

***TB 9-6625-2798-24**

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR CONDUCTIVE FLOOR, SHOE AND PERSONNEL TESTER (ASSOCIATED RESEARCH MODEL 2269)

Headquarters, Department of the Army, Washington, DC
8 November 2007

Distribution Statement A: Approved for public release; distribution is unlimited.

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also send in your comments electronically to our E-mail address: 2028@redstone.army.mil or by fax 256-842-6546/DSN 788-6546. For the World Wide Web use: <https://amcom2028.redstone.army.mil>. Instructions for sending an electronic 2028 can be found at the back of this manual.

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*This bulletin supersedes TB 9-6625-2798-50, dated 15 October 1980.

SECTION I IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instruction for the calibration of Conductive Floor, Shoe and Personnel Tester (Associated Research Model 2269).

a. Model Variations. The pin terminal marked **PERSONNEL** is changed to a banana clip terminal when the tester is used as a component of APE 1953.

b. Time and Technique. The time required for this calibration is approximately 1 hour, using the DC-low frequency technique.

2. Forms, Records, and Reports

a. Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25.

b. Adjustments to be reported are designated (R) at the end of the sentence in which they appear. When adjustments are in tables, the (R) follows the designated adjustment. Report only those adjustments made and designated with (R).

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Conductive floor resistance	5 megohms $\pm 2\%$
Personnel resistance	1 megohm $\pm 2\%$

SECTION II EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Transfer Calibration Standards Sets AN/GSM-286, AN/GSM-287 or AN/GSM-705. Alternate items may be used by the calibrating activity. The items selected must be verified to perform satisfactorily prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one ratio between the standard and TI. Where the four-to-one ratio cannot be met, the actual accuracy of the equipment selected is shown in parenthesis.

5. Accessories Required. The accessories required for this calibration are common usage accessories, issued as indicated in paragraph 4 above, and are not listed in this calibration procedure.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
DC POWER SUPPLY	Range: 0 to 36 VDC, 0 to 30 Amps	Elgar, Model DCS40-30EM10 (13589313)
MULTIMETER	Range: 0 to 525 V DC Accuracy: $\pm 0.5\%$	Agilent, Model 3458A (3458A)
RESISTANCE STANDARD NO. 1	Range: 000,000 to 999,999.99 ohms Accuracy: $\pm 0.5\%$	Biddle-Gray, Model 71-631 (7910328)
RESISTANCE STANDARD NO. 2	Range: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, megohm Accuracy: $\pm 0.5\%$	Beckman, Model CR10M (8598965)

SECTION III PRELIMINARY OPERATIONS

6. Preliminary Instructions

a. The instructions outlined in paragraphs 6 and 7 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 as listed in table 2.

c. Unless otherwise specified, verify the results of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer’s manual for this TI.

d. Unless otherwise specified, all controls and control settings refer to the TI.

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

NOTE

Do not activate tester for periods exceeding five seconds. Wait 20 seconds between measurements.

7. **Equipment Setup.** Remove the TI cover.

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.

NOTE

Do not activate tester for periods exceeding five seconds. Wait 20 seconds between measurements.

8. Meter Accuracy (Floor and Equipment)

a. Performance Check

- (1) Short **COMMON** and **FLOOR AND EQUIPMENT** terminals on TI.
- (2) Push **PRESS TO TEST** button on TI and zero the meter. Release button.
- (3) Remove shorting lead from TI.
- (4) Connect equipment as shown on figure 1 for calibration of TI up to but not including 1 megohm.

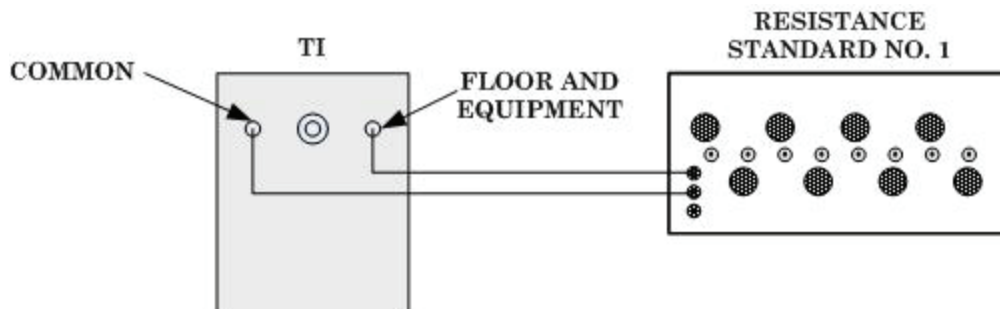


Figure 1. Performance check setup for less than 1 megohm (floor and equipment).

- (5) Push **PRESS TO TEST** button. Adjust resistance standard no. 1 until TI indicates value shown in column 1 of table 3. Resistance standard no. 1 settings will be between min and max values shown in table 3. Release button. If resistance standard no. 1 does not indicate between the values shown in table 3, perform **b** below.

Table 3. Performance Check-Floor And Equipment (Less Than 1 Megohm)

Test instrument indication	Total resistance of resistance standard no. 1 (ohms)	
	Min	Max
0	0	50
10K	9,800	10,200
50K	49,000	51,000
100K	98,000	102,000
200K	196,000	204,000
500K	490,000	510,000
1 M	980,000	See table4

- (6) Remove test leads from resistance standard no. 1.
- (7) Short **COMMON** and **FLOOR AND EQUIPMENT** terminals on TI.
- (8) Push **PRESS TO TEST** button on TI and zero the meter. Release button.
- (9) Remove shorting lead from TI.
- (10) Connect equipment as shown in figure 2 for calibration of TI at 1 megohm and greater.

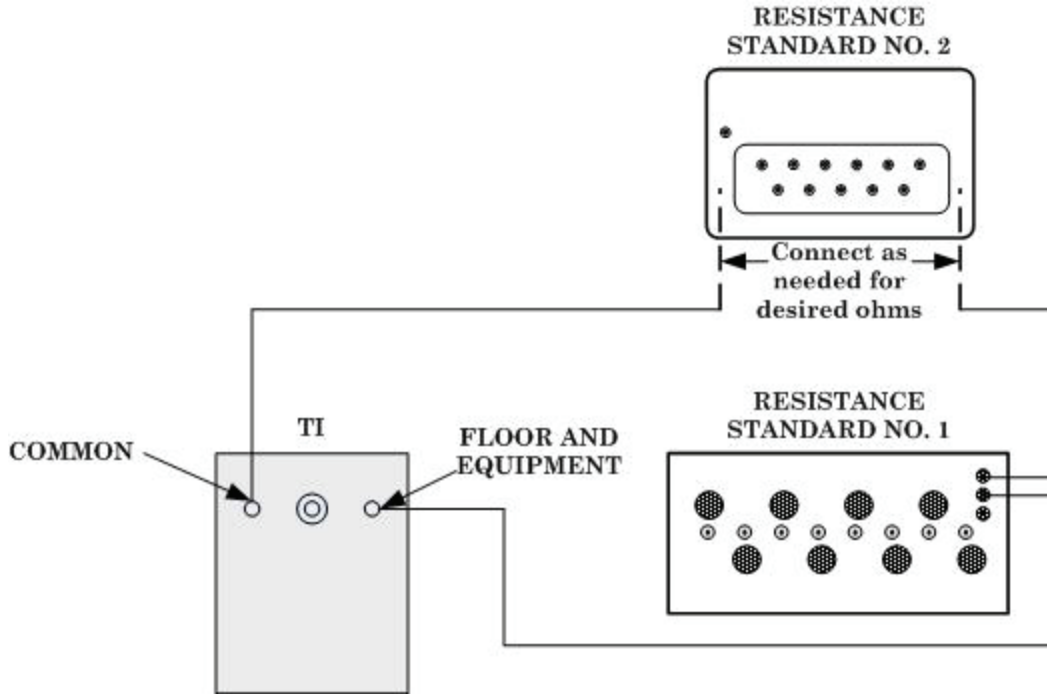


Figure 2. Performance check setup for 1 megohm and greater (floor and equipment).

- (11) Push **PRESS TO TEST** button. Adjust resistance standards no. 1 and no. 2 until TI indicates value shown in column 1 of table 4. Total resistance will be between min and max values shown in table 4. Release button. If the total resistance does not indicate between the values shown in table 4 perform **b** below.

Table 4. Performance Check-Floor And Equipment

Test instrument Indication	Total resistance of resistance standards no. 1 and no.2 (ohms)	
	Min	Max
1 M	See table 3	1,020,000
5 M	4,900,000	5,100,000

- (12) Disconnect equipment setup.

b. Adjustments

- (1) Remove four flathead screws from side of top flange of the TI. Remove TI from case.
- (2) Remove battery from TI.

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- (3) Remove four pan-head screws from TI face. Remove TI face and circuitry from inner case.
- (4) Connect DC power supply to battery leads.
- (5) Energize DC power supply and adjust output to 3.0 volts.
- (6) Connect multimeter across R1 on shunt assembly printed circuit board shown in figure 3.
- (7) Adjust series calibration potentiometer R6 (fig. 3) to mid-position (R).
- (8) Push **PRESS TO TEST** pushbutton on TI. Adjust panel **ZERO** control until multimeter reads 500 to 525 volts (R).
- (9) Disconnect multimeter from TI. Be sure not to disturb **ZERO** control setting on panel.
- (10) Connect the **COMMON** terminal on the TI to the low terminal of resistance standard no. 1.
- (11) Connect the **FLOOR AND EQUIPMENT** terminal on the TI to the high terminal of resistance standard no. 1.

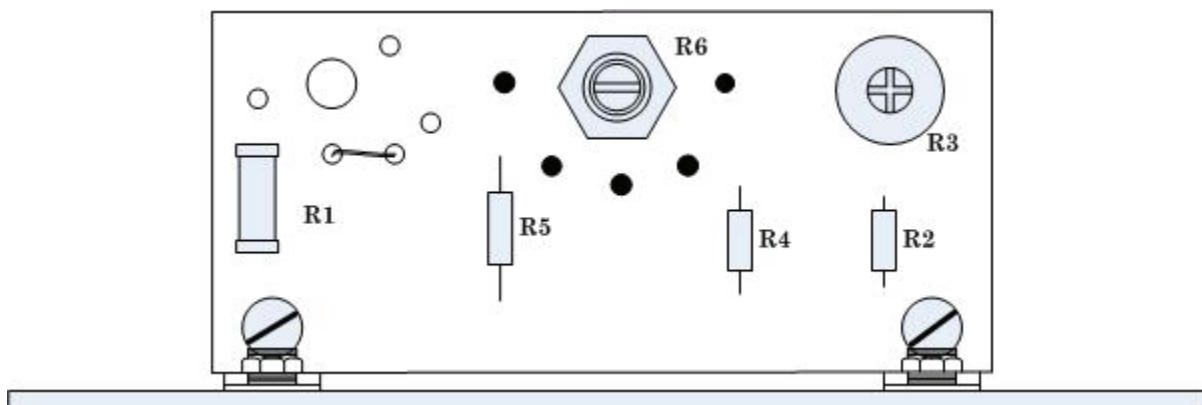


Figure 3. Shunt assembly printed circuit board.

- (12) Set resistance standard no. 1 to 000,000.00 ohms.
- (13) Push **PRESS TO TEST** pushbutton on TI. Adjust R3 (fig. 3) to zero meter. Release **PRESS TO TEST** pushbutton (R).
- (14) Set resistance standard no. 1 to 250,000 ohms.
- (15) Push **PRESS TO TEST** pushbutton on TI. Adjust R6 (fig. 3) in a direction to double the error (higher or lower than 250,000 ohms). Release **PRESS TO TEST** pushbutton (R).
- (16) Repeat (12) through (15) above until no further adjustment is required.
- (17) Repeat 8 a above.
- (18) Turn off DC power supply. Remove all connections to TI. Place instrument and circuitry in inner case and assemble four pan-head screws.

(19) Connect batteries to battery leads. Place inner case in TI case. Assemble four flathead screws.

9. Meter Accuracy (Personnel)

a. Performance Check

- (1) Short **COMMON** and **PERSONNEL** terminals on TI.
- (2) Push **PRESS TO TEST** button on TI and zero the meter. Release button.
- (3) Remove shorting lead from TI.
- (4) Connect equipment as shown in figure 4.

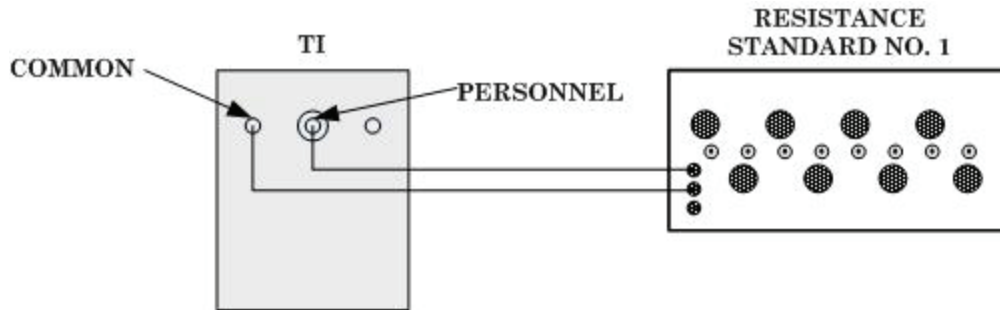


Figure 4. Performance check setup for less than 1 megohm (personnel).

(5) Push **PRESS TO TEST** button. Adjust resistance standard no. 1 until TI indicates value shown in column 1 of table 5. Resistance standard no. 1 setting must be within limits specified in table 5. Release button.

Table 5. Performance Check-Personnel

Test instrument indication	Total resistance of resistance standard no. 1 (ohms)	
	Min	Max
1 MEG	980,000	1,020,000

b. Adjustments. No adjustments can be made.

10. Final Procedure

- a.** Deenergize and disconnect all equipment and reinstall protective covers on TI if necessary.
- b.** Annotate and affix DA label/form in accordance with TB 750-25.

By Order of the Secretary of the Army:

Official:



JOYCE E. MORROW

*Administrative Assistant to the
Secretary of the Army*

0724908

GEORGE W. CASEY, JR.
*General, United States Army
Chief of Staff*

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 343078, requirements for calibration procedure TB9-6625-2798-24.

Instructions for Submitting an Electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@redstone.army.mil
To: <2028@redstone.army.mil

Subject: DA Form 2028

1. **From:** Joe Smith
2. **Unit:** home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-OCT -93
8. **Pub no:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-JUL-85
11. **Change Number:** 7
12. **Submitter Rank:** MSG
13. **Submitter FName:** Joe
14. **Submitter MName:** T
15. **Submitter LName:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. **Page:** 2
19. **Paragraph:** 3
20. **Line:** 4
21. **NSN:** 5
22. **Reference:** 6
23. **Figure:** 7
24. **Table:** 8
25. **Item:** 9
26. **Total:** 123
27. **Text**

This is the text for the problem below line 27.

