

*TB 9-6680-287-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR ELECTRIC TACHOMETER GENERATOR, IDEAL INDUSTRIES, MODEL 50-002

Headquarters, Department of the Army, Washington, DC
20 May 2004

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, US Army Aviation and Missile Command, 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. For the World Wide Web, use <https://amcom2028.redstone.army.mil>.

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*This bulletin supersedes TB 9-6680-287-35, dated 24 July 1985.

SECTION I IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Electric Tachometer Generator, Ideal Industries, Model 50-002. The manufacturer's manual 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. 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

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
Low-range scale	Range: 0 to 2500 rpm Accuracy: $\pm 1\%$ FS
High-range scale	Range: 0 to 5000 rpm Accuracy: $\pm 1\%$ FS

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-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. The following peculiar accessories are also required for this calibration: Motional Pickup Transducer, P/N 7913463 (6695-00-302-6923); and Tachometer Calibrator, P/N 7910009 (4931-00-071-5351).

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
FREQUENCY COUNTER	Range: 59.406 to 12.1212 ms Accuracy: $\pm 0.25\%$	Fluke, Model PM6681/656 (PM6681/656)

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 the manufacturer's manual 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. Remove TI and accessories from carrying case.
- b. Insert generator unit into meter unit and twist generator unit cw to lock into position.
- c. Mechanically zero meter, if necessary, using mechanical zero adjustment screw.
- d. Turn drive shaft of generator manually to ensure that shaft turns freely.
- e. Remove four back cover securing screws from tachometer calibrator. Remove back cover.
- f. Connect motional pickup transducer output to input of frequency counter.
- g. Connect frequency counter and power supply (part of motional pickup transducer) to a 115 V ac source.
- h. Energize equipment and allow 15 minutes for equipment to warm-up and stabilize.
- i. Connect 0.500 to 1 ratio drive adapter, supplied with tachometer calibrator, to tachometer calibrator with calibrator in the horizontal plane.

NOTE

Observe that flywheel in tachometer calibrator is painted alternately black and white; model 650A, 10 equal black and white; model 650H, one each black and white. If model 650H is used, all frequencies listed will be divided by 10.

8. Rpm Accuracy

a. Performance Check

- (1) Set **RANGE** switch of TI to **LO**.
- (2) Install conical tip into center hole of generator unit drive shaft of TI.
- (3) Hold TI in horizontal position and insert conical tip into drive of tachometer calibrator, applying only enough pressure to turn conical tip without slippage.

NOTE

Changing the applied pressure may affect frequency indication.

(4) Adjust tachometer calibrator for 500 rpm as indicated on TI. Frequency counter will indicate technique of between 57.143 and 63.171 ms.

(5) Repeat technique of (3) and (4) above, using the ratio adapters listed in table 3. If frequency counter does not indicate within limits specified, perform **b** below.

Table 3. Rpm Accuracy

Test instrument (rpm)		Frequency counter indications (ms)	
0.500:1 Adapter	1:1 Adapter	Min	Max
- - -	1000	57.143	63.170
1000	2000	29.269	30.769
1500	3000	19.672	20.339
2000	4000	14.815	15.1906
2500	5000	11.882	12.1212

- (6) Set **RANGE** switch of TI to **HI**.
- (7) Repeat (5) above with 1 to 1 ratio adapter.
- (8) Repeat (5) and (7) above with ratio adapters connected to tachometer calibrator in a vertical plane.

b. Adjustments

- (1) Repeat **7 i** through **8 a** (3) above.
- (2) Adjust tachometer calibrator for 12.005 ms on frequency counter.
- (3) Adjust low range adjustment (fig. 1) for 2500 rpm on TI (R).
- (4) Set **RANGE** switch of TI to **HI**.
- (5) Connect 1 to 1 ratio drive adapter to tachometer calibrator in a horizontal plane.
- (6) Adjust tachometer calibrator for 12.005 ms on frequency counter.

- (7) Adjust high range adjustment (fig. 1) for 5000 rpm on TI (R).
- (8) Repeat 7 i through 8 a (8) above.

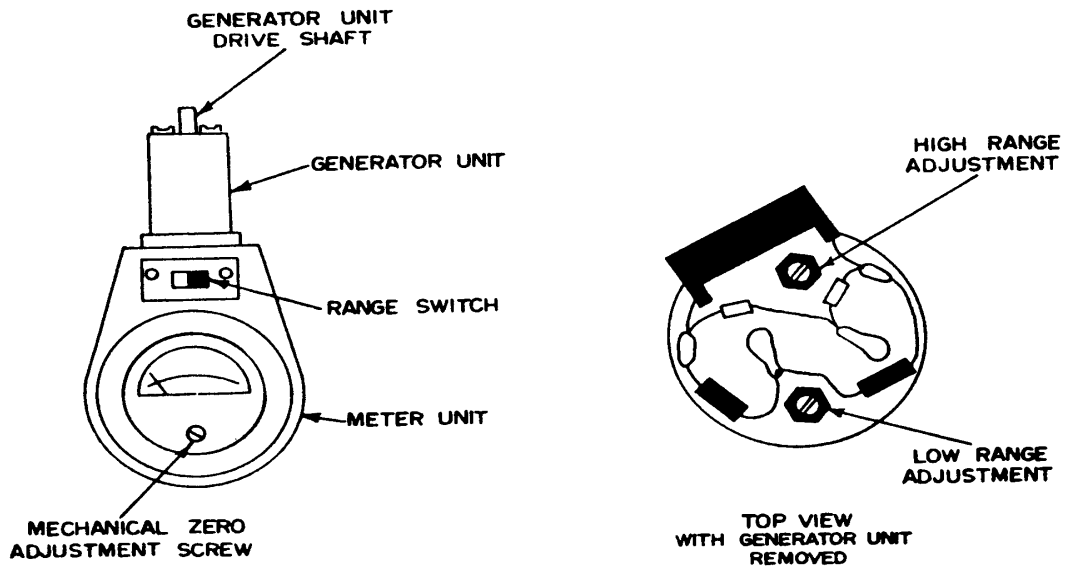


Figure 1. Electric tachometer - generator.

9. 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:

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Distribution:

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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.

