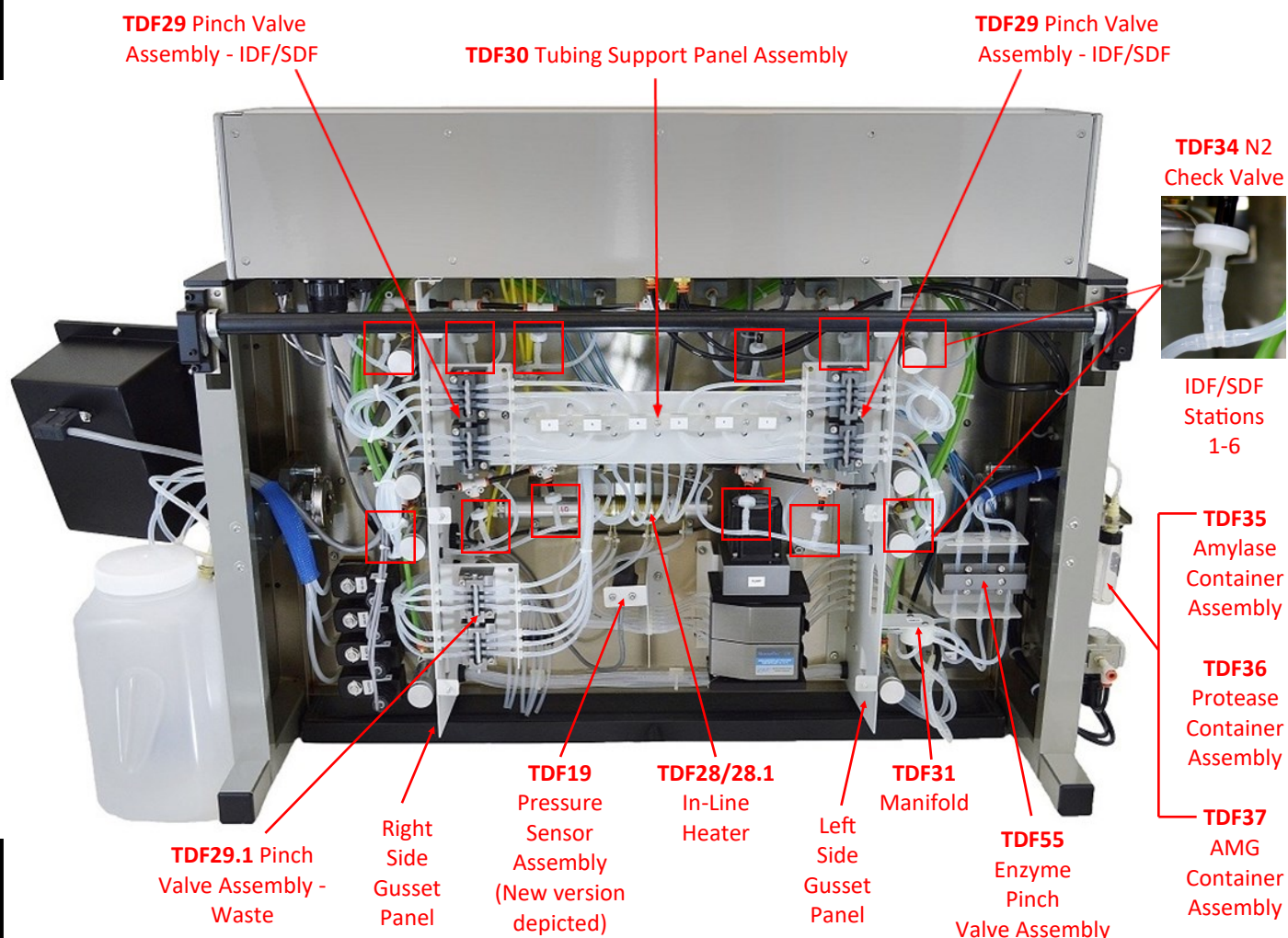


This procedure is to help facilitate the replacement of all the Delivery tubing on the back of the ANKOM^{TDF} Dietary Fiber Analyzer. A total of three kits TDF126, TDF71 & TDF30 will be required to replace all the delivery tubing. Follow the steps below to complete this process. (Refer to the Step Reference Table below to locate the appropriate step(s) for the tubes being replaced.)

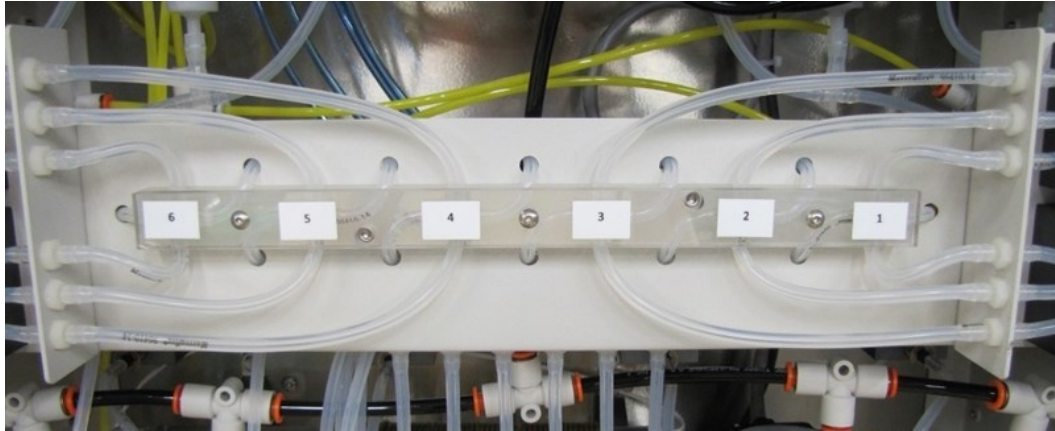
Step Reference Table

Part #	Step	Part #	Step
TDF19	Step 9	TDF31	Step 7
TDF28/28.1	Steps 1 & 4	TDF34	Step 2
TDF29	Step 3	TDF35-37	Step 8
TDF29.1	Step 5	TDF55	Step 6
TDF30	Steps 1 & 4		



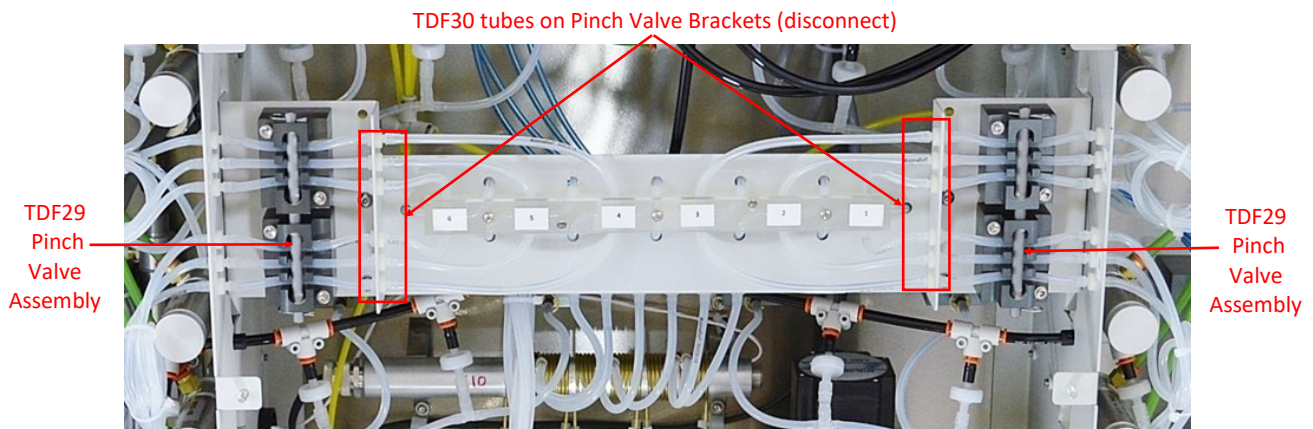
NOTE: When installing tubing, ensure the tubes are securely attached and covering the barbed fittings.

1. Remove the TDF30 Tubing Support Panel Assembly. The new TDF30 Support Panel will be installed later.

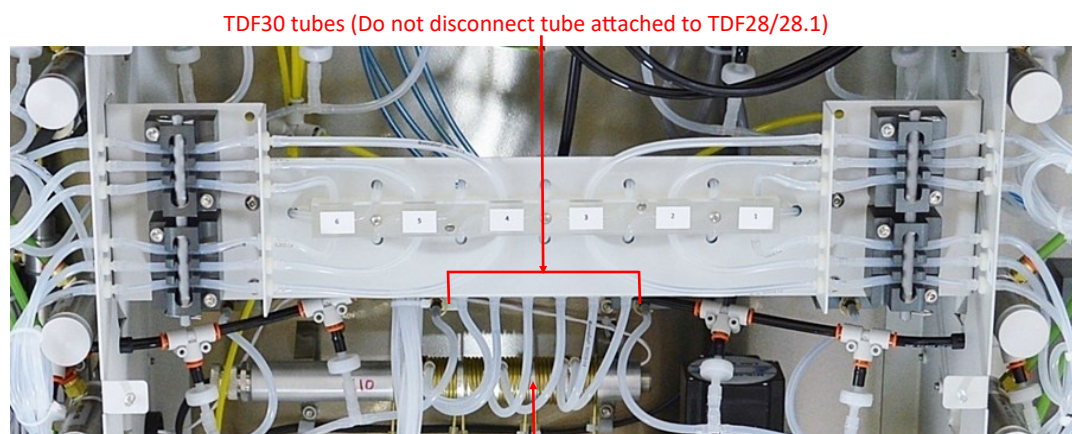


TDF30 Tubing Support Panel Assembly

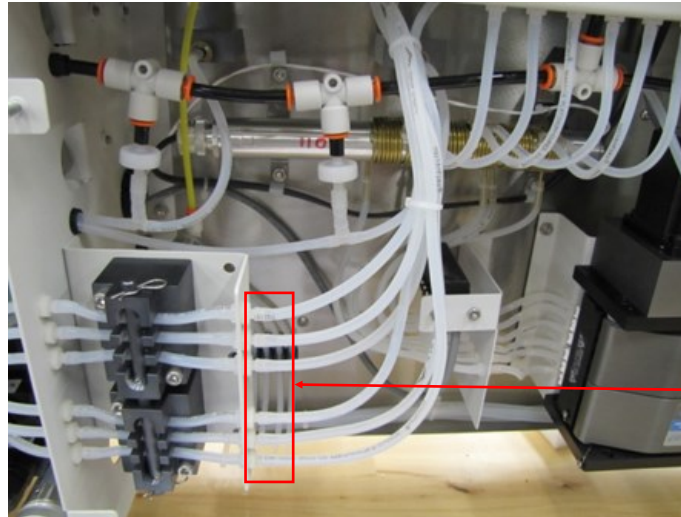
A. Disconnect the twelve tubes on the TDF30 connecting to the barbed fittings on the Pinch Valve Brackets.



B. Disconnect the six 6" tubes from the bottom of TDF30 tubes. Do NOT disconnect the tubes that are attached to the TDF28/28.1 On-Line Heater.



- C. At the right-side Pinch Valve Bracket, disconnect the six 16" bottom tubes which connect from the TDF30 to the TDF29.1 Waste Pinch Valve Assembly.



TDF30 tubes on
Pinch Valve
Bracket
(disconnect)

TDF29.1 Pinch Valve Assembly – Waste

- D. Unscrew the four screws holding the TDF30 in place on the Pinch Valve Bracket.
Note: One of the four screws has a nut on the back side. The screw closest to the IDF #6 position on the Support Panel has the nut.

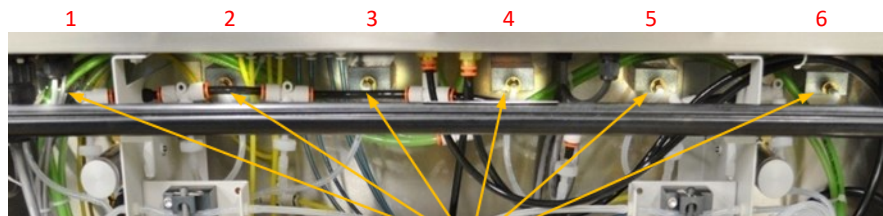


- E. Remove the old Tubing Support Panel Assembly.

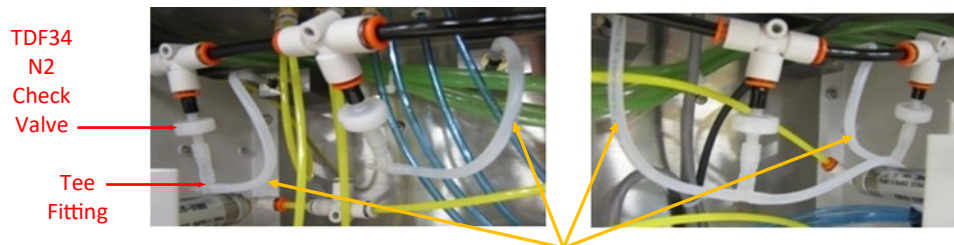
2. Remove and replace the tubes from the TDF34 N2 Check Valves to the IDF/SDF Fill Nozzles. Refer to the chart below for a list of tube lengths you will need for this step.

TDF34		
Length (Inches)	Length (Centimeters)	QTY
6	15.2	12

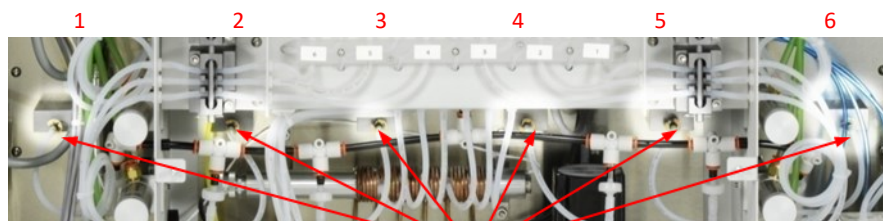
- Remove the twelve 6" silicone tubes from the back of each stainless-steel fill nozzle tube and disconnect the opposite end from the N2 Check Valve.
- Replace the six tubes on the upper Fill Nozzles (IDF), indicated by orange arrows, connecting them to the Tee Fittings off the bottom of the N2 Check Valve.
- Replace the six tubes on the lower Fill Nozzles (SDF), indicated by red arrows, connecting them to the lower Tee Fittings.



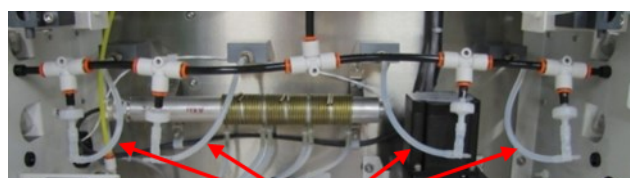
Tubing from N2 Check Valves to the Fill Nozzles (Upper Stations 1-6)



N2 Check Valves to the Tee Fittings (Upper)



Tubing from N2 Check Valves to the Fill Nozzles (Lower Stations 1-6)



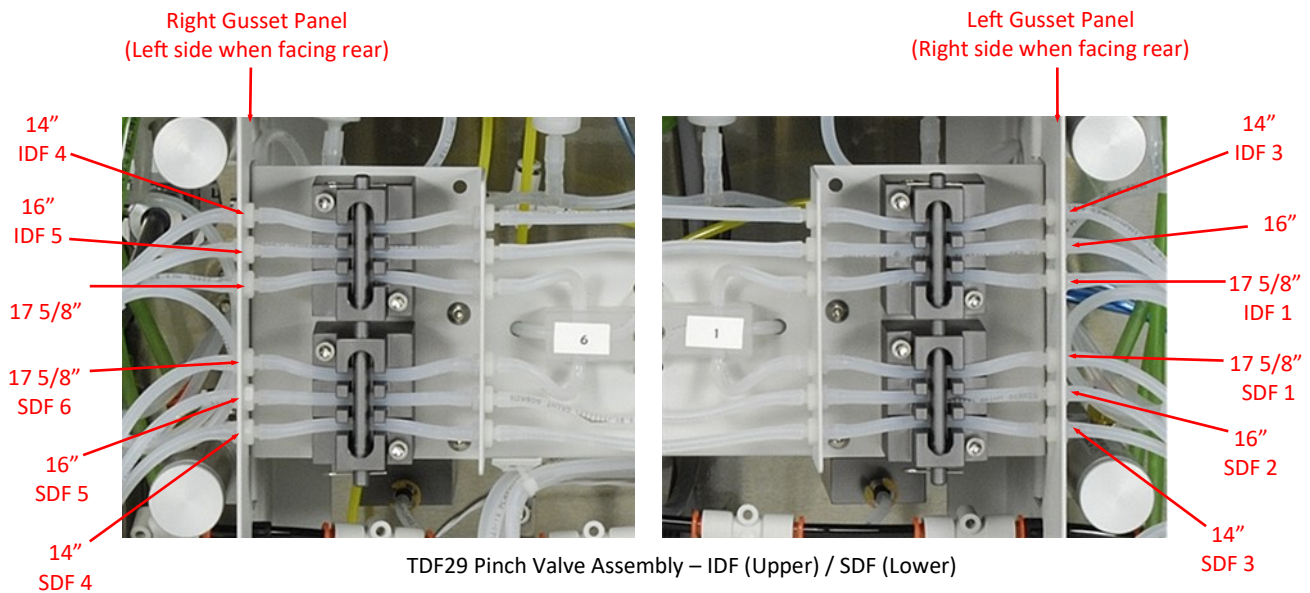
N2 Check Valves to the Tee Fittings (Lower)

3. Remove and replace the tubes from the TDF29 Pinch Valve Assembly. Refer to the chart below for a list of tube lengths you will need for this step. *(The 3-1/4 tubes are part of the TDF71 package.)*

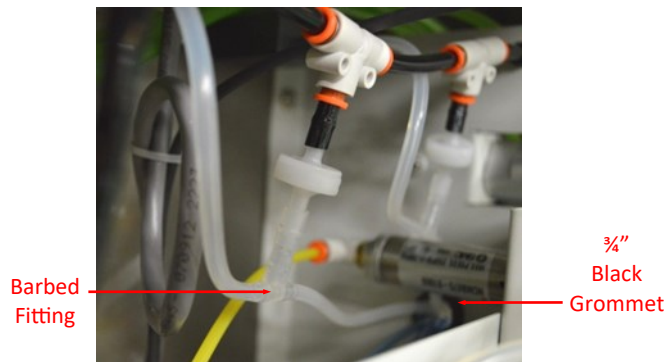
TDF29		
Length (Inches)	Length (Centimeters)	QTY
3-1/4	8.3	12
14	35.6	4
17-5/8	44.8	4
16	40.6	4

- a. Attach the following tube lengths to their correct locations on the TDF29 Pinch Valve Assemblies (see image below.) - IDF/SDF: Four pieces of 14" tube lengths; four pieces of 16" tube lengths; four pieces of 17-5/8" tube lengths; and twelve pieces of 3-1/4" tube lengths.

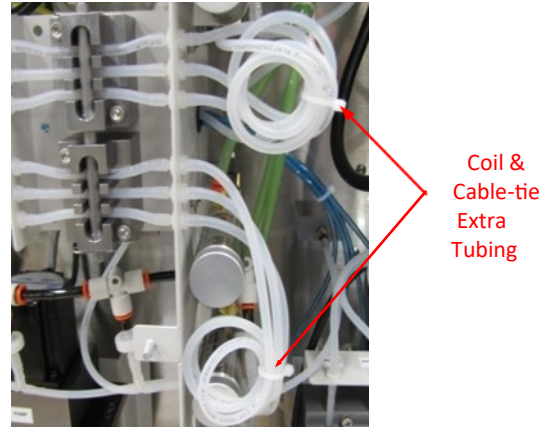
NOTE: The overall tubing length from the pump to the Fill Nozzle needs to be the same length at each station because the fluids are pumped volumetrically. The varying lengths that you see in this step at each station are made up for in the TDF30 Tubing Support Panel (addressed in step #1).



- b. Feed the appropriate tube lengths through the grommets in the side gusset panels. All the tubing that goes to stations 2, 3, 4, & 5 needs to feed through the 3/4" black grommet on one of the side gusset panels (image shown below).
- c. Be sure tubing is coiled and cable-tied before connecting the opposite ends in order to keep the tubing organized. Ensure each IDF/SDF tube connects to the remaining barb on the Tee Fitting underneath the appropriate N2 Check Valve. (Example: IDF station #3 connects to the upper N2 Check Valve at position 3.)

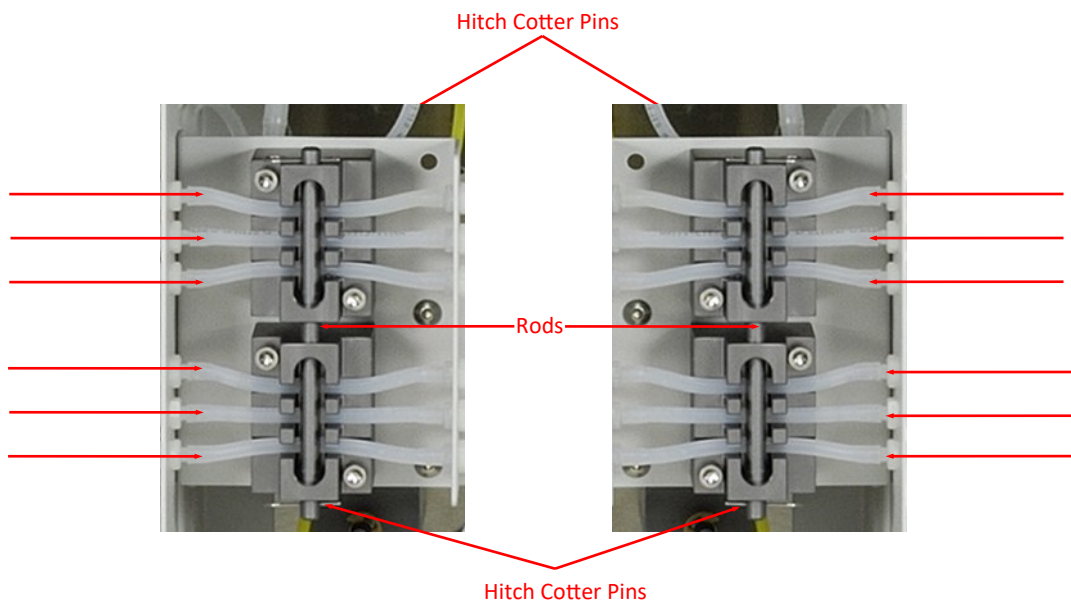


Example: IDF station #3



TDF29 Pinch Valve Assembly – IDF (Upper) / SDF (Lower)

- d. Replace the twelve 3-1/4" tubes on the TDF29 Pinch Valve Assemblies—IDF/SDF by removing the hitch cotter pins and rods.



TDF29 Pinch Valve Assembly – IDF/SDF

- e. Reinstall the rods and secure the hitch cotter pins.

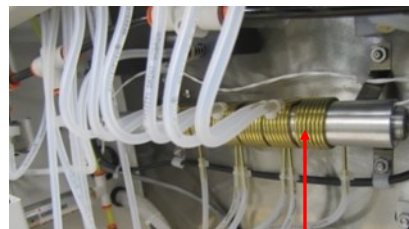
4. Reinstall the TDF30 Tubing Supply Panel Assembly.

- Secure the four screws to reattach the TDF30. *Note: One of the four screws has a nut on the back side.*
- Attach the new tubes (IDF and SDF) to the appropriately matched barb connecting the TDF29 Pinch Valve Assemblies on either side of the TDF30. (As shown below).



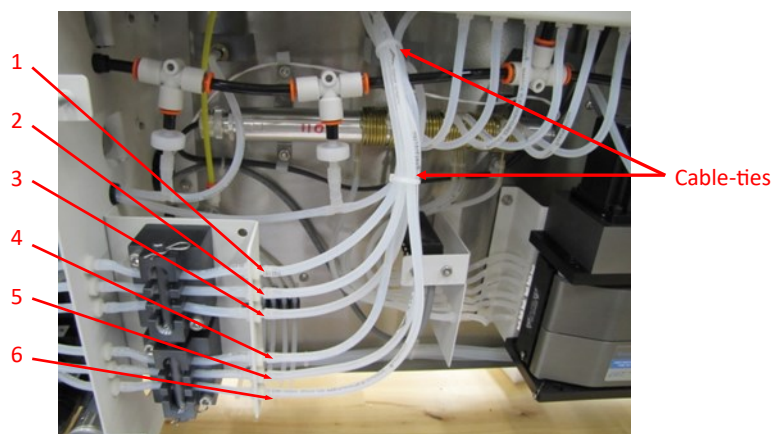
Example: Stations 1 & 6 are reconnected to their appropriate barbed fittings.

- Attach the six 6" tubes from the top of the TDF28/28.1 In-Line Heater to the bottom barbs of the TDF30 Tubing Support Panel.



TDF28/28.1 In-Line Heater

- Attach 16" tubes to the TDF29.1 Waste Pinch Valve matching the station on TDF30 to the correct barb as shown below. Cable-tie the six 16" tubes together, being careful not to over tighten the cable-ties and restrict the flow of fluid in the tubes.

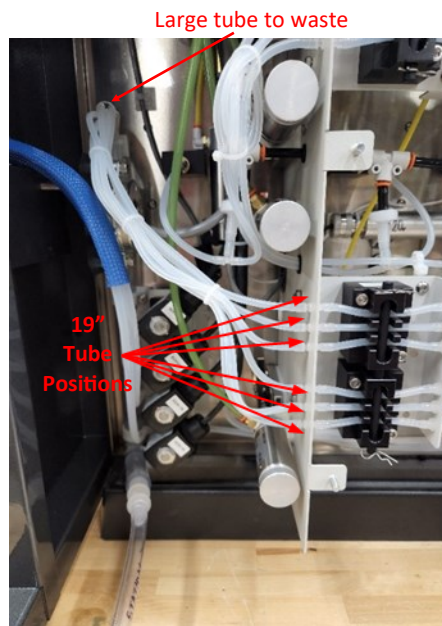


TDF29.1 Pinch Valve Assembly – Waste (Lower 16" tube connection)

5. Remove and replace the tubing on the TDF29.1 Pinch Valve Assembly-Waste. Refer to the chart below for a list of the tube lengths needed for this step. *(The 3-1/4 tubes are part of the TDF71 package.)*

TDF29.1		
Length (Inches)	Length (Centimeters)	QTY
3-1/4	8.3	6
19	48.3	6

- Replace the six pieces of 19" tubing on the left side of the TDF29.1 Waste Pinch Valve and feed the end of the bundle of tubes into the large hose going to waste as shown in the picture below.
- Bundle the 19" tubing and secure it with a cable-tie. Trim the excess from the cable tie. Remove the bundle of tubes and trim the longer tubes so that they are equal in length to the shortest tube. Reinsert the bundle into the large tube. The bundle should extend approximately 2" into the large tube.



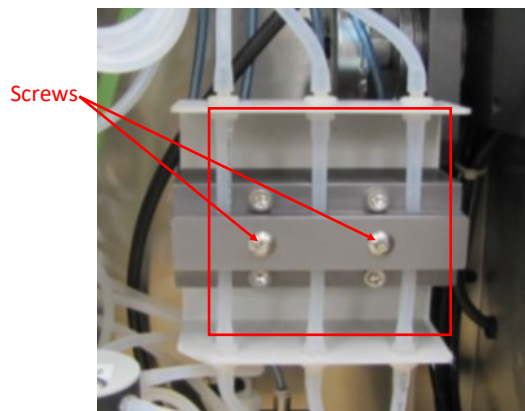
TDF29.1 Pinch Valve Assembly – Waste

- Remove the hitch cotter pins and rods from the TDF29.1 and replace the six 3-1/4" tubes in the Waste Pinch Valve.

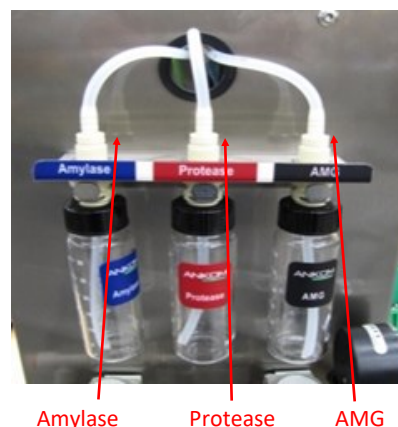
6. Remove and replace the tubing on the TDF55 Enzyme Pinch Valve Assembly. Refer to the chart below for a list of the tube lengths you will need for this step. *(The 3-1/4 tubes are part of the TDF71 package.)*

TDF55		
Length (Inches)	Length (Centimeters)	QTY
3-1/4	8.3	3
11	27.9	3
6	15.2	3

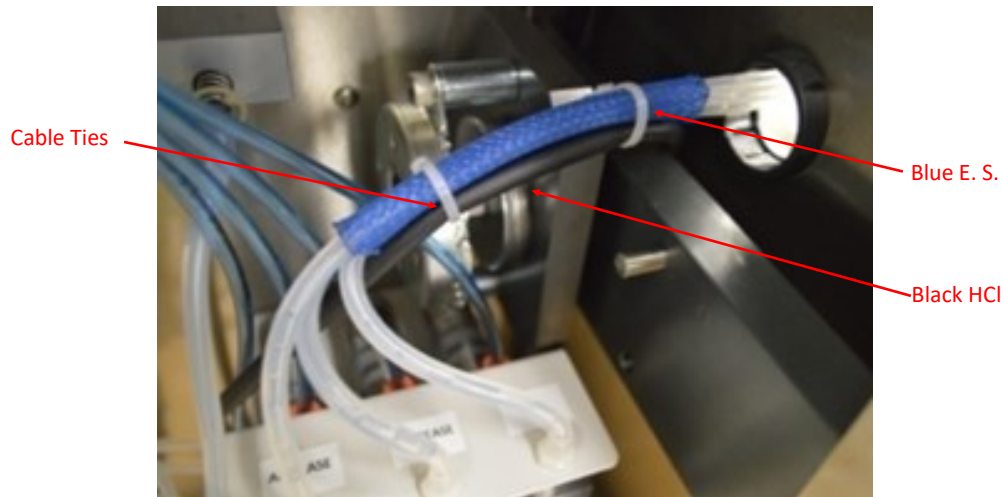
- a. Unscrew the two screws on the TDF55 Enzyme Pinch Valve Assembly to remove the bar.



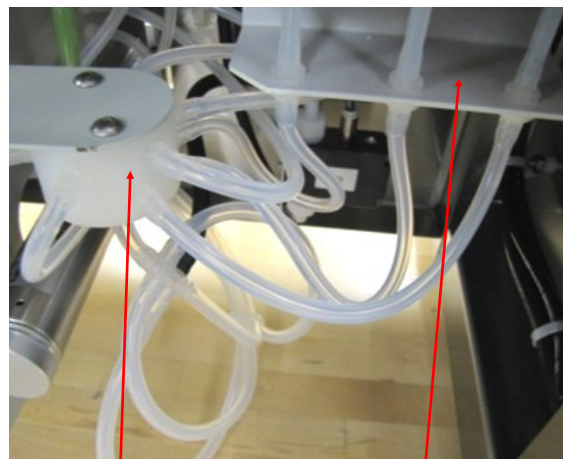
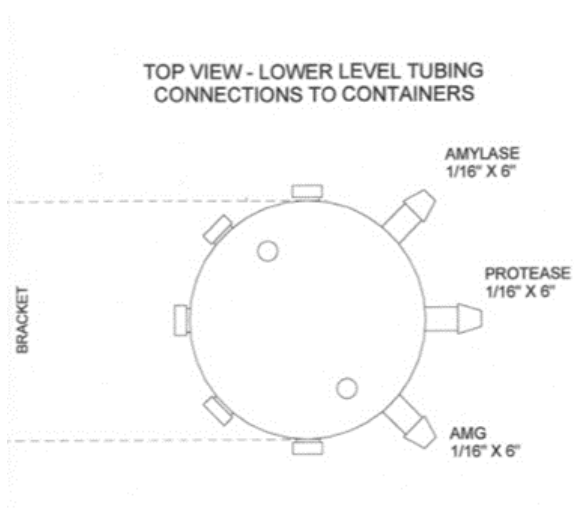
- b. Attach the three pieces of the 3-1/4" tubing to the inside of the TDF55 Enzyme Pinch Valve Assembly.
- c. Reinstall and secure the bar using the two screws to secure it to the Enzyme Pinch Valve.
- d. Replace the 11" lengths connecting the TDF55 Enzyme Pinch Valve Assembly to the correct Enzyme Container Assemblies (TDF35-37). Slide each tube, one at a time, through the blue Expandable Sleeve (E.S.) connecting them to the appropriate enzyme bulkhead fitting barb.



- e. Secure cable ties around the blue E. S. and the black HCl tube. Trim the excess from the cable ties.



- f. Replace the three 6" tubes on the bottom of the TDF55 that connect to the Lower level of the TDF31 Manifold.



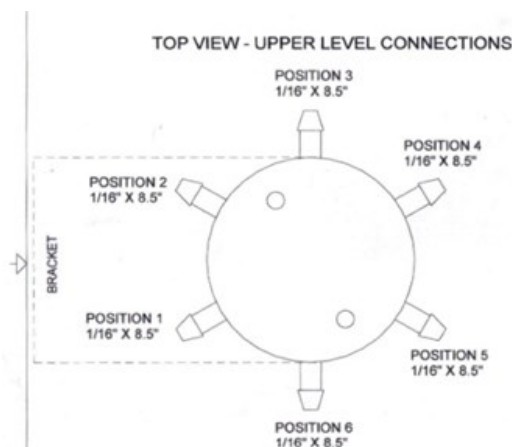
TDF31 Manifold

TDF55 Enzyme Pinch Valve

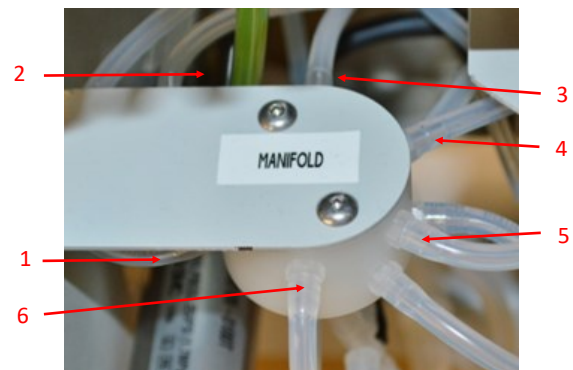
7. Remove and replace the tubes from the TDF31 Manifold connecting to the left side gusset panel. Refer to the chart below for a list of the tube lengths you will for this step.

TDF31		
Length (Inches)	Length (Centimeters)	QTY
8-1/2	21.6	6

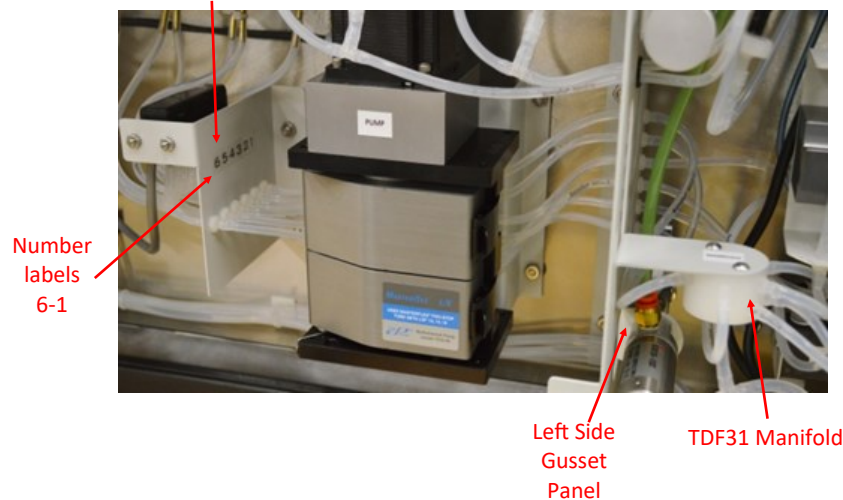
- a. Replace the six 8-1/2" tube lengths connecting the tubes from the Upper level of the TDF31 Manifold to the barbs in the Left Side Gusset Panel (right side panel when facing the rear of the instrument). Each tube position should connect to the appropriate gusset panel barb and follow that tube line number to its matching number label (6-1) on the TDF19.

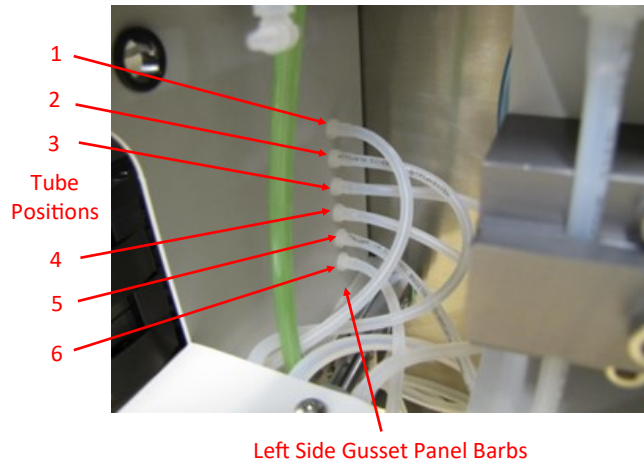


Tube Positions
(Manifold)



TDF19 Pressure Sensor Assembly

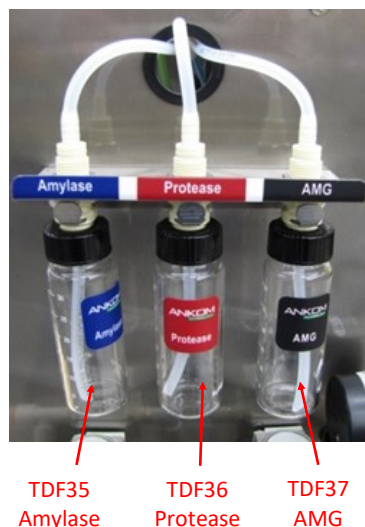




8. Remove and replace the tubes from inside TDF35, 36, & 37. Refer to the chart below for a list of the tube lengths you will need for this step.

TDF35			TDF36			TDF37		
Length (Inches)	Length (Centimeters)	QTY	Length (Inches)	Length (Centimeters)	QTY	Length (Inches)	Length (Centimeters)	QTY
3-3/8	8.6	1	3-3/8	8.6	1	3-3/8	8.6	1

- Disconnect the three vials and discard the tubing from inside the vials.
- Replace the three 3-3/8" tubes on the inside of the TDF35-37 Enzyme Container Assemblies. Trim the bottom edge to a 45° angle so that they do not suction to the bottom of the container during fluid delivery.



9. Replace the small (1-1/4") tubes on the lower portion of the TDF19 Pressure Sensor Assembly. Refer to the chart below for a list of the tube lengths you will need for this step.

TDF19		
Length (Inches)	Length (Centimeters)	QTY
1-1/4	3.2	6

- Replace the six 1-1/4" tube lengths on the right side of the TDF19.
- Reconnect the six 1-1/4" tubes to their appropriately matched barbs.

