*TB 9-4910-558-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR HEATER TEST STAND VALCOM LTD, MODEL VHTS-89102

Headquarters, Department of the Army, Washington, DC
9 May 2008

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.

*This bulletin supersedes TB 9-4910-558-35, dated 12 February 1992.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Heater Test Stand, Valcom LTD, Model VHTS-89102. DA Form 3758, Calibration and Repair Requirements Worksheet, and TM 9-4910-755-13&P were used as the prime data sources 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 2 hours, using the dc and 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
Dc voltage	Range: 0 to 24 V dc Accuracy: ± 0.75 V
Dc amperes	Range: 0 to 25 A Accuracy: ± 0.75 A
Pyrometer (temperature)	Range: 0 to 300°C Accuracy: ± 5°C

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, AN/GMS-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 provided 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 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. The following peculiar accessory is as required for this calibration: Dc Power Supply, Dynamic Industries Corp., Model 55314-104054 (MIS-38956).

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
CALIBRATOR	Dc volts range: 0 to 24 V dc Accuracy: ± 0.625%	Fluke, Model 5720A (5720A) (p/o MIS-35947)
DC CURRENT SHUNT	Dc amperes range: 0 to 25 A Accuracy: [1]	Guildline, Model 9711 (7912323)
MULTIMETER	Range: 9.75 to 57.50 mV Accuracy: [1]	Hewlett Packard, Model 3458A (3458A)
THERMOMETER	Temperature range: 0 to 100°C Accuracy: ±1.25°C	Azonix, Model A1012 (MIS 38958) w/Temperature Probe Instrulab, Model 4101-10X

[1]Combined accuracy of dc current shunt and multimeter: ±1.8% to ±2.1%.

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 result 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 TM 9-4910-755-13&P 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.

WARNING

Ensure TI has no fuel residue present inside fuel assembly.

a. Open the control panel of TI as necessary to gain access to adjustments.

b. Ensure TI **ON-OFF POWER** switch is in **OFF** position.

c. Ensure TI **VOLTMETER** and **AMMETER** indicate zero. If not, mechanically zero meter pointer using adjustment screw on meter face.

d. Set switches as listed in (1) through (5) below:

(1) **VOLTMETER HEATER/OFF/ EXTERNAL MODE** switch to **OFF**.

(2) **AMMETER HEATER/OFF/ EXTERNAL MODE** switch to **OFF**.

(3) **LEAK TEST** switch to **OFF**.

(4) **RUN-START** switch to **OFF**.

(5) **HIGH-LOW** switch to **LOW**.

e. Connect TI to appropriate power source.

8. Dc Voltage Accuracy

a. Performance Check

(1) Connect calibrator **OUTPUT HI** to TI voltmeter input + and calibrator **OUTPUT LO** to TI voltmeter input - terminals.

(2) Set **ON-OFF POWER** switch to **ON**.

(3) Set **VOLTMETER HEATER/OFF/EXTERNAL MODE** switch to **EXTERNAL MODE**.

(4) Adjust calibrator output for a 5 V dc indication on TI **VOLTMETER**. Calibrator will indicate between 4.25 and 5.75 V dc.

(5) Repeat technique of (4) above using calibrator settings and TI indications listed in table 3.

(6) Set TI **VOLTMETER HEATER/ OFF/EXTERNAL MODE** switch to **OFF**.

b. Adjustments. No adjustments can be made.

Table 3. Dc Voltage Accuracy

Test instrument **VOLTMETER** indications (V dc)	Calibrator indications (V dc)	
	Min	Max
10	9.25	10.75
15	14.25	15.75
20	19.25	20.75
24	23.25	24.75

9. Dc Amperes Accuracy

a. Performance Check

(1) Connect equipment as shown in figure 1. Position dc current shunt range plugs to **10**.

(2) Set TI **AMMETER HEATER/OFF/EXTERNAL MODE** switch to **EXTERNAL MODE**.

(3) Adjust dc power supply controls for a TI **AMMETER** indication of 5 A. Digital multimeter will indicate between 42.50 and 57.50 mV dc.

NOTE

Reduce power supply output current to zero before moving dc current shunt connection.

(4) Move dc current shunt connection from 10 A range to 100 A range and position dc current shunt range plugs to **100**.

(5) Adjust dc power supply controls for TI **AMMETER** indications as listed in table 4. Digital multimeter indications will be within limits as specified in table 4.

(6) Set TI **AMMETER HEATER/OFF/ EXTERNAL MODE** switch to **OFF**.

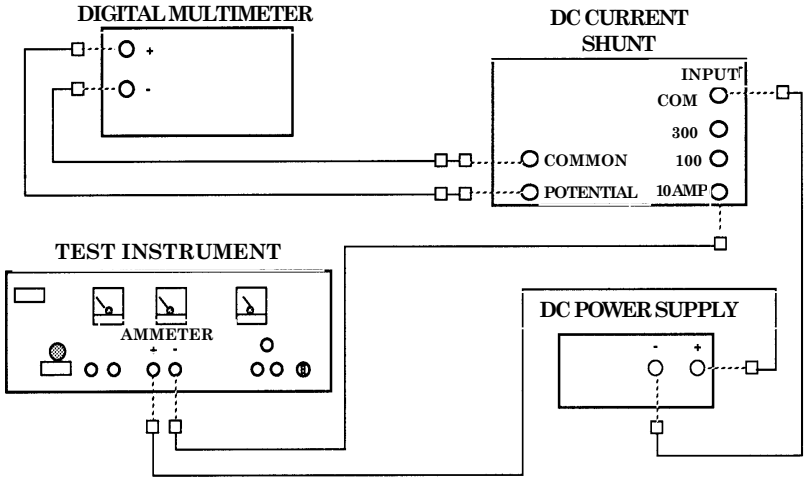

Figure 1. Dc current - equipment setup.

Table 4. Dc Amps Accuracy

Test instrument **AMMETER** indications (A)	Digital multimeter indications (mV dc)	
	Min	Max
10	9.25	10.75
15	14.25	15.75
25	24.25	25.75

b. Adjustments. No adjustments can be made.

10. Temperature Accuracy

a. Performance Check

(1) Set **ON/OFF POWER** switch to **OFF** and connect thermocouple cable to TI **THERMOCOUPLE** connector located on right-hand side of TI.

(2) Adjust **TEMPERATURE** meter adjustment screw for an indication equal to thermometer indication.

(3) Set **ON/OFF POWER** switch to **ON** and place TI thermocouple probe and thermometer probe in ice water bath. If TI **TEMPERATURE** meter does not indicate within ±5 degrees Celsius of thermometer indication, perform **b** (l) below.

(4) Place TI thermocouple probe and thermometer probe in boiling water bath. If TI **TEMPERATURE** meter does not indicate within ±5 degrees Celsius of thermometer indication, perform **b** (2) and (3) below.

b. Adjustments

(1) Adjust R5 (fig. 2) for TI **TEMPERATURE** meter indication equal to thermometer indication (R).

(2) Adjust R6 (fig. 2) for TI **TEMPERATURE** meter indication equal to thermometer indication (R).

(3) Repeat **a** (3) and (4) above.

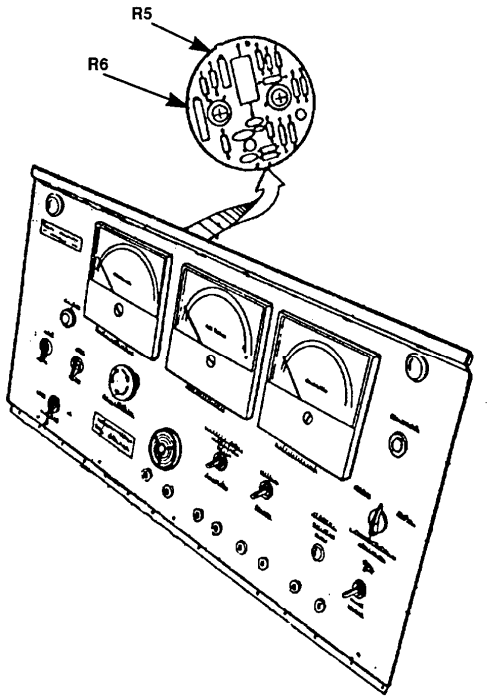

Figure 2. Temperature adjustment location.

11. 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.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
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0808502

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 343512, requirements for calibration procedure TB 9-4910-558-24.

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.

PIN: 084776-000