*TB 9-6635-203-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR DIAL INDICATING TENSIOMETER MIL-T-38760

Headquarters, Department of the Army, Washington, DC
8 July 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 9-6635-203-35, dated 21 September 1985, including all changes.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Dial Indicating Tensiometer MIL-T-38760. The manufacturer's manual, and MIL-T-38760 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. Locations of handle latch, pointer, actuating handle, and unlock button varies according to manufacturer.

b. Time and Technique. The time required for this calibration is approximately 1.5 hours, using the physical 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 applications which pertain to this calibration are in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Tension (weight)	Range: 10 to 200 lbs Accuracy: ±5% of averaged 3 readings

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/GSM-287 and 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 listed in table 3 are issued as indicated in paragraph **4** above and are used in this calibration procedure. When necessary, these items may be substituted by equivalent items, unless specifically prohibited.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
BALANCE WEIGHT SET	Range: 1/16 to 8 oz Accuracy: Class C	(7910419) (see AVIOR)
BALANCE WEIGHT SET	Range: 5 to 150 lbs Accuracy: Class T	(7910346)
HANGER ASSEMBLY	Range: 5 lbs Accuracy: ±0.02 lbs	(7916702) (p/o 7916705)
STANDARD WEIGHT SET	Range: 1 to 40 lbs Accuracy: Class T	(7909056)

Table 3. Accessories Required

Common name (official nomenclature)	Description (part number)
CABLE	(7916704) (p/o 7916705)
CABLE HOLDER	(7916703) (p/o 7916705)
MECHANICAL LOADER	Loader with extended leg (7916274)
MOUNTING PLATE	Capable of supporting mechanical loader (7915876)

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 and item identification number as listed in tables 2 and 3.

NOTE

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.

NOTE

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

7. Equipment Setup

a. Remove TI and calibration bar from carrying case.

b. Compare serial number on name plate of TI with serial number stamped on tab of calibration bar; these serial numbers must agree.

c. Rotate cable size-gage ccw against stop pin (fig. 1).

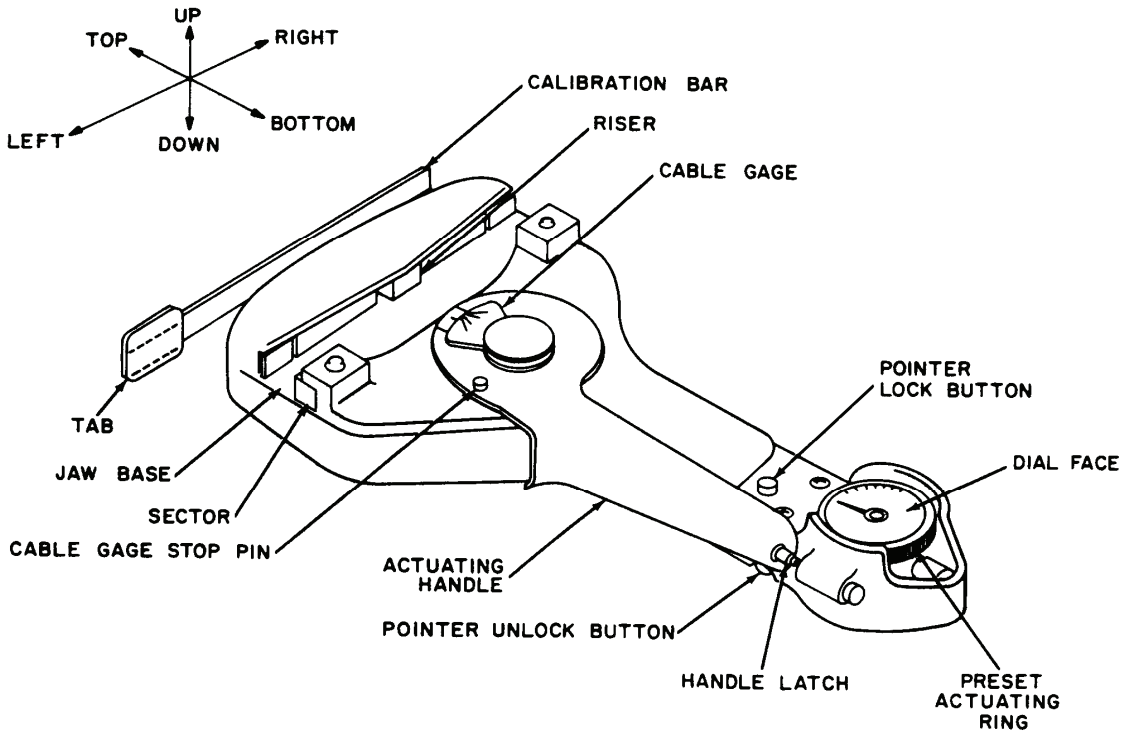

Figure 1. Dial indicating tensiometer (typical).

d. Turn bezel until indicator dial indicates $^{1}/_{16}$.

NOTE

This setting must be changed to correspond to size of cable being used.

e. Compress TI actuating handle and insert calibration bar into jaws with calibration bar tab to left (fig. 1).

f. Release actuating handle completely.

NOTE

The actuating handle is retained by a handle latch. When actuating handle is compressed, handle latch is automatically released downward. To relatch, compress handle against side of frame and push handle latch upward into detent in actuating handle. Then slowly release hand compression (fig. 1).

WARNING

When relatching, be sure handle latch is in detent before releasing compression on actuating handle; otherwise, handle will snap open and may cause personal injury.

g. Indicator dial will read within ±2 percent of reading stamped on calibration bar.

h. Compress actuating handle and remove calibration bar, carefully relatching actuating handle.

i. Set up equipment as shown in figure 2.

j. Tare weight of hanger assembly must be included as part of the total weight used in each test.

8. Dial Indicating Tensiometer

a. Performance Check

(1) Rotate knurled rim of indicator dial on TI until pointer indicates the cable diameter being used.

(2) Rotate cable size-gage on TI ccw against the stop pin.

(3) Increase tension on cable by adding weights from balance weight sets or standard weight set to hanger assembly until total weight (tare weight plus added weight) equals 25 pounds.

(4) Apply TI to cable by compressing actuating handle and making certain that cable is aligned in the jaws and against jaw base (fig. 1).

(5) Slowly release compression until riser block and sectors (fig. 1) are firmly gripping cable. Release compression entirely.

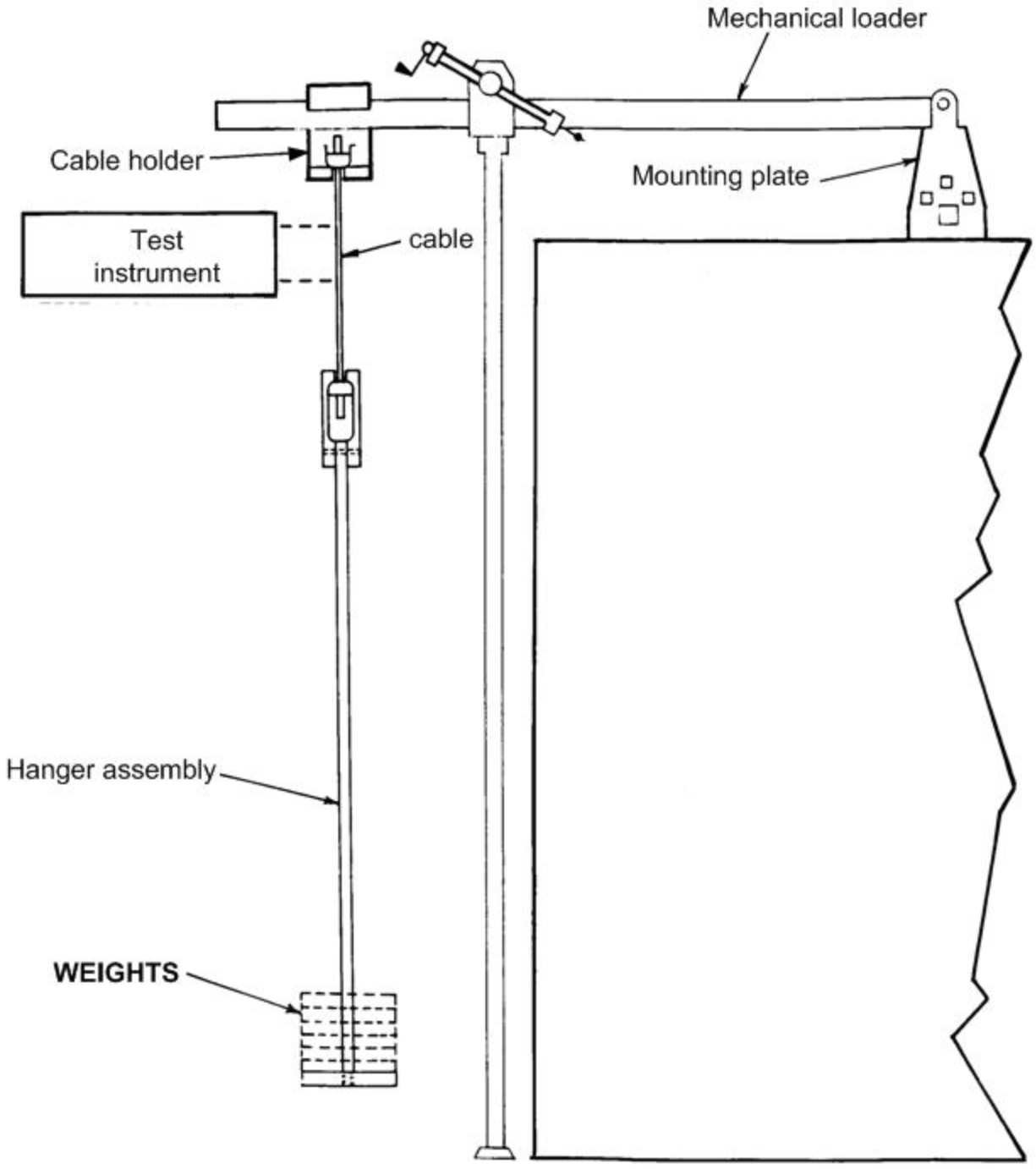

Figure 2. Equipment setup.

NOTE

Do not attempt to take cable tension readings with pointer lock button pressed. This button should only be used to lock dial indicator pointer when taking readings on closely grouped or in awkward or blind locations. When this occurs, button must be pressed to unlock pointer after each reading; otherwise, erroneous readings will be obtained.

(6) TI will indicate between 23.75 and 26.25 pounds.

(7) Reading on TI cable size-gage must correspond with cable size stamped on cable terminal.

(8) Repeat (1) through (7) above, using cables and total weight as listed in table 4. TI will indicate within limits specified.

Table 4. Dial Indicating Tensiometer

Cable size (in)	Total weight (lbs)	Test instrument		
		Cable size	Min	Max
3/32	25	3/32	23.75	26.25
1/8	25	1/8	23.75	26.25
5/32	50	5/32	47.50	52.50
3/16	75	3/16	71.25	78.75
7/32	100	7/32	95.00	105.00
1/4	125	1/4	118.75	131.25
1/4	150	1/4	142.50	157.50
1/4	175	1/4	166.25	183.75

NOTE

Due to the uneven surface of stranded cables a slight variation in reading will sometimes occur on the same cable at the same tension. This is especially true of 5/32-inch diameter cable and larger. To obtain the greatest possible accuracy three to five readings should be taken at slightly different (approximately 1 inch) locations on the cable. Average these readings to obtain the maximum degree of accuracy.

NOTE

When measuring tensions, using the $^{7}/_{32}$ and $^{1}/_{4}$-inch size cables, set the dial to [125-] square for tensions of 125 pounds and below and [125+] square for tensions above 125 pounds.

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:

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0812808

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 343081, requirements for calibration procedure TB9-6635-203-24.

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.