This procedure is to help facilitate the replacement of the TDF23 Paddle Bar Assembly on the ANKOM^{TDF} Dietary Fiber Analyzer.

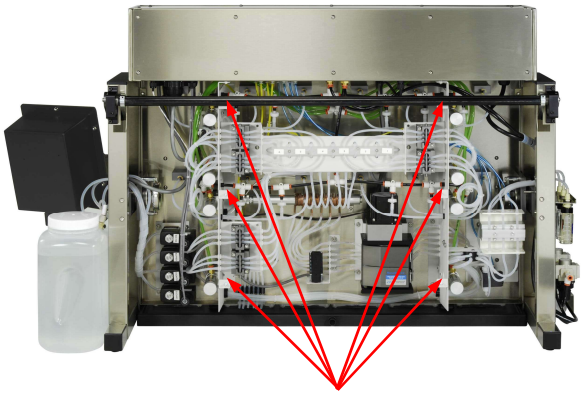
Note: The following items will be sent in a replacement package as part of the TDF23 Paddle Bar Replacement Kit.

- New Paddle Bar Assembly
- Loctite
- 1 Shoulder Screw
- 4 Shims (0.015)
- 2 Screws #8269
- Depth gauge
- 5/32” Hex key wrench
- 3/32” Hex key wrench
- 1/8” Hex key wrench

1. Prepare the instrument for service.

a. Power off the instrument.

b. Remove the clear back panel of the TDF instrument by removing the six acorn nuts using a 3/8” nut driver (provided with the original instrument purchase).



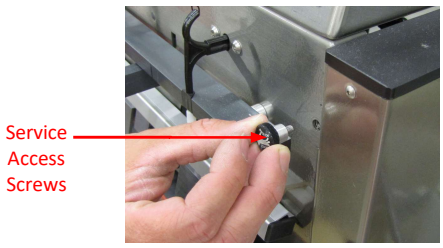
2. Tilt the instrument forward (if necessary) for easy access to the back of the TDF.

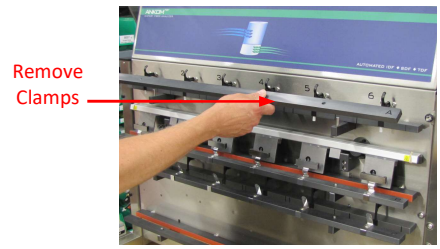
a. Unscrew the two black *Service Access* screws on the upper right and left sides of the instrument (near the ends of Clamp Bar A).

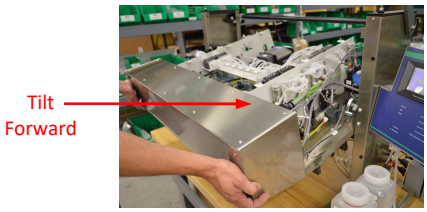
b. Remove the four front clamp bars and set them aside.

c. Clear the area in front and immediately behind the instrument of any items that might be in the way.

d. Tilt the instrument forward, careful to guide it down slowly to ensure no tubing gets caught or pinched in the machine.

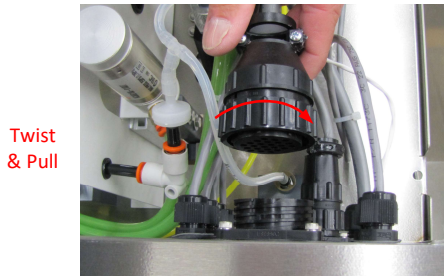






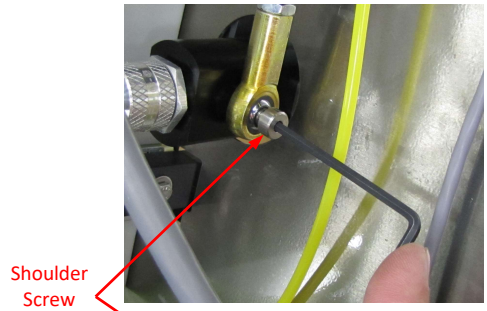
3. Unplug the black 25 pin Cable Connector plug.

Twist counter-clockwise from the underside of the Electrical Enclosure (right side from the front) and pull to release the plug.



4. Unscrew the Shoulder Screw that connects the cable block to the mixer piston.

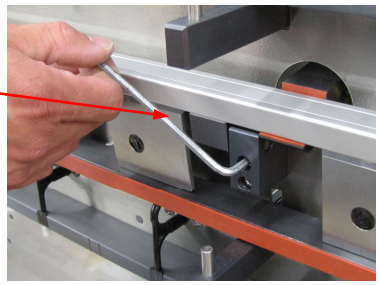
Using the 1/8" Hex key wrench, unscrew the Shoulder Screw on the Paddle Bar Assembly sticking through the hole in the front of the instrument, connecting to the brass rod end of the Mixer Piston. Set the Shoulder Screw aside for later use.

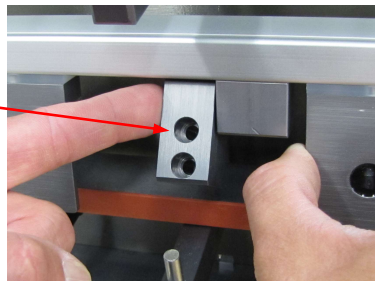


5. Unscrew the 4 screws holding the Paddle Bar Assembly onto the front of the instrument.

a. Lift the instrument to its upright position.

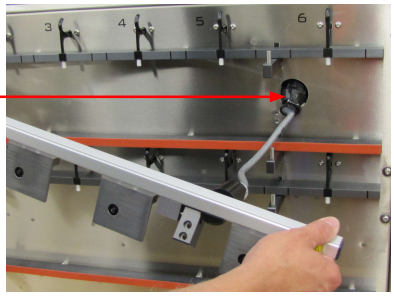
b. Use the 5/32" Hex key wrench to remove the screws. Be careful while doing this as the Paddle Bar Assembly will fall out when the last screw is removed.



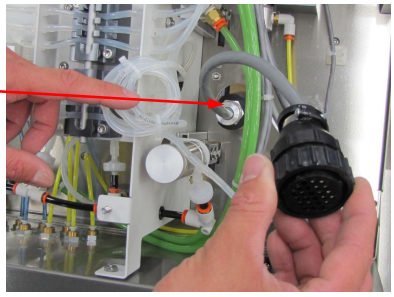


6. Gently feed the black 25 pin Cable Connector plug through the hole in the front of the instrument, being careful not to get it caught on the tubing and air lines.

Front view Cable Connector Hole



Rear view Cable Connector inserted through hole

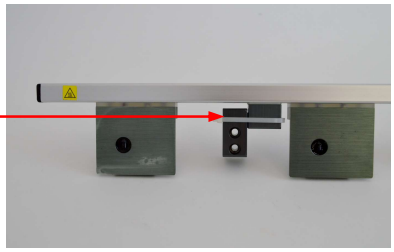


7. Set the faulty Paddle Bar Assembly aside for return to ANKOM.

8. Prepare the new replacement Paddle Bar Assembly.

Remove the cable-tie from the Paddle Bar Hinge Post on the left side. Be careful as the hinge block will fall off the Hinge Pin if tilted.

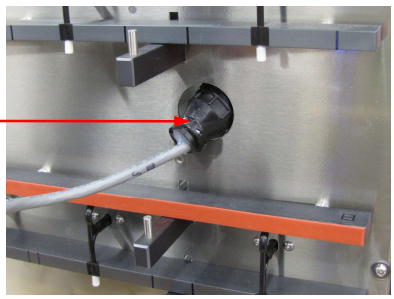
Cable-tie on Left side Hinge Post



9. Install the new Paddle Bar Assembly.

Feed the black 25 pin Cable Connector through the hole in the front of the instrument.

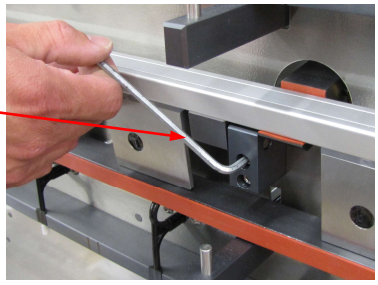
Cable Connector



10. Loosely install the four screws.

Line up the two Paddle Bar Hinge Posts with the four screw holes to the right and left being sure to loosely install the four screws with the 5/32" Hex key wrench.

5/32" Hex Key Wrench

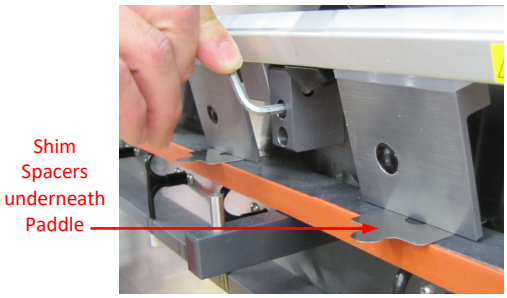


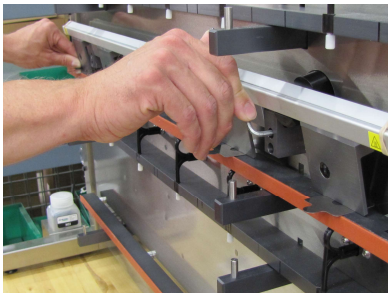
11. Place the four shims in their appropriate positions.

a. Set the four 0.015" Shim spacers (provided in the new Paddle Bar kit) underneath the #1, 2, 5 & 6 paddles and set on top of Clamp Bar B to properly distance the Paddle Bar Assembly from Clamp Bar B. When doing this, allow the paddles to rest on the shims while tilting the paddles back so that the bottom front corner of each paddle is the only part of the paddle that is touching the shims. In this position the face of the paddles will not be perfectly vertical but slightly tilted back at the bottom.

b. With the paddles held in a tilted back position, tighten the four screws in the Paddle Bar Hinge Posts using the 5/32" Hex key wrench.

c. Once the screws are tight, remove the four Shim spacers from beneath the paddles.





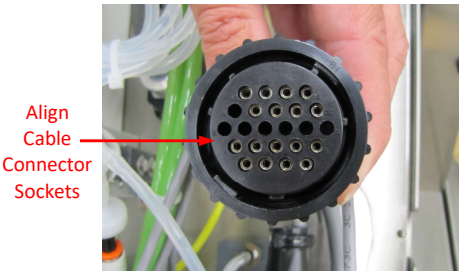
12. Plug the 25 pin Cable Connector into its socket in the underside of the Electrical Enclosure.

a. Carefully tilt the instrument forward.

b. Make sure the cable is not caught up in the tubing or air lines in the back of the instrument.

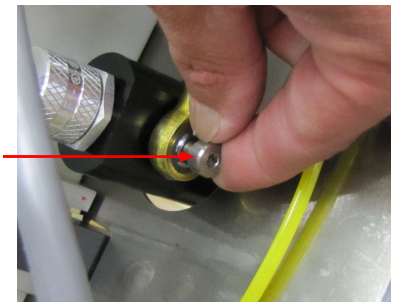
c. When plugging the connector in, align the pins to the sockets within the connector and twist clock-wise until it stops turning.

d. Check to make sure it cannot be pulled out (it should lock in place).



13. Finger-tighten the Shoulder Screw.

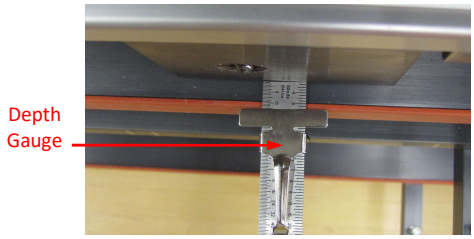
This will connect the cable block (on the Paddle Bar Assembly sticking through the hole in the front of the instrument) to the brass rod end of the Mixer Piston in order to secure the Paddle Bar while testing it in the following steps.



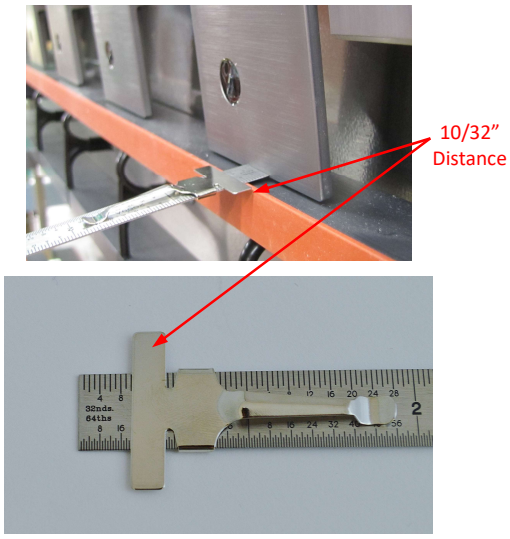
14. Check the back stroke of the paddles.

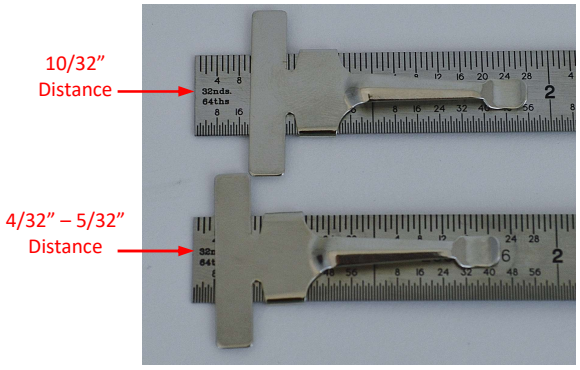
a. Ensure that the instrument is in the upright position.

b. Using the depth gauge ruler (provided in the new Paddle Bar kit) with the Paddle Bar Assembly in the back stroke position (this is its normal, at rest, position) rest the squared-off end of the depth gauge against the bottom edge of the #5 paddle.



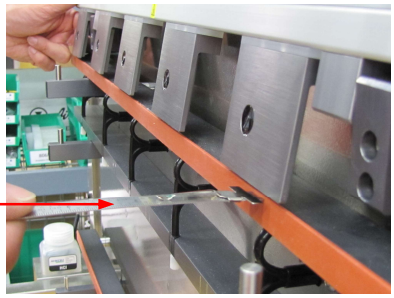
c. Measure the distance from the bottom edge of this paddle to the face of the orange gasket on Clamp Bar B. This distance should be 10/32". If this distance is not correct contact ANKOM Technology for instructions on how to make an adjustment. **Note: The gasket can be either Orange or Black.**





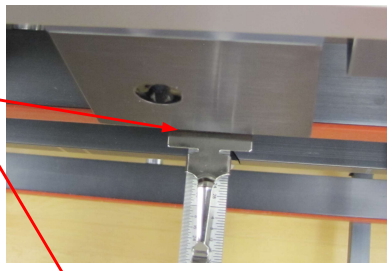
15. Check the forward stoke of the paddles.

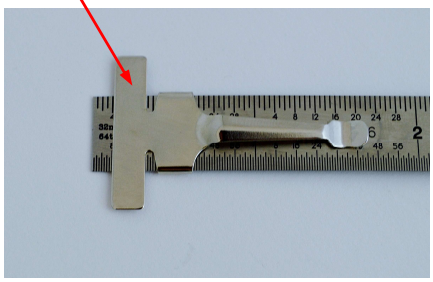
a. Rest the squared-off end of the depth gauge against the face of the orange gasket on Clamp Bar B just in front of paddle #5.

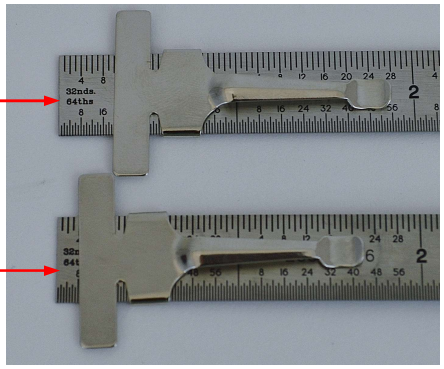


b. Using either paddle #1 or #6 in your opposite hand, rotate the paddles forward so that they extend to their forward position.

c. Looking straight down on paddle #5, measure the distance that the bottom edge of this paddle extends beyond the orange gasket. This distance should be 4/32" - 5/32". If this distance is not correct contact ANKOM Technology for instructions on how to make an adjustment. **Note: The gasket can be either Orange or Black.**





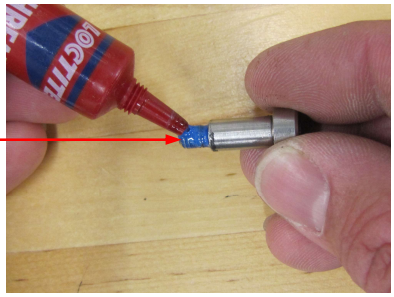


16. Secure the Shoulder Screw in place.

a. Tilt the instrument forward to access the back once again.

b. Remove the Shoulder Screw installed finger-tight in the previous step.

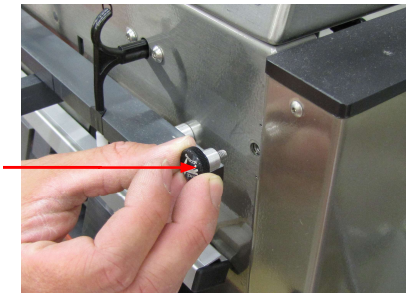
c. Apply a drop of Loctite 242 (provided in the new Paddle Bar kit) to the threads of this screw.



d. Re-install the screw (do Not to get the Loctite on the brass Rod End of the Mixer Piston) and tighten with the ⅛" Hex key wrench.

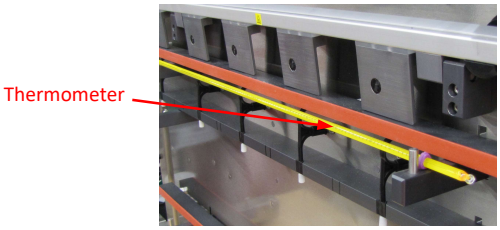
e. Return the instrument to its upright position.

f. Reinstall the two *Service Access* screws.



17. Adjust the reported temperatures on the Touch Screen Display with a calibrated thermometer accurate to at least 0.2˚C.

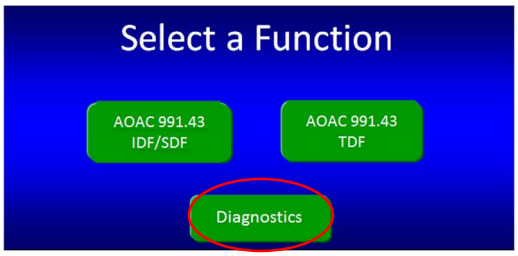
a. Obtain a calibrated thermometer and place it in the immediate environment of the paddles.



b. Allow a few moments for the temperature reading to equilibrate with the environment.

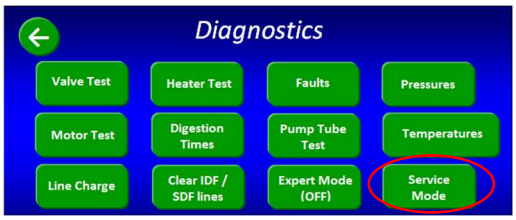
c. Turn the TDF instrument on.

c-1. From the *Select a Function* screen, press *Diagnostics*

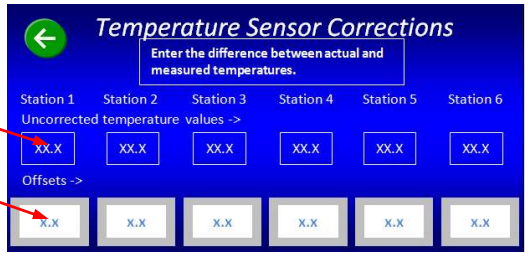


c-2. *Service Mode*

c-3. *Temperature Sensor Corrections*

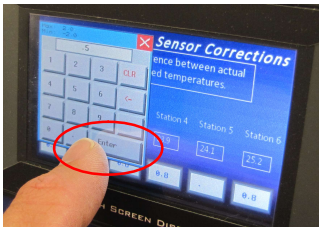


c-4. Enter temperature offsets into the fields for each station. For example, if the calibrated thermometer is showing a temperature of 23.2˚C but the *Uncorrected temperature value* for station 1 is showing a temperature of 24.0˚C, enter an offset of -0.8˚C. If the *Uncorrected temperature value* for station 2 is showing a temperature of 23.0˚C, enter an offset of 0.2˚C. Whatever number is entered as the offset (whether positive or negative) will be added to the uncorrected value.



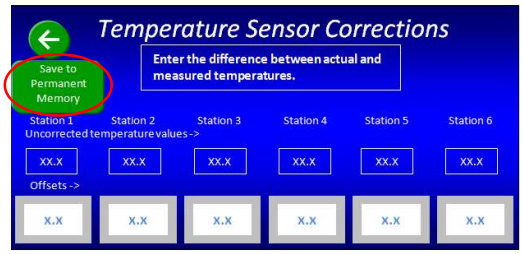
c-5. <u>Write down</u> the offset numbers you put in for each Paddle Bar to later ensure they save to the instrument.

c-6. Select *Save to Permanent Memory* and exit out of *Diagnostics*.



d. Turn the instrument off and then on again to check to ensure the corrected value information saved properly.

e. Follow the above screen display selections again and check to ensure the Temperature Sensor Corrections match those that you wrote down after adjusting.



18. Reinstall the back panel.

Replace the clear back panel of the TDF instrument securing it with the six acorn nuts removed in the first step. With this completed you are now ready to return your TDF instrument to service. Contact ANKOM Technology for instructions on returning the faulty Paddle Bar Assembly.