*TB 9-4920-362-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TEST BOX ASSY PILOT ASSIST/NULLING SIKORSKY, MODEL 70700-20678-041

Headquarters, Department of the Army, Washington, DC
5 June 2007

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes or 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, ATTN: 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.

*This bulletin supersedes TB 9-4920-362-35, dated 11 July 1983.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Test Box Assy Pilot Assist/Nulling, Sikorsky, Model 70700-20678-041. TM 55-4920-414-13&P 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 2 hours, 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
Power requirements	115 V ac, 60 Hz ±10%; 28 V dc ±1%
Dc volts	Range: -15.5 To +28.5 V Accuracy: ±1.8%
Dc current	Range: -10.5 To +10.5 mA Accuracy: ±5%

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, four-to-one 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 accessory is also required for this calibration: POWER SUPPLY DCS40-30EM10.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
AUTOTRANSFORMER	Range: 115 V ac Accuracy: ±1%	Ridge, Model 9020A (9020A)
MULTIMETER	Range: -10.5 to +10.5 mA Accuracy: ±1.25% Range: -15.5 to +28.5 V dc Accuracy: ±0.45%	Fluke, Model 8840A/AF05 (AN/GSM-64D)

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 TM 55-4920-414-13&P 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. Position controls as listed in (1) through (6) below:

(1) **AC POWER** switch to **OFF**.

(2) **DC POWER** switch to **OFF**.

(3) **TRIM** switch to **OFF**.

(4) **SAS** switch to **OFF**.

(5) **BOOST** switch to **OFF**.

(6) **POWER AC** and **DC** circuit breakers to **IN**.

b. Connect autotransformer to **AC POWER** connector, using cable supplied with TI.

c. Connect autotransformer to a 115 V ac, 60 Hz power source and adjust for 115 V ac output.

d. Connect power supply positive terminal to **DC POWER** connector pin **B** and negative terminal to pin **A**.

e. Connect multimeter to power supply.

f. Adjust power supply for a 28 V dc indication on multimeter and then disconnect multimeter from equipment setup.

g. Set **AC POWER** and **DC POWER** switches to **ON** and allow at least 20 minutes for equipment to warm-up.

8. Dc Voltage

a. Performance Check

(1) Set **AC POWER** and **DC POWER** switches to **OFF**.

(2) Connect multimeter to connector **J466R** pin 1 (+) and pin 2 (-).

(3) Set **AC POWER**, **DC POWER**, and **TRIM** switches to **ON**. Multimeter will indicate between 27.5 and 28.5 V dc.

(4) Set **DC POWER** and **TRIM** switches to **OFF**.

(5) Disconnect multimeter from **J466R** and connect to **J468R** pin 1 (+) and pin 2 (-).

(6) Set **DC POWER** switch to **ON**. Multimeter will indicate between 27.5 and 28.5 V dc.

(7) Set **DC POWER** switch to **OFF**.

(8) Disconnect multimeter from **J468R** and connect to **J469R** pin 1 (+) and pin 2 (-).

(9) Repeat (6) and (7) above.

(10) Disconnect multimeter from equipment setup.

(11) Set **AC POWER** switch to **OFF**.

(12) Connect multimeter positive to **+15VDC** and negative to **SIG GRD** (front panel).

(13) Set **AC POWER** switch to **ON**. Multimeter will indicate between 14.5 and 15.5 V dc.

(14) Set **AC POWER** switch to **OFF**.

(15) Disconnect multimeter from **+15VDC** and connect to **-15VDC**.

(16) Set **AC POWER** switch to **ON**. Multimeter will indicate between -14.5 and -15.5 V dc.

(17) Set **AC POWER** switch to **OFF**.

(18) Connect cable **W1** (supplied with TI) to connector **J3** (rear of TI).

(19) Connect multimeter positive to pin 4 at other end of cable W1 marked to **PITCH TRIM ACTUATOR**, and multimeter negative to **SIG GRD**.

(20) Set **AC POWER** switch to **ON**. Multimeter will indicate between 14.5 and 15.5 V dc.

(21) Repeat technique of (17), (19), and (20) above at connections listed in table 4. Multimeter will indicate within limits specified.

Table 4. Dc Voltage

Test instrument		Multimeter indications (V dc)	
PITCH TRIM ACTUATOR connector	Test points position **XDCR**	Min	Max
Pin 7	---	+14.5	+15.5
Pin 8	---	-14.5	-15.5
Pin 5	---	-14.5	-15.5
Jumper pins 5 and 9	Trim position	-14.5	-15.5
Jumper pins 5 and 6	Stick input	-14.5	-15.5

(22) Set **AC POWER** switch to **OFF** and disconnect cable **W1** from TI.

b. Adjustments. No adjustments can be made.

9. Valve Current Meter

a. Performance Check

(1) Connect cable **W2** (supplied with TI) to connector **J3** on TI.

(2) Connect multimeter mA terminal to pin 2 of **SAS ACTUATOR** end of cable **W2**, and **LOW** terminal to pin 1.

(3) Set **TRIM COIL SELECT** switch to **BOTH**.

(4) Set **AC POWER** switch to **ON**.

(5) Adjust **CURRENT CONTROL** cw toward **INCR** until valve current meter indicates -10.00 mA. If multimeter does not indicate between -9.50 and -10.50 mA, perform **b** below.

(6) Set **AC POWER** switch to **OFF**.

(7) Repeat technique of (2) through (6) above at connection and switch positions listed in table 5. Multimeter will indicate within limits specified.

Table 5. Valve Current Meter

Multimeter connections to **SAS ACTUATOR** end of cable W2		**TRIM COIL SELECT** switch positions	Multimeter indications (mA)	
mA	LOW		Min	Max
Pin 2	Pin 1	1	-9.50	-10.50
Pin 2	Pin 1	2	0.0	0.0
Pin 2	Pin 1	BOTH[1]	+9.50	+10.50
Pin **4**	Pin 3	BOTH[2]	-9.50	-10.50
Pin **4**	Pin 3	BOTH[1]	+9.50	+10.50

[1]Adjust **CURRENT CONTROL** toward **DECR** until valve current meter indicates +10.00 mA.
[2]Adjust **CURRENT CONTROL** toward **INCR** until valve current meter indicates -10.00 mA.

b. Adjustments

(1) Set **AC POWER** switch to **OFF**.

(2) Remove TI from protective case.

(3) Set **AC POWER** switch to **ON**.

(4) Adjust **CURRENT CONTROL** until multimeter indicates 0.000.

(5) Adjust **R15** (under circuit board, right front) until valve current meter indicates 00.00 with flashing polarity (R).

10. 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

0709404

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 342049 requirements for calibration procedure TB 9-4920-362-24.

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.