DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR FLIGHT CONTROL SET, TEST BENCH SET AN/ASM-329 (NSN 4920-00-087-6643)

Headquarters, Department of the Army, Washington, DC
31 December 1980

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a. way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703, A reply will be furnished direct to you.

***This bulletin supersedes TB 11-4920-294-35, 27 July 1979.**

Section I. IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides Instructions for the calibration of Flight Control Set, Test Bench Set, AN/ASM-329, and is to be used by calibration personnel at all levels Flight Control Set, Test Bench Set, AN/ ASM-329, will hereinafter be referred to as the Test Instrument throughout this procedure.

a. Model Variations. There is only one model of this Test Instrument.

b. Time and Technique. The time required for calibration is approximately 2 hours using the dc-low frequency technique.

2. Calibration Data Card DA Form 2416. *a. Forms, Records, and Reports.* Forms, records, and reports required for calibration personnel at all levels are prescribed in TM 38-750. DA Form 2416 (Calibration Data Card) must be annotated in accordance with TM 38-750 for each calibration performed.

b. Adjustment Reporting. Adjustments to be reported on DA Form 2416 are designated (R) at the end of the sentence in which they appear. If adjustments appear in tables, the (R) will follow the designated adjustments Report only those adjustments designated with (R).

3. Calibration Description. Test Instrument parameters and performance specifications which pertain to this calibration are listed in table 1.

Table. Calibration Description

Test instrument parameters	Performance specifications
Input voltage ac (alternating current)	115 +3vac, single phase 400 Hz +20 Hz
Input voltage dc (direct current)	27.5 +0.5 vdc
Output voltage	11.8 volts ac +0.5 line to line

Section II. EQUIPMENT REQUIREMENTS

NOTE

Minimum use specifications are the principal parameters required for performance of the calibration, and are included to assist in the selection of alternate equipment, which may be used at the discretion of the calibrating activity Satisfactory performance of alternate items shall be verified prior to use All applicable equipment must bear evidence of current calibration.

4. Equipment Required. Equipment required for calibration performance tests is listed below:

Table 2. Calibration Equipment

Common Name	Minimum use specifications	Calibration equipment*
Ac/dc Voltmeter	Range 0 to 30 vdc 0 to 15 vac Accuracy ±1%	ME-202/U or Dana 5703 (7912606)
Stopwatch	Range 0 to 60 seconds	Cleber Watch Co 382
Variable dc power supply	Range 0 to 30 vdc Accuracy ±4%	TS-656/U or NJE CS36CR30 (7907346-2)

*The calibration equipment utilized in this procedure was selected from those known to be available at Department of Defense facilities, and the listing by make or model number carries no implication of preference, recommendation, or approval by the Department of Defense for use by other agencies It is recognized that equivalent equipment produced by other manufacturers may be capable of equally satisfactory performance in the procedure.

5. Accessories Required. Accessories required for calibration performance tests are listed below.

Table 3. Accessories Required

Common name	Description
Cable Assembly (two required)	24 in., banana plug to banana plug with pin adapter (red)
Cable Assembly (two required)	24 in., banana plug to banana plug with pin adapter (black)

Section III. PRELIMINARY OPERATIONS

6. Preliminary Instructions.

WARNING

HIGH VOLTAGE is used during the performance of this calibration DEATH ON CONTACT may result if necessary safety precautions are not observed.

a. The instructions outlined in this paragraph are preparatory to the calibration process Personnel should become familiar with the entire procedure prior to performing calibration.

b. Remove the Test Instrument lid and place the Test Instrument on the work bench.

c. Position both POWER switches to OFF

7. Equipment Setup. *a.* Connect cable assembly CX-10800/ASM-329 (W9) (supplied with Test Instrument) to Test Instrument J101.

b. Connect positive lead of variable dc power supply to pin B and negative lead to pin A of cable assembly CX-10800/ASM-329 (W9) plug marked TO 28 VDC POWER.

NOTE

If cable assembly (W9) is not available, connect dc positive to pin E and negative to pin F of J101.

c. Connect positive lead of 115 vac, 400 Hz power source to pin B and negative lead to pin D of cable assembly CX-100800/ASM-329 (W9) plug marked TO 115 VAC POWER.

d. Connect common and dc probes to voltmeter to Test Instrument PWR GRD and J108, pin GG, respectively.

Section IV. CALIBRATION PROCESS

8. CHANNEL MONITOR Calibration. *a. Performance Check.*

(1) Set 115V 400 Hz and 27 VDC POWER switches to ON and simultaneously start stopwatch.

(2) Record elapsed time required for voltmeter to indicate between 27 and 28 vdc (K1 energized). Relay K1 shall energize within 21/2 to 31/2 minutes. If not, perform the following adjustments.

b. Adjustments

(1) Set both POWER switches to OFF.

(2) Remove CHANNEL MONITOR box from Test Instrument front panel and wait a minimum of ten minutes for K1 to cool.

(3) Loosen the two captive screws on the rear of the CHANNEL MONITOR protective cover and slide the cover back over the cables connected to the CHANNEL MONITOR box.

(4) Adjust K1 time delay by rotating the screw adjustment in the end of the cylindrical timer relay clockwise for decreased time or counterclockwise for increased time (R).

(5) Repeat a above.

(6) Reinsert the CHANNEL MONITOR box in the Test Instrument front panel.

9. AFSC CONT Calibration. *a. Performance Check*

(1) Set 115V 400 Hz and 27 VDC POWER switch to ON. Voltmeter shall indicate between 27 and 28 vdc after 21/2 minutes.

(2) Press and release AFCS button. AFCS lamp shall illuminate and remain illuminated (K1 energized).

(3) Press and release BAR ALT button BAR ALT lamp shall illuminate and remain illuminated (K2 energized).

(4) Press and release BAR ALT REL button BAR ALT lamp shall go off, come back on, and remain illuminated (K2 energized).

(5) Press and release BAR OFF button BAR ALT lamp shall go off (K2 deenergized).

(6) Press AN/ASW-29 OFF button. AFCS lamp shall go off (K1 deenerglzed).

(7) Set the voltmeter to the 30-volt ac range.

(8) Connect the voltmeter to Test Instrument J108, pins m, k, and j as described In table 4.

(9) Adjust HEADING SIM control for zero and adjust YAW TRIM control for null indication on the voltmeter.

(10) Connect the voltmeter input to points in the From column and G (common) to points in the To column of table 4, and observe that the indications are within the specified limits.

b. Adjustments No adjustments can be made.

Table 4. Signal Voltage Indication

Test Instrument		Test connections J 108	Voltmeter indications (vac)	
YAW TRIM controls	To*	From	Minimum	Maximum
Null	m	k	0.03	0.03
Rotated CW 1 1/4	m	k	10.5	11.5
Rotated CCW 1 1/4 turns from null	m	k	10.5	11.5
Null	k	j	0.03	0.03
Rotated CW 1 1/4 turns from null	k	j	10.5	11.5
Rotated CCW 1 1/4 turns from null	k	j	10.5	11.5

*Voltmeter positive lead

10. HEADING SIM B101 Control Transformer Alignment Accuracy. *a. Performance Checks.*

(1) Remove AFCS CONT unit from Test Instrument front panel.

(2) Disconnect the cable from Test Instrument J9 connector.

(3) Set HEADING SIM control as listed in table 5.

(4) Set the voltmeter to the 30 volts ac scale and then to lower ranges accordingly.

(5) Connect the voltmeter input to P109, and to the points in the From column and G (common) to points In the To column of table 5, and observe that the Indications are within the specified limits.

b. Adjustments. No adjustments can be made.

11. Final Procedure. *a.* Deenergize and disconnect all equipment.

b. Reinsert FACS CONT and CHANNEL MONITOR units into panels, fasten the screws, and replace the Test Instrument protective cover.

c. In accordance with TM 38-750, annotate and affix DA Label 80 (US Army Calibrated Instrument) When the TI receives limited or special calibration, annotate and affix DA Label 163 (US Army Limited or Special Calibration). When the TI cannot be adjusted within tolerance annotate and affix DA Form 2417 (US Army Calibration System Rejected Instrument).

Table 5. HEADING SIM Test

Test instrument		Test connections P 109	Voltmeter indications (vac)	
HEADING SIMS controls	To	From	Minimum	Maximum
Null	J	P	0.0	0.05
Rotate slowly CW 360°	J	P	6.8	14.0
Null	J	N	0.0	0.05
Rotate slowly CCW 360°	J	N	6.8	14.0

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PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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Distribution.
To be distributed In accordance with DA Form 12-36A, requirements for calibration literature for AN/ASM-329

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