*TB 9-4931-541-40

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR DIAL INDICATOR CALIBRATOR ITALL MODEL 700

Headquarters, Department of the Army, Washington, DC
10 September 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 9-4931-541-40, dated 28 April 2008.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Dial Indicator Calibrator, ITALL Model 700. 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. None.

b. Time and Technique. The time required for this calibration is approximately 1 hour using the physical 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 that pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Range	0.0 to 1.0 in.
Accuracy	± 0.0001 in. over entire range
Resolution	± 0.000001 in.

SECTION II
EQUIPMENT REQUIREMENT

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Reference Calibration Standard Set, NSN 4931-00-621-7878. 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 the 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: ND281B Display Unit and Shaft diameter adaptor; Split Bushing, Starrett (EDP56007).

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
ELECTRONIC LINEAR TRANSDUCER	Range: 0.0 to 1.0 in. Accuracy: ± 0.000025 in.	Heidenhain, Model MT2501

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.

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

7. Equipment Setup

a. Clean TI contact surface and electronic linear transducer probe tip with alcohol.

b. Position TI contact surface to lowest position.

c. Mount standard electronic linear transducer in TI dial indicator mounting fixture using shaft diameter adapter so probe tip just makes contact with TI contact surface.

d. Connect the electronic linear transducer to the ND281B display unit and connect display unit to 110 V ac.

e. Set both TI and standard electronic linear transducer display units for a 0.000001 resolution.

NOTE

Zero electronic linear transducer display unit. Ensure the electronic linear transducer and TI has full 1 in. travel.

f. Allow 1 hour equipment stabilization time.

8. Dial Indicator Calibrator (DIC) Linearity Accuracy

a. Performance Check

(1) Zero both the TI and standard electronic linear transducer display units.

(2) Adjust contact surface upwards until display unit reads 1st parameter of table 3.

(3) Verify that the standard display unit displays within limits in table 3.

(4) Repeat technique of (2) and (3) for all remaining TI settings listed in table 3.

(5) Zero both the TI and standard electronic linear transducer display units.

(6) Repeat technique of (2) through (4) above for the TI contact surface downward direction.

Table 3. Calibration Data Chart for Dial Indication Calibrator (DIC)

TI contact surface direction		TI display	Electronic Linear Transducer Display Unit indication	
1st Pass	2nd Pass		Minimum	Maximum
UP	DOWN	0.050000	0.049900	0.050100
UP	DOWN	0.100000	0.099900	0.100100
UP	DOWN	0.200000	0.199900	0.200100
UP	DOWN	0.300000	0.299900	0.300100
UP	DOWN	0.400000	0.399900	0.400100
UP	DOWN	0.500000	0.499900	0.500100
UP	DOWN	0.600000	0.599900	0.600100
UP	DOWN	0.700000	0.699900	0.700100
UP	DOWN	0.800000	0.799900	0.800100
UP	DOWN	0.900000	0.899900	0.900100
UP	DOWN	1.000000	0.999900	1.000100

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.

By Order of the Secretary of the Army:

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

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0819102

Distribution:

To be distributed in accordance with STD IDS No. RLC-1500, 2 January 2003, requirements for calibration procedure TB 9-4931-541-40.

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.