

Filament & Focus Coil Current Adjustments

Filament Current Adjustment 5.5.3

Focus Coil Current Adjustments 5.5.4

The Filament and Focus current meters

- Both are Amperes meters
- Both have built in alarm limits
- Both are set to the tube's nameplate value
- The accuracy of the meters are determined in another procedure. They are assumed to be accurate in the transmitter alignment.



5.5.3.2 Initial Conditions/Preliminary Setup.

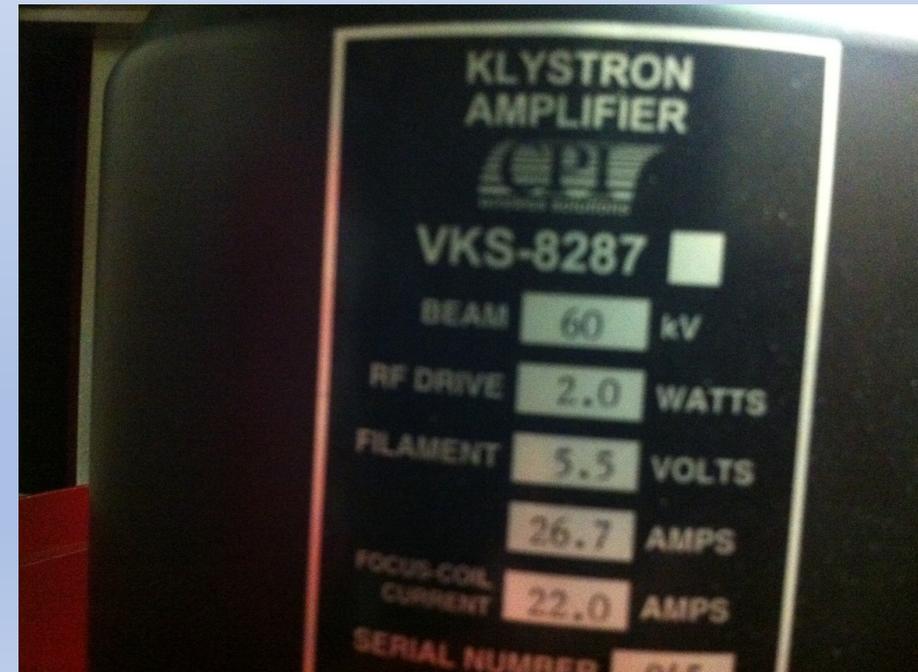
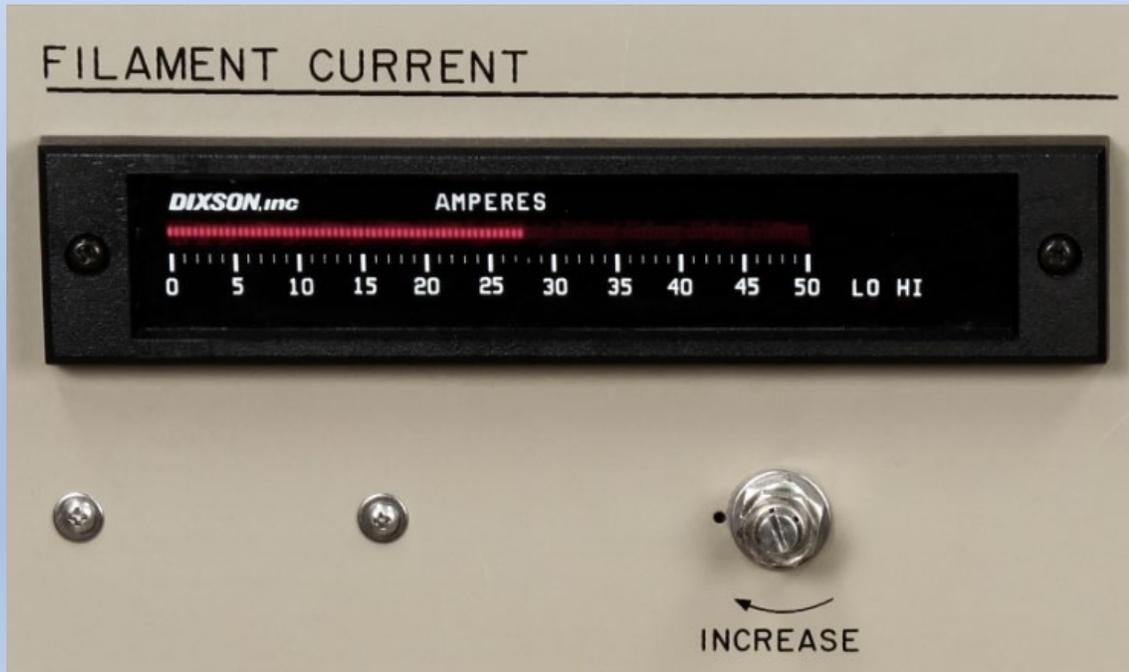
1. Perform paragraph 3.4.1.2, steps 1 through 3 to place the transmitter in STANDBY.

5.5.3.3 Procedure.

1. Loosen locking nut on Filament current Potentiometer A1R1 directly below the FILAMENT CURRENT Meter A1M1.

NOTE

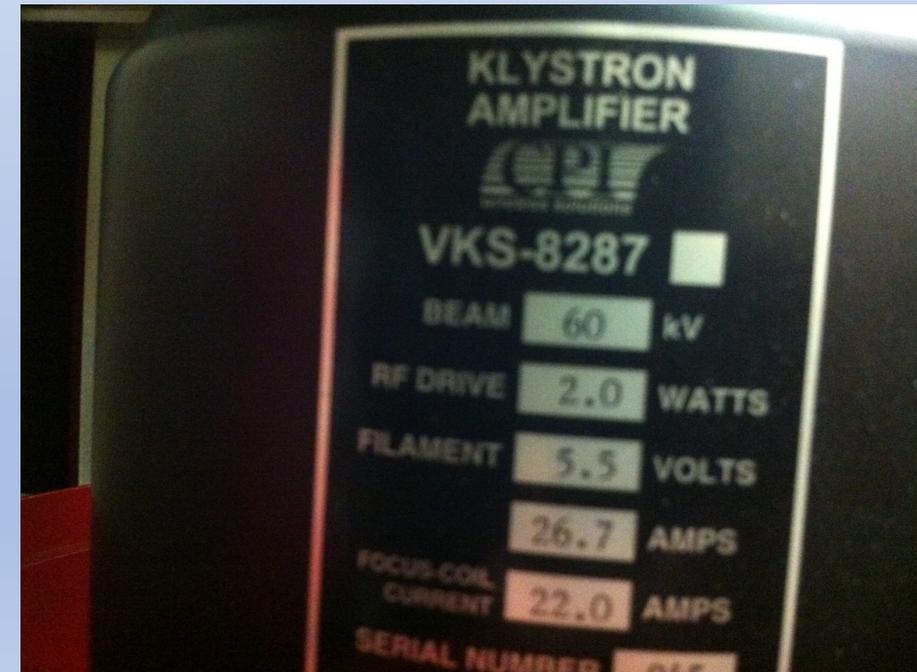
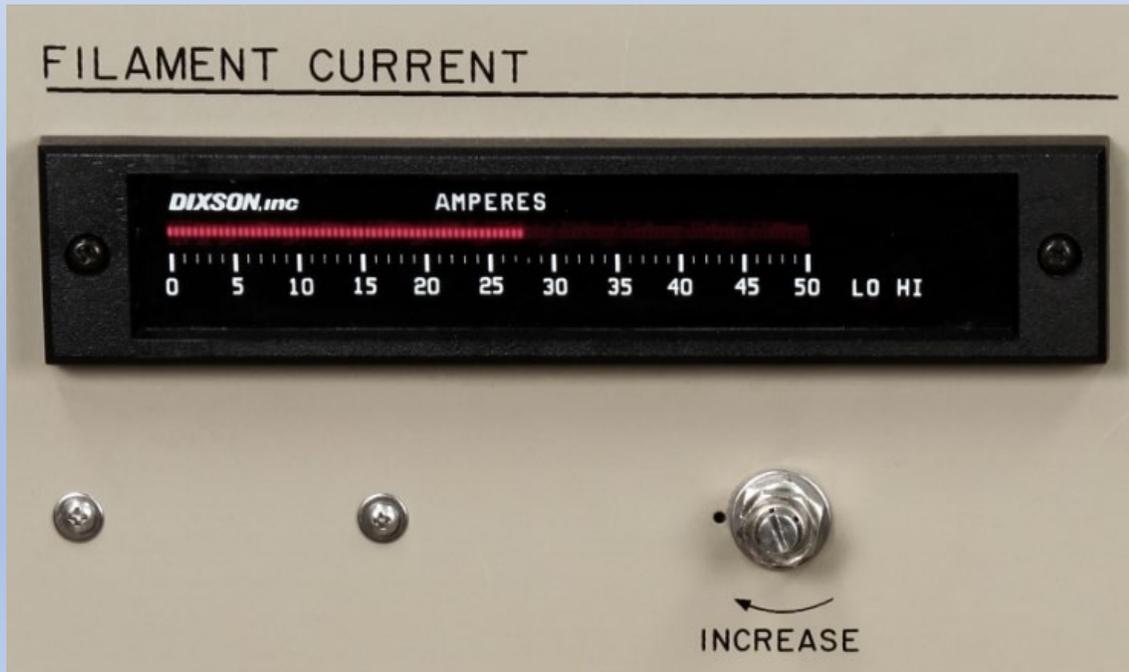
Nameplate values can be found labeled on the side of the klystron neck or on the Klystron Data Sheet.



2. Adjust Filament Current Potentiometer A1R1 so filament current indicated on FILAMENT CURRENT Meter A1M1 reads within ± 0.5 Amps of nameplate value for the klystron installed in transmitter channel. DO NOT exceed 30 Amps of filament current.

3. Tighten locking nut on Filament Current Potentiometer A1R1.

4. Proceed to paragraph 5.5.3.4 to set the upper and lower meter limits.



5.5.3.4 Meter Limit Adjustments.

1. Perform paragraph 3.4.1.2, steps 1 through 4 to power down the transmitter, lock HIGH VOLTAGE POWER CB1 circuit breaker, and remove the interlock key.

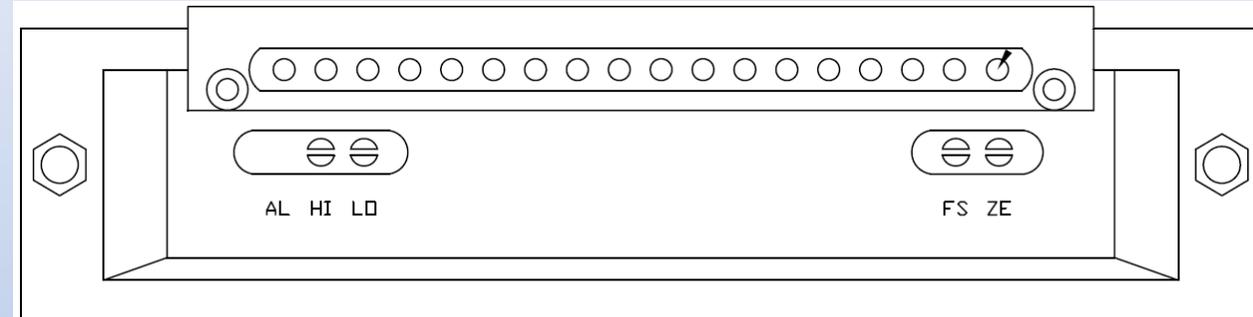
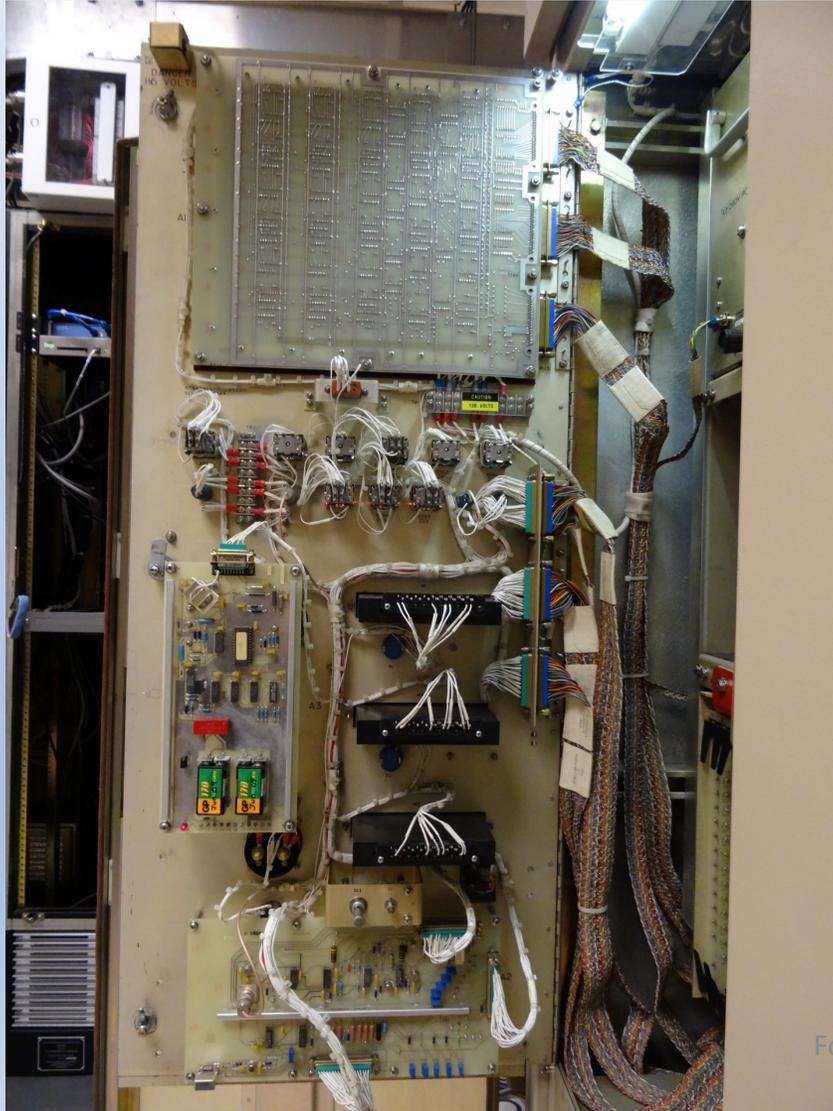
WARNING

Hazardous voltages are present within the transmitter cabinet. Take all standard precautions against electric shock. Failure to comply may cause serious injury or DEATH.

2. Use interlock key to unlock and open left bay inner door.
3. Insert the interlock bypass tool on the cabinet door Interlock Switch S4 per paragraph 5.1.4.1.
4. Remove panel stiffener from the back of Transmitter Control Panel A1.
5. Proceed to paragraph 5.5.3.4.1 for the Dixon meter or paragraph 5.5.3.4.2 for the Otek meter.

5.5.3.4.1 Lower/Upper Limit Adjustment - Dixson Meter.

1. Locate the LO and HI potentiometers on the back of FILAMENT CURRENT Meter A1M1.



DIXSON METER



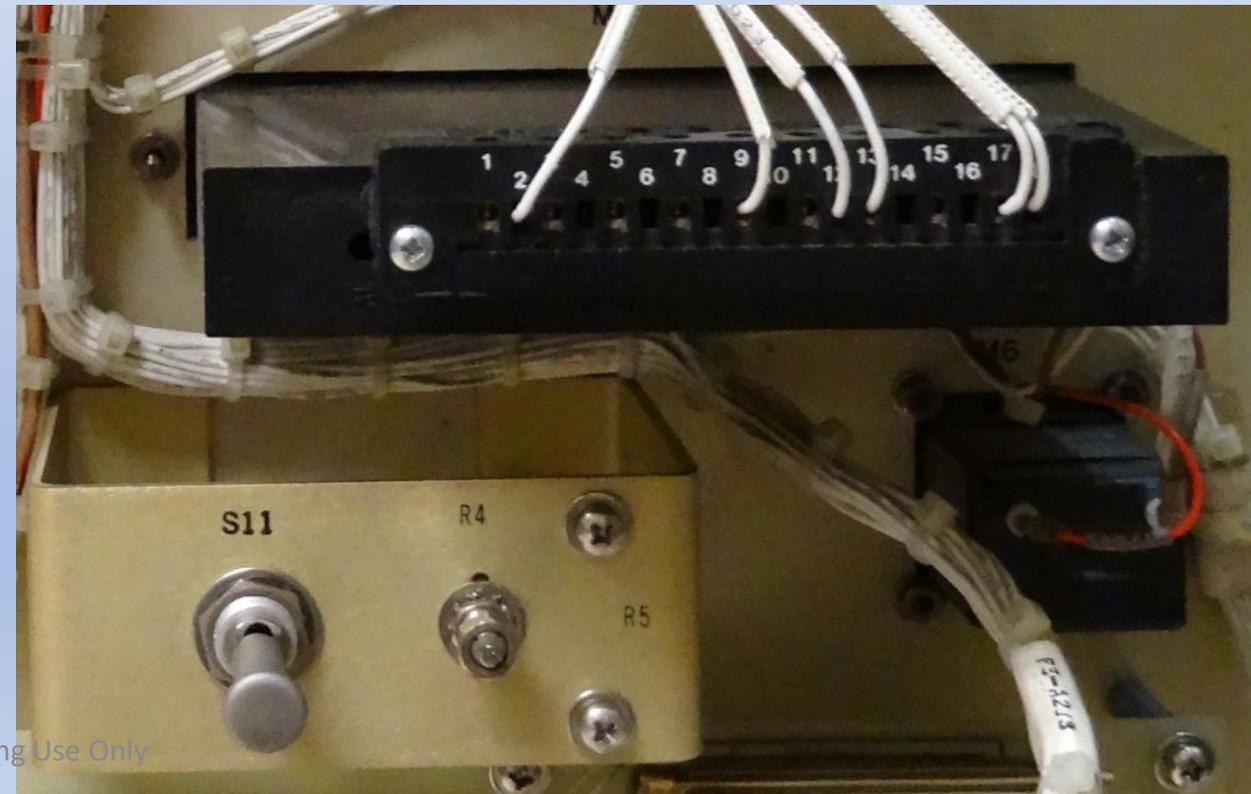
2. Set AUXILIARY POWER CB2 to ON.

NOTE

Pulling Switch A1S11 out and pushing it down displays the lower and upper limit LED segments on FILAMENT CURRENT Meter A1M1.

If the filament current is below the upper and lower fault limits, both limit LED segments will be illuminated.

If the filament current exceeds either upper or lower fault limits, the associated limit LED segment will not be illuminated and will appear as a dark segment bracketed by illuminated segments.

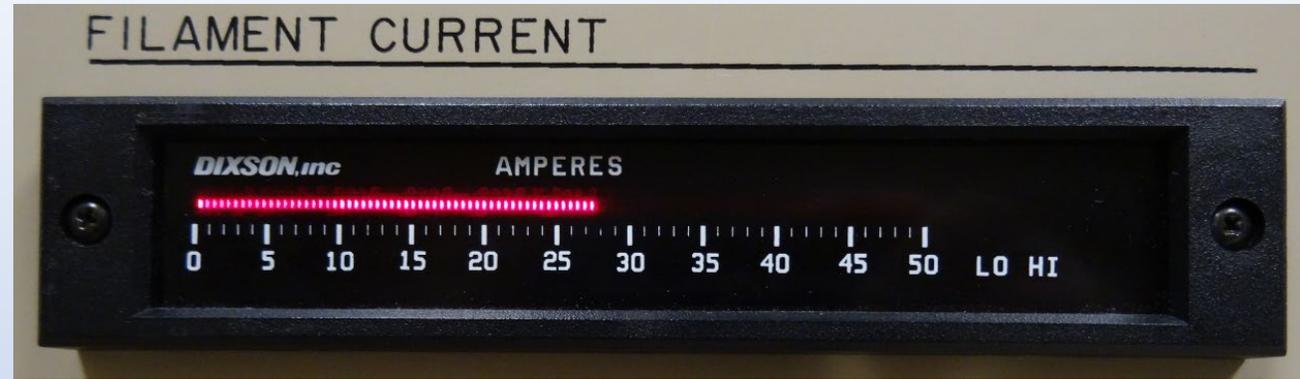


3. Pull out and push down Switch A1S11. While holding down Switch A1S11, observe the front of FILAMENT CURRENT Meter A1M1 and determine the upper and lower filament current limits.

NOTE

Nameplate values can be found labeled on the side of the klystron neck or on the Klystron Data Sheet.

Meter without S11 active



Meter with S11 active

Missing segment is lower limit, segment to the right is upper limit



4. Continue to hold down Switch A1S11 and adjust the LO potentiometer to move the lower current LED segment to 2A below filament current value. Once set, release Switch A1S11.

5. Hold down Switch A1S11 and adjust the HI potentiometer to move the upper current LED segment to 2A above filament current value. Once set, release Switch A1S11.

FILAMENT CURRENT

DIXSON,inc

AMPERES



For Training Use Only

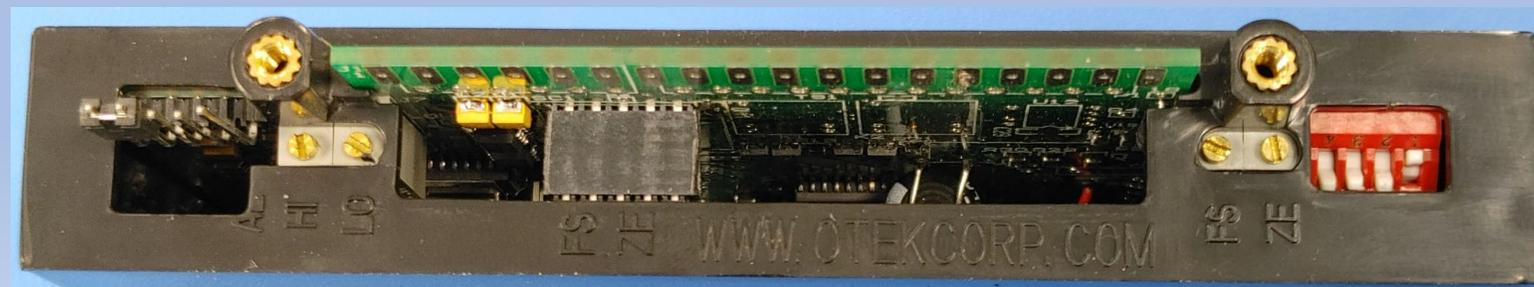
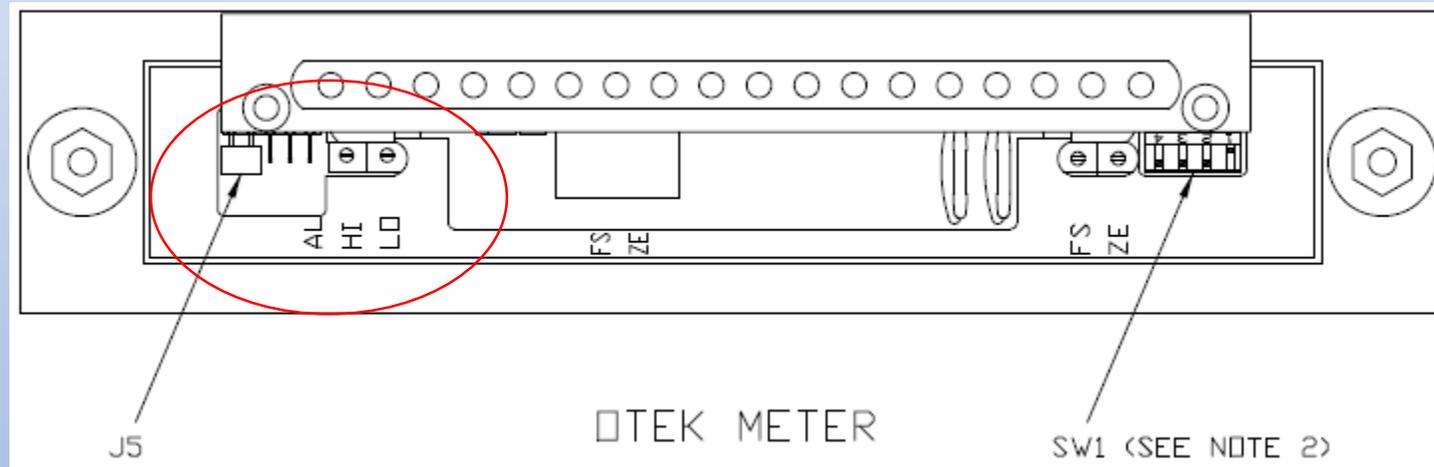
The following steps would be done IF you were not proceeding to the Focus Coil Meter Adjustment

- 6. Set AUXILIARY POWER CB2 to OFF.
- 7. Reinstall panel stiffener to the back of Transmitter Control Panel A1.
- 8. Remove the interlock bypass tool from the interlock switch and lock the left bay inner door.
- 9. Power the transmitter up and return the system to remote control by performing the procedures in paragraph 3.4.1.5, steps 2 through 4.

5.5.3.4.2 Lower/Upper Limit Adjustment - Otek Meter.

See [Figure 4-8](#), Sheet 1 and proceed as follows:

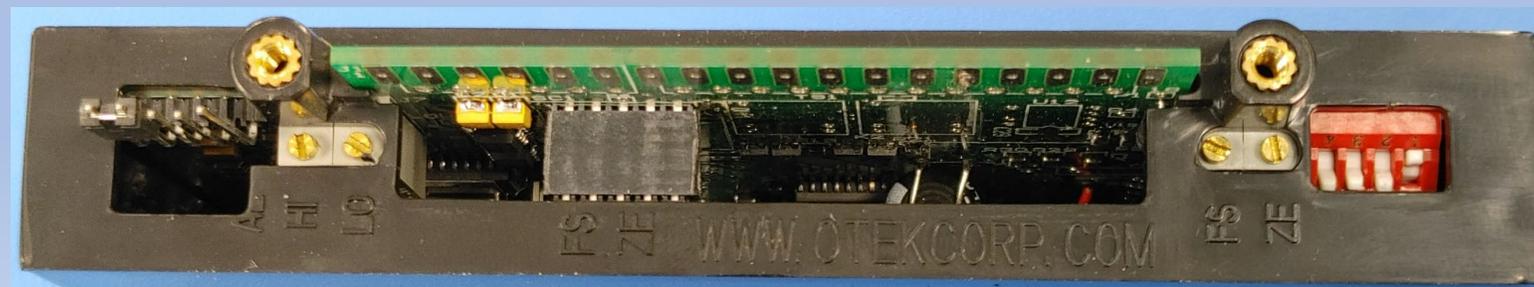
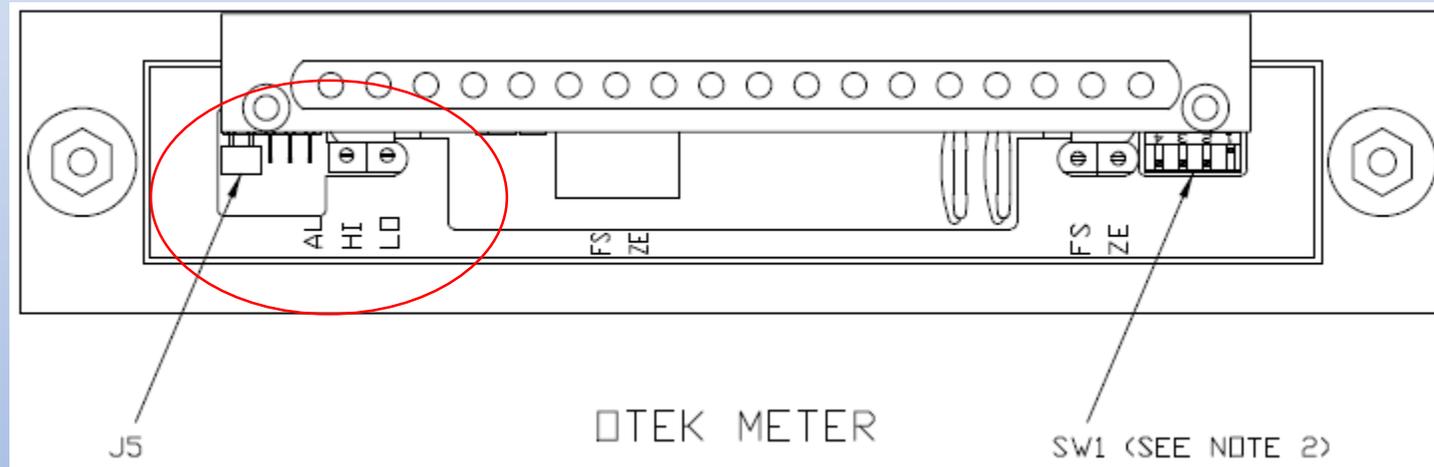
- Locate the “LO” and “HI” potentiometers and the jumpers on the meter back. (*switch positions can be found in Figure 4-8*)



- 1. Locate the LO and HI potentiometers on the back of FILAMENT CURRENT Meter A1M1.
- 2. Remove the jumper attached to J5 pins 1 to 2 and connect to J5 pins 2 to 3.
- 3. Set AUXILIARY POWER CB2 to **ON**.

NOTE

Nameplate values can be found labeled on the side of the Klystron neck or on the Klystron Data Sheet.



4. Adjust LO potentiometer to move the lower limit final LED segment to 2A below filament current nameplate value.
5. Set AUXILIARY POWER CB2 to **OFF**.
6. Remove the jumper pins from J5 pins 2 to 3 and connect to J5 pins 4 to 5.
7. Set AUXILIARY POWER CB2 to **ON**.
8. Adjust the HI potentiometer to move the upper limit final LED segment to 2A above filament current value.
9. Set AUXILIARY POWER CB2 to **OFF**.
10. Restore the J5 jumper to pins 1 to 2 (normal operation).

If you are doing a full calibration, you would not do the next few steps.

- 11. Reinstall panel stiffener to the back of Transmitter Control Panel A1.
- 12. Remove the interlock bypass tool from the interlock switch and lock the left bay inner door.
- 13. Power the transmitter up and return the system to remote control by performing the procedures in paragraph [3.4.1.5](#), steps [2](#) through [4](#).

5.5.4 FOCUS COIL CURRENT ADJUSTMENTS.

- The Focus coil adjustment is pretty much the same as the Filament Current adjustment.
- The biggest difference is that the HVON command must go active to turn on the focus coil current to adjust the current.

5.5.4.2 Initial Conditions/Preliminary Setup.

5.5.4.3 Meter Limit Adjustments

The following paragraphs provide lower and upper current limit adjustment procedures for the FOCUS COIL CURRENT Meter A1M2. Proceed to paragraph [5.5.4.3.1](#) for the Dixson meter or [5.5.4.3.2](#) for the Otek meter.

5.5.4.3.1 Lower/Upper Limit Adjustment - Dixon Meter. See [Figure 4-8](#), Sheet 1 and [Figure 11-12](#), and proceed as follows:

1. Locate the LO and HI potentiometers on the back of FOCUS COIL CURRENT Meter A1M2.

WARNING

Hazardous voltages are present within the transmitter cabinet. Bypassing Transmitter Cabinet Interlock Switch S4 activates 280 Volt Power Supply A2, located in the left bay. Proceed with caution. Contact with a 280V potential may cause serious injury or **DEATH**.

2. Set AUXILIARY POWER CB2 to **ON**.

NOTE

Pulling Switch A1S11 out and pushing it down displays the lower and upper limit LED segments on FOCUS COIL CURRENT Meter A1M2. If the focus coil current is below the upper and lower fault limits, both limit LED segments will be illuminated. If the filament current exceeds either upper or lower fault limits, the associated limit LED segment will not be illuminated and will appear as a dark segment bracketed by illuminated segments.

3. Pull out and push down Switch A1S11. While holding down Switch A1S11, observe the front of FOCUS COIL CURRENT Meter A1M2 and determine the upper and lower focus coil current limits.

NOTE

Nameplate values can be found mounted on the side of the klystron and on the Klystron Data Sheet.

4. Continue to hold down Switch A1S11 and adjust LO potentiometer to move LED segment to 2A below focus coil current nameplate value.

5. Continue to hold down Switch A1S11 and adjust HI potentiometer to move the LED segment 2A above focus coil current nameplate value. Once set, release Switch A1S11.

6. Set AUXILIARY POWER CB2 to **OFF**

7. Install panel stiffener on back of Transmitter Control Panel A1.

8. Remove the interlock bypass tool from the interlock switch and lock the left bay inner door.

9. Return interlock key to HIGH VOLTAGE POWER CB1 and rotate the key CCW.

10. Proceed to paragraph [5.5.4.4](#) to adjust the focus coil current..

5.5.4.3.2 Lower/Upper Limit Adjustment - **Otek** Meter. See [Figure 4-8](#), Sheet 1 and proceed as follows:

1. With Interlock Switch S4 bypassed, locate the LO and HI potentiometers on the back of FOCUS COIL CURRENT Meter A1M2.
2. Remove the jumper attached to J5 pins 1 to 2 and connect to J5 pins **2 to 3**.

WARNING

Hazardous voltages are present within the transmitter cabinet. Bypassing Transmitter Cabinet Interlock Switch S4 activates 280 Volt Power Supply A2, located in the left bay. Proceed with caution. Contact with a 280V potential may cause serious injury or **DEATH**.

3. Set AUXILIARY POWER CB2 to **ON**.

NOTE

Nameplate values can be found mounted on the side of the klystron or on the Klystron Data Sheet.

4. Adjust LO potentiometer to move the lower limit final LED segment to 2A below focus coil current nameplate value.

5. Set AUXILIARY POWER CB2 to **OFF**.
6. Remove the jumper from J5 pins 2 to 3 and connect to J5 pins 4 to 5.
7. Set AUXILIARY POWER CB2 to **ON**.
8. Adjust HI potentiometer to move the upper limit final LED segment to 2A above focus coil current nameplate value.
9. Set AUXILIARY POWER CB2 to **OFF**.
10. Restore the J5 jumper to pins 1 to 2 (normal operation).
11. Install panel stiffener on back of Transmitter Control Panel A1.
12. Remove the interlock bypass tool from the interlock switch and lock the left bay inner door.
13. Return interlock key to HIGH VOLTAGE POWER CB1 and
14. Proceed to paragraph [5.5.4.4](#) to adjust the focus coil current.

5.5.4.4 Focus Coil Current Adjustment.

1. Ensure initial conditions/preliminary setup is completed per paragraph [5.5.4.2](#) and the Meter Limit Adjustments per paragraph [5.5.4.3](#) have been performed.
2. Set CABINET LIGHTS CB3, AUXILIARY POWER CB2, and HIGH VOLTAGE POWER CB1 to **ON**.
3. Press **MAINT/SYSTEM** switch. MAINT indicator illuminates (white).



4. Ensure the PREHEAT indicator extinguishes (approximately 12 minutes after step [2](#)) and the AVAILABLE lamp illuminates (green).



5. On the Main RDA HCI, click on **System Test Software** and **Yes** to confirm. Click **Control ► AME/Receiver Control**; and select the following:

Test Source: **KLYSTRON OUTPUT**

Pulse Width: **Short Pulse**

PRF: **D5**

Click: **Inject Signal**

6. Press **HV ON/NO CONTROL** switch. HV ON indicator illuminates (white).



7. If FOCUS COIL CURRENT Meter A1M2 indicates a value between lower and upper fault limits, skip to step 13.

8. Press **HV OFF/NO CONTROL** switch. HV OFF indicator illuminates (white).



9. If FOCUS COIL CURRENT Meter A1M2 indicates a fault, loosen locking nut (below the meter) and preset Focus Coil Current Potentiometer A1R2 fully CCW; and rotate it CW seven full turns (A1R2 is a 10-turn potentiometer).

10. Press **HV ON/NO CONTROL** switch. HV ON indicator illuminates (white).



11. If FOCUS COIL CURRENT Meter A1M2 indicates a value between lower and upper fault limits, proceed to step [13](#).
12. If FOCUS COIL CURRENT Meter A1M2 indicates a LO fault, rotate A1R2 one-half turn CW and return to step [10](#). If FOCUS COIL CURRENT Meter A1M2 indicates a HI fault, rotate A1R2 one-half turn CCW and return to step [10](#).
13. While observing FOCUS COIL CURRENT Meter A1M2, adjust A1R2 to obtain a focus coil current within $\pm 0.5A$ of focus coil current value indicated on klystron nameplate and re-tighten lock nut.
14. Compare reading on VOLTAGE/CURRENT Meter A1M4 (position 9) with focus coil power supply voltage previously recorded in meter reading column of Transmitter Parameter and Adjustment Record Card described in paragraph [5.5.17](#). Update record card as necessary.

15. Press **HV OFF/NO CONTROL** switch. HV OFF indicator illuminates (white).



16. Close all System Test Software windows by clicking **Close**, **File**, and **Exit**. Click **Yes** and **OK** at pop-up windows.
17. Return the system to remote control by performing the procedures in paragraph [3.4.1.5](#), steps [3](#) through [4](#).