

#### 4.5.5 CIRCUIT CALIBRATIONS.

In addition to calibrating the meters on Transmitter Control Panel A1, five transmitter circuits must be adjusted to deliver calibrated samples to the transmitter control panel. The following paragraphs describe how to calibrate these circuits. See Figure FO11-12 and locate Metering Interface Board A1A2.

4.5.5.1 Filament Current and Voltage Calibration UD3A1A2R26 and UD3A7A1A1R9. To ensure accurate results, FILAMENT CURRENT Meter AIM1 must be calibrated as described in paragraph 4.5.4.1.

Two technicians are required for this procedure.

##### 4.5.5.1.1 Equipment and Tools Required.

1. Screwdriver set, Phillips
2. Screwdriver set, flat-tip
3. Screwdriver set, miniature
4. Dielectric Oil (25 gal) (A/R)
5. Ammeter (ASN: R400-SE9) (NSN: 6625-01-389-1375)
6. Filament Load Assembly (ASN: R400-SE14) (NSN: 5905-01-390-0244)
7. Oil tank dolly
8. Oil transfer pump kit
9. Oil drip pan
10. True RMS voltmeter (Fluke 84 or equivalent)
11. Wrench set, open-end

<b>WARNING</b>
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Failure to perform the power-down procedure in paragraph 3.4.1.2 could cause serious injury or **DEATH**.

4.5.5.1.2 Initial Conditions/Preliminary Setup. See Figure 4-14, and proceed as follows:

### NOTE

When performing the Meter Limit Adjustment procedure, do not complete the last three steps so that the panel stiffener is removed, the interlock bypass tool remains inserted into S4, and the transmitter is powered down.

1. Perform paragraphs 5.5.3 through 5.5.3.4, to gain control of the system, power down the transmitter, and complete the Filament Current and Meter Limit Adjustments.
2. Verify HIGH VOLTAGE POWER CB1 and AUXILIARY POWER CB2 are set to **OFF**. If not, then 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

### HIGH VOLTAGE

Filter Capacitor Bank A9 can hold a lethal charge long after transmitter power has been removed. Discharge Filter Capacitor Bank A9 after transmitter power is off and prior to transmitter maintenance by opening the right bay inner door while monitoring the charge on VOLTAGE/CURRENT Meter AIM4, at position 6, +280 VDC power supply. Opening the right bay inner door releases the filter capacitor bank discharge plunger. Failure to comply could cause serious injury or **DEATH**.

3. Use interlock key and open the right bay inner door to discharge residual high voltage from Filter Capacitor Bank A9.
4. To gain [access to connections on filament transformer](#), oil must be drained from oil tank, and oil tank front cover must be removed. Refer to paragraph 5.4.2.4 and 5.4.2.4.1 to perform oil drain procedure.

### NOTE

[Supplemental Video from NWSTC Oil Removal](#)

Using Figure 4-14, physically verify the location of terminal E-3 and terminal E-4 on the filament transformer.

5. Remove nut, lockwasher, and flatwasher on filament transformer [terminals E3 and E4](#). Remove one wire connected to terminal E3, and remove two wires connected to terminal E4. Mark wires to ensure correct replacement.

[Supplemental Video from NWSTC Disconnect Terminals](#)

[Test Connections Picture from NWSTC](#)

6. Connect one end of filament load assembly and true RMS multimeter lead (positive lead) to filament transformer terminal E3. Secure test leads with hardware removed in step 5. See Figure 4-14. Set the RMS multimeter to VAC.

[Test Equipment Picture from NWSTC](#)

7. Connect the other end of filament load assembly to the positive lead of the ammeter; then the negative lead of the ammeter connects to the RMS multimeter (negative lead) and to filament transformer terminal E4. Secure test leads with hardware removed in step 5. See Figure 4-14.

[Supplemental Video from NWSTC  
Connect Test Equipment](#)

8. Zero adjust the RMS multimeter.

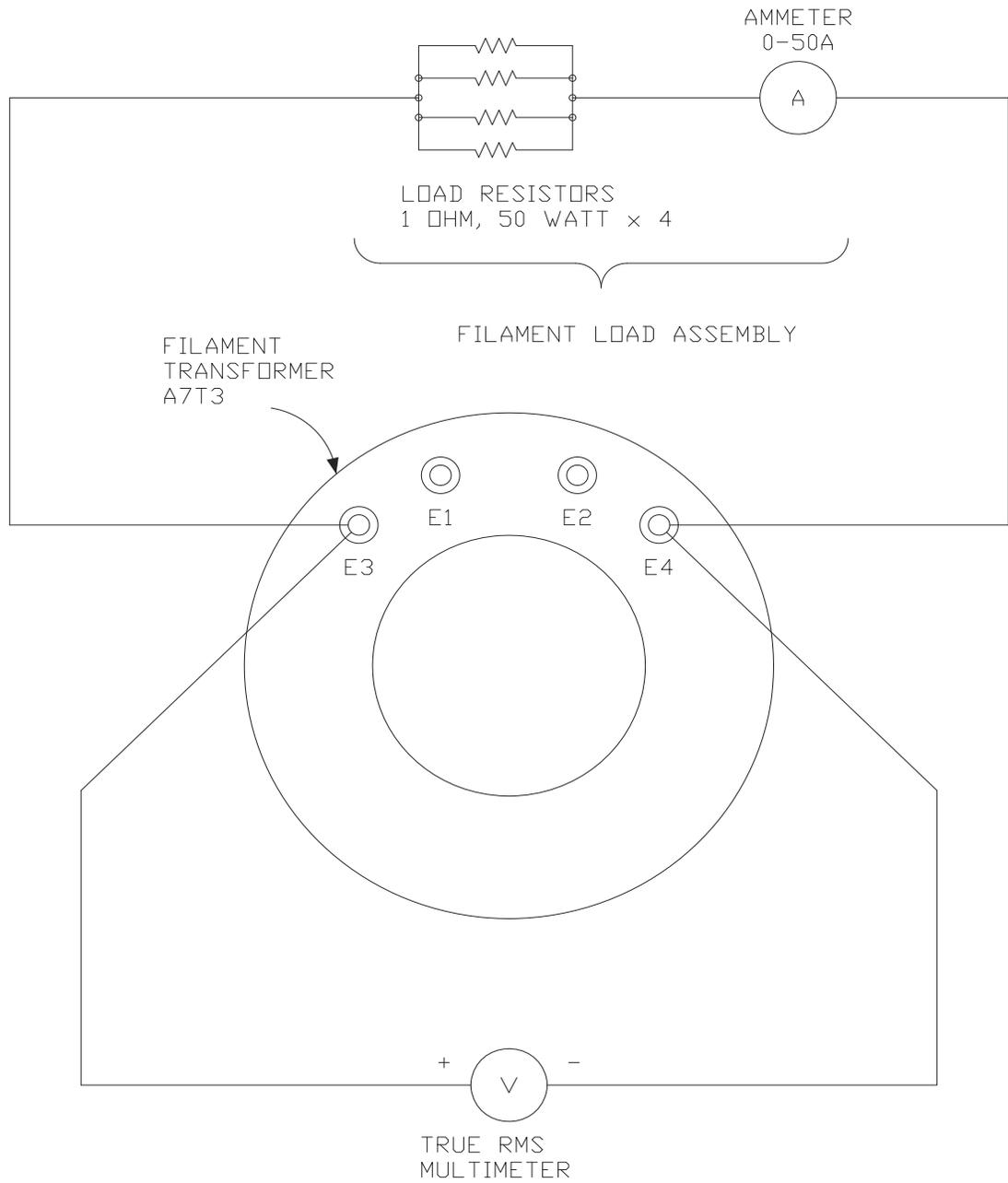
9. Make sure all connections are tight, there are no shorts in test circuit, and A7T3 terminals are not shorted to chassis, tube socket, or any other equipment in oil tank.

10. Plug in and turn on filament load assembly.

11. If necessary, use interlock key to unlock and open left bay inner door.

12. If necessary, insert the [interlock bypass tool](#) on the cabinet door Interlock Switch S4 per paragraph 5.1.4.1.

13. If necessary, remove panel stiffener from the back of Transmitter Control Panel A1.



NOTE: TERMINATE TEST WIRES THAT CONNECT TO FILAMENT TRANSFORMER A7T3 TERMINALS WITH #10 LUGS.

NX1365-B

**Figure 4-14. Filament Current/Voltage Board Assembly Calibration Setup**

4.5.5.1.3 Procedure.

**WARNINGS**

Lethal voltages are exposed during this calibration procedure. Exercise extreme caution when working around high voltage. Failure to comply could result in serious injury or **DEATH**.

The load resistors become too hot to touch during this procedure. Keep the test as short as possible and allow the resistors to cool before handling.

**CAUTION**

Do not turn on AUXILIARY POWER CB2 without a filament load connected. The filament power supply capacitors can charge to a value high enough to damage switching transistors in the filament power supply. If it is suspected Filament Power Supply PS1 was energized without a load, turn off all power and refer to paragraph 5.3.16 to pull Filament Power Supply PS1 out of the cabinet far enough to release the discharge plunger. Allow Filament Power Supply PS1 to discharge for 2 minutes, replace Filament Power Supply PS1 in the transmitter cabinet, and make sure a filament load is connected before continuing.

1. Set AUXILIARY POWER CB2 to **ON** and wait for ammeter reading to stabilize.

**NOTE**

[Supplemental Video from NWSTC  
Current Meter Adjustment](#)

If a filament current fault occurs, temporarily expand the FILAMENT CURRENT Meter A1M1 fault limits by decreasing the lower limit and increasing the upper limit by 5A. Refer to paragraph 5.5.3.4 for procedures for adjusting meter limits.

2. Adjust [A1A2R26](#) until FILAMENT CURRENT Meter A1M1 reads same as test ammeter. See Figure FO11-12 for resistor location.
3. Adjust filament current slowly using A1R1 until test ammeter indicates nameplate current.
4. Turn VOLTAGE/CURRENT Selector Switch A1S9 to position 7 and read the FPA FILAMENT PS voltage on VOLTAGE/CURRENT Meter A1M4 reads between 60 and 80V.
5. Turn VOLTAGE/CURRENT Selector Switch A1S9 to position 8 to read FPA FILAMENT VOLTAGE on VOLTAGE/CURRENT Meter A1M4.

[Supplemental Video from NWSTC  
Voltage Meter Adjustment](#)

6. Locate variable resistor [A7A1A1R9](#) (located on Oil Tank Component Board A7A1A1; see Figure FO11-14, Sheet 2), and adjust R9 to make VOLTAGE/CURRENT Meter A1M4, position 8 reading within + 0.1V of RMS multimeter reading.
7. Set AUXILIARY POWER CB2 to **OFF** and remove all test equipment.
8. Restore connections to filament transformer.
9. Close and lock the right bay inner door.
10. Refer to paragraph 5.4.2.4.2 and replace oil tank cover and dielectric oil.
11. Install panel stiffener on back of Transmitter Control Panel A1. [Supplemental Video from NWSTC  
Oil Replacement](#)
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.

4.5.5.2 [Focus Coil Current Calibration UD3A1A2R27](#). The following procedures calibrate the focus coil current sample. To ensure accuracy, FOCUS COIL CURRENT Meter A1M2 must be calibrated as described in paragraph 4.5.4.1.

**WARNING**

Lethal voltages are exposed during this calibration procedure. Exercise extreme caution when working around high voltage. Failure to comply could result in serious injury or **DEATH**.

Two technicians are required for this procedure.

4.5.5.2.1 [Equipment and Tools Required](#).

1. Screwdriver set, Phillips
2. Screwdriver set, flat-tip
3. Screwdriver set, miniature
4. Focus Coil Adapter Cable:  
ASN: R400-SE13  
NSN: 5995-01-388-4552