and 1/8" OD tubing sizes, and for 10-32 and 1/4-28 coned ports.

For those space-limited applications where nut heads interfere with each other, try our FlushNut™ Fittings (Note: FlushNut Fittings require a tightening tool.).

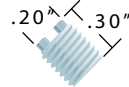
To avoid collapsing the ID of your tubing, Upchurch Scientific recommends the LiteTouch system be used on hard tubing only, such as stainless steel, PEEK™ polymer or titanium. We do not recommend the LiteTouch Ferrule System for repeated use in plastic ports.



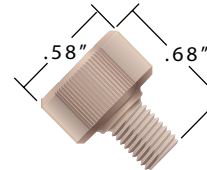
F-354
10-32 Stainless Steel FlushNut
for 1/32" and 1/16" OD tubing

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

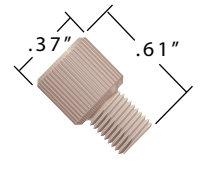
C-235
1/4-28 Stainless Steel Nut
for 1/8" OD tubing



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



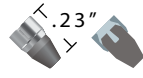
LT-215
1/4-28 PEEK Nut
for 1/8" OD tubing



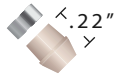
LT-132
PEEK Ferrule with
Stainless Steel Lock Ring
for 1/32" OD tubing



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

REMOVAL TOOL

The LiteTouch (above) and Super Flangeless™ Fittings Systems are ideal for connections that need to be broken frequently, because the lock ring holds the ferrule in place on the tubing until intentionally removed. Once swaged onto the tubing, the lock ring and ferrule keep the nuts in place, thus eliminating the need for flanged tubing in tubing assemblies.

Use our 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. The ring will pop off, releasing the ferrule from the tubing.



LiteTouch Ferrule Pressure Ratings*

LT-132 for 1/32" OD tubing	5,000 psi (345 bar)
LT-100 for 1/16" OD tubing	5,000 psi (345 bar)
LT-135 for 1/16" OD tubing	15,000 psi (1,034 bar)
LT-200 for 1/8" OD tubing	4,500 psi (310 bar)

* This chart is intended for reference only. The data presented refer to the capability of the ferrules, not the tubing. Your results may vary depending on nut, receiving port and tubing materials; actual tubing diameter (due to manufacturer's tolerances), chemical compatibility, etc.

LITETOUCH FERRULE SYSTEMS

For 1/32" OD Tubing	Qty.
LT-132x PEEK Ferrules ¹ , Natural, with SST lock rings	10-pk

For 1/16" OD Tubing	Qty.
LT-100x PEEK Ferrules, Natural, with SST lock rings	10-pk
LT-135x PEEK Ferrules, Black, with SST lock rings	10-pk

For 1/8" OD Tubing	Qty.
LT-200x PEEK Ferrules ² , Natural, with SST lock rings	10-pk

LITETOUCH NUTS

For 1/32" and 1/16" OD Tubing	Qty.
F-354x Stainless Steel FlushNuts ³ , 10-32	10-pk
LT-110x PEEK Nuts, Natural, 10-32	10-pk

For 1/8" OD Tubing	Qty.
C-235x Short Stainless Steel Nuts, 1/4-28	10-pk
F-364x Stainless Steel FlushNuts ³ , 1/4-28	10-pk
LT-210x PEEK Nuts, Natural, 1/4-28	10-pk
LT-215x Short PEEK Nuts, Natural, 1/4-28	10-pk

REMOVAL TOOL

LT-300	Removal Tool for LiteTouch and Super Flangeless Ferrules
--------	----------------------------------------------------------

¹ LT-132, LT-100 and LT-135 can be used with all 10-32 nuts found on this page and page 15.

² LT-200 can also be used with all 1/4-28 nuts for 1/8" OD tubing found on page 15.

³ A tightening tool is required for these fittings (see page 17).

SST = Stainless Steel



FLUSHNUT™ FITTINGS

For Coned and Flat-Bottom Ports

* 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.

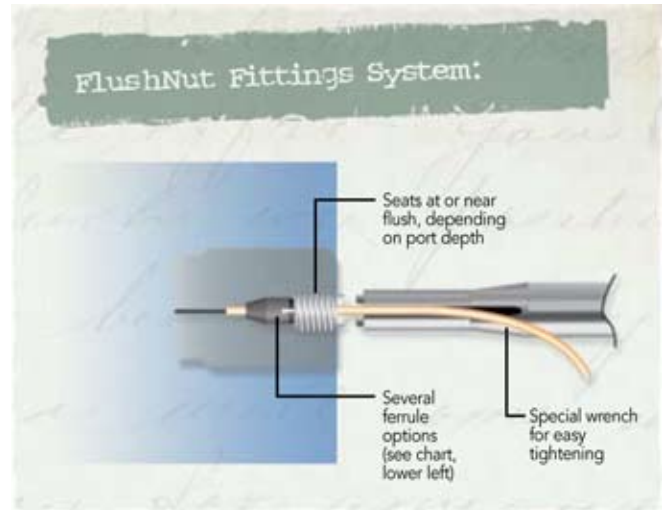
FlushNut Fittings are available for use with a number of ferrule systems and for use with 1/32", 1/16" and 1/8" OD tubing (see table below). Pressure ratings for these products range from 700-9,000 psi (48-620 bar), determined by the tubing and ferrule system selected. Please see the pages indicated in the table below for specific pressure ratings. All FlushNut Fittings are manufactured from 316 stainless steel.¹

Tighten or remove FlushNut Fittings with our specially designed FlushNut Wrenches, available in 10-32 and 1/4-28 versions.



FlushNut Wrenches

¹ Except the P-321 Plug, which is made of PEEK™ polymer.



FLANGELESS SEALTIGHT FITTINGS

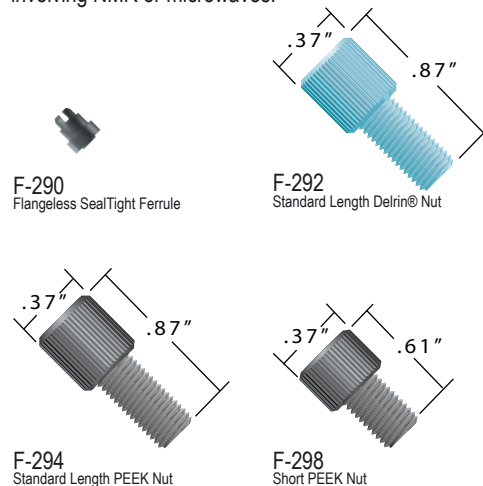
For Flat-Bottom Ports

* Hold up to 5,000 psi in 1/4-28 Flat-Bottom Ports

* All Polymer Construction

The Upchurch Scientific Flangeless SealTight Fittings system has redefined the pressure range of applications for traditional 1/4-28 flat-bottom ports. Our innovative F-290 Ferrule incorporates the dual compression mechanism of the F-192 coned SealTight Ferrule in a design that allows its use in a flat-bottom port. With this ferrule and a Flangeless SealTight nut, it is now possible to hold pressures up to 5,000 psi (345 bar) with all-polymer components in flat-bottom ports!

All Flangeless SealTight nuts require the PEEK F-290 Flangeless SealTight Ferrule. This fittings system, for use with 1/16" OD tubing only, is particularly well suited for applications where metal is undesirable, such as those involving NMR or microwaves.



FLANGELESS SEALTIGHT FITTINGS FOR 1/16" OD TUBING

Ferrule	Flangeless SealTight Ferrules, Black PEEK	Qty.
F-290x	Flangeless SealTight Ferrules, Black PEEK	10-pk
Nuts		
F-292x	Std. Length Nuts, Std. Head, Blue Delrin, 1/4-28	10-pk
F-294x	Std. Length Nuts, Std. Head, Black PEEK, 1/4-28	10-pk
F-298x	Short Nuts, Std. Head, Black PEEK, 1/4-28	10-pk

FLUSHNUT WRENCHES

F-345	Wrench for 10-32 threaded FlushNut Fittings
F-346	Wrench for 1/4-28 threaded FlushNut Fittings

FlushNut Ferrule Options:

FlushNut	Threads/Port*	For Tubing OD	Ferrule Options	Page
F-350	10-32 C	1/16"	SealTight™ F-192	13
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	20
	1/4-28 FB	1.8/2.0mm	Super Flangeless P-355	20
F-356	1/4-28 FB	1/32"	Super Flangeless P-248	19
	1/4-28 FB	1/16"	Super Flangeless P-250, P-259, P-260	19
F-358	1/4-28 FB	1/16"	Flangeless P-200, P-200N, P-200R, P-221, P-240	56
F-368	1/4-28 FB	1/8"	Flangeless P-300, P-300N, P-340	57
	1/4-28 FB	1.8/2.0mm	Flangeless P-342	58
	1/4-28 FB	3.0mm	Flangeless P-343	58
P-321	1/4-28 FB	N/A	Plug — No ferrule required	60

* C = Coned; FB = Flat-bottom.

SUPER FLANGELESS™ FITTINGS

INTRODUCTION

For Flat-Bottom Ports

- * **Designed to Hold to Higher Pressures than standard Flangeless Fittings**
- * **Eliminates loosening of Nuts Caused by Tubing Twist**

Upchurch Scientific® Super Flangeless Fittings are designed to provide significant improvements over standard Flangeless Fittings. The lock ring offers uniform compression on the ferrule while operating as a bearing against the nut. Thus, the nut can spin freely against the ferrule, preventing the tubing from twisting during the tightening process. This feature eliminates 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 to release Super Flangeless Ferrules from tubing for repositioning.

Note

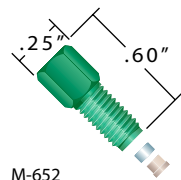
Our other fittings for 10-32 flatbottom ports, acuTight™ Fittings. These fittings are designed to provide airtight connections under vacuum and low pressure conditions.

SUPER FLANGELESS FITTINGS

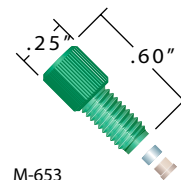
For 1/16" OD Tubing (10-32 Flat-Bottom Ports)

Several PEEK™ nut styles are available to connect 1/16" OD tubing into 10-32 flat-bottom ports. Use these fittings with rigid and semi-rigid tubing, such as PEEK, stainless steel and Teflon®. Connect capillary tubing using our NanoTight™ FEP Tubing Sleeves.

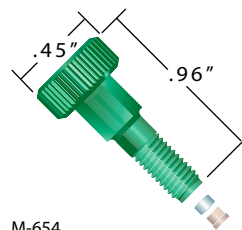
The M-650 Ferrule is made of PEEK polymer and the lock ring is passivated 316 stainless steel.



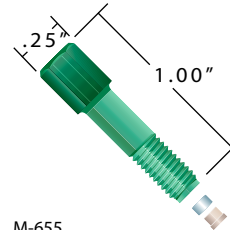
M-652
10-32 PEEK
with M-650 Ferrule



M-653
10-32 PEEK
with M-650 Ferrule



M-654
10-32 PEEK
with M-650 Ferrule



M-655
10-32 PEEK
with M-650 Ferrule

FLANGELESS NUT EXTENDER TOOLS

Use the P-298, P-299 or P-399 Extender Tool to tighten any standard, short or extra long style nut in hard-to-reach places. For our Headless nuts, try the P-297 Tool. These tools can tighten any Upchurch Scientific knurl-headed male nut on pages 10, 13, 14 and 16 – 20 (except F-287, F-288 and winged nuts). They can also be used with many of the low pressure nuts. The F-346 Tool tightens FlushNut Fittings.



SUPER FLANGELESS FITTINGS FOR 1/16" OD TUBING

Ferrules		Qty.
M-650x	PEEK Ferrules, Natural with SST lock rings, 10-32 FB	10-pk
Nuts		
M-652x	PEEK Short Hex Head Nuts, Green, 10-32 FB	10-pk
M-653x	PEEK Headless Short Nuts, Green, 10-32 FB	10-pk
M-654x	PEEK Long Knurl/Hex Fat Head Nuts, Green, 10-32 FB	10-pk
M-655x	PEEK Long Hex Head Nuts, Green, 10-32 FB	10-pk

FLANGELESS NUT EXTENDER TOOLS

F-346	FlushNut Tool for 1/4-28 Nuts
P-297	For Headless Style Nuts, aluminum
P-298	For Standard Head Nuts, Delrin®
P-299	For Standard Head Nuts, aluminum
P-399	For Standard Head Nuts, Short, aluminum

SST = Stainless Steel

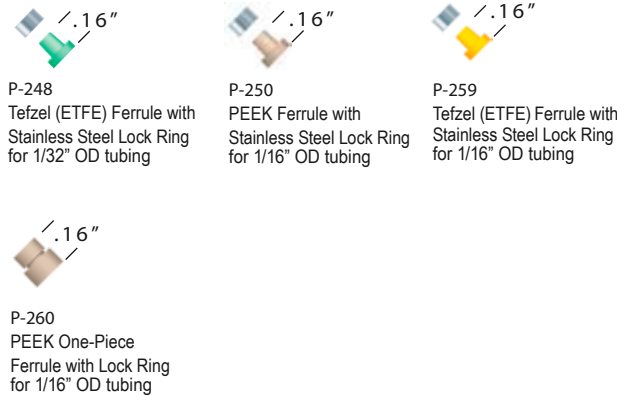
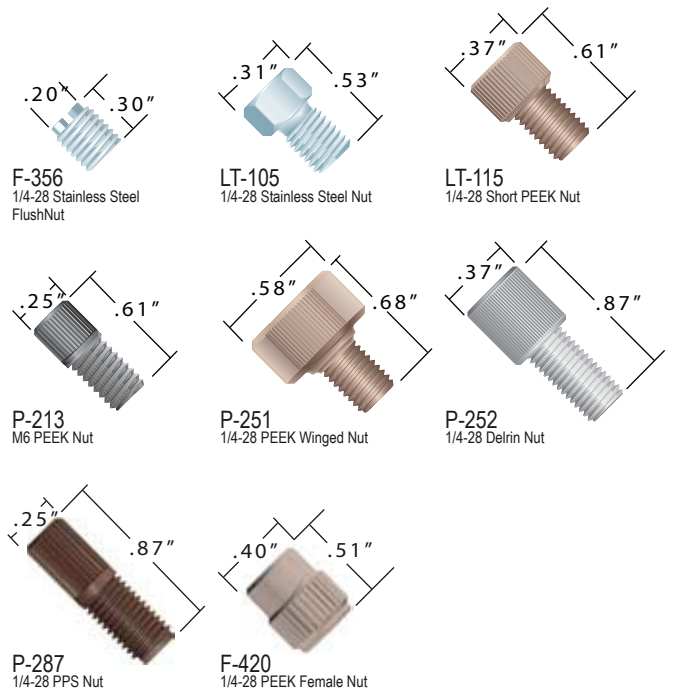


SUPER FLANGELESS™ FITTINGS (CONT.)

For 1/32" and 1/16" OD Tubing
(1/4-28, M6 Flat-Bottom Ports)

Several nut styles are available to connect 1/32" and 1/16" OD tubing into 1/4-28 and M6 flat-bottom ports, including our unique F-356 FlushNut™, a fitting designed to seat at or near flush with the top of a port when tightened.

The ferrules are made of Tefzel® or PEEK™ polymer, and the lock rings are made of passivated 316 stainless steel (except the P-260 lock ring, which is PEEK) Any nut on this page can be used with any ferrule on this page, except as noted in footnote 3. Connect capillary tubing into 1/4-28 and M6 flat-bottom ports using these ferrules and NanoTight™ Tubing Sleeves).



Super Flangeless Ferrule Pressure Ratings:

For 1/16" OD Tubing, 10-32 FB Ports

M-650 Ferrule (using the M-654 PEEK Nut)	Fused Silica Tubing*	750 psi (52 bar)
	DuPont Teflon® brand resin FEP Tubing	1,700 psi (121 bar)
	PEEK Tubing	3,750 psi (259 bar)
	Stainless Steel Tubing	3,750 psi (259 bar)

For 1/32" OD Tubing, 1/4-28 and M6 FB Ports

P-248 Ferrule (using the P-287 PPS Nut)	PEEK Tubing (.008" ID)	2,500 psi (172 bar)
---------------------------------------------------	------------------------	---------------------

For 1/16" OD Tubing, 1/4-28 and M6 FB Ports

P-250 Ferrule (using the P-252 Delrin® Nut)	ETFE Tubing	2,400 psi (165 bar)
	PEEK Tubing	5,000 psi (345 bar)
	Stainless Steel Tubing	7,000 psi (483 bar)

P-259 Ferrule (using the P-255 PEEK Nut)	Teflon FEP Tubing	2,500 psi (172 bar)
	PEEK Tubing	2,400 psi (165 bar)
	Stainless Steel Tubing	2,000 psi (138 bar)

P-260 Ferrule (using the P-252 Delrin Nut)	ETFE Tubing	2,600 psi (179 bar)
	PEEK Tubing	2,800 psi (193 bar)
	Stainless Steel Tubing	1,800 psi (124 bar)

FB = Flat-bottom port.

* With F-242 FEP NanoTight Sleeve (page 38).

These data were generated under optimal conditions, using water at room temperature. The data presented refer to the capability of the fittings, not the tubing. Your results may vary, depending on variables such as: the solvent used; the materials of the tubing, port, nut and ferrule used; and the temperature at which your analyses are run.

SUPER FLANGELESS FITTINGS FOR 1/32" AND 1/16" OD TUBING¹

Ferrules		Qty.
P-248x	Tefzel Ferrules, Green, with SST lock rings, for 1/32" OD tubing	10-pk
P-250x	PEEK Ferrules, Natural, with SST lock rings, for 1/16" OD tubing	10-pk
P-259x	ETFE Ferrules, Yellow, with SST lock rings, for 1/16" OD tubing	10-pk
P-260x	PEEK One-Piece Ferrules, Natural, for 1/16" OD tubing	10-pk
Nuts		Qty.
F-356x	Stainless Steel FlushNuts ² , 1/4-28	10-pk
LT-105x	Stainless Steel Short Hex Head Nuts, 1/4-28	10-pk
LT-115x	PEEK Short Nuts, Natural, 1/4-28	10-pk
P-213	PEEK Short Headless Nut ³ , Black, M6	ea.
P-217	PPS Nut, Black, M6	ea.
P-219	PEEK Short Nut, Black, M6	ea.
P-232	PEEK Short Headless Nut ³ , Natural, 1/4-28	ea.
P-246x	Teflon PFA Nuts, Natural, 1/4-28	10-pk
P-251x	PEEK Nuts with "wings", Natural, 1/4-28	10-pk
P-252x	Delrin Nuts, Gray, 1/4-28	10-pk
P-255x	PEEK Nuts, Natural, 1/4-28	10-pk
P-281	PPS Nut, Natural, 1/4-28	ea.
P-287	PPS Headless Nut ³ , Natural, 1/4-28	ea.
P-289	PPS Headless Nut ³ , Black, M6	ea.
P-418	PEEK Female Nut, Green, M6	ea.
P-420	PEEK Female Nut, Natural, 1/4-28	ea.

¹ Some of the nuts on this page are available in additional colors. Please contact us for more information.

² A tightening tool is required for this fitting (see page 17).

³ Use only the P-259 Ferrule with the 1/16" Super Flangeless Headless Nuts. SST = Stainless Steel

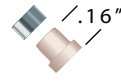
SUPER FLANGELESS™ FITTINGS

(CONT.)

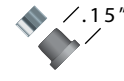
For 1/8" and 1.8/2.0mm OD Tubing
(1/4-28, M6 Flat-Bottom Ports)

These fittings offer all of the benefits of Super Flangeless Fittings for 1/8" and 1.8/2.0mm OD tubing. Use any of the ferrules with any 1/4-28 nuts on this page, except as noted in footnote 3. Use the P-352 Ferrule with any M6 threaded nut on this page to connect 1/8" OD tubing into M6 ports.

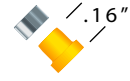
The ferrules are made of PEEK™, Tefzel® or Kel-F® polymer, and the lock rings are made of passivated 316 stainless steel (except the P-360 lock ring, which is PEEK).



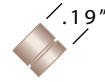
P-350
PEEK Ferrule with
Stainless Steel Lock Ring
for 1/8" OD tubing



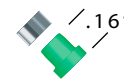
P-352
PEEK Ferrule with
Stainless Steel Lock Ring
for 1/8" OD tubing



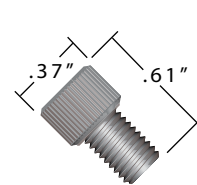
P-359
Tefzel Ferrule with
Stainless Steel Lock Ring
for 1/8" OD tubing



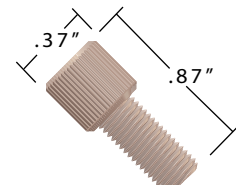
P-360
PEEK One-Piece Ferrule
for 1/8" OD tubing



P-355
Kel-F Ferrule with
Stainless Steel Lock Ring
for 1.8/2.0mm OD tubing



P-319
M6 PEEK Nut



P-331
1/4-28 PEEK Nut



P-387
1/4-28 PPS Nut

Pressure Ratings for Super Flangeless Ferrule:

For 1/8" OD Tubing, 1/4-28 and M6 FB Ports

P-350 and P-352 Ferrules (using the LT-210 PEEK Nut)	PEEK Tubing (.062" ID)	4,100 psi (283 bar)
	PEEK Tubing (.080" ID)	2,900 psi (200 bar)
	Stainless Steel Tubing	5,800 psi (400 bar)
P-359 Ferrule (using the LT-210 PEEK Nut)	DuPont Teflon® brand resin	
	FEP Tubing (.062" ID)	1,200 psi (83 bar)
	ETFE Tubing (.062" ID)	1,800 psi (124 bar)
	PEEK Tubing (.080" ID)	1,000 psi (69 bar)
P-360 Ferrule (using the LT-210 PEEK Nut)	Teflon FEP Tubing (.062" ID)	1,400 psi (97 bar)
	ETFE Tubing (.062" ID)	2,700 psi (186 bar)
	PEEK Tubing (.080" ID)	700 psi (48 bar)

For 1.8/2.0mm OD Tubing, 1/4-28 and M6 FB Ports

P-355 Ferrule (using the P-317 PPS Nut)	Teflon FEP Tubing (2.0mm OD x 1.0mm ID)	1,000 psi (69 bar)
	ETFE Tubing (1.8mm OD x .020" ID)	1,250 psi (86 bar)
	PEEK Tubing (1.8mm OD x .020" ID)	1,500 psi (103 bar)

FB = Flat-bottom port.

These data were generated under optimal conditions, using water at room temperature. The data presented refer to the capability of the fittings, not the tubing. Your results may vary, depending on variables such as: the solvent used; the materials of the tubing, port, nut and ferrule used; and the temperature at which your analyses are run.

SUPER FLANGELESS FITTINGS FOR 1/8" AND 1.8/2.0MM OD TUBING¹

Ferrules	Qty.
P-350x PEEK Ferrules, Natural, with SST lock rings, for 1/8" OD tubing	10-pk
P-352x PEEK Ferrules, Black, with SST lock rings, for 1/8" OD tubing	10-pk
P-359x ETFE Ferrules, Yellow, with SST lock rings, for 1/8" OD tubing	10-pk
P-360x PEEK One-Piece Ferrules, Natural, for 1/8" OD tubing	10-pk
P-355x Kel-F Ferrules, Green, with SST lock ring, for 1.8/2.0mm OD tubing	10-pk
Nuts	Qty.
C-235x Stainless Steel Short Hex Head Nuts, 1/4-28	10-pk
F-156 PEEK Female Nut, Black, 1/4-28	ea.
F-364x Stainless Steel FlushNuts ² , 1/4-28	10-pk
LT-210x PEEK Nuts, Natural, 1/4-28	10-pk
LT-215x PEEK Short Nuts, Natural, 1/4-28	10-pk
P-317 PPS Nut, Black, M6	ea.
P-319 PEEK Short Nut, Black, M6	ea.
P-331 PEEK Nut, Natural, 1/4-28	ea.
P-332x Delrin® Nuts, Black, 1/4-28	10-pk
P-336 PEEK Short Headless Nut ³ , Natural, 1/4-28	ea.
P-337x PEEK Short Headless Nuts ³ , Black, M6	10-pk
P-381 PPS Nut, Natural, 1/4-28	ea.
P-387 PPS Headless Nut ³ , Natural, 1/4-28	ea.
P-400x Teflon PFA Nuts, Natural, 1/4-28	10-pk
P-419 PEEK Female Nut, Gray, M6	ea.

¹ Some of the nuts on this page are available in additional colors. Please contact us for more information.

² Requires the use of F-346 FlushNut Tool.

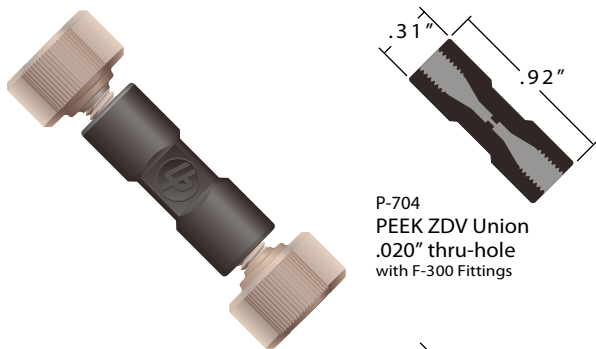
³ Use only P-359 Ferrules with these 1/8" Super Flangeless Headless Nuts.

⁴ Use only P-352 Ferrules with M6 Super Flangeless Headless Nuts. Requires the use of P-297 Headless Nut Extender Tool to tighten sufficiently.
SST = Stainless Steel

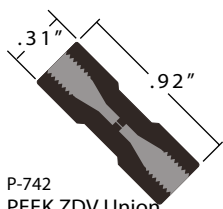


PEEK™ ZDV UNIONS

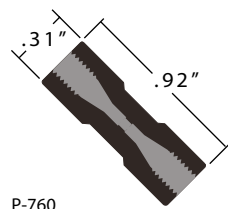
Upchurch Scientific® PEEK ZDV Unions come complete with two F-300 Fingertight Fittings for 1/16" OD tubing and are pressure rated to 6,000 psi (414 bar).



P-704
PEEK ZDV Union
.020" thru-hole
with F-300 Fittings



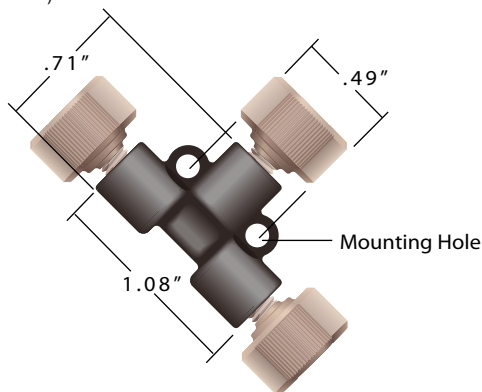
P-742
PEEK ZDV Union
.010" thru-hole
with F-300 Fittings



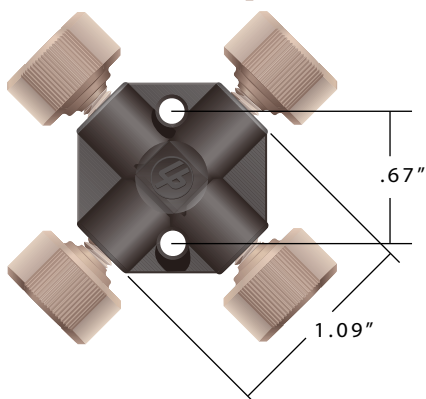
P-760
PEEK ZDV Union
.050" thru-hole
with F-300 Fittings

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, titanium or stainless steel tubing. They can also operate in lower pressure applications using other tubing such as Teflon or Tefzel® (ETFE).



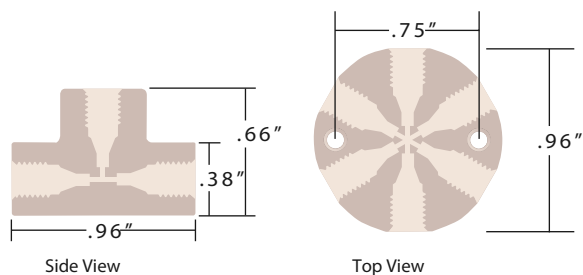
P-727 PEEK Tee
.020" thru-hole
with F-300 Fittings



P-729 PEEK Cross
.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 with a pressure rating of 6,000 psi (414 bar). Seal unused ports with any of our polymer 10-32 plugs.



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

Note

>> Customize the products on this page with the fittings of your choice. Just add a "-01" to the end of any part number listed below (designates a part without fittings). Then order the coned polymer fittings of choice.

>> Polymer unions, tees, crosses and manifolds for micro- and Nano-scale applications.

PEEK ZDV UNIONS

		Threads	Thru-hole	Includes	Swept Volume
P-704	Union	10-32	.020" (.50mm)	(2) F-300	.28µL
P-742	Union	10-32	.010" (.25mm)	(2) F-300	.07µL
P-760	Union	10-32	.050" (1.25mm)	(2) F-300	1.2µL

PEEK TEES AND CROSSES

		Threads	Thru-hole	Includes	Swept Volume
P-727	Tee	10-32	.020" (.50mm)	(3) F-300	.57 µL
P-728	Tee	10-32	.050" (1.25mm)	(3) F-300	3.0 µL
P-729	Cross	10-32	.020" (.50mm)	(4) F-300	.72 µL
P-730	Cross	10-32	.050" (1.25mm)	(4) F-300	3.5 µL

PEEK MANIFOLD

		Threads	Thru-hole	Includes	Swept Volume
P-170	7-Port	10-32	.020" (.50mm)	(7) F-331	2.2 µL

Upchurch® High Pressure Fittings & Connectors



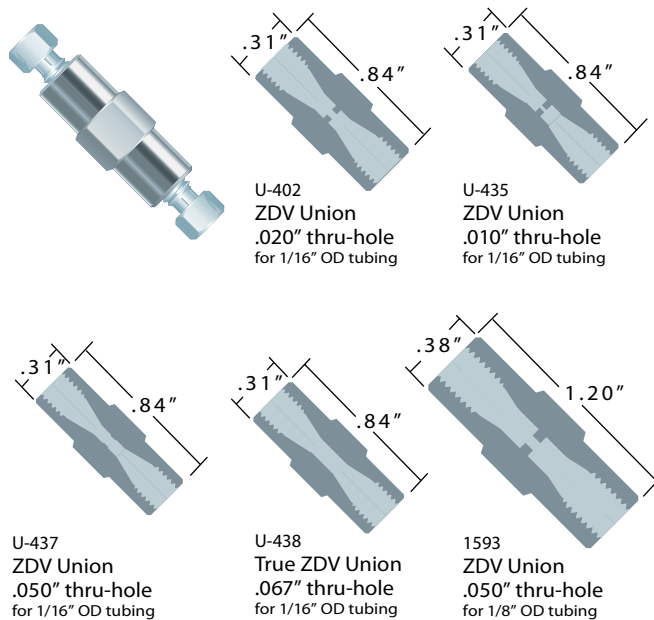
Stainless Steel Unions and Connectors

STAINLESS STEEL ZDV UNIONS

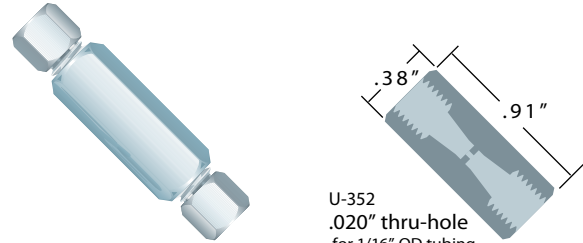
These high pressure, zero-dead-volume (ZDV) unions, manufactured by Upchurch Scientific®, are designed as direct replacements for specific manufacturers' parts. Each union is precision machined from 316 stainless steel, carefully passivated, then thoroughly rinsed. Each comes complete with stainless steel nuts and ferrules, and is rated to 10,000 psi (690 bar) when wrench tightened. Please Note: Use our P-554 Gauge Plug to assist in creating a true ZDV connection with the U-438 Union.

For micro flow applications, please see our U-411 Stainless Steel Union. For stainless steel tubing.

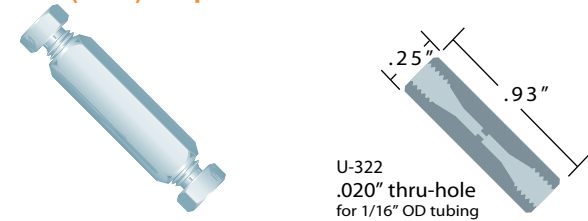
Standard ZDV Unions



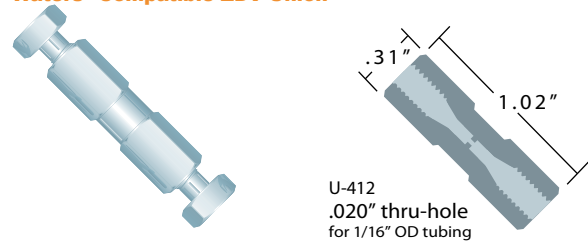
SSI Compatible ZDV Union



VICI® (Valco) Compatible ZDV Union

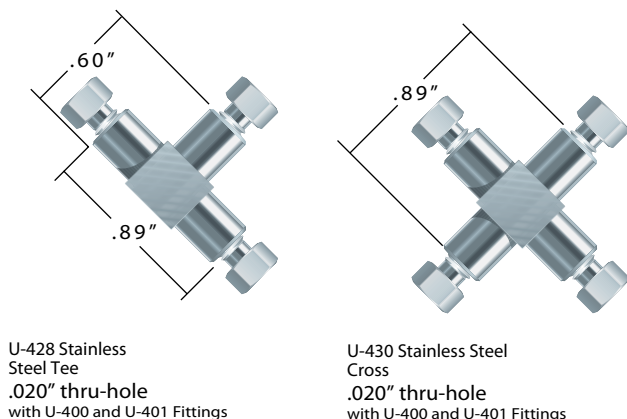


Waters® Compatible ZDV Union



STAINLESS STEEL TEES & CROSSES

These 316 stainless steel products come complete with 10-32 fittings for use with 1/16" OD tubing and are rated to 10,000 psi (690 bar). They are also compatible with Parker and Valco male fittings.



STANDARD STAINLESS STEEL ZDV UNIONS

	Threads	Thru-hole	Includes	Swept Volume
U-402	10-32	.020" (.50mm)	(2) U-400/U-401	.13µL
U-435	10-32	.010" (.25mm)	(2) U-400/U-401	.02µL
U-437	10-32	.050" (1.25mm)	(2) U-400/U-401	.84µL
U-438	10-32	.067" (1.70mm)	(2) U-400/U-401	Near 0µL
1593	1/4-28 for use with 1/8" OD tubing	.050" (1.25mm)	(2) C-235/C-236	1.48µL

SSI COMPATIBLE ZDV UNION

U-352	1/4-28	.020" (.50mm)	(2) U-350/U-351	.18µL
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VICI (VALCO) COMPATIBLE ZDV UNION

U-322	10-32	.020" (.50mm)	(2) U-320/U-321	.15µL
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WATERS COMPATIBLE ZDV UNION

U-412	10-32	.020" (.50mm)	(2) U-410/U-401	.10µL
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STAINLESS STEEL TEES AND CROSSES

U-428	Tee	10-32	.020" (.50mm)	(3) U-400/U-401	.57 µL
U-429	Tee	10-32	.040" (1.00mm)	(3) U-400/U-401	2.1 µL
U-430	Cross	10-32	.020" (.50mm)	(4) U-400/U-401	.72 µL
U-431	Cross	10-32	.040" (1.00mm)	(4) U-400/U-401	2.5 µL

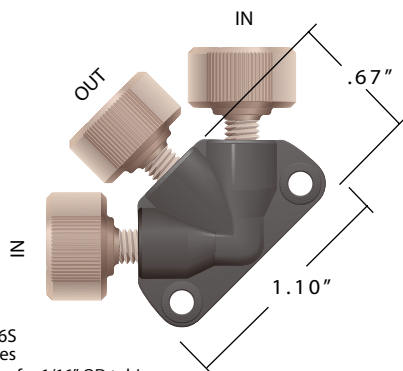


STATIC MIXING TEES

- * 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 2.2µL (includes frit volume) and are designed for flow rates of 0.5 to 3 mL/min and a maximum pressure of 6,000 psi (414 bar). The back pressure caused by the tee is typically only 10 to 20 psi (.7 to 1.4 bar) at these flow rates. The thru-holes are .020" and the center port features a 10µm 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 Rheodyne® Vacuum Degassing Systems).



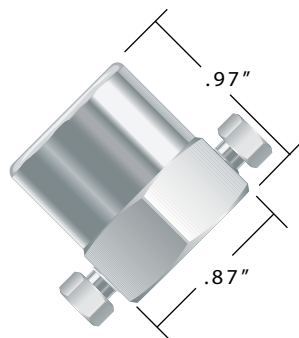
U-466 and U-466S
Static Mixing Tees
with F-300 Fittings for 1/16" OD tubing

PRESSURE GAUGE TEE

- * Complete with stainless steel Fittings

Many HPLC systems have pumps that provide a digital readout of the in-line 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 Teflon® 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. our Nanomixer™ and micro static mixing Tee, respectively. Both are designed for micro flow applications.

FITTINGS KITS

- * For HPIC and FIA systems

The Upchurch Scientific 1400 Series Kits contain fittings for typical systems. Besides nuts and ferrules, most kits also include tubing, unions and other parts — all at a substantial savings over individually priced components. The HPLC Starter Kit includes 5-feet of 1/16" OD x .010" ID PEEK tubing, a tubing cutter and an F-120FUNPACK. Our Super Kit contains a wider selection of fittings and tubing, as well as filters, guard columns and a polymer tubing cutter.

For a complete listing of the components in each kit, please visit our website at www.upchurch.com and search on "Kits". You may also contact your local Distributor or Upchurch Scientific directly.



PRESSURE GAUGE TEE

	Includes
U-433 Pressure Gauge Tee	(2) U-400/U-401

STATIC MIXING TEE

	Includes
U-466 Static Mixing Tee, 10µm UHMWPE Frit	(3) F-300
U-466S Static Mixing Tee, 10µm Stainless Steel Frit	(3) F-300

FITTINGS KITS

1435 Super Kit
1458 FIA Fittings Kit
2100 HPLC Starter Kit
1457 PEEK Fittings Kit