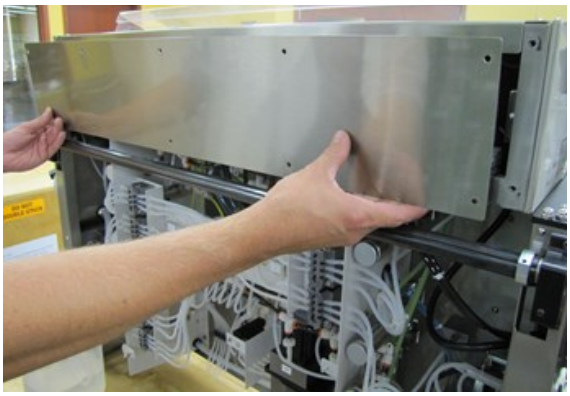
Power Supply B Replacement
TDF110

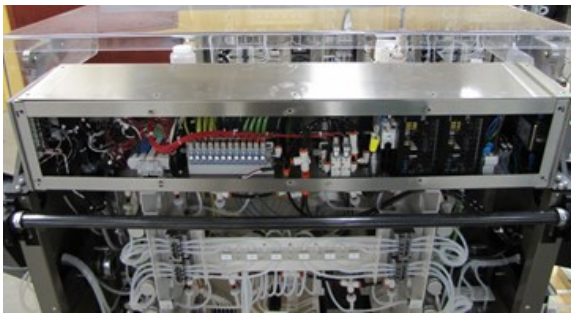
Service Procedure TS032
Rev. 10-11-2022 RJC

Before replacing the Power Supply, ensure that the TDF Instrument is turned OFF.

1. **Turn off the instrument and unplug the power cord.** Unscrew the 10 screws on the back panel of the electrical enclosure and remove. Set aside the panel and screws for reattachment later.

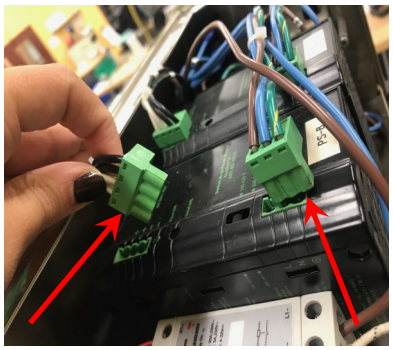


2. Unscrew the 7 screws on the top panel to the electrical enclosure and remove. Set screws and panel aside for reattachment later.



3. There are three possible versions of Power Supply B (PS-B). Each has different wiring connections. With the panels removed, disconnect the seven wires (or two plugs) connected to PS-B. The Murr Version has two green plugs, the Meanwell version has screw connections on the front and the rear of the power supply and the Omron version has all the wire connections on the front of the power supply.

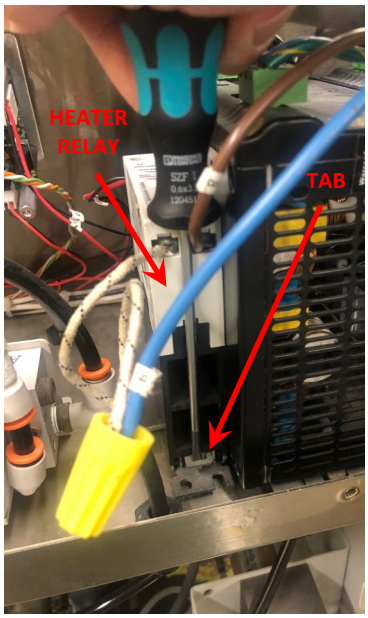
Murr

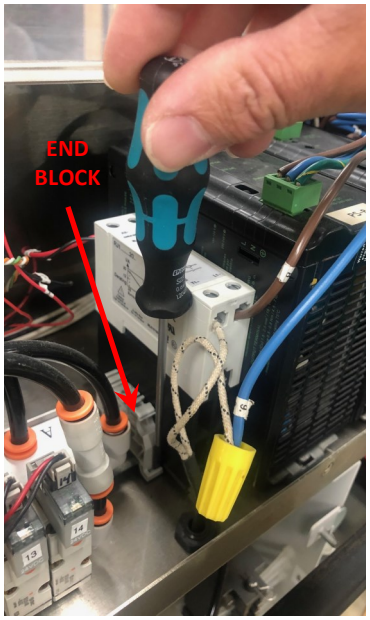


MeanWell

Omron

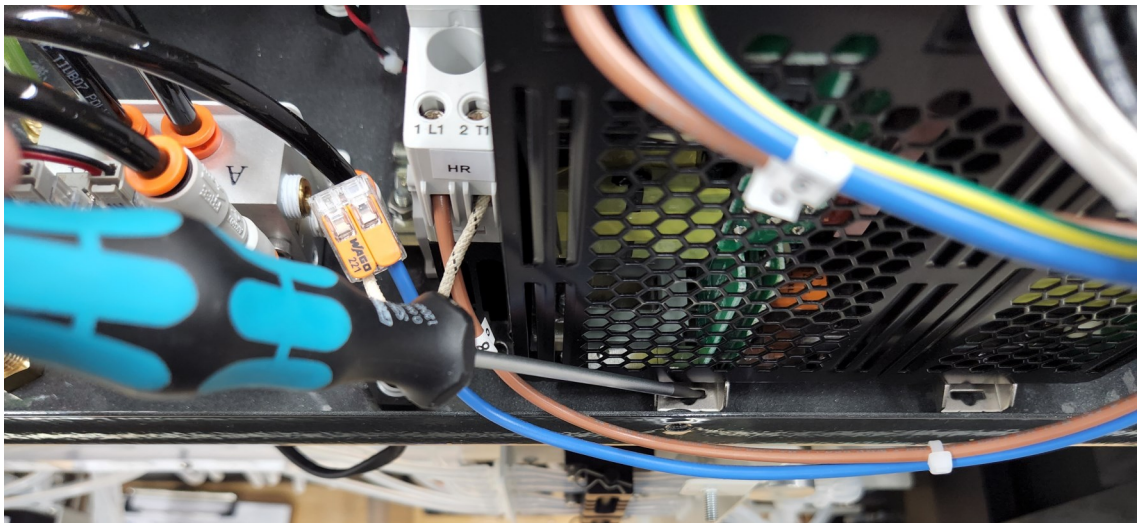
4. Loosen the Heater Relay. Using a small screwdriver pull back on the tab to free it from the DIN rail beneath it.
5. Remove the end block and slide these two parts over to make room for the larger power supply. NOTE: It may be necessary to slide components over on the opposite side of the DIN rail as well, to create adequate space.



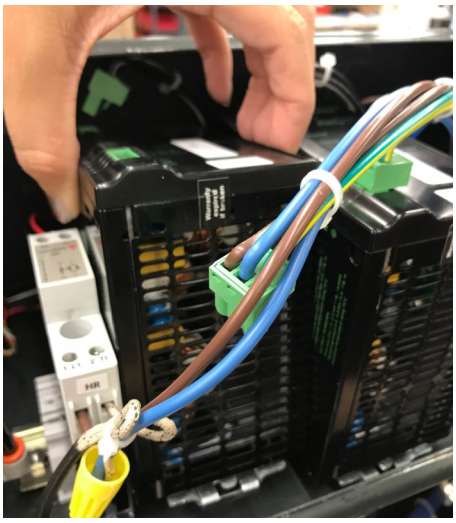


Note: The latest manufacturing configuration has replaced the yellow wire nut with a Wire Splicer.

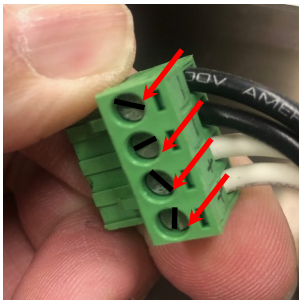
6. Again, using a small screwdriver, pull the tab back at the bottom of old power supply B to release it from the DIN rail below it.

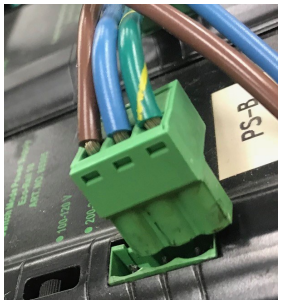


7. Slide out the old power supply B. Then insert the new power supply and snap it into place on the DIN rail. ***Note**: it may be necessary to shift components on the DIN rail to make room for the new power supply.*
8. Snap both the end block and Heater Relay back into their new positions.



9. If the old PS-B had the green plugs (Murr) remove the plugs from the wires. With a small flat-head screwdriver, loosen the seven wires from the screw terminals in each of the green connectors. Discard the old green plugs.





10. Verify safety wiring. If your white wires connected to PS-B look like Image A or if your DIN rail has fuses like Image B move to step 27 in these instructions. If your instrument doesn't match one of the images below, proceed to step 11.

Image A

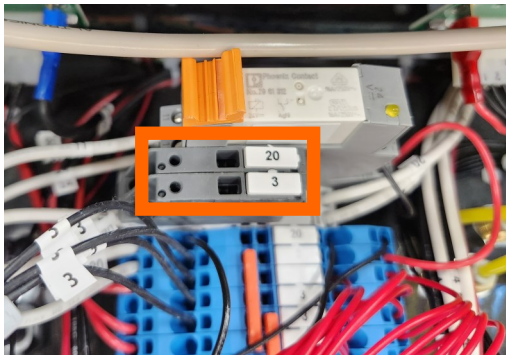
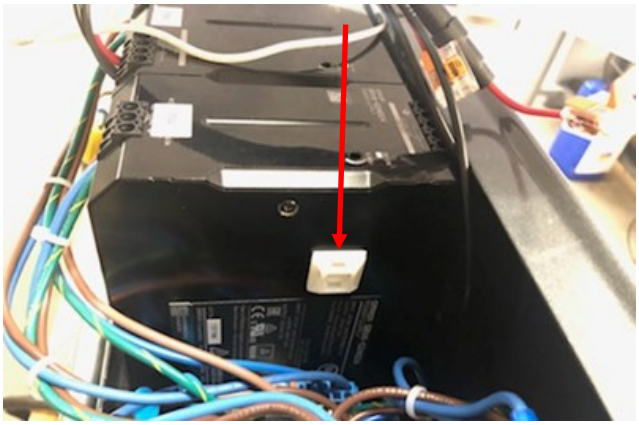


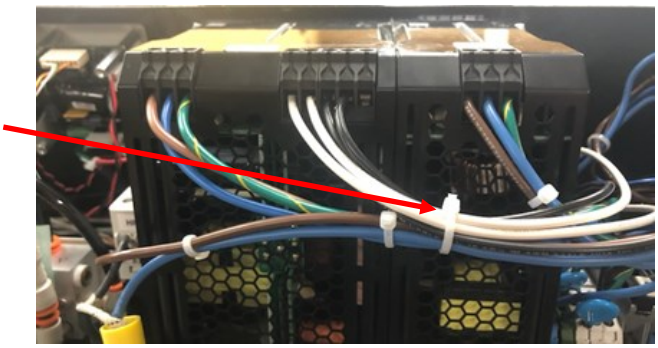
Image B

11. Adhere the white zip tie fastener to the right side of Power Supply **A** at approximately 1 ½ inches from the back of the power supply and 1 inch from the top. This will be used later in the procedure.

Note: This location does not have to be precise.

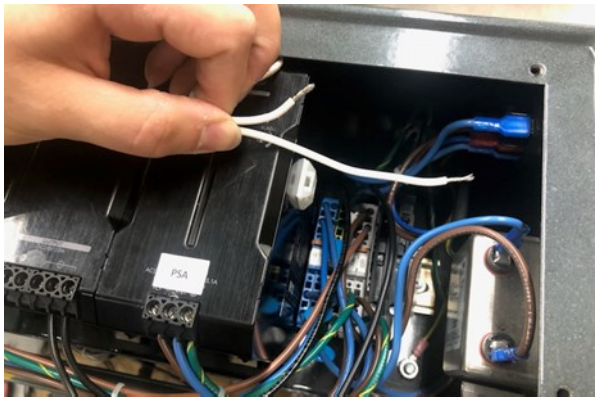


12. Cut the main zip tie holding the wires going to PS-B.



13. Cut approximately 6 inches off one of the white wires. It does not matter which one. On the second white wire, cut off approximately 10 inches.

14. Strip the insulation (approximately 11mm or ½") of both white wires to expose the metal conductor.

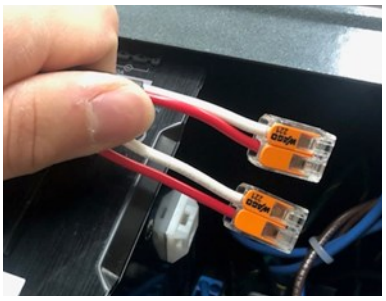


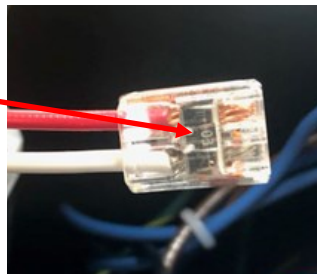
15. The enclosed in-line fuse kit package contains two red wires with fuses. Each black plastic cylinder contains (1) Fast Acting 10 Amp Fuse. On each red wire open the orange tab on the wire connector that does not contain the red wire.

16. Insert one of the white wires into the empty slot on the wire connector and close the orange tab. Pull on the wires to ensure they are secure.

17. Repeat for the second white wire and second wire connecter.

***Note**: Ensure both wires are pushed all the way into the empty slot and making contact with the metal bar on the back side of the wire connector.*





18. Install the other end of the two red wires with in-line fuses into (+) terminals on the new Power Supply B. Ensure that they are screwed in tightly. ***NOTE**: Either wire can go into either location.*

19. Connect the two black wires into the (–) terminals (as shown), secure the wires using a flat-head screwdriver. Be sure that all wire strands are captured in the screw terminal. Give the wires a tug to be sure it is secure.

20. On the opposite side of the power supply, using a small flat-head screwdriver connect the green/yellow wire to the ground terminal (⏚). Connect the Blue to the (**N**) position and the Brown wire to the (**L**) position. Be sure that all wire strands are captured in the screw terminal. Tug on each wire to ensure a good connection.

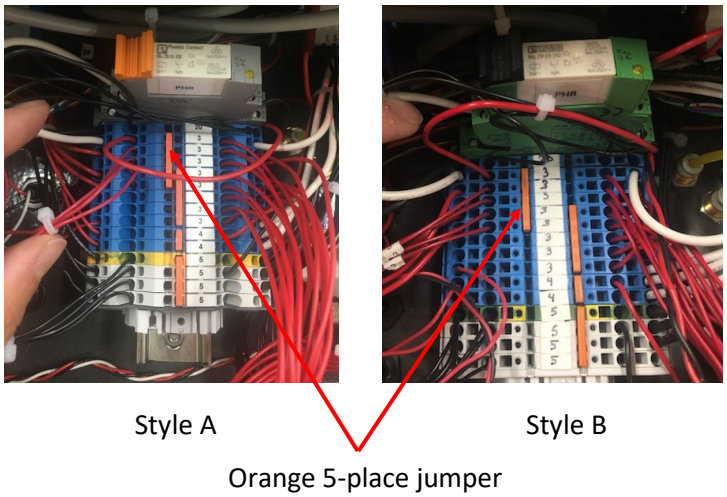
21. Wrap the new wires and existing black wires with the black wire sleeve that is provided. Make sure that the wires are completely encased.

22. Place a zip tie through the white zip tie fastener on the side of Power Supply A and loosely tighten around the wires being held by the black wire sleeve. Cut off zip tie excess.

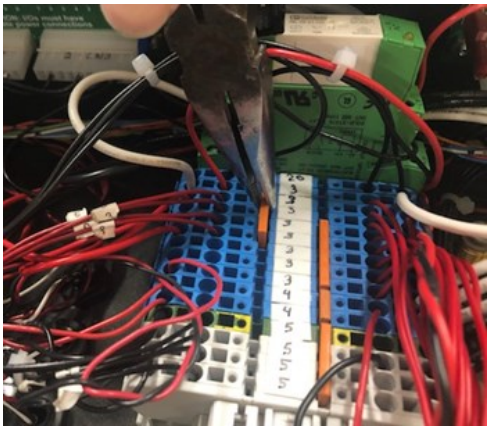
23. Locate the DIN rail with terminals on the left side (from the back) of the electrical cabinet.

    ***NOTE**: There are two styles of DIN rails in production, but the procedure for both is the same.*

24. Locate the orange, 5-place jumper on the terminals labeled "3" located closest to the relay.

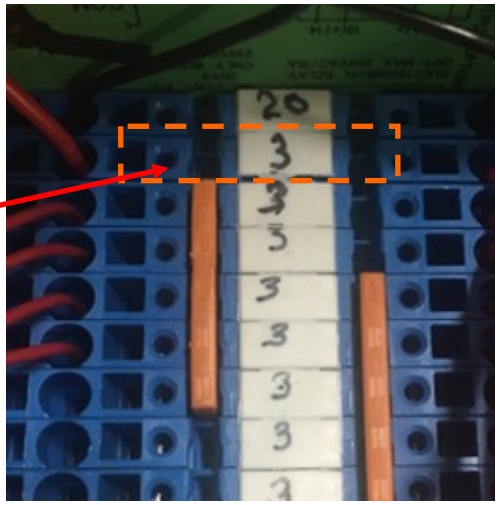


25. For either style of DIN rail, remove the orange 5-place jumper with needle nose pliers.



26. Reinstall the orange fuse jumper one terminal below its previous position. Make sure it is snapped in completely.

    Note: *This is where the orange 5-place jumper used to be, it is now moved down.*



Note: ***If the wires are already connected to PS-B, proceed to step 30.***

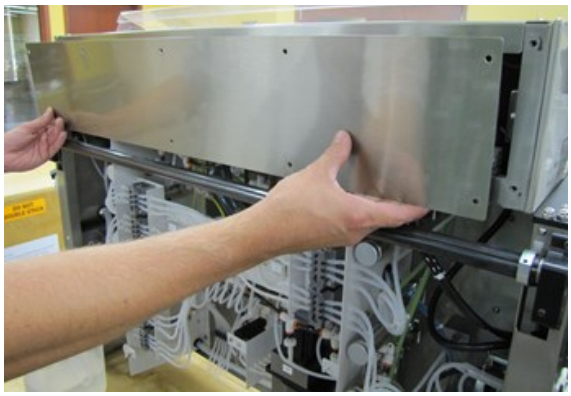
27. Install the two red/white wires into Power Supply B. Ensure that they are screwed in tightly. ***NOTE****: Either wire can go into either location.*

28. Connect the two black wires into the – screw terminals (as shown), secure the wires using a flat-head screwdriver. Be sure that all wire strands are captured in the screw terminal.

29. On the opposite side of the power supply, connect the green/yellow wire to the ground terminal (⏚). Connect the Blue to the (**N**) position and the Brown wire to the (**L**) position. Be sure that all wire strands are captured in the screw terminal. Tug on each wire to ensure a good connection.

30. Replace the top panel to the electrical enclosure. Secure loosely with the 7 screws removed earlier.

31. Replace the back panel to the electrical enclosure. Secure with the 10 screws removed earlier. Once the back panel is in place, the screws to the top panel can be tightened.



HEATING TEST

to confirm effectiveness and proper installation of new Power Supply B

32. Be sure volume calibration has been done prior to this test. Refer to the Operator's Manual for complete details. This is important because an incorrect volume in the bags will make this timed heat-up test inaccurate.
33. Fill the Distilled Water container and plug in the TDF70 Flush Tubing Assembly to each supply connector with the middle connector connected to the water container.
34. From the "Diagnostics" screen select "Motor Test". Press "Set Valves" and open the Water Supply and the IDF Inlet ONLY. Close all others. Use ← to return to the Motor Test screen. Leave the volume at 10mls and press "GO". This will purge the air from the lines to the IDF nozzles. Remove the containers.
35. Obtain 6 Flow-Thru bags and **heat seal the bottom edge**.
36. Place the 6 Flow-Thru bags in the IDF positions on the TDF instrument.
37. From the "Select a Function" screen, select the 991.43 IDF/SDF run. Follow the prompts to start the run and select "NO" to the question "Check pH Manually".
38. Press "START".
39. Once it is done initializing the lines, you can select "Check Temperatures/Pressures" then choose "Temperatures". Close the front cover during the heating test.
40. When the mixing pads start mixing, start the timer and take a picture of the temperatures. Record the first readings from each station as T_o in the chart below. Record the temperatures every 2.5 minutes until the last station has reached 95°C. Stop the timer when the last station reaches 95°C, record temperatures and replace the next time interval with the reading on the timer. The paddles must reach 90°C in 25 minutes to avoid an E5 Paddle Heater Undertemp fault. This is usually accomplished in 15 - 20 minutes.
41. Return to the main run screen and abort the run. After some cooling, remove the bags and return the instrument to service.

Paddle Heater Timed Heat-up Test

	Paddle #	Paddle #	Paddle #	Paddle #	Paddle #	Paddle #
Time	**1**	**2**	**3**	**4**	**5**	**6**
T_0						
$T_{2.5}$						
T_5						
$T_{7.5}$						
T_{10}						
$T_{12.5}$						
T_{15}						
$T_{17.5}$						
T_{20}						
$T_{22.5}$						
T_{25}						

Time to 90°C:_____
(≤22 minutes)

Time to 95°C:_____
(≤ 27 minutes)

Contact ANKOM Technology if after the replacement of Power Supply B the bags fail to meet these requirements.