















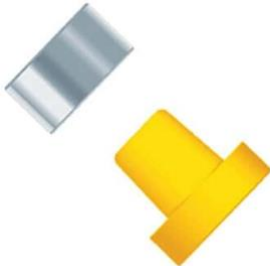



Automated Continuous Flow
Parts • Pohl Lab • December 2023




Flow Component	Vendor	(Link)
<p>Harvard Syringe Pump</p> 	<p>Harvard Apparatus</p>	<p>https://acmerevival.com/product/harvard-apparatus-phd-ultra-syringe-pump</p>
<p>Stainless Steel Syringe</p> 	<p>Harvard Apparatus</p>	<p>https://www.harvardapparatus.com/stainless-steel-syringes.html 70-2268-8 ml Stainless Steel Syringe with 1/8-inch SWAGELOK</p>
<p>Coil Reactor PFA Tubing Natural 1/8" OD x 1/16" ID x 50ft</p> 	<p>IDEX Health and Science</p>	<p>IDEX Part Number: 1509L https://www.idex-hs.com/store/product-detail/pfa-tubing-natural-1-8-od-x-1-16-id-x-50ft/1509l</p>
<p>Coil Reactor PFA Tubing Natural 1/16" OD x .020" ID x 50ft</p> 	<p>IDEX Health and Science</p>	<p>IDEX Part Number: 1512L https://www.idex-hs.com/store/search-results/1/?searchCriteria=1512L</p>

<p>Plastic Static Mixers</p> 	<p>Stamixco</p>	<p>https://www.stamixco-usa.com/plastic-static-mixers Model HT™ Helical Mixing Elements</p>
<p>Ferrule Connector</p> 	<p>Cole-Parmer</p>	<p>https://www.coleparmer.com/i/idex-flangeless-fitting-standard-knurl-natural-peek-1-16-od-tubing-1-4-28-flat-bottom-1-ea/0202076</p>
<p>Tee Assembly PEEK</p> 	<p>IDEX Health and Science</p>	<p>1. Tee Assembly PEEK for 1/8" OD, .062 thru hole P-800 2. PEEK Low Pressure Tee Assembly 1/16" PEEK .020 thru hole P-712 https://www.idex-hs.com/store/product-detail/tee_assembly_peek_for_1_8_od_062_thru_hole/p-800?search=true</p>
<p>Quad mixer</p> 	<p>IDEX Health and Science</p>	<p>https://www.idex-hs.com/store/product-detail/cross_assembly_peek_050_hi_pressure/p-726?search=true Cross Assembly PEEK .050 Hi Pressure IDEX Part Number: P-726</p>
<p>Y Assembly PEEK</p> 	<p>IDEX Health and Science</p>	<p>Y Assembly PEEK 1/4-28 .060in P-514 https://www.idex-hs.com/store/product-detail/y_assembly_peek_1_4_28_060in/p-514?search=true</p>
<p>Union Assembly</p>	<p>IDEX</p>	<p>Union Assembly MicroTight® PEEK</p>

	<p>Health and Science</p>	<p>IDEX Part Number: P-720 https://www.idex-hs.com/store/product-detail/union_assembly_microtight_peek/p-720</p>
<p>BPR Assembly</p> 	<p>IDEX Health and Science</p>	<p>BPR Assembly PEEK 1000 psi IDEX Part Number: P-455 https://www.idex-hs.com/store/product-detail/bpr_assembly_peek_1000_psi/p-455</p>
<p>Luer Adapter Female</p> 	<p>IDEX Health and Science</p>	<p>Luer Adapter Female Luer to M6 Male ETFE, Black IDEX Part Number: P-686 https://www.idex-hs.com/store/product-detail/luer_adapter_female_luer_to_m6_male_tefzel_efe_black/p-686?search=true</p>
<p>Raspberry Pi 4 Model B</p>  <p>- 1 GB RAM</p>	<p>Adafruit</p>	<p>https://www.adafruit.com/product/4295</p>
<p>5 Port, 0.040" Bore, 1/16" OD Tubing, 1/4-28 Flat Bottom;</p> 	<p>Cole-Parmer</p>	<p>https://www.coleparmer.com/i/idex-low-pressure-manifold-body-natural-peek-5-port-0-040-bore-1-16-od-tubing-1-4-28-flat-bottom-1-ea/0202311</p>
<p>Empty Chromatography</p>	<p>Fisher</p>	<p>https://www.fishersci.com/shop/products/empty-</p>

<p>Columns</p> 		<p>chromatography-columns/p-3208140</p>
<p>Ferrule, Yellow ETFE/SS Ring, 1/16" OD Tubing, 1/4-28 or M6 Flat Bottom; 10/PK</p> 	<p>Cole-Parmer</p>	<p>https://www.coleparmer.com/i/index-super-flangeless-ferrule-yellow-etfe-ss-ring-1-16-od-tubing-1-4-28-or-m6-flat-bottom-10-pk/0201374</p>
<p>high-pressure unions, tees, and crosses; 0.020" bore, tee</p> 	<p>Cole-Parmer</p>	<p>https://www.coleparmer.com/i/high-pressure-unions-tees-and-crosses-0-020-bore-tee/0200812?searchterm=P-715</p>
<p>Raspberry Pi 5 Model B - 4 GB RAM</p> 	<p>Sparkfun</p>	<p>https://www.canakit.com/canakit-raspberry-pi-5-starter-kit-red-white.html</p>
	<p>Restek</p>	<p>Stainless-Steel Tubing, 1/16" OD, Premium Grade, 0.040" ID, 10 m, ea. Catalog No. 27780 https://www.restek.com/p/27780</p>

	<p>Restek</p>	<p>1/16" Tubing Cutter Catalog No. 20192 https://www.restek.com/p/20192</p>
	<p>IDEX Health & Science</p>	<p>Stainless Steel Tee Assembly .020in thru hole https://www.idex-hs.com/store/product-detail/stainless-steel-tee-assembly-020in-thru-hole/u-428?search=true</p> <p>Part Number: U-428</p>
	<p>Chemglass Life Sciences</p>	<p>Chemglass Life Sciences. Micro, gas-tight syringes 5 mL and 10 mL , CG-3074 https://chemglass.com/syringes-micro-gas-tight</p>
	<p>Chromtech</p>	<p>Luer Adapter Female Luer x 1/4-28 Male Tefzel P-630, P-624 https://chromtech.com/p-624-luer-adapter-female-luer-x-14-28-male-tefzel</p>
	<p>Cole-Parmer</p>	<p>Upchurch Scientific® Tees, Multi-Port Connectors, IDEX Health & Science, Tee Assy, 10-32 C (F) for 1/16 in (1.6 mm) OD Tubing, Pressure Rating=20,000 psi (1,379 bar), Tubing O.D.=1.6 mm (1 / 16), Material=Stainless Steel, Hole Size=0.51 mm (0.020), Volume=0.57 µL U-428 https://www.coleparmer.com/i/idex-vhp-tee-assembly-ss-0-020-id-1-16-od-tubing-10-32-coned-1-ea/0193950</p>

	<p>Cole-Parmer</p>	<p>Idex High-Pressure Cross Assembly, PEEK, 0.020" ID, 1/16" OD Tubing, 10-32 Coned; 1/EA P-729 https://www.coleparmer.com/i/idex-high-pressure-cross-assembly-peek-0-020-id-1-16-od-tubing-10-32-coned-1-ea/0202457?pubid=EW</p>
	<p>Vici</p>	<p>https://www.vici.com/cval/c25z.php For ordering: No direct ordering link, request the quote first</p>
	<p>chemyx</p>	<p>https://chemyx.com/products/syringe-pump-usb-cable/</p>
	<p>Insight</p>	<p>https://www.insight.com/en_US/shop/product/USB2HABM10/STARTECH.COM/USB2HABM10/StarTech-com-10ft-USB-2-0-Cable---USB-A-to-Mini-B/?utm_medium=shopping&utm_source=adwords&utm_campaign=ecommerce_startech_google_shopping_ongoing&s_kwcid=AL!14256!3!669747591295!!!q!299255420568!&qclid=CjwKCAiApuCrBhAuEiwA8VJ6Jsd-y-iGzNmg4bmgahBxz-IQaBQ-iVa7CJJTqPRKifOppY8l8Xlw7MRoCPrsQAvD_BwE</p>

NOTE: The alternate to IDEX is [chromtech](#)

- **How to start thinking about converting all those old manual reactions into new automated ones**

Saliba, R. C.; Wooke, Z. J.; Nieves, G. A.; Chu A.-H. A.; Bennett, C. S.*; Pohl, N. L. B.* (*joint corresponding authors) Challenges in the conversation of manual processes to machine-assisted syntheses: Activation of thioglycosides donors with aryl(trifluoroethyl)iodonium triflimide. *Org. Lett.* **2018**, *20*, 800. DOI: [10.1021/acs.orglett.7b03940](https://doi.org/10.1021/acs.orglett.7b03940)

- **See how we use MechWolf for the first automated building block syntheses**

(We hosted a Tufts grad student in Bloomington to learn the ropes and that was the start of a great collaboration!): Yalamanchili, S.; Nguyen, T.V.; Zsikla, A.; Stamper, G.; DeYong, A. E.; Florek, J.; Vasquez, O.; Pohl, N. L. B.*; Bennett, C. S.* Automated, multistep continuous-flow synthesis of 2,6-dideoxy and 3-amino-2,3,6-trideoxy monosaccharide building blocks. *Angew. Chem. Int. Ed.* **2021**, *60*, 23171-23175. DOI: [10.1002/anie.202109887](https://doi.org/10.1002/anie.202109887)

- **A great background for how to start thinking about designing your own carbohydrate building blocks**

DeYong, A.; Rudich, Meredith L.; Pohl, Nicola L. B. Synthesis of Carbohydrate Building Blocks for Automated Oligosaccharide Synthesis. *Reference Module in Chemistry, Molecular Sciences and Chemical Engineering, Comprehensive Glycosciences*, 2nd edition, Elsevier, **2021**, ISBN-13: 9780128194571. DOI: [10.1016/B978-0-12-819475-1.00109-7](https://doi.org/10.1016/B978-0-12-819475-1.00109-7).