

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR  
INSULATION BREAKDOWN TEST SET,  
BENDIX MODEL, 13700-1-C  
FEDERAL STOCK NUMBER 6625-765-9079

Headquarters, Department of the Army, Washington, D. C.  
29 April 1974

WARNING

PRECAUTIONARY DATA

Personnel performing operations involving instructions, procedures and practices which are included or implied in this technical bulletin shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury,-death, or an aborted mission. HIGH VOLTAGE. High voltage is used during the performance of this procedure. Death on contact may result if personnel fail to observe safety precautions.

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\*This bulletin supersedes TB 55-6625-726-35, 15 April 1971.

**Section I. IDENTIFICATION AND DESCRIPTION**

**1-1. Test Instrument Identification.**

This bulletin provides instructions for the calibration of Insulation Breakdown Test Set. The insulation breakdown test set will be referred to as the "test instrument" throughout this bulletin.

Nomenclature: Insulation Breakdown Test Set  
 Model: 13700-1-C  
 FSN: 6625-765-9079  
 Manufacturer: Bendix  
 Model variations: None  
 Time required: 2 hours (approx)  
 Technique: DC and low frequency

**1-2. Calibration Description.**

Test instrument parameters and performance specifications which pertain to this calibration are listed in table 1-1.

*Table 1-1. Calibration Description*

Test instrument parameters	Performance specifications
Volts	0-750 vac !5% of fs 0-2250 vac +5% of fs
Current	0-5 ma ac +5% of fs

**1-3. Forms and Records.**

Maintenance forms, records, and reports which are to be used by calibration personnel at all calibration levels are listed in and prescribed by TM 38-750.

**1-4. Reporting of Errors.**

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to DA Publications and forwarded direct to Commander, US Army Aviation Systems Command, ATTN: AMSAV-F, PO Box 209, St. Louis, Missouri 63166.

**Section II. EQUIPMENT REQUIREMENTS**

**2-1. Equipment Required.**

Table 2-1 identifies the specific equipment used in this calibration procedure.

**NOTE**

**Minimum use specifications are the. Principal parameters required for performance of the calibration, and are included to assist in the selection of alternate equipment, which may be used at the discretion of the calibrating activity. Satisfactory performance of alternate items shall be verified prior to use. All applicable equipment must bear evidence of current calibration.**

*Table 2-1. Calibration Equipment Required*

Item	Common name	Minimum use specifications	Equipment identification <sup>1</sup>
A1	Differential multimeter <sup>2</sup>	Range: 0-1000 vac Range: 0-10 ma ac Accuracy: 0.5%	John Fluke Model 853A 6625-489-8908
A2	Decade resistor	Range: 0.1 ohm- 111 megohm Accuracy: 1.0%	ZM-16/U 6625-669-0266

<sup>1</sup>The calibration equipment utilized in this procedure was selected from those known to be available at Department of Defense facilities; and the listing by model number carries no implication of preference, recommendation, or approval by the Department of Defense for use by other agencies. It is recognized that equivalent equipment produced by other manufacturers may be capable of equally satisfactory performance in the procedure.

<sup>2</sup>Input impedance, 1 megohm.

## **2-2. Accessories Required.**

The accessories listed in table 2-2 are to be used in the calibration procedure. When necessary, these items may be substituted by equivalent items unless specifically prohibited.

*Table 2-2. Accessories Required*

Item	Common name	Accessory identification
B1	Lead electrical <sup>2</sup>	24-in. 18 AWG; banana plug termination (red) 7907497
B2	Lead electrical	24-in. 18 AWG; banana plug termination (black) 7907498

<sup>1</sup>See footnote under table 2-1.

<sup>2</sup>Two required.

### Section III. PRELIMINARY OPERATIONS

#### 3-1. Preliminary Instructions.

a. The instructions outlined in this section are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name and item identification number as listed in tables 2-1 and 2-2. For the identification of equipment referenced by item numbers prefixed with A, see table 2-1 and for prefix B, see table 2-2.

#### WARNING

**HIGH VOLTAGE is used during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions.**

#### 3-2. Equipment Setup.

- a. Adjust mechanical zero-adjustments on test instrument meters for zero (0).
- b. Set red pointer on test instrument meter to the index mark on the right side of scale.
- c. Position test instrument controls as listed in (1) through (3) below:
  - (1) COMPENSATOR switch to OFF.
  - (2) RANGE SELECTOR switch to OFF.
  - (3) VOLTAGE CONTROL to zero.
- d. Set test instrument POWER switch to ON and allow time for equipment to warm up and stabilize.

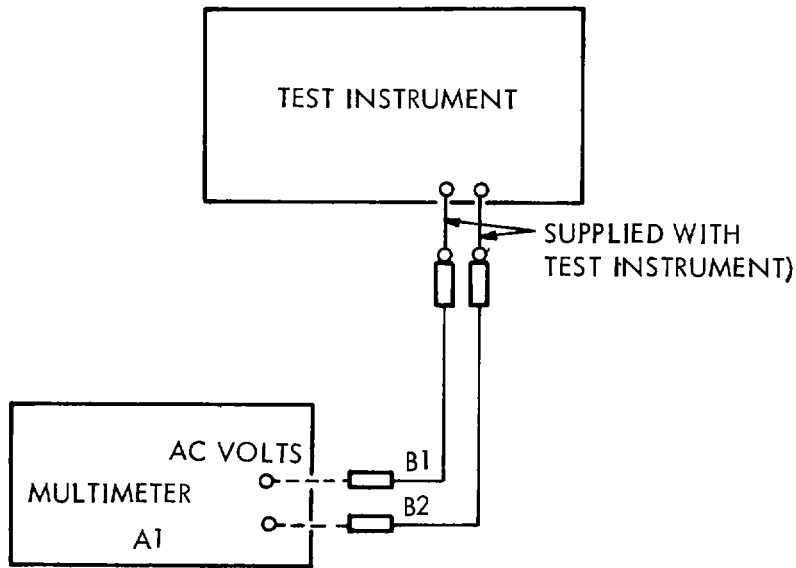
### Section IV. CALIBRATION PROCESS

#### NOTE

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

#### 4-1. AC Voltmeter (Low Range).

- a. *Performance Check.*
  - (1) Connect differential multimeter (AI) to test instrument as shown in figure 4-1.



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Figure 4-1. AC voltage (low range) equipment setup.

- (2) Set differential multimeter RANGE switch to 1000 volt AC position.
- (3) Set test instrument RANGE SELECTOR to 0-750 volt position.
- (4) Press test instrument TEST ON switch.
- (5) Adjust test instrument VOLTAGE CONTROL for 250 volt indication on test instrument AC voltmeter. Differential multimeter will indicate between 212.5 and 287.5 vac.
- (6) Adjust test instrument VOLTAGE CONTROL for each indication on test instrument AC voltmeter, as listed in table 4-1. Differential multimeter will indicate within the limits specified in table 4-1'
- (7) Set test instrument VOLTAGE CONTROL to zero.

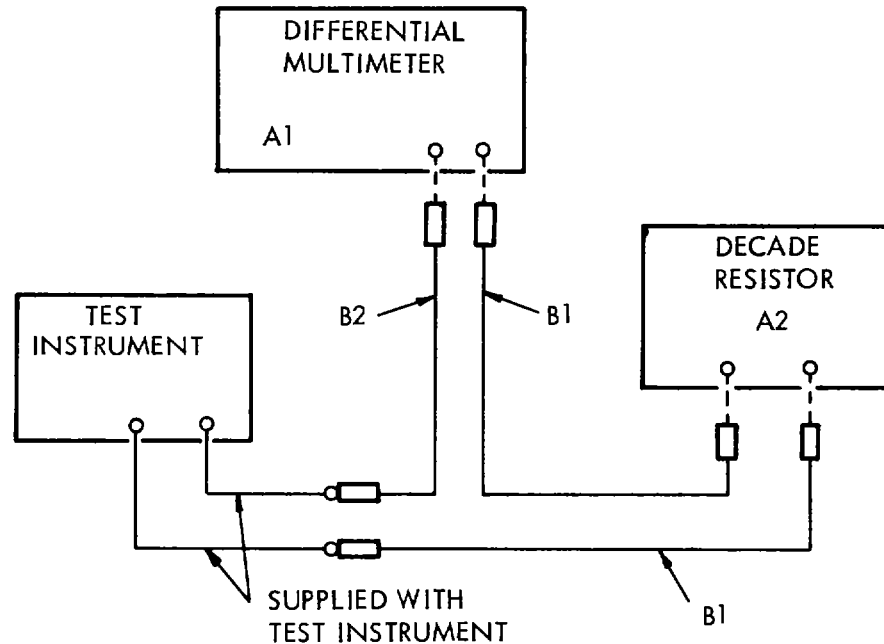
b. *Adjustments.* No adjustments can be made.

Table 4-1. AC Voltmeter (Low Range)

Test instrument indications (vac)	Differential multimeter indications (vac)	
	Min	Max
500	462.5	537.5
750	712.5	787.5

**4-2. AC Voltmeter (High Range).***a. Performance Check.*

- (1) Connect equipment as shown in figure 4-2.



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Figure 4-2. AC voltage (high range) equipment setup.

- (2) Set test instrument RANGE SELECTOR switch to 0-2250 volt position.
  - (3) Adjust decade resistor (A2) to 100 megohms.
  - (4) Set differential multimeter (A1) RANGE switch to 10 volt AC position.
  - (5) Press test instrument ON switch.
  - (6) Adjust test instrument VOLTAGE CONTROL for 750 volts indication on test instrument AC voltmeter. Differential multimeter will indicate between 6.38 and 8.62 vac.
  - (7) Set Differential multimeter RANGE switch to 100 volt AC position.
  - (8) Adjust test instrument VOLTAGE CONTROL for each indication on test instrument AC voltmeter as listed in table 4-2. Differential multimeter will indicate within the limits specified in table 4-2.
  - (9) Set test instrument VOLTAGE CONTROL to zero.
- b. Adjustments.* No adjustments can be made.

Table 4-2. AC Voltmeter (High Range)

Test instrument indications (vac)	Differential multimeter indication (vac)	
	Min	Max
1500	13.88	16.12
2250	21.38	23.62

**4-3. AC Current Meter.***a. Performance Check.*

- (1) Connect equipment as shown in figure 4-2 and set decade resistor (A2) to read 2 K ohms resistance.
- (2) Set test instrument RANGE SELECTOR switch to 0-750 volt position.
- (3) Set differential multimeter (AI) CURRENT RANGE switch to indicate 10 ma ac.
- (4) Press test instrument ON switch.
- (5) Adjust test instrument VOLTAGE CONTROL for 5 ma ac on test instrument AC current meter. Differential multimeter will indicate between 4.75 and 5.25 ma ac.
- (6) Adjust test instrument VOLTAGE CONTROL for each indication on test instrument AC current meter as listed in table 4-3. Differential multimeter will indicate within the limits specified in table 4-3.
- (7) Set test instrument VOLTAGE CONTROL to zero.

*b. Adjustments.* No adjustments can be made.

Table 4-3. AC Current Meter

Test instrument indications (vac)	Differential multimeter indication (vac)	
	Min	Max
4	3.75	4.25
3	2.75	3.25
2	1.75	2.25

**4-4. Final Procedure.***a.* Deenergize and disconnect all equipment.

*b.* Annotate and affix DA Label 80, US Army Calibration System, in accordance with TM 38-750. When the test instrument cannot be adjusted within tolerance, annotate and affix DA Form 2417, Unserviceable or Limited Use Tag.

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