

4000 General Plumbing

Please visit our website at Sapidyne.com/installation-instructions to access the individual plumbing Installation Instructions when you are ready to install the new plumbing. **Note:** The number next to each connection refers to the **Proper Order of Installation**. The quantity of each connection is [1] per instrument. Each set of installation Instruction will have its own Tools List.

Please proceed in the following order to correctly route the tubing:

- 1) *Peristaltic Pump Connection, 4000* ([344419](#)) – ([11782](#))
- 2) *Pressure Transducer Connection, 4000* ([344410](#)) – ([11783](#))
- 3) *Buffer Waste, 4000* ([344426](#)) – ([11784](#))
- 4) *Sample Line Connection* ([344480](#)) – ([11785](#))
- 5) *Flow Cell* ([392160](#)) or *Siliconized Flow Cell* ([392170](#)) – ([11787](#))

Getting Started:

To prevent contamination from spreading from the old plumbing and parts clean the instrument with 5% Bleach Solution, *KinExA Cleaning Solution* ([2T7010](#)), and DIH₂O using the following instructions:

Note: Keep the Bleach Solution between 0.5% NaOCl (sodium hypochlorite). If using household Bleach (≈ 5% NaOCl) a 10 fold dilution is adequate. If using concentrated sodium hypochlorite solution (≈ 10-15% NaOCl) a 20-30 fold dilution respectively should be used.

- Perform a **Buffer Change**, follow the instructions and cleanse the plumbing with 5% Bleach Solution. Run [3] **Fast Rinses**.
- *Quad Stirrer Propellers*: Quickly dip each *Propeller* into 5% Bleach Solution and then immediately into DIH₂O and let them dry.
- Perform a **Buffer Change** to switch to *KinExA Cleaning Solution*. Run [3] **Fast Rinses**.
- Perform a **Buffer Change** to switch to DIH₂O. Run at least [5] **Fast Rinses**.
- Run [3] **Fast Rinses** to remove all liquid from the plumbing.
- Remove the *Wash Station* from the instrument by removing the plumbing connections and the screw holding the *Wash Station* in place with a *T10 Screwdriver* ([012010](#)).

Note: Be prepared with paper towels, liquid will spill from the Wash Station and lines.

- Remove the *Wash Station* and rinse several times with DIH₂O.
- Place the *Wash Station* back on the instrument

Put on *Gloves* and remove all of the existing plumbing connections. Clean the *Flow Cell Groove* and the *Reflector* using *Denatured Alcohol* and *Kimwipes*.

Note: Do not throw away the *Tubing Nuts* or *Backflush Filter* when replacing the plumbing as they are re-used.

Adding Dielectric Grease ([231362](#)):

In order to prevent bubbles, complete the following procedure on connections using the *1/16" Tan 10-32 Ferrules* ([347113](#)), *10-32 Tan Nuts* ([346201](#)), and *10-32 Extra Short Nuts* ([346205](#)).

Slide the *10-32 Tan Nut* or *10-32 Extra Short Nut* onto the tubing where indicated in **Figure 1A**. Apply a **very thin amount** of the *Dielectric Grease* onto your finger and then gingerly apply the *Grease* all of the way around the tubing. Gently slide the *1/16" Tan 10-32 Ferrule* over the *Grease* and then apply another very thin layer of *Grease* around the tip of the *Ferrule* in **Figure 1B**.

Note: Avoid getting *Dielectric Grease* onto the end of the *1/16" Tan 10-32 Ferrule* and or the tubing to prevent contamination.

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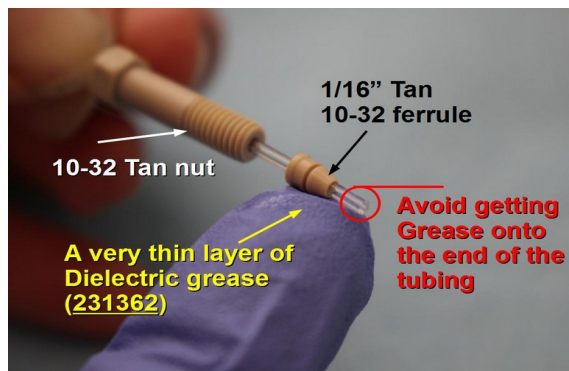


Figure 1A. Applying Dielectric Grease to the Tan Ferrule and tubing.



Figure 1B: Applying Dielectric Grease to the Tan Ferrule.

The Peristaltic Pump Connections: Installing the Filter, Frit, and Adapter:

Follow the instructions below to install a new **Filter (394053)** or to replace an old **Frit (394058)**

Parts and Tools Needed:

- [1] Backflush Connection (344419)
- [2] Filter (394053)
- [2] Frit (394058) (Located in the Plumbing Kit (830340))
- [3] 10-32 Female Luer Adapter (343437) (Located in the Plumbing Kit (830340))
- [1] Denatured Alcohol (2A5000)
- [As Needed] Kimwipes (A09005)
- [2] 11 mm Combination Wrenches (042110)
- [1] 5/16" Combination Wrench (041040)

- Loosen and open the Filter using [2] 11 mm Wrenches (Figure 2A). If the Filter is new, visually check that the Frit has been snugly placed into the **Male Casing** (Figure 2B).

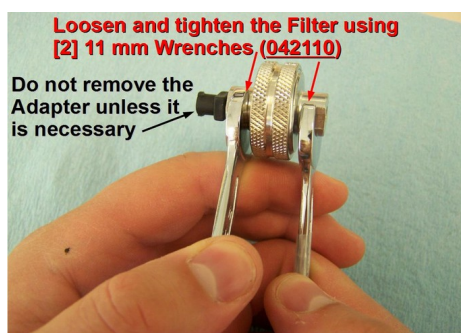


Figure 2A: Loosening and tightening the Filter Casing.

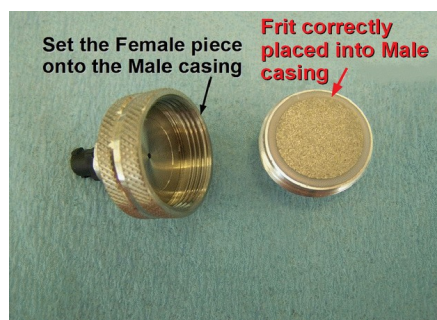


Figure 2B: Installing the Frit into the Filter Casing.

- If the Filter is used, remove and discard the Frit. If you are returning to Sapidyne Headquarters, return the Frits from both Filters. Thoroughly clean the Filter with Denatured Alcohol and Kimwipes and then carefully place a new Frit making certain to press it straight down into the Male Casing. **Note: Do not flip the Male Casing upside down or the Frit will become misaligned and leak.** Place the Female Casing over the Male and then screw the [2] pieces together. Use the [2] Wrenches to re-tighten the component.

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- Orient the *Filter* so that the *Female Casing* is on your left and then screw the first 1-2 threads of the *Female Luer to 10-32 Adapter* into the *Female* piece as shown in **Figure 3**. Neatly apply [1] pinhole size dot of *Sil-Poxy* onto the next 2-3 threads that are closest to the *Female casing* and then hand tighten the *Adapter*. Use the $5/16$ " *Combination Wrench* to tighten another $1/2$ turn to ensure the proper tightness.

Note that most fittings require only a $1/4$ turn after they have been finger tightened, so make certain that you do not over tighten. It is extremely easy to break the *Adapter* when tightening so be very careful.

- When placing the *Filters* on the instrument, orient the *Filter* in the *Filter Mounts* so that the threads are facing the right.

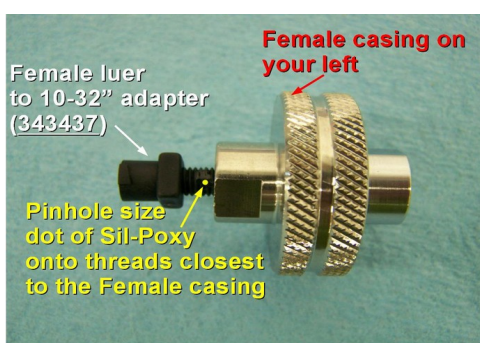


Figure 3: Installing the *Female Luer Adapter* into the *Female Casing*.

Ferrule Method:

- *Ferrules* are used to create a seal at the union of the *FEP Tubing* and the valve ports.
- There are two different types of *Ferrules* used on the KinExA, the $1/16$ " *White Flangeless Ferrule* (347016) and the $1/16$ " *Tan 10-32 Ferrule* (347113).

The $1/16$ " White Flangeless Ferrule:

- The *White Ferrule* slides onto the tubing with the tapered end toward the *Nut* and the flared end toward the valve port. When installing and tightening these fittings, be sure that the tubing is pushed all of the way into the valve ports (**Figure 4**).

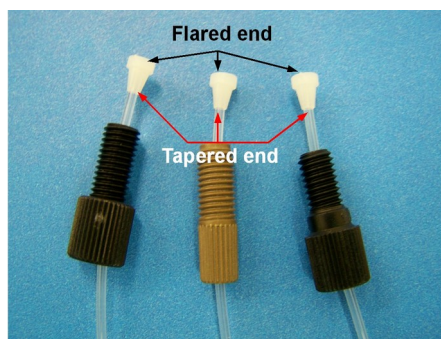


Figure 4: Orientation of the *White Ferrules*.

The $1/16$ " Tan 10-32 Ferrule:

- The *Tan Ferrule* slides onto the tubing with the tapered end toward the end of the tubing and the flat end toward the *Nut* (**Figure 5**).

Note: When installing and tightening these fittings, be sure to push the tubing all of the way into the valve ports.

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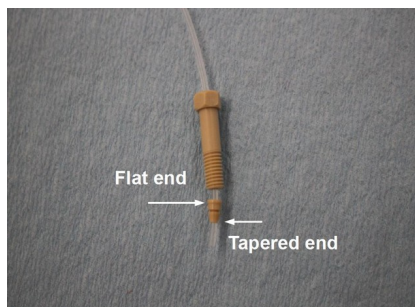


Figure 5: Orientation of the Tan Ferrule.

Plumbing Nuts:

Where they are used on the instrument:

- 1) The 10-32 Extra Short Nuts (346205) are used to connect the top of the Flow Cell to the Sample Line via a Union.
 - 2) The 10-32 Tan Nuts (346201) are used to connect the Backflush to the Solenoid Valve and the Sample Line to the Sipper Tip.
 - 3) The M6 Black Nuts (346101) are used to connect the Syringe Pump, the Pressure Transducer, and the bottom of the Flow Cell.
 - 4) The 1/4"-28 Headless Brown Nuts (346011) are used to connect to the Solenoid Valves.
- The 1/16" Tan 10-32 Ferrules (347113) are used with the 10-32 Tan Nuts and Extra Short Nuts.
 - The 1/16" White Flangeless Ferrules (347016) are used with the 1/4"-28 and the M6 Nuts.

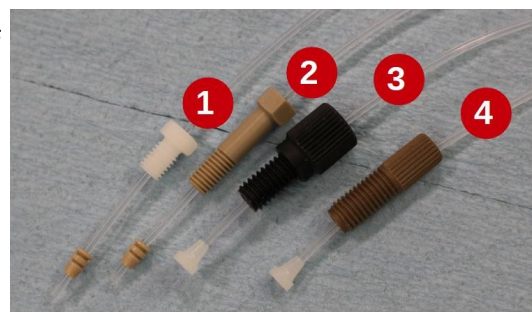


Figure 6: (1) 10-32 Extra Short Nut, (2) 1/16" Tan 10-32 Nut, (3) M6 Black Nut, & (4) 1/4"-28 Headless Brown Nut.