

## E-Fiber Accessories

Modular electrospinning/electrospraying platform

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### **EFA045 - Quadaxial Stainless Steel Needles**

Quadaxial needles are made of four concentric standard needles, and can be used to simultaneously infuse, electrospin or 3D print up to three different materials.

Quadaxial needles can be used for electrospinning/spraying applications, and also laboratory testing.

They are designed to have minimum dead volume, and detachable assembly for easy cleaning operations. They are fully customizable and made according to customer specifications.

## MAIN FEATURES

- reusable AISI 304 stainless steel
- 100% compatible with all of our E-Fiber devices
- adaptable to any device using Male Luer Lock Connections
- easy to handle
- easy cleaning procedure
- geometry reduce impact on fluid dynamic (no stagnation point)
- autoclavable
- comply with GLP / GMP

## TECHNICAL DATA

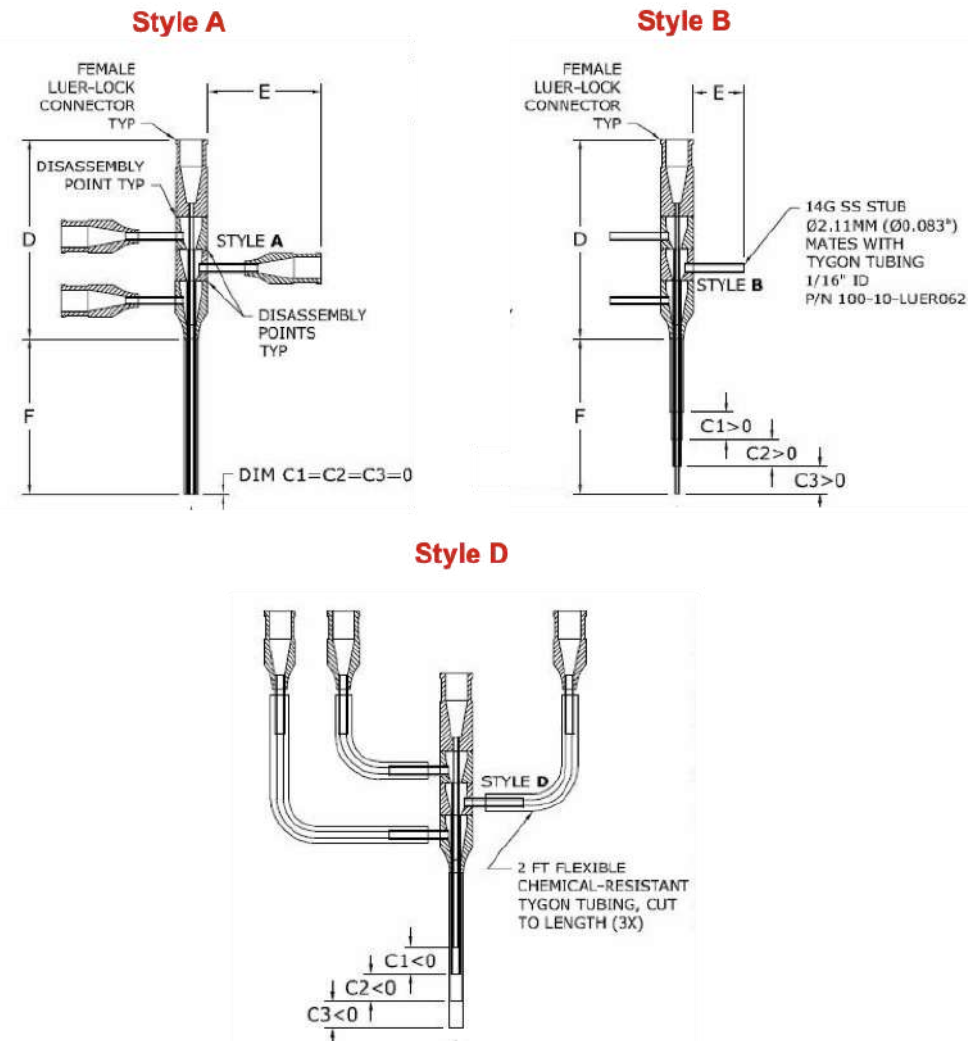
Materials	AISI 304 Stainless Steel (shaft) Chrome and Zinc plated brass (hub)
Connector	Female Luer
Dimensions	Customizable upon request (please see Table below)
Diameter size range	5 - 28 G

Three disassembly points for easy cleaning procedure (POS - Point of Separation)

**SELECTION GUIDELINE**

1. Select dimensions of the inner, middle inner, middle outer and outer needle (keep in mind 5G is the bigger diameter and 28G is the smaller diameter - Outer Diameter of inner needle MUST be less than Inner Diameter of the outer needle).
2. Select the desired design.
3. Select the straight length (parameter F) - minimum value is 2mm, recommended 10-25mm, maximum 60mm for all even gauges and 15mm if any gauge is odd.
4. Select the right-angle length (parameter E) - minimum 25mm for Style A, minimum 5mm for Style B maximum value is 120mm; N/A for Style D
5. Length difference (parameter C1, C2, C3):
  - C = 0 → is the most common - both tube at the same quote
  - C > 0 → inner tube longer the outer tube
  - C < 0 → outer tube longer the inner tube

**Triaxial needle design**



Dim D is approximately 53mm and is not adjustable  
Disassembly for cleaning at point "POS"

**Table of quadaxial needle dimensions**

Gauge	OD - Outer Diameter		ID - Inner Diameter		Wall thickness	
	[inches]	[mm]	[inches]	[mm]	[inches]	[mm]
5	0.219	5.56	0.189	4.80	0.015	0.381
6	0.203	5.16	0.173	4.39	0.015	0.381
7	0.180	4.57	0.150	3.81	0.015	0.381
8	0.165	4.19	0.135	3.43	0.015	0.381
9	0.148	3.76	0.118	3.00	0.015	0.381
10	0.134	3.40	0.106	2.69	0.014	0.356
11	0.120	3.05	0.094	2.39	0.013	0.330
12	0.109	2.77	0.085	2.16	0.012	0.305
13	0.095	2.41	0.071	1.80	0.012	0.305
14	0.083	2.11	0.063	1.60	0.010	0.254
15	0.072	1.83	0.054	1.37	0.009	0.229
16	0.065	1.65	0.047	1.19	0.009	0.229
17	0.058	1.47	0.042	1.07	0.008	0.203
18	0.049	1.24	0.033	0.84	0.008	0.203
19	0.042	1.07	0.027	0.69	0.0075	0.191
20	0.035	0.889	0.023	0.584	0.0060	0.152
21	0.032	0.813	0.020	0.508	0.0060	0.152
22	0.028	0.711	0.016	0.406	0.0060	0.152
23	0.025	0.635	0.013	0.330	0.0060	0.152
24	0.022	0.559	0.012	0.305	0.0050	0.127
25	0.020	0.508	0.010	0.254	0.0050	0.127
26	0.018	0.457	0.010	0.254	0.0040	0.102
27	0.016	0.406	0.008	0.203	0.0040	0.102
28	0.014	0.356	0.007	0.178	0.0035	0.089

**N.B. OD of inner needle MUST be less than ID of the outer needle**

## ORDERING DETAILS

Product code EFA045

In order to build up a coaxial needle, we will need basic information like:

Style		_____	(A, B or D ⇒ A is our standard)
Inner Gauge needle	(IG)	_____	G
Middle Inner Gauge needle (MIG)		_____	G
Middle Outer Gauge needle (MOG)		_____	G
Outer Gauge needle	(OG)	_____	G
Straight length	(F)	_____	mm
Right-Angle length	(E)	_____	mm
Length difference	(C1)	_____	mm (between outer and middle outer needles)
Length difference	(C2)	_____	mm (between middle outer and middle inner needles)
Length difference	(C3)	_____	mm (between middle inner and inner needles)

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