*TB 9-6625-2275-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR AC DIVIDER FLUKE, MODEL 7405A-4207, AND CURRENT SHUNT FLUKE, MODEL 80J-10

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

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.

			Paragraph	Page
SECTION	I.	IDENTIFICATION AND DESCRIPTION		
		Test instrument identification	1	2
		Forms, records, and reports	2	2
		Calibration description	3	2
	II.	EQUIPMENT REQUIREMENTS		
		Equipment required	4	2
		Accessories required	5	3
	III.	CALIBRATION PROCESS FOR MODEL 7405A-4207		
		Preliminary instructions	6	3
		Equipment setup	7	3
		Ratio accuracy	8	4
		Final procedure	9	5
	IV.	CALIBRATION PROCESS FOR MODEL 80J-10		
		Preliminary instructions	10	5
		Equipment setup	11	5
		Shunt accuracy	12	6
		Final procedure	13	7

*This bulletin supersedes TB 9-6625-2275-35, dated 17 February 1992.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of AC Divider, Fluke, Model 7405A-4207 and Current Shunt, Fluke, Model 80J-10. DA Form 3758, Calibration and Repair Requirements Worksheet, was used as the prime data source in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. None.

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

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

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
Fluke, Model 7405A-4207	
Ratio	Value: 1000:1 Voltage range: 20 V maximum Frequency: Dc to 50 kHz Accuracy: (23°C ±5°C) ±0.07% (ac only) ±0.07% + 5 μV (dc only) (Temperature coefficient: 25 ppm/°C)
Fluke, Model 80J-10	
Shunt	Range: 0 to 10 A Frequency: Dc to 10 kHz Accuracy: ± 0.25%

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)
CALIBRATOR	Dc voltage: Range: 0 to 19 V Accuracy:[1] Dc current: Range: l to 10 A Accuracy:[2]	Fluke, Model 5720A (5720A) (p/o MIS-35947); w amplifier, Fluke 5725A/AR (5725A/AR)
MULTIMETER	Dc voltage: Range: 0 to 19.0 V Accuracy:[1] [2]	Agilent, Model 3458A (3458A)

[1]Combined accuracy of calibrator (dc voltage) and multimeter (dc voltage) is 0.0175%.
[2]Combined accuracy of calibrator (dc current) and multimeter (dc voltage) is 0.0625%.

SECTION III
CALIBRATION PROCESS FOR MODEL 7405A-4207

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.

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

7. Equipment Setup

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.

a. Set multimeter for dc voltage measurements. Short **INPUT HI** and **LO** and zero the multimeter. Remove short.

b. Connect equipment as shown in figure 1.

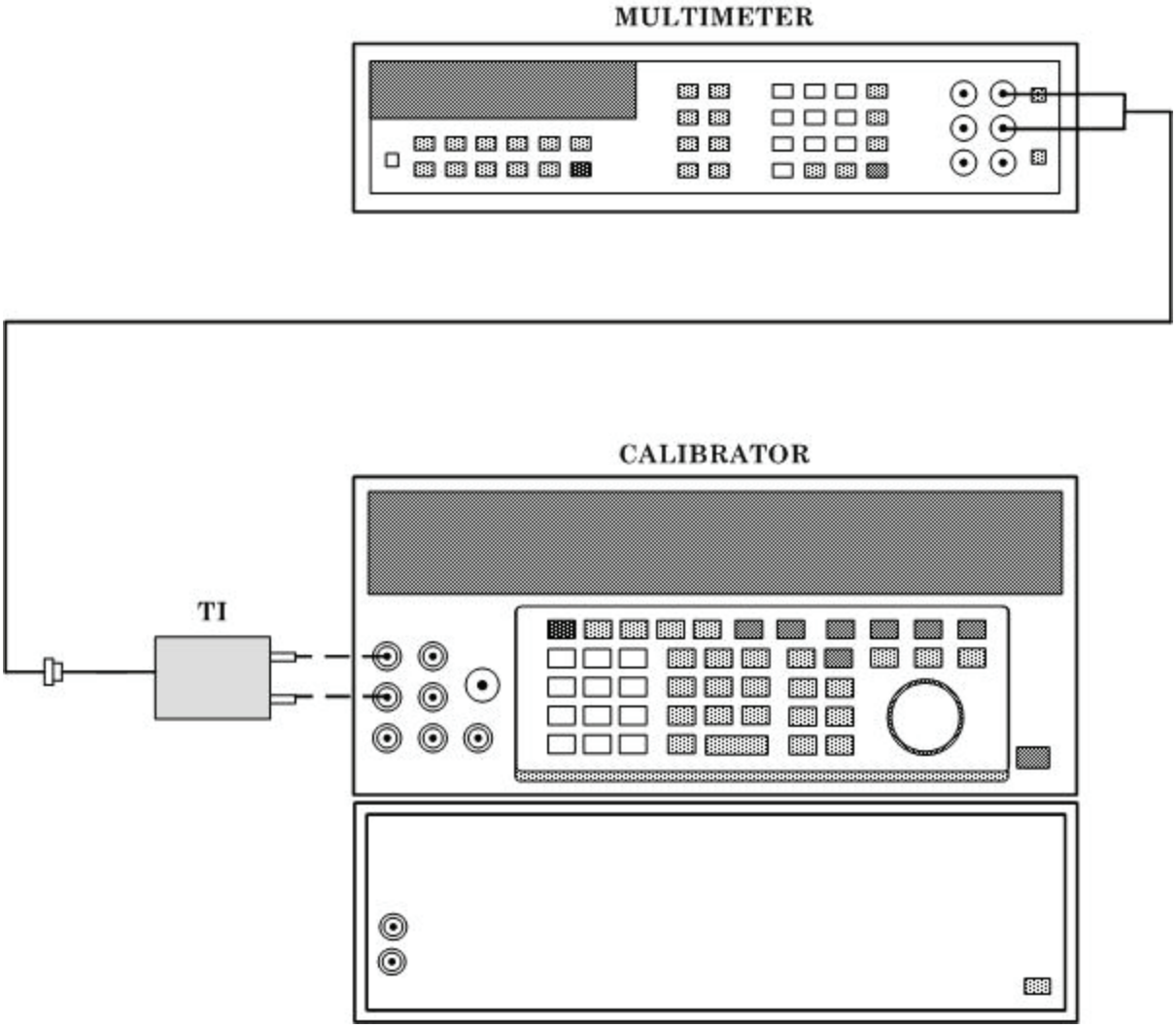

Figure 1. Ratio accuracy.

8. Ratio Accuracy

a. Performance Check

(1) Set calibrator for a 0 V dc output. Multimeter indication will be <5 μV. Record indication.

(2) Disconnect TI from equipment setup and connect multimeter **Input HI** and **LO** terminals directly to calibrator **OUTPUT HI** and **LO** terminals.

(3) Set multimeter to 100 V range.

(4) Set calibrator for a 19 V dc output. Using output adjustment control, adjust calibrator for a 19.00000 V dc (±5 digits) indication on multimeter.

(5) Set calibrator to **STANDBY**.

(6) Reconnect equipment as shown in figure 1.

(7) Set calibrator to **OPERATE** and multimeter to 100 mV range.

(8) Subtract value recorded in (1) above from multimeter indication. Resulting value will be between 18.9867 mV and 19.0133 mV dc.

b. Adjustments. No adjustments can be made.

9. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

SECTION IV
CALIBRATION PROCESS FOR
FLUKE, MODEL 80J-10

10. Preliminary Instructions

a. The instructions outlined in paragraphs **10** and **11** 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.

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

11. Equipment Setup

WARNING

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

a. Set multimeter for dc voltage measurements. Short **VOLTS INPUT** and then zero the multimeter.

b. Connect equipment as shown in figure 2 CONNECTION A.

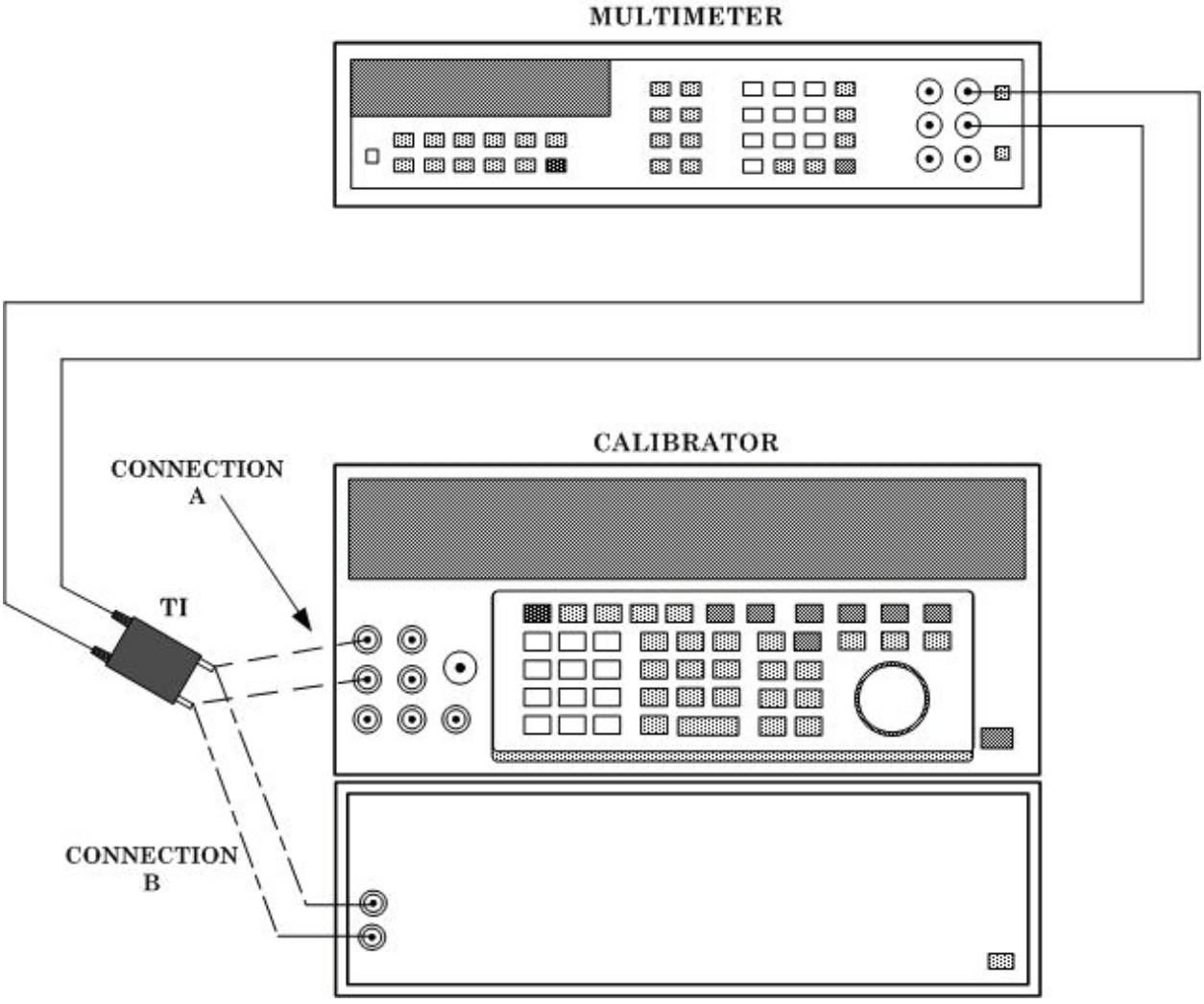

Figure 2. Shunt accuracy.

12. Shunt Accuracy

a. Performance Check

(1) Set calibrator for a 1 A dc output. Multimeter will indicate within the limits specified in first row of table 3.

(2) Set calibrator to **STANDBY** and connect equipment as shown in figure 2 CONNECTION B.

(3) Repeat technique of (1) above for calibrator outputs listed in table 3. Multimeter will indicate within the limits specified in table 3.

b. Adjustments. No adjustments can be made.

Table 3. Shunt Accuracy

Calibrator output		Multimeter indications (mV dc)	
Current (A)	Frequency	Min	Max
1.0	Dc	9.9750	10.0250
5.0	Dc	49.8750	50.1250
10.0	Dc	99.7500	100.2500

13. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
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0727503

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 343510, requirements for calibration procedure TB 9-6625-2275-24.

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.