*TB 9-6625-1943-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR FREQUENCY METER AMERICAN MACHINE AND FOUNDRY CO. MODEL PFM 604B, A AND M INSTRUMENT, INC., MODEL 5009 AND SUN ELECTRIC CORP., MODEL M7-110

Headquarters, Department of the Army, Washington, DC
27 September 2002

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, 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 provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our FAX number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web, use: https://amcom2028.redstone.army.mil.

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*This bulletin supersedes TB 9-6625-1943-35, dated 20 July 1992.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Frequency Meter, American Machine and Foundry Co., Model PFM 604B, A and M Instrument, Inc., Model 5009 and Sun Electric Corp., Model M7-110. The manufacturers' manuals were 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. Variations among models are described in text.

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
Input voltage	105 to 135 V ac
Input frequency	60 and 400 Hz
Meter scales	58 to 62 Hz and 380 to 420 Hz
Resolution	0.1 Hz (58 to 62 Hz) and 1 Hz (380 to 420 Hz)
Meter accuracy: Center scale Entire scale	 0.1% 0.2%

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 Set AN/GSM-286. 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.

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	Range: 105 to 135 V ac Frequency: 57.88 to 420.8 Hz Accuracy: ±0.025%	John Fluke, Model 5700A/CT (p/o MIS-35947)

SECTION III
CALIBRATION PROCESS

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 and additional maintenance information are contained in the manufacturers' manuals for this TI.

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. Adjust TI mechanical zero (front panel) until each meter indicates first major division.

b. If necessary, set TI controls as required.

8. Frequency Accuracy

a. Performance Check

(1) Connect calibrator **OUTPUT HI** and **LO** to TI 400 Hz input.

(2) Set calibrator for a 120 V, 400 Hz output.

(3) Adjust calibrator frequency for a 400 Hz indication on TI. Calibrator frequency indication will be between 0.3996 and 0.4004 kHz.

(4) Set calibrator amplitude to 105 V and repeat (3).

(5) Set calibrator amplitude to 135 V and repeat (3).

(6) Set calibrator amplitude to 120 V and repeat technique of (3) above using indications listed in table 3.

Table 3. Frequency Accuracy

Test instrument indications (Hz)	Calibrator frequency indications (kHz)	
	Min	Max
380	0.3792	0.3808
385	0.3842	0.3858
390	0.3892	0.3908
395	0.3942	0.3958
405	0.4042	0.4058
410	0.4092	0.4108
415	0.4142	0.4158
420	0.4192	0.4208

(7) Disconnect calibrator **OUTPUT HI** and **LO** from TI 400 Hz input.

(8) Connect calibrator **OUTPUT HI** and **LO** to TI 60 Hz input.

(9) Set calibrator for a 120 V, 60 Hz output.

(10) Adjust calibrator frequency for a 60 Hz indication on TI. Calibrator frequency indication will be between 59.94 Hz and 60.06 Hz.

(11) Repeat technique of (10) above using indications listed in table 4.

Table 4. Frequency Accuracy

Test instrument meter indications (Hz)	Calibrator frequency indications (Hz)	
	Min	Max
58	57.88	58.12
59	58.88	59.12
61	60.88	61.12
62	61.88	62.12

b. Adjustments

. Refer to paragraph **6c** above.

9. Final Procedure

a. Deenergize and disconnect all equipment.

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

THESE ARE THE INSTRUCTIONS FOR SENDING 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@avma27.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**: TB 9-6625-xxxx-35
9. **Pub Title**: Calibration Procedure for ...
10. **Publication Date**:
11. Change Number:
12. **Submitted Rank**: MSG
13. **Sumitter 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.

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

OFFICIAL:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0222104

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