*TB 9-5855-1891-40

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TEST SET, BORESIGHT COLLIMATOR, TS-3784/TAS

Headquarters, Department of the Army, Washington, DC
22 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 9-5855-1891-50, dated 15 March 1993, including all changes.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Test Set, Boresight Collimator, TS-3784/TAS. DMWR 9-5855-286 and TM 9-5855-286-14 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 12 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.

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
Deviation	Accuracy: 3.71 or less computed from test data worksheets

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 Reference Calibration Standards 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 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: Fixture, boresight collimator mass simulator (1335500); Mount Boresight Assembly (SM-D-775000) p/o Boresight Collimator.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
GAGE BLOCK NO. 1	Accuracy: Approximately 0.010 in. thick	(7901267) Gage block set, 28 pieces
GAGE BLOCK NO. 2	Accuracy:[1]	(7901363) Gage block set, 8 pieces
REFERENCE MIRROR[2]	Accuracy: Flatness to within l/5 fringe of monochromatic light	(13335499)
SURFACE PLATE	Accuracy: ±0.000075 in. Class 1 Grade A	36"X48"

[1] Used to place height of lab standard mirror reflecting surface in light path of UPPER MIRROR and LOWER MIRROR.
[2] Reference mirror will be called lab standard mirror throughout this calibration procedure.

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 required to calibrate the TI are included in this procedure. Additional maintenance information is contained in TM 9-5855-286-14 and DMWR 9-5855-286.

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 optics assembly from container case and stand optics assembly upright on surface plate.

b. Remove AUTOCOLLIMATOR from container case, loosen two CLAMP SCREWS, and slide AUTOCOLLIMATOR into TI until it seats (fig. 1).

c. Tighten two CLAMP SCREWS (fig. 1).

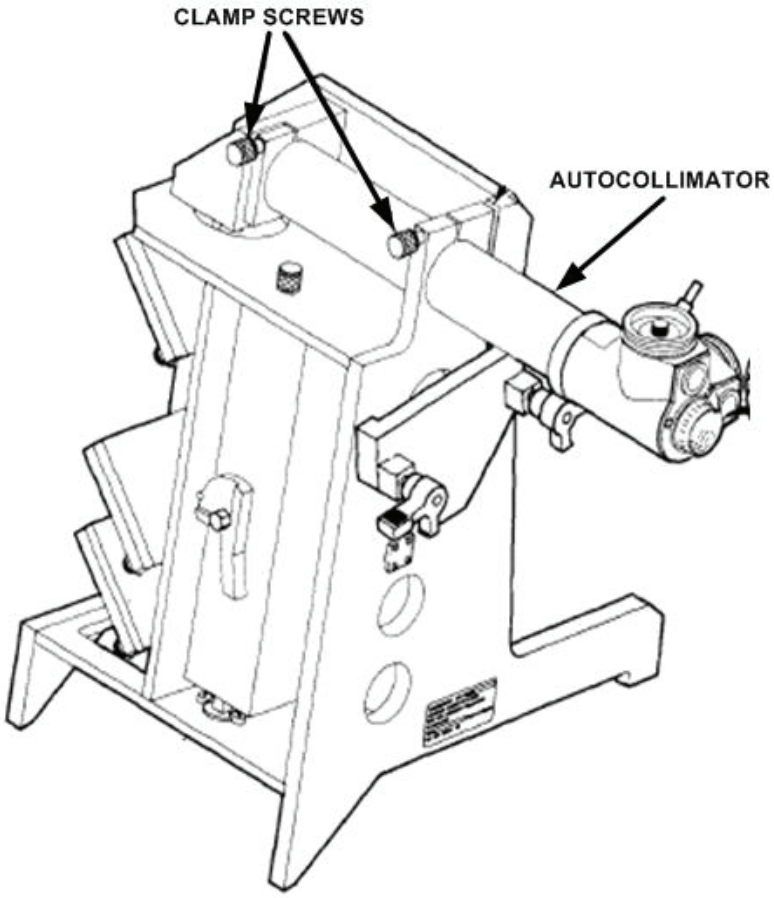

Figure 1. Autocollimator installation.

d. Remove POWER CORD ASSEMBLY CONNECTOR from container case and attach RHEOSTAT CONTROL to AUTOCOLLIMATOR (fig. 2).

NOTE

RHEOSTAT CONTROL (fig. 2) has magnetic base and attaches magnetically to AUTOCOLLIMATOR (fig. 2) housing.

e. Turn RHEOSTAT CONTROL fully ccw (fig. 2).

f. Connect POWER CORD RETICLE CONNECTOR to RETICLE LAMP JACK and connect POWER CORD ASSEMBLY CONNECTOR to 115 V ac, 50 to 60 Hz (fig. 2).

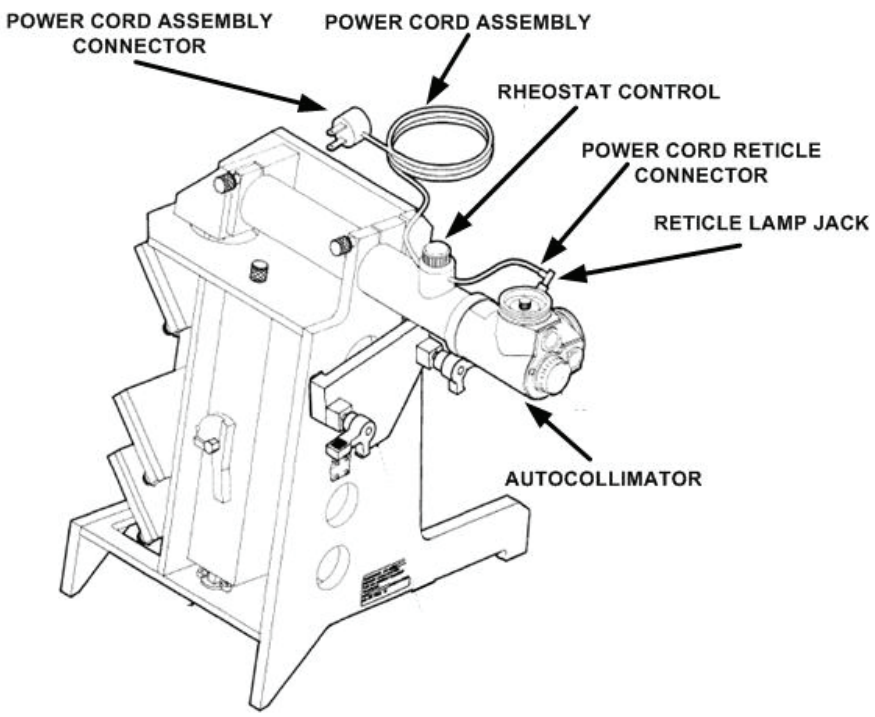

Figure 2. Rheostat control attachment.

NOTE

TI assembly is comprised of optics assembly, autocollimator and rheostat control.

NOTE

Allow 24 hours settling time for TI temperature to stabilize to laboratory temperature.

8. Boresight Collimator Test Set Accuracy

a. Performance Check

(1) Look through EYEPIECE, turn RHEOSTAT CONTROL cw until horizontal and vertical reticles are visible and STATIONARY RETICLE is illuminated (fig. 3).

(2) Turn EYEPIECE until STATIONARY RETICLE and NUMBER MARKINGS are in focus (fig. 3).

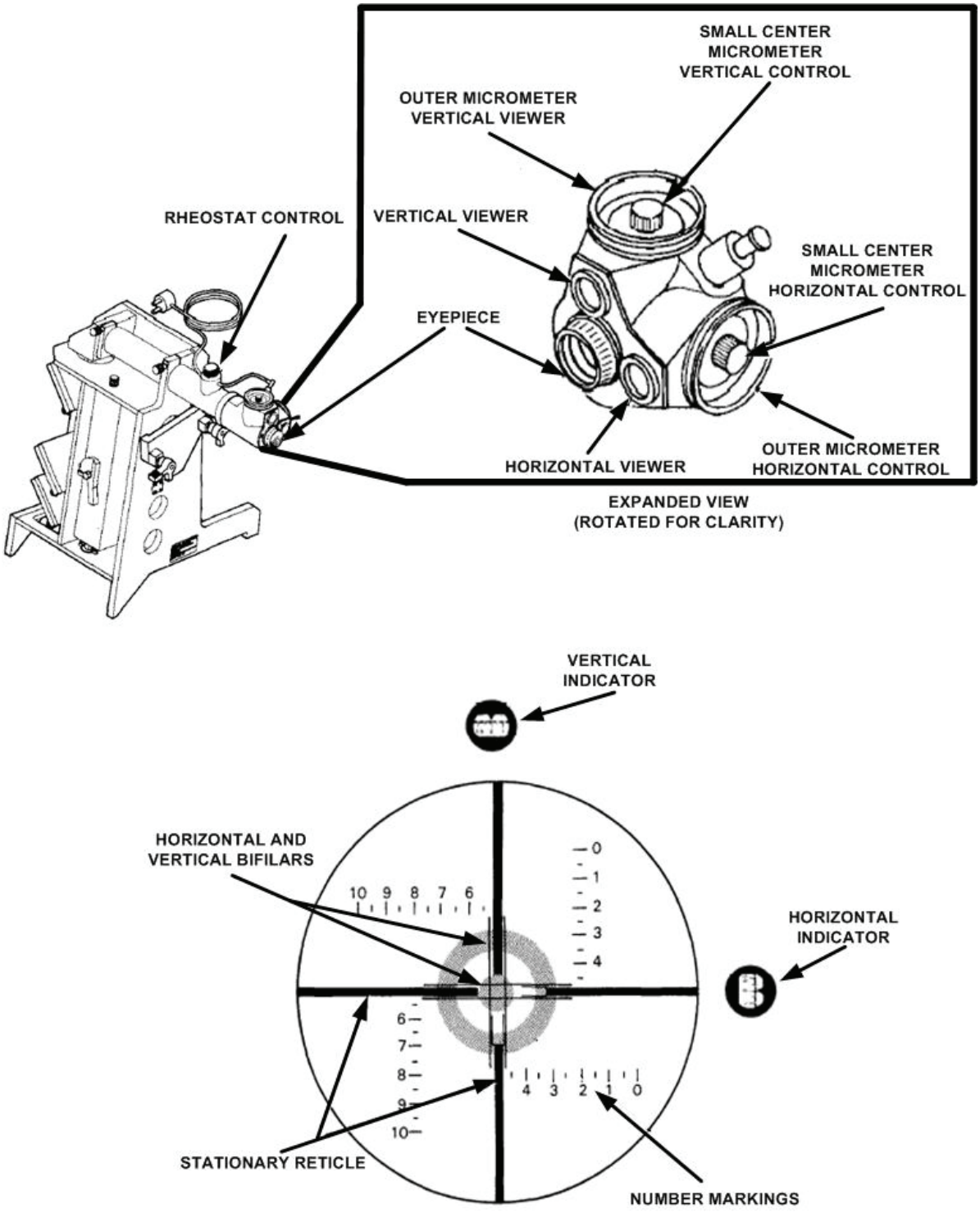

Figure 3. Reticle alignment.

(3) Turn SMALL CENTER MICROMETER VERTICAL AND HORIZONTAL CONTROLS (fig. 3) to adjust horizontal and vertical reticles until centered on STATIONARY RETICLE (fig. 3).

(4) Look through HORIZONTAL VIEWER (fig. 3), hold SMALL CENTER MICROMETER HORIZONTAL CONTROL and turn OUTER MICROMETER HORIZONTAL CONTROL until HORIZONTAL INDICATOR (fig. 3) indicates 0.

(5) Look through VERTICAL VIEWER (fig. 3), hold SMALL CENTER MICROMETER VERTICAL CONTROL and turn OUTER MICROMETER VERTICAL CONTROL until VERTICAL INDICATOR (fig. 3) indicates 0.

(6) Repeat (3), (4), and (5) above until horizontal and vertical alignment cannot be improved.

(7) Remove CALIBRATION PLATE ASSEMBLY from container case and install CALIBRATION PLATE ASSEMBLY on OPTICS ASSEMBLY by pushing in and turning two LATCH HANDLES (fig. 4).

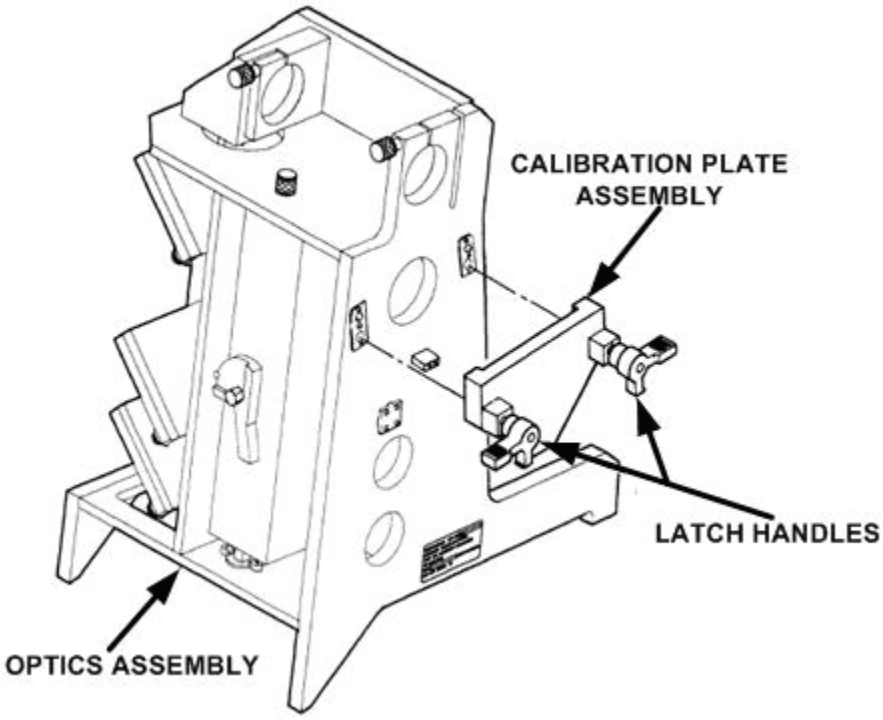

Figure 4. Optics and calibration plate assemblies.

(8) Move UPPER MIRROR OPTICAL BAFFLE (fig. 5) to open and close all other optical baffles (block light path).

(9) Release LOCKING LEVER and tighten PIVOT SCREW (if necessary) so REFERENCE MIRROR will stay in any position without use of LOCKING LEVER (fig. 5).

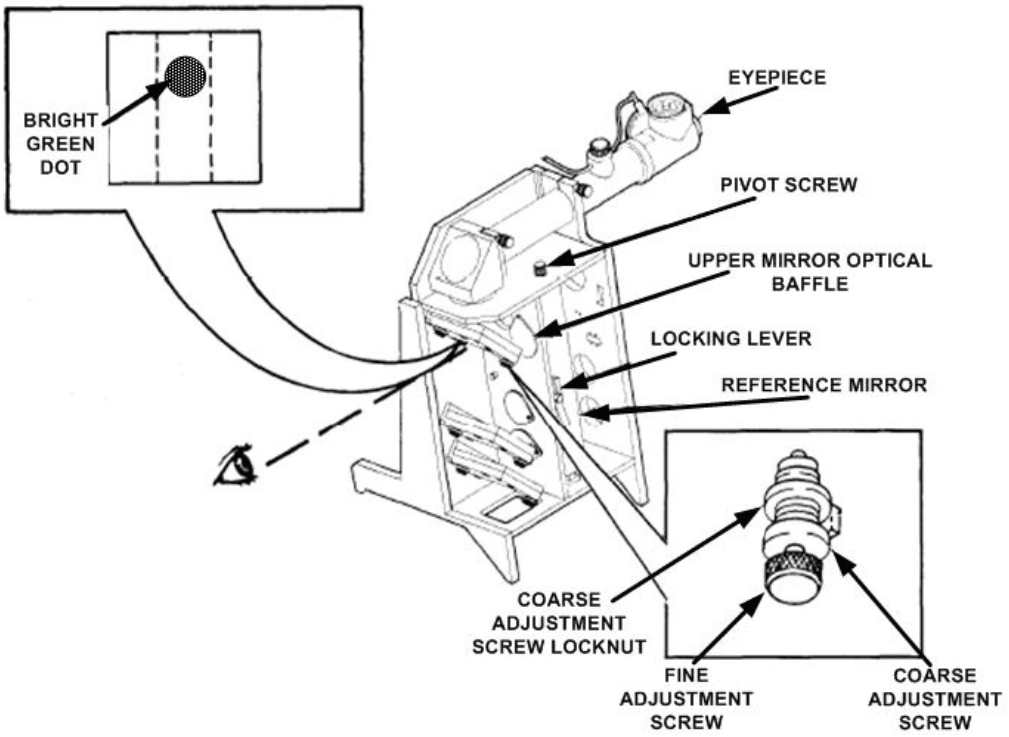

Figure 5. Optics assembly alignment.

NOTE

"Out" position means apertures are open for passage of light from boresight collimator mounting position. "In" position means apertures are not open for passage of light from boresight collimator mounting position.

(10) Move REFERENCE MIRROR to out position (fig. 5). Do not use LOCKING LEVER to lock REFERENCE MIRROR in place (fig. 5).

(11) Look through EYEPIECE (fig. 5), view STATIONARY RETICLE (fig. 6) and its reflected image. If STATIONARY RETICLE (fig. 6) reflected image is not seen, perform **b** (l) through (5) below.

(12) Look through EYEPIECE (fig. 5) and turn FINE ADJUSTMENT SCREWS (fig. 5) to adjust elevation and azimuth of STATIONARY RETICLE REFLECTED IMAGE until it is on top of STATIONARY RETICLE (fig. 6).

(13) Release LATCH HANDLES on calibration plate and remove from OPTICS ASSEMBLY (fig. 6). Return CALIBRATION PLATE ASSEMBLY (fig. 6) to container case cover.

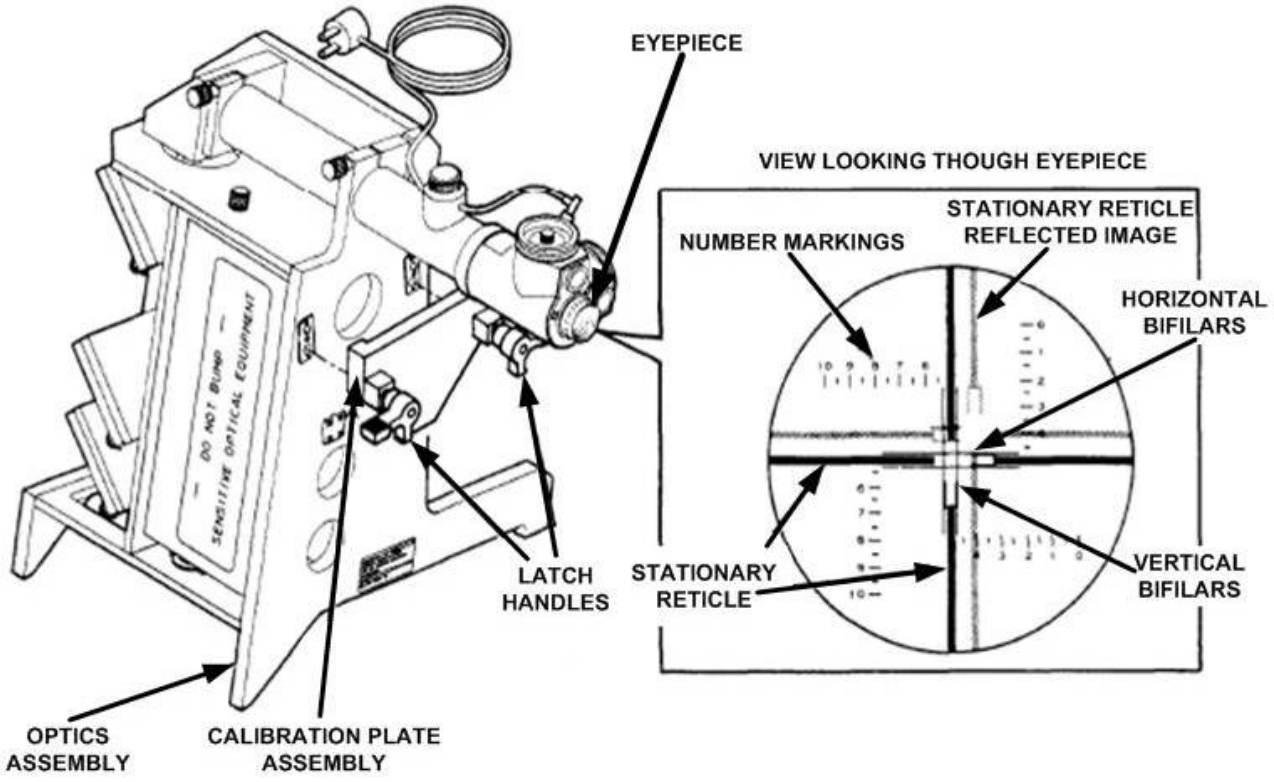

Figure 6. Reflected image adjustment.

(14) Install BORESIGHT COLLIMATOR MASS SIMULATOR on OPTICS ASSEMBLY and secure by pushing in and turning two LATCH HANDLES (fig. 7).

(15) Move REFERENCE MIRROR (fig. 7) to in position.

NOTE

Do not use LOCKING LEVER to lock REFERENCE MIRROR in place (fig. 7).

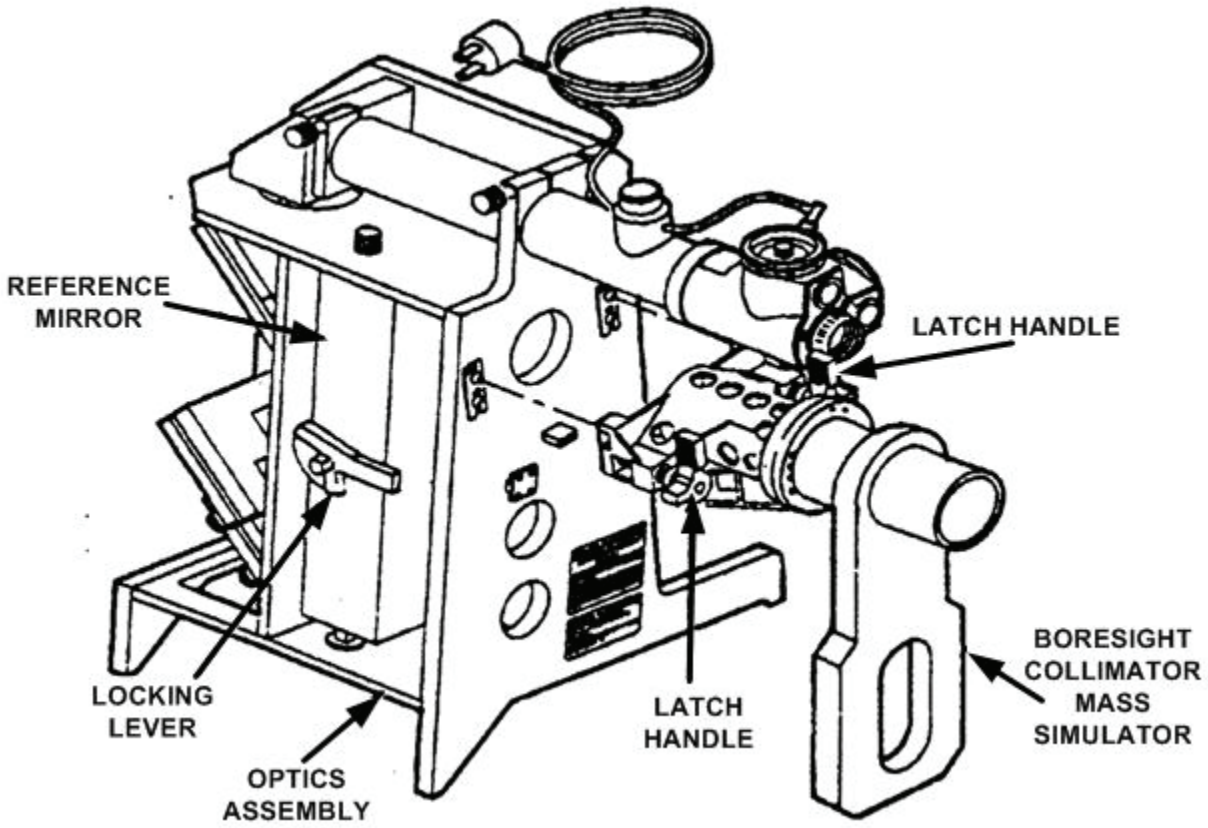

Figure 7. Boresight collimator mass simulator installation.

(16) Look through EYEPIECE and ensure STATIONARY RETICLE REFLECTED IMAGE (fig. 6) is visible. If STATIONARY RETICLE REFLECTED IMAGE (fig. 6) is not visible, perform **b** (6) through (9) below.

(17) Rotate SMALL CENTER MICROMETER HORIZONTAL and VERTICAL CONTROLS (fig. 3) until VERTICAL AND HORIZONTAL BIFILARS are aligned with STATIONARY RETICLE REFLECTED IMAGES (fig. 6).

(18) Hold SMALL CENTER HORIZONTAL and VERTICAL CONTROLS and rotate OUTER MICROMETER HORIZONTAL and VERTICAL CONTROLS until 30 is indicated in HORIZONTAL and VERTICAL VIEWERS (fig. 3).

(19) Verify that HORIZONTAL and VERTICAL BIFILARS (fig. 6) remain aligned with stationary reticle reflected images with 30 indicated in HORIZONTAL and VERTICAL VIEWERS (fig. 3).

(20) Rotate SMALL CENTER MICROMETER HORIZONTAL and VERTICAL CONTROLS (fig. 3) to move HORIZONTAL and VERTICAL BIFILARS (fig. 6) so that stationary reticle reflected image can be seen without obstruction.

(21) Move MIDDLE MIRROR OPTICAL BAFFLE (fig. 8) to open position.

NOTE

Do not readjust upper mirror controls during procedures which follow.

(22) Look through EYEPIECE (fig. 8) and using MIDDLE MIRROR CONTROLS, align reflected image from MIDDLE MIRROR with stationary reticle reflected image of UPPER MIRROR (fig. 8).

(23) Close MIDDLE MIRROR OPTICAL BAFFLE and open LOWER MIRROR OPTICAL BAFFLE (fig. 8).

(24) Look through EYEPIECE and use LOWER MIRROR CONTROLS to align reflected image from LOWER MIRROR CONTROL with reflected image of UPPER MIRROR CONTROL (fig. 8).

(25) Close LOWER MIRROR OPTICAL BAFFLE and open MIDDLE MIRROR OPTICAL BAFFLE (fig. 8). Verify that MIDDLE MIRROR REFLECTED IMAGE remains aligned with UPPER MIRROR REFLECTED IMAGE (fig. 8).

(26) Close MIDDLE MIRROR OPTICAL BAFFLE (fig. 8).

(27) Rotate SMALL CENTER MICROMETER HORIZONTAL CONTROL (fig. 3) (do not hold OUTER MICROMETER HORIZONTAL CONTROL while rotating SMALL CENTER MICROMETER HORIZONTAL CONTROL) to align HORIZONTAL BIFILARS (fig. 8) with horizontal reflected image.

NOTE

Make copies of test data sheets (minimum of five copies each are required) located at the end of this TB for recording test results.

(28) Record reading from HORIZONTAL VIEWER (fig. 3) on test data sheet under Reference Mirror Data column (Window 1).

(29) Rotate SMALL CENTER MICROMETER HORIZONTAL CONTROL (fig. 3) to move bifilars from horizontal reflected image and then realign HORIZONTAL BIFILARS (fig. 8) with horizontal reflected image.

(30) Record reading from HORIZONTAL VIEWER (fig. 3) on test data sheet under Reference Mirror Data column (Window 1).

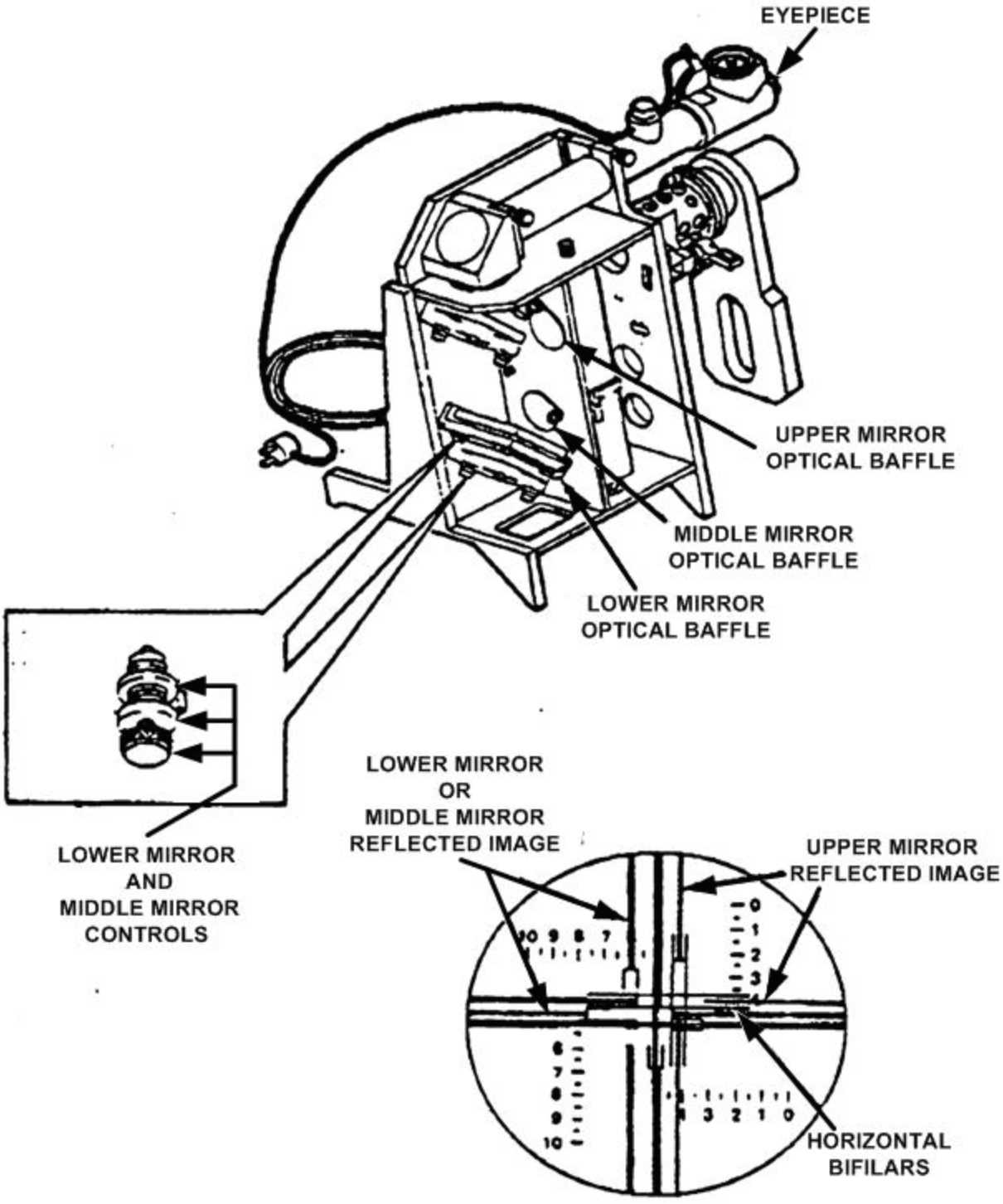

Figure 8. Middle mirror adjustment.

(31) Repeat (29) and (30) above three more times and record readings on test data sheet, (Appendix A), under Reference Mirror Data column (Window 1).

(32) Repeat 27 through 31 above substituting SMALL CENTER MICROMETER VERTICAL CONTROL for SMALL CENTER MICROMETER HORIZONTAL CONTROL (fig. 3) to obtain vertical bifilar readings and record readings on test data sheet under Reference Mirror Data column (Window 1).

(33) Move UPPER MIRROR OPTICAL BAFFLE to closed position and move MIDDLE MIRROR OPTICAL BAFFLE to open position (fig. 8).

(34) Repeat (27) through (32) above and record readings on test data sheet under Reference Mirror data column (Window 2).

(35) Move MIDDLE MIRROR OPTICAL BAFFLE to closed position and move LOWER MIRROR OPTICAL BAFFLE (fig. 8) to open position.

(36) Repeat (27) through (32) above and record readings on test data sheet under Reference Mirror data column (Window 3).

(37) Move REFERENCE MIRROR (fig. 7) to out position. Do not lock REFERENCE MIRROR (fig. 7) in place.

NOTE

Reference mirror from table 2 will be called lab standard mirror throughout this calibration procedure.

(38) Position LAB STANDARD MIRROR as shown in figure 9 and place GAGE BLOCK No. 2 (fig. 9) (1 by 1 inch thick) between SURFACE PLATE (fig. 9) and each machine ground pad located on bottom of LAB STANDARD MIRROR (fig. 9).

NOTE

LAB STANDARD MIRROR (fig. 9) must be positioned so all three (upper, middle, and lower) mirrors reflected images can be seen.

Look for BRIGHT GREEN SPOT (fig. 5) for close alignment of LAB STANDARD MIRROR (fig. 9).

(39) Close LOWER and MIDDLE MIRROR OPTICAL BAFFLES and open UPPER MIRROR OPTICAL BAFFLE (fig. 8).

(40) Ensure LAB STANDARD MIRROR (fig. 9) is in position to view horizontal and vertical reflected images from LAB STANDARD MIRROR (fig. 9). After LAB STANDARD MIRROR (fig. 9) is positioned, care should be taken not to touch or bump mirror. Any mirror movement will result in false readings.

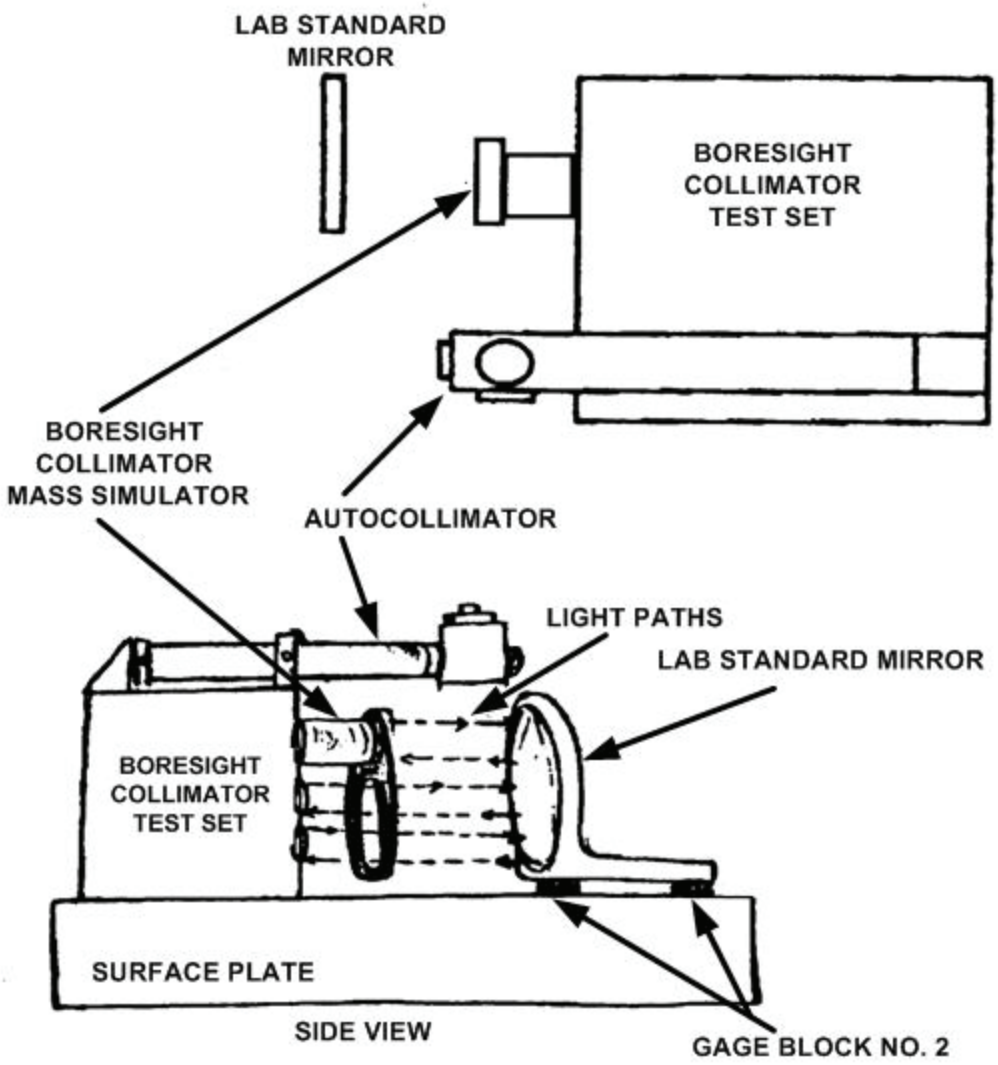

Figure 9. Lab standard mirror setup.

(41) Repeat (27) through (36) above and record readings on test data sheet under Lab Standard columns (Window 1, Window 2, and Window 3).

(42) Perform computations listed on test data sheets. If TI computed deviation is greater than 3.71 as indicated on test data sheets, retest and repair as necessary.

(43) Close LOWER MIRROR OPTICAL BAFFLE and open UPPER MIRROR OPTICAL BAFFLE (fig. 8).

(44) Move REFERENCE MIRROR (fig. 7) to in position, but do not lock REFERENCE MIRROR (fig. 7) in place.

(45) Place GAGE BLOCK No. 1 under LEG NUMBER 1 (fig. 10).

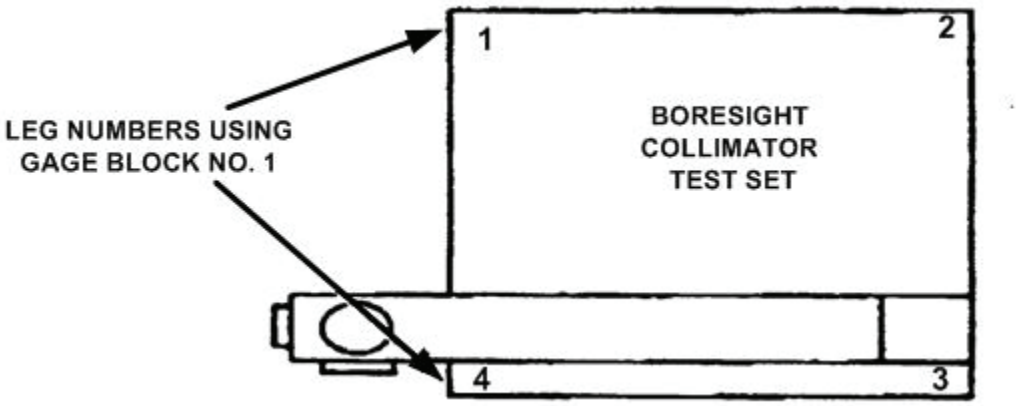

Figure 10. Leg numbering (overhead view).

(46) Repeat (27) through (37) above and record readings on new test data sheet for leg number 1. (Mark an X in Leg Number 1 block of test data sheet for Reference Mirror in place.)

(47) Close MIRROR OPTICAL BAFFLE and open UPPER MIRROR OPTICAL BAFFLE (fig. 8).

(48) Repeat (40) and (41) above.

(49) Perform computations listed on test data sheets. If TI computed deviation is greater than 3.71 as indicated on test data sheets, retest and repair as necessary.

(50) Remove GAGE BLOCK No. 1 from LEG NUMBER 1 and place GAGE BLOCK No. 1 under LEG NUMBER 2 (fig. 10).

(51) Move REFERENCE MIRROR (fig. 7) to in position. Do not lock REFERENCE MIRROR (fig. 7) into position.

(52) Close LOWER MIRROR OPTICAL BAFFLE and open UPPER MIRROR OPTICAL BAFFLE (fig. 8).

(53) Repeat 27 through 37 above and record readings on new test data sheet for leg number 2. (Mark an X in Leg Number 2 block of test data sheet.)

(54) Repeat (52) above.

(55) Repeat (40) and (41) above.

(56) Perform computations listed on test data sheets. If TI computed deviation is greater than 3.71 as indicated on test data sheets, retest and repair as necessary.

(57) Remove GAGE BLOCK No. 1 from LEG NUMBER 2 and place GAGE BLOCK No.1 under LEG NUMBER 3 (fig. 1 0).

(58) Move REFERENCE MIRROR to in position (fig. 7). Do not lock REFERENCE MIRROR (fig. 7) into position.

(59) Close LOWER MIRROR OPTICAL BAFFLE and open UPPER MIRROR OPTICAL BAFFLE (fig. 8).

(60) Repeat (27) through (37) above and record readings on new test data sheet for leg number 3. (Mark an X in Leg Number 3 block of test data sheet for Reference Mirror in place.)

(61) Repeat (59) above.

(62) Repeat (40) and (41) above.

(63) Perform computations listed on test data sheets. If TI computed deviation is greater than 3.71 as indicated on test data sheets, retest and repair as necessary.

(64) Remove GAGE BLOCK No. 1 from LEG NUMBER 3 and place GAGE BLOCK No. 1 under LEG NUMBER 4 (fig. 10).

(65) Move REFERENCE MIRROR (fig. 7) to in position. Do not lock REFERENCE MIRROR (fig. 7) into position.

(66) Close LOWER MIRROR OPTICAL BAFFLE and open UPPER MIRROR OPTICAL BAFFLE (fig. 8).

(67) Repeat (27) through (37) above and record readings on test data sheet for leg number 4. (Mark an X in Leg Number 4 block of test data sheet for Reference Mirror in place.)

(68) Repeat (66) above.

(69) Repeat (40) and (41) above.

(70) Perform computations listed on test data sheets. If TI computed deviation is greater than 3.71 as indicated on test data sheets, retest and repair as necessary.

b. Adjustments

(1) While viewing through EYEPIECE (fig. 6) look for BRIGHT GREEN DOT (fig. 5).

(2) Loosen COARSE ADJUSTMENT SCREW LOCKNUT and adjust COARSE ADJUSTMENT SCREW to center BRIGHT GREEN DOT on reflection of your eye (fig. 5).

(3) While viewing through EYEPIECE, turn COARSE ADJUSTMENT SCREW (fig. 5) until STATIONARY RETICLE REFLECTED IMAGE (fig. 6) is in field-of-view.

(4) While viewing through EYEPIECE turn COARSE ADJUSTMENT SCREW (fig. 5) to adjust elevation setting and azimuth setting of STATIONARY RETICLE REFLECTED IMAGE (fig. 6) to read between 4 arc-minutes and 6 arc-minutes on NUMBER MARKINGS (fig. 6) (R).

(5) Tighten COARSE ADJUSTMENT SCREW LOCKNUT (fig. 5).

(6) Loosen two screws on COARSE ELEVATION ECCENTRIC PIVOT (fig. 11).

NOTE

Make all adjustments slowly to ensure STATIONARY RETICLE REFLECTED IMAGE passes through FIELD-OF VIEW (fig. 11).

(7) Loosen COARSE ELEVATION ECCENTRIC PIVOT LOCKNUT (fig. 11).

(8) Look through EYEPIECE, alternately adjust AZIMUTH STOP SCREW (fig. 12), and adjust COARSE ELEVATION ECCENTRIC PIVOT until STATIONARY RETICLE REFLECTED IMAGE is seen in FIELD-OF-VIEW but not on top of STATIONARY RETICLE (fig. 11) (R).

(9) Hold COARSE ELEVATION ECCENTRIC PIVOT while tightening COARSE ELEVATION ECCENTRIC PIVOT LOCKNUT (fig. 11).

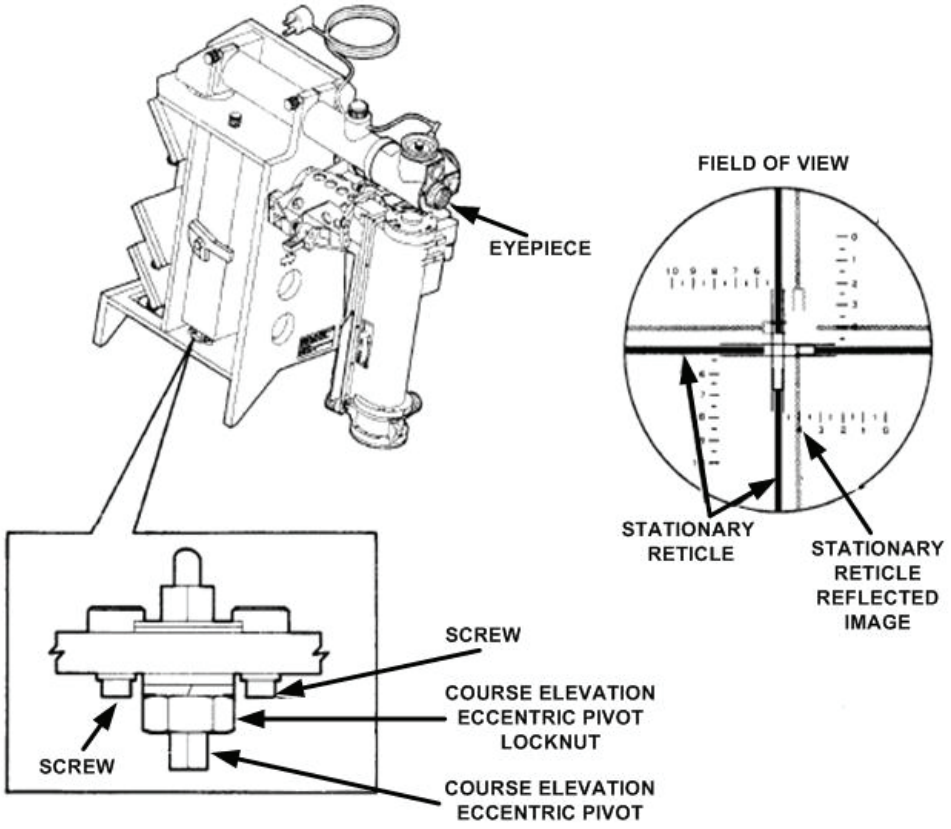

Figure 11. Stationary reticle reflected image coarse adjustment.

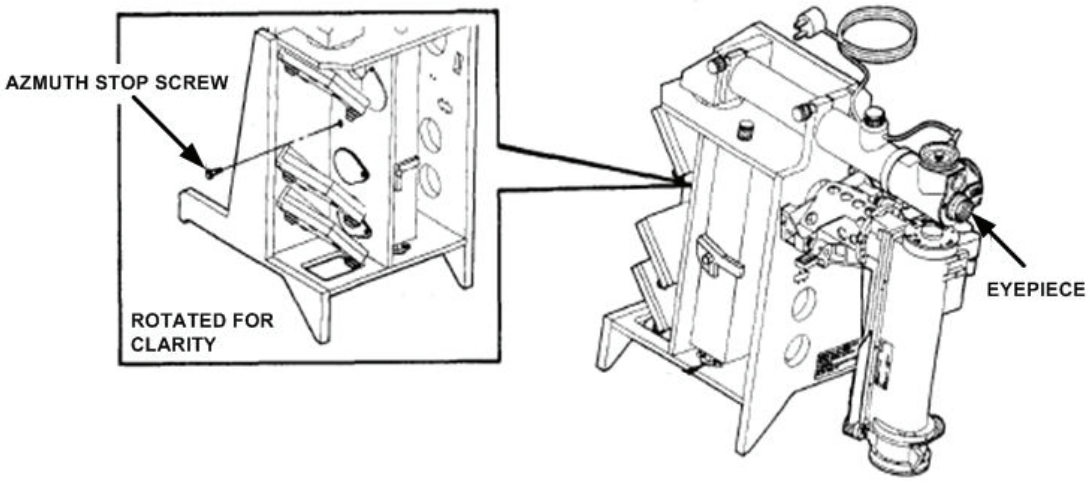

Figure 12. Stationary reticle reflected image coarse adjustment - continued.

9. Final Procedure

a. Deenergize and disconnect all equipment.

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

APPENDIX A

TEST DATA SHEET
BORESIGHT COLLIMATOR TEST SET
NSN 5855-01-161-8964

NO. _____ TEST DATE: _____

TEST CONDITION: (CHECK APPROPRIATE BLOCK)

- ☐ FLAT SURFACE
- ☐ GAGE BLOCK NO. 1 UNDER LEG NO. 1
- ☐ GAGE BLOCK NO. 1 UNDER LEG NO. 2
- ☐ GAGE BLOCK NO. 1 UNDER LEG NO. 3
- ☐ GAGE BLOCK NO. 1 UNDER LEG NO. 4

REFERENCE MIRROR IN PLACE

	HORIZONTAL (ARC SECONDS)	VERTICAL (ARC SECONDS)
WINDOW 1 (UPPER)	1. _____	1. _____
	2. _____	2. _____
	3. _____	3. _____
	4. _____	4. _____
	5. _____	5. _____
	AVERAGE _____	AVERAGE _____
	STD DEV _____	STD DEV _____
WINDOW 2 (MIDDLE)	1. _____	1. _____
	2. _____	2. _____
	3. _____	3. _____
	4. _____	4. _____
	5. _____	5. _____
	AVERAGE _____	AVERAGE _____
	STD DEV _____	STD DEV _____
WINDOW 3 (BOTTOM)	1. _____	1. _____
	2._____	2._____
	3._____	3._____
	4._____	4._____
	5._____	5._____
	AVERAGE _____	AVERAGE _____
	STD DEV _____	STD DEV _____

COMPUTATIONS:

HORIZONTAL DIFFERENCES

(AVG WINDOW 1) - (AVG WINDOW 2) = _____ (H1)
(AVG WINDOW 1) - (AVG WINDOW 3) = _____ (H2)

VERTICAL DIFFERENCES

(AVG WINDOW 1) - (AVG WINDOW 2) =_____ (V1)
(AVG WINDOW 1) - (AVG WINDOW 3) = _____ (V2)

APPENDIX A
(Continued)

LAB STANDARD MIRROR IN PLACE

	HORIZONTAL (ARC SECONDS)	VERTICAL (ARC SECONDS)
WINDOW 1 (UPPER)	1. _____	1. _____
	2. _____	2. _____
	3. _____	3. _____
	4. _____	4. _____
	5. _____	5. _____
	AVERAGE _____	AVERAGE _____
	STD DEV _____	STD DEV _____
WINDOW 2 (MIDDLE)	1. _____	1. _____
	2. _____	2. _____
	3. _____	3. _____
	4. _____	4. _____
	5. _____	5. _____
	AVERAGE _____	AVERAGE _____
	STD DEV _____	STD DEV _____
WINDOW 3 (BOTTOM)	1. _____	1. _____
	2. _____	2. _____
	3. _____	3. _____
	4. _____	4. _____
	5. _____	5. _____
	AVERAGE _____	AVERAGE _____
	STD DEV _____	STD DEV _____

COMPUTATIONS:
HORIZONTAL DIFFERENCES
(AVG WINDOW 1) - (AVG WINDOW 2) = _____ (H3)
AVG WINDOW 1) - (AVG WINDOW 3) = _____ (H4)

VERTICAL DIFFERENCES
(AVG WINDOW 1) - (AVG WINDOW 2) = _____ (V3)
(AVG WINDOW 1) - (AVG WINDOW 3) = _____ (V4)

DIFFERENCES BETWEEN MIRRORS
HORIZONTALS
Hl - H3= _____ (X1)
H2 - H4= _____(X2)
VERTICALS
V1 - V3 =_____(Y1)
V2 - V4= _____(Y2)

NOTE:
If STD DEV (standard deviation) equals 1.0 or greater, this indicates a probable error in taking the readings. Repeat the test.

(WINDOW 1 - WINDOW 2) DEVIATION _____ $\sqrt{X1^2 + Y1^2}$ = >3.71 = Fail
(WINDOW 1 - WINDOW 3) DEVIATION _____ $\sqrt{X22 + Y22}$ = >3.71 = Fail

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

0814802

Distribution:

To be distributed in accordance with STD IDS No. RLC-1500, 2 January 2003, requirements for calibration procedure TB 9-5855-1891-40.

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.