

T.O. 33K1-4-1968-1

TECHNICAL MANUAL
CALIBRATION PROCEDURE
FOR
HIGH POTENTIAL TESTER
4045AI

(ASSOCIATED RESEARCH)



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HIGH POTENTIAL TESTER**4045AI****(ASSOCIATED RESEARCH)****1 CALIBRATION DESCRIPTION:***Table 1.*

Test Instrument (TI) Characteristics	Performance Specifications	Test Method
DC Voltage	Range: 0 to 5 kV Accuracy: $\pm 2.0\%$ FS	Measured with a DMM and Voltage Divider
AC Voltage	Range: 0 to 5 kV Accuracy: $\pm 2.0\%$ FS	Measured with a DMM

2 EQUIPMENT REQUIREMENTS:

Noun	Minimum Use Specifications	Calibration Equipment	Sub- Item
2.1 DC VOLTMETER	Range: 0 to 10 VDC Accuracy: $\pm 0.1\%$	Fluke 8506A	
2.2 DIGITAL MULTIMETER	Range: 0 to 1100 VAC Accuracy: $\pm 0.1\%$	Fluke 8600A	
2.3 VOLTAGE DIVIDER	Range: 0 to 5 kVDC Accuracy: $\pm 0.1\%$	Fluke 80E-10	
2.4 RESISTOR	Range: 3 M Ω , 1/2 watt Accuracy: N/A	As Avail.	

3 PRELIMINARY OPERATIONS:

3.1 Review and become familiar with entire procedure before beginning calibration process.



Unless otherwise designated, and prior to beginning the Calibration Process, ensure that all test equipment voltage and/or current outputs are set to zero (0) or turned off, where applicable. Ensure that all equipment switches are set to the proper position before making connections or applying power.

3.2 Ensure that TI is properly grounded, connect all case grounds to facility ground.



This procedure involves voltages that are hazardous to personnel. All necessary precautions during the conduct of these tests must be observed.

3.3 Connect TI and test equipment to 115 V/60 Hz power, set POWER switches to ON and allow a 15 minute warm-up period.

3.4 Zero TI meter if required.

3.5 Connect the 3 MΩ Resistor to TI DC output.

3.6 Set TI output control for VDC and adjust for 900 VDC as monitored on the Digital Multimeter.

3.7 The TI alarm must sound and LEAKAGE lamp must be illuminated.

3.8 Set TI output voltage to minimum.

3.9 Repeat steps 3.5 through 3.8 except set TI and Digital Multimeter to AC and use TI AC output terminals.

NOTE

If a maximum Leakage current value is required, calculate resistance needed and perform steps 3.5 through 3.8 using the calculated value of resistance in step 3.5.

3.10 Remove Resistor from TI and adjust TI voltmeter for an indication of 500 volts.

3.11 Carefully bring TI output lead tips close enough for arcing to occur.

3.12 The TI BREAKDOWN and LEAKAGE lamps must be illuminated.

3.13 Set TI output voltage to minimum.

4 CALIBRATION PROCESS:

NOTE

Unless otherwise specified, verify the results of each test and take corrective action whenever the test requirement is not met, before proceeding.

4.1 DC VOLTAGE CALIBRATION:

4.1.1 Connect the Voltage Divider input to the TI DC output and the DC Voltmeter (2.1) INPUT to the Voltage Divider 1000:1 OUTPUT terminals.

4.1.2 Set DC Voltmeter FUNCTION and RANGE to 10 VDC.

4.1.3 Set TI output for VDC.

4.1.4 Adjust TI output control until TI indicates the first value listed in the Applied column of Table 2.

4.1.5 The DC Voltmeter must indicate within the corresponding limits listed in the Limits column of Table 2.

4.1.6 Repeat steps 4.1.4 through 4.1.5 for each remaining applied value in Table 2.

Table 2.

Applied (kVDC)	Limits (kVDC)
1	0.90 to 1.10
2	1.90 to 2.10
3	2.90 to 3.10
4	3.90 to 4.10
5	4.90 to 5.10

4.1.7 Set TI output to minimum and disconnect test set up.

4.2 AC VOLTAGE CALIBRATION:

4.2.1 Set TI output for AC.

4.2.2 Connect TI AC output to Digital Multimeter voltage INPUT.

4.2.3 Set Digital Multimeter FUNCTION and RANGE to 1200 VAC.

4.2.4 Carefully adjust TI output control until TI meter indicates 1 kVAC.

4.2.5 The Digital Multimeter must indicate within the limits of 900 to 1100 VAC.

4.2.6 Set TI output to minimum.

4.2.7 Disconnect and secure all equipment.

CALIBRATION PERFORMANCE TABLE

DC VOLTAGE CALIBRATION:

<u>Applied (kVDC)</u>	<u>Limits (kVDC)</u>
1	0.90 to 1.10
2	1.90 to 2.10
3	2.90 to 3.10
4	3.90 to 4.10
5	4.90 to 5.10

AC VOLTAGE CALIBRATION:

<u>Applied</u>	<u>Limits</u>
1 kVAC	900 to 1100 VAC