TB 9-4920-361-35

CHANGE 1

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR VERTICAL DISPLAY SYSTEM LINE TEST SET, CANADIAN MARCONI, MODEL 476-853 AND VERTICAL DISPLAY SYSTEM BENCH TEST SET, CANADIAN MARCONI, MODEL 476-854

Headquarters, Department of the Army, Washington, DC
18 May 2004

TB 9-4920-361-35, 5 September 2003, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page.

Remove Pages	**Insert Pages**
15 and 16	15 and 16

2. File this change sheet in front of the publication for reference purposes.

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0408905

Distribution:
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*TB 9-4920-361-35

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Headquarters, Department of the Army, Washington, DC
5 September 2003

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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 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 9-4920-361-35, dated 10 January 2003.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Vertical Display System Line Test Set, Canadian Marconi, Model 476-853 and Vertical Display System Bench Test Set, Canadian Marconi, Model 476-854. TM 55-4920-413-13&P and TM 55-4920-412-13&P 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. Model 476-854 contains a simulator and a unit tester. Model 476-853 contains only a simulator.

b. Time and Technique. The time required for this calibration is approximately 3 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
Torque No. 1 and No. 2 (simulator)	Fixed: 0 and 3.7 V dc Accuracy: ±0.10 V dc Variable: 0 ±0.10 to 5.42 V dc min
Fuel quantity No. 1 and No. 2 (simulator)	Fixed: 0 and 6.13 V dc Accuracy: ±0.05 V dc Variable: 0 ±0.10 to 7.73 V dc min
Turbine gas temp No. 1 and No. 2 (simulator)	Fixed: 0 and 33.80 mV dc Accuracy: ±0.10 mV dc Variable: 0 ±0.01 to 44.00 mV dc min
Engine oil temp No. 1 and No. 2 (simulator)	Fixed: 74 and 151□ Accuracy: ±3□ Variable: 77 to 148□ min
Xmsn oil temp (simulator)	Fixed: 85 and 230□ Accuracy: ±6□ Variable: 88 to 270□ min
Rotor speed (simulator)	Fixed: 0 and 11,250 Hz Accuracy: ±56 Hz Variable: 0 to 17,200 Hz min
Engine % rpm No. 1 and No. 2 (simulator)	Fixed: 0 and 1333.5 Hz Accuracy: ±6 Hz Variable: 0 to 1830 Hz min
Gas gen speed No. 1 and No. 2 (simulator)	Fixed: 0 and 2135 Hz Accuracy: ±10 Hz Variable: 0 to 2400 Hz min
Engine oil press No. 1 and No. 2 (simulator)	Fixed: 3.591 and 2.914 V ac Accuracy: ±0.144 V ac Variable: 3.447 to 2.770 V ac min
Xmsn oil press (simulator)	Fixed: 2.840 and 3.591 V ac Accuracy: ±0.144 V ac Variable: 3.447 to 2.696 V ac min
Inter cal(unit tester): Positions 1 to 14 Positions 15 to 19	 Range: 5 V dc Accuracy: ±1 V dc Range: 5 V dc Accuracy: ±0.5 V dc
Rotor overspeed (unit tester)	Range: 5 V dc Accuracy: ±0.5 V dc
Central display and signal data (unit tester)	See paragraph 21
Display update (unit tester)	See paragraph 22

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. Alternate items may be used by the calibrating activity when the equipment listed in table 2 is not available. 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.

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: Extender Board, Canadian Marconi P/N 220-419916-000.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
AUTOTRANSFORMER	Range: 105 to 125 V ac at 400 Hz Accuracy: ±1%	Ridge INC, Model 9020A (7916818)
CALIBRATOR	Range: 6 V at 400 Hz	John Fluke, Model 5700A/CT (p/o MIS-35947)
DC POWER SUPPLY	Range: 28 V dc Accuracy: ±1%	HDL, Model LR-10 (CS36CR30)
DIGITAL MULTIMETER	Range: -11 to +28 V dc, 1.32 to 12.5 V ac Accuracy: ±0.8% dc, ±1% ac Range: 71 to 270Ω Accuracy: ±0.5%	John Fluke, Model 8840A/AF-05/09 (AN/GSM-64D)
FREQUENCY COUNTER	Range: 600 ms to 17.2 kHz Accuracy: ±0.4%	Fluke, Model PM6681
OSCILLOSCOPE	Range: 1.5 to 6 V p-p Accuracy: ±3%	Tektronix, Model 2430A (OS291/G)

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 55-4920-412-13&P for model 476-854 and TM 55-4920-413-13&P for model 476-853.

d. When indications specified in paragraphs **8** through **22** are not within tolerance, perform the power supply check prior to making adjustments. After adjustments are made, repeat paragraphs **8** through **22**. Do not perform power supply check if all other parameters are within tolerance.

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

f. Perform paragraphs **8** through **24** for model 476-854 and paragraphs **8** through **18**, **23**, and **24** for model 476-853.

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 with the performance check where applicable.

a. If calibrating TI model 476-854, do not connect unit tester to simulator unit until instructed to do so.

b. Set **ON-OFF-SIM ONLY** switch to **OFF**.

c. Connect equipment as shown in figure 1.

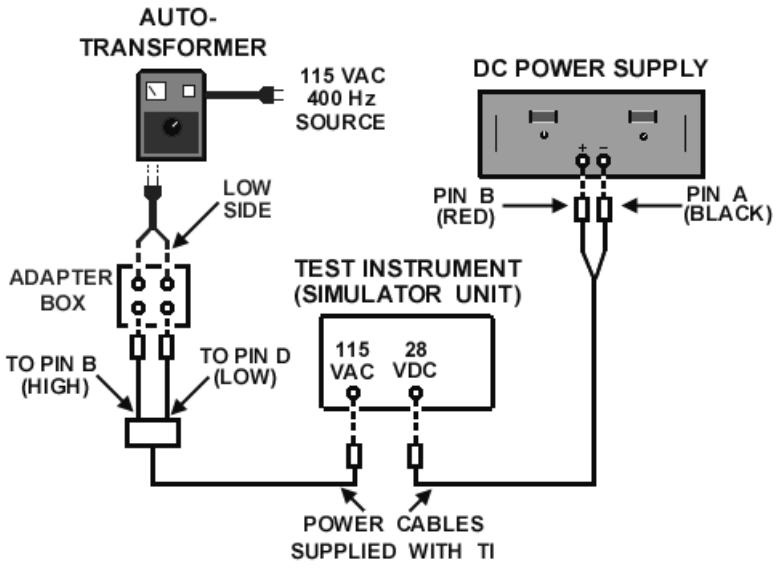


Figure 1. Power supply - equipment setup.

d. Adjust autotransformer output for 115 V.

e. Connect digital multimeter to dc power supply and adjust dc power supply for a 28 V output indication on digital multimeter.

f. Disconnect digital multimeter from equipment setup.

g. Set **ON-OFF-SIM ONLY** switch to **ON** and allow at least 30 minutes for warm-up.

h. Set **ON-OFF-SIM ONLY** switch to **OFF**.

CAUTION

To prevent damage to TI, always turn power off before making connections.

8. Output Voltages

a. Performance Check

(1) Connect digital multimeter between TI connector No. 1 pins FF (HI) and HH (LOW). Refer to figure 2 for pin locations.

(2) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY** and **INTEGRAL LIGHTING** switch to **INT**. Digital multimeter will indicate between 4.0 and 6.0 V ac.

(3) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(4) Connect digital multimeter between connector No. 1 pins P (HI) and EE (LOW).

(5) Set **ON-OFF-SIM ONLY** switch to **ON**. If digital multimeter does not indicate between 11.5 and 12.5 V dc, perform **b** below.

(6) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(7) Connect digital multimeter between connector No. 1 y (HI) and EE (LOW).

(8) Set **ON-OFF-SIM ONLY** switch to **ON**. If digital multimeter does not indicate between -11.5 and -12.5 V dc, perform **b** below.

(9) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(10) Connect digital multimeter between connector No. 1 pins J (HI) and EE (LOW).

(11) Set **ON-OFF-SIM ONLY** switch to **ON**. Digital multimeter will indicate between 5 and 6 V dc.

(12) Set **ON-OFF-SIM ONLY** switch to **OFF**.

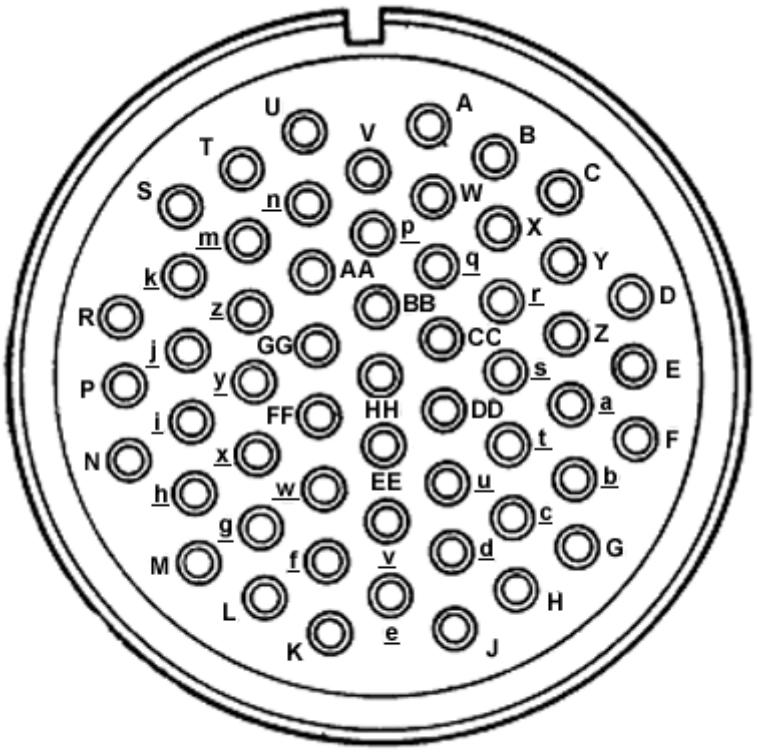
b. Adjustments. Perform paragraph **23**.

9. Torque No. 1 and No. 2

a. Performance Check

(1) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(2) Connect digital multimeter to TI connector No. 1 pins E (HI) and F (LOW). Refer to figure 2 for pin locations.



SIGNAL DATA CONVERTER
CONNECTORS NO. 1 and NO. 2

Figure 2. Simulator unit - pin locations.

(3) Set **TORQUE NO. 1 CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

(4) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. Digital multimeter will indicate between 3.6 and 3.8 V dc.

(5) Set **TORQUE NO. 1 HI/LO** switch to **LO**. Digital multimeter will indicate between -0.1 and +0.1 V dc.

(6) Set **TORQUE NO. 1 CAL/NOR** switch to **NOR** and turn variable control fully ccw. Digital multimeter will indicate between -0.1 and +0.1 V dc.

(7) Adjust variable control fully cw. Digital multimeter will indicate 5.415 V dc minimum.

(8) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(9) Disconnect leads from connector No. 1 pins E (HI) and F (LOW) and connect to connector No. 2 pins a (HI) and b (LOW).

(10) Repeat (3) through (8) above, except use **TORQUE No. 2** controls.

b. Adjustments. No adjustments can be made.

10. Fuel Quantity No. 1 and No. 2

a. Performance Check

(1) Connect digital multimeter to connector No. 1 pins G (HI) and H (LOW).

(2) Set **FUEL QUANTITY NO. 1 CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

(3) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. Digital multimeter will indicate between 6.08 and 6.18 V dc.

(4) Set **FUEL QUANTITY NO. 1 HI/LO** switch to **LO**. Digital multimeter will indicate between -0.1 and +0.1 V dc.

(5) Set **FUEL QUANTITY NO. 1 CAL/NOR** switch to **NOR** and adjust variable control fully ccw. Digital multimeter will indicate between -0.1 and + 0.1 V dc.

(6) Adjust variable control fully cw. Digital multimeter will indicate 7.63 V dc minimum.

(7) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(8) Disconnect leads from TI connector No. 1 pins G (HI) and H (LOW) and connect to connector No. 2 pins G (HI) and H (LOW).

(9) Repeat (2) through (7) above, except use fuel quantity No. 2 controls.

b. Adjustments. No adjustments can be made.

11. Turbine Gas Temp No. 1 and No. 2

a. Performance Check

(1) Connect digital multimeter to connector No. 1 pins L (HI) and M (LOW).

(2) Set **TURBINE GAS TEMP NO. 1 CAL/NOR** switch to **CA**L and **HI/LO** switch to **HI**.

(3) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. Digital multimeter will indicate between 33.65 and 33.95 mV dc.

(4) Set **TURBINE GAS TEMP NO. 1 HI/LO** switch to **LO**. Digital multimeter will indicate between -0.50 and +0.50 mV dc.

(5) Set **TURBINE GAS TEMP NO. 1 CAL/NOR** switch to **NOR** and adjust variable control fully ccw. Digital multimeter will indicate between -0.50 and +0.50 mV dc.

(6) Adjust variable control fully cw. Digital multimeter will indicate 41.3 mV dc minimum.

(7) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(8) Disconnect leads from connector No. 1 pins L (HI) and M (LOW) and connect to connector No. 2 pins L (HI) and M (LOW).

(9) Repeat (2) through (7) above except use **TURBINE GAS TEMP NO**. **2** controls.

b. Adjustments. No adjustments can be made.

12. Engine Oil Temp No. 1 and No. 2

a. Performance Check

(1) Connect digital multimeter to connector No. 1 pins g (HI) and h (LOW).

(2) Set **ENGINE OIL TEMP NO. 1 CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

NOTE

Measure resistance of test leads and subtract from resistance indications.

(3) Measure resistance. Digital multimeter will indicate between 148Ω and 154Ω.

(4) Set **ENGINE OIL TEMP NO. 1 HI/LO** switch to **LO**. Digital multimeter will indicate between 71Ω and 77Ω.

(5) Set **ENGINE OIL TEMP NO. 1 CAL/NOR** switch to **NOR** and adjust variable control from fully ccw to fully cw. Digital multimeter indication will vary from 77Ω or less to 148Ω or more.

(6) Disconnect leads from connector No. 1 pins g (HI) and h (LOW) and connect to connector No. 2 pins g (HI) and h (LOW).

(7) Repeat (2) through (5) above, except use engine oil temp No. 2 controls.

b. Adjustments. No adjustments can be made.

13. Xmsn Oil Temp

a. Performance Check

(1) Connect digital multimeter to connector No. 2 pins J (HI) and K (LOW).

(2) Set **XMSN OIL TEMP CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

NOTE

Measure resistance of test leads and subtract from resistance indications.

(3) Measure resistance. Digital multimeter will indicate between 224Ω and 236Ω.

(4) Set **XMSN OIL TEMP HI/LO** switch to **LO**. Digital multimeter will indicate between 79Ω and 91Ω.

(5) Set **XMSN OIL TEMP CAL/NOR** switch to **NOR** and adjust variable control from fully ccw to fully cw. Digital multimeter indication will vary from 88Ω or less to 270Ω or more.

b. Adjustments. No adjustments can be made.

14. Rotor Speed

a. Performance Check

(1) Connect frequency counter to connector No. 1 pins A (HI) and B (LOW).

(2) Set **ROTOR SPEED CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

(3) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**.

(4) Measure frequency. Frequency counter will indicate between 11,190 and 11,302 Hz.

(5) Set **ROTOR SPEED HI/LO** switch to **LO**. Frequency counter will indicate 0.

(6) Set **ROTOR SPEED CAL/NOR** to **NOR** and adjust **ROTOR SPEED** variable control from fully ccw to fully cw. Frequency counter indication will vary from 0 to 17,200 Hz minimum.

(7) Set **ON-OFF-SIM ONLY** switch to **OFF**.

b. Adjustments. No adjustments can be made.

15. Engine % Rpm No. 1 and No. 2

a. Performance Check

(1) Connect frequency counter to connector No. 1 pins C (HI) and D (LOW).

(2) Set **ENGINE % RPM NO. 1 CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

(3) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. Frequency counter will indicate between 1308 and 1362 Hz.

(4) Set **ENGINE % RPM NO. 1 HI/LO** switch to **LO**. Frequency counter will indicate 0.

(5) Set **ENGINE % RPM NO. 1 CAL/NOR** to **NOR** and adjust **ENGINE % RPM NO. 1** variable control from fully ccw to fully cw. Frequency counter indication will vary from 0 to 1830 Hz minimum.

(6) Adjust **ENGINE % RPM NO. 1** variable control fully ccw.

(7) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(8) Disconnect leads from connector No. 1 pins C (HI) and D (LOW) and connect to connector No. 2 pins Y (HI) and Z (LOW).

(9) Repeat (2) through (7) above, except use **ENGINE % RPM NO. 2** controls.

b. Adjustments. No adjustments can be made.

16. Gas Gen Speed No. 1 and No. 2

a. Performance Check

(1) Connect frequency counter to TI connector No. 1 pins c (HI) and d (LOW).

(2) Set **GAS GEN SPEED NO. 1 CAL/NOR** switch to **CAL** and **HI/LO** switch to **HI**.

(3) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. Frequency counter will indicate between 2125 and 2145 Hz.

(4) Set **GAS GEN SPEED NO. 1 HI/LO** switch to **LO**. Frequency counter will indicate 0.

(5) Set **GAS GEN SPEED NO. 1 CAL/NOR** switch to **NOR** and adjust **GAS GEN SPEED NO. 1** variable control from fully ccw to fully cw. Frequency counter indication will vary from 0 to 2400 Hz minimum.

(6) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(7) Disconnect leads from connector No. 1 pins c (HI) and d (LOW) and connect to connector No. 2 pins c (HI) and d (LOW).

(8) Repeat (2) through (6) above, except use **GAS GEN SPEED NO. 2** controls.

b. Adjustments. No adjustments can be made.

17. Engine Oil Press No. 1 and No. 2

a. Performance Check

(1) Connect equipment as shown in figure 3, connection A for connector No. 1. Do not disconnect equipment connected in figure 1.

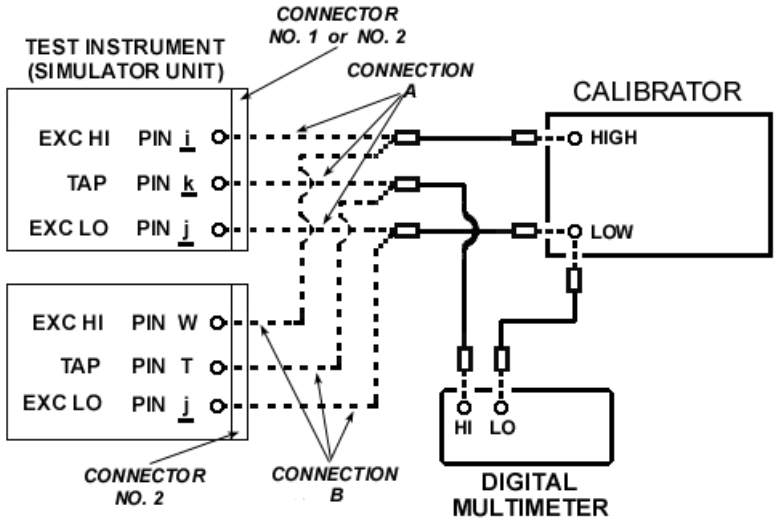


Figure 3. Engine oil pressure - equipment setup.

(2) Set TI **ENGINE OIL PRESS NO. 1 CAL/NOR** switch to **CAL** and **HI/LO** switch to **LO**.

(3) Set calibrator for a 6 V, 400 Hz output.

(4) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. If digital multimeter does not indicate between 3.447 and 3.735 V ac, perform **b**(1) through (4) below.

(5) Set **ENGINE OIL PRESS NO. 1 HI/LO** switch to **HI**. Digital multimeter will indicate between 2.770 and 3.058 V ac.

(6) Set **ENGINE OIL PRESS NO. 1 CAL/NOR** switch to **NOR** and adjust **ENGINE OIL PRESS NO. 1** variable control from fully ccw to fully cw. If digital multimeter does not indicate from more than 3.447 to less than 2.770 V ac, perform **b**(1) through (3) and (5) and (6) below.

(7) Set **ON-OFF-SIM ONLY** switch to **OFF** and calibrator to **STBY**.

(8) Connect equipment as shown in figure 3, connection A, for connector No. 2.

(9) Repeat (2) through (7) above except use **ENGINE OIL PRESS NO. 2** controls. If not within tolerance in (4) above, perform **b** (1) through (3) and (7) below. If not in tolerance in (6) above, perform **b** (1) through (3) and (8) and (9) below.

b. Adjustments

(1) Set autotransformer and dc power supply to **OFF**, and calibrator to **STBY**.

(2) Remove pressure board A2 (fig. 4) and reinstall, using extender board.

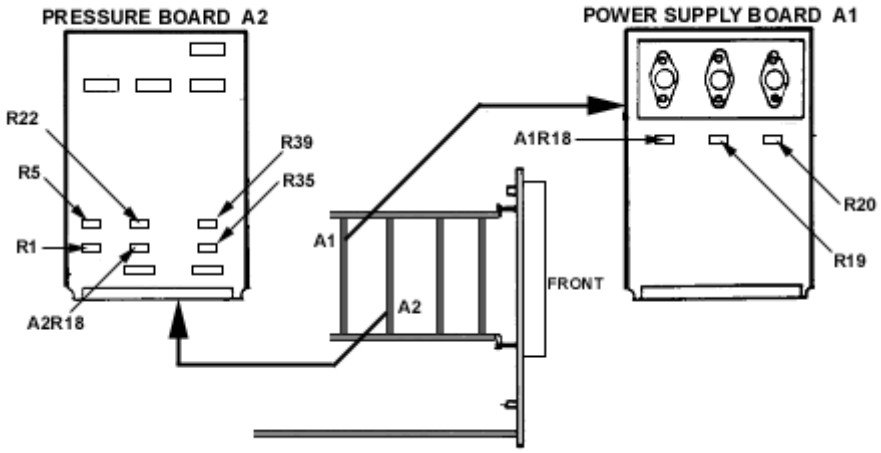


Figure 4. Simulator unit - internal left view.

(3) Set autotransformer, dc power supply, and calibrator power to **ON**.

(4) Adjust R5 (fig. 4) for a 3.591 V ac indication on digital multimeter (R).

(5) Turn **ENGINE OIL PRESS NO. 1** variable control fully ccw.

(6) Adjust R1 (fig. 4) for a 3.591 V ac indication on digital multimeter (R).

(7) Adjust R22 (fig. 4) for a 3.591 V ac indication on digital multimeter (R).

(8) Turn **ENGINE OIL PRESS NO. 2** variable control fully ccw.

(9) Adjust A2R18 (fig. 4) for a 3.591V ac indication on digital multimeter (R).

18. Xmsn Oil Press

a. Performance Check

(1) Connect equipment as shown in figure 3, connection B, for connector No. 2. Do not disconnect equipment connected in figure 1.

(2) Set **XMSN OIL PRESS CAL/NOR** switch to **CAL** and **HI/LO** switch to **LO**.

(3) Set calibrator for a 6 V, 400 Hz output.

(4) Set **ON-OFF-SIM ONLY** switch to **SIM ONLY**. If digital multimeter does not indicate between 3.447 and 3.735 V ac, perform **b** (1) through (4) below.

(5) Set **XMSN OIL PRESS HI/LO** switch to **HI**. Digital multimeter will indicate between 2.696 and 2.984 V ac.

(6) Set **XMSN OIL PRESS CAL/NOR** switch to **NOR** and adjust **XMSN OIL PRESS** variable control from fully ccw to fully cw. If digital multimeter does not indicate from more than 3.447 to less than 2.696 V ac, perform **b** (1) through (3) and (5) through (7) below.

(7) Set **ON-OFF-SIM ONLY** switch to **OFF**.

b. Adjustments

(1) Set autotransformer and dc power supply to **OFF**, and calibrator to **STBY**.

(2) Remove pressure board A2 (fig. 4) and reinstall, using extender board.

(3) Set autotransformer, dc power supply, and calibrator power to **ON**.

(4) Adjust R39 (fig. 4) for a 3.591-V ac indication on digital multimeter (R).

(5) Turn **XMSN OIL PRESS** variable control fully ccw.

(6) Adjust R35 (fig. 4) for a 3.591 V ac indication on digital multimeter (R).

(7) Repeat **a** (2) through (6) above and adjust for best in-tolerance condition.

19. Inter Cal (Unit Tester)

NOTE

Do not perform paragraphs **19** through **22** when calibrating model 476-853. Go to paragraph **23**.

a. Performance Check

(1) Disconnect calibrator and digital multimeter from equipment setup.

(2) Connect simulator **INTERCONNECT** jack to unit tester **J5 INTERCONNECT** jack, using cable (219-419742-000, supplied with TI).

NOTE

Using cable supplied with TI connecting it to appropriate jack being tested, while performing paragraphs **19** through **22** (tables 4, 5, and 6) and using opposite end of cable to complete test may prevent possible damage to connectors on TI.

(3) Connect digital multimeter to unit tester connector J8 pin 17 (HI) and COM test point, using leads and adapter (B5, B7, and B2).

(4) Set **INTER CAL SELECT** switch to **1**.

(5) Set **ON-OFF-SIM ONLY** switch to **ON**. Digital multimeter will indicate between 4 and 6 V dc.

(6) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(7) Repeat technique of (3) through (6) above for **INTER CAL SELECT** switch positions and pin connections listed in table 4. Digital multimeter will indicate within limits specified. Refer to figure 5 for pin locations on J2, J3, and J9.

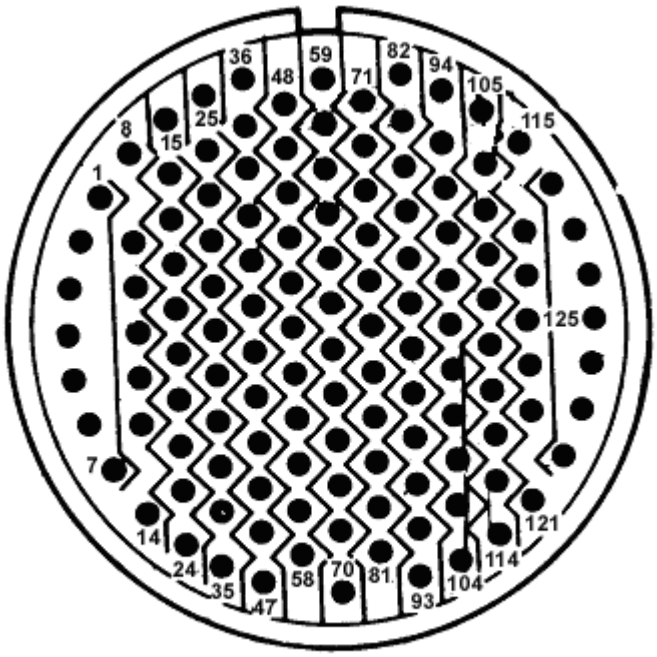
(8) Set **ON-OFF-SIM ONLY** switch to **ON**.

(9) Set **INTER CAL SELECT** switch to **21** and **ANALOG SET** switch to **SLOW** and then to **FAST** while observing analog **INTERFACE MONITOR** which will count at a faster rate and reset after counting to 1827.

(10) Set **INTER CAL SELECT** and **ON-OFF-SIM ONLY** switches to **OFF**.

Table 4. Inter Cal Select (Unit Tester)

Unit tester		Digital multimeter indications (V dc)	
INTER CAL SELECT switch position no.	Pin connections	Min	Max
2	J8 Pin 19	4	6
3	J8 Pin 18	4	6
4	J8 Pin 20	4	6
5	J8 Pin 21	4	6
6	J9 Pin 44	4	6
7	J9 Pin 45	4	6
8	J9 Pin 46	4	6
9	J9 Pin 47	4	6
10	J8 Pin 22	4	6
11	J8 Pin 23	4	6
12	J9 Pin 48	4	6
13	J9 Pin 49	4	6
14	J9 Pin 50	4	6
15	J2 Pin 41	4.5	5.5
16	J3 Pin 41	4.5	5.5
17	J3 Pin 42	4.5	5.5
18	J3 Pin 40	4.5	5.5
19	J2 Pin 43	4.5	5.5



J2, J3 AND J9

Figure 5. Unit tester - pin locations.

b. Adjustments. No adjustments can be made.

20. Rotor Overspeed (Unit Tester)

a. Performance Check

(1) Disconnect lead from J2 pin 43 and connect to J6 pin 31 on unit tester.

(2) Set ROTOR OVERSPEED 127% switch to ON.

(3) Set **ON-OFF-SIM ONLY** switch to **ON**. Digital multimeter will indicate between 4.5 and 5.5 V dc.

(4) Set ROTOR OVERSPEED 127% and ON-OFF-SIM ONLY switches to OFF.

(5) Disconnect lead from J6 pin 31 and connect to J6 pin 32.

(6) Repeat (2) through (4) above, except use **ROTOR OVERSPEED 137%** switch.

(7) Disconnect lead from J6 pin 32 and connect to J6 pin 33.

(8) Repeat (2) through (4) above, except use **ROTOR OVERSPEED 142%** switch.

b. Adjustments. No adjustments can be made.

21. Central Display and Signal Data (Unit Tester)

a. Performance Check

(1) Disconnect lead from J6 pin 33 and connect to J2 pin 1 on unit tester.

(2) Set **LOGIC P/S** switch to **1**.

(3) Set **ON-OFF-SIM ONLY** switch to **ON**. Digital multimeter will indicate between 13 and 17 V dc.

(4) Set **ON-OFF-SIM ONLY** switch to **OFF**.

(5) Repeat technique of (1) through (4) above at unit tester switch settings and pin connections listed in table 5. Digital multimeter will indicate within limits specified.

(6) Disconnect digital multimeter from equipment setup.

(7) Connect J3 pin 26 to J3 pin 27.

(8) Connect digital multimeter positive to J3 pin 93 and negative to J3 pin 26.

Table 5. Central Display and Signal Data

Unit tester		Digital multimeter indications (V dc)	
Logic P/S switch settings	Pin connections	Min	Max
1	J2 Pin 3	-13.0	-17.0
1	J2 Pin 5	6.5	9.5
1	J2 Pin 6	6.5	9.5
1	J2 Pin 35	4.5	5.5
2	J3 Pin 1	13.0	17.0
2	J3 Pin 3	-13.0	-17.0
2	J3 Pin 5	6.5	9.5
2	J3 Pin 6	6.5	9.5
2	J3 Pin 35	4.5	5.5
1	J6 Pin 26	10.0	11.0
1	J6 Pin 27	-10.0	-11.0
- - -	J6 Pin 16	4.0	6.0
- - -	J6 Pin 29	4.0	6.0
- - -	J8 Pin 13	4.0	6.0
- - -	J8 Pin 16	4.0	6.0
1	J9 Pin 2	13.0	17.5
1	J9 Pin 4	-13.5	-17.5
1	J9 Pin 7	6.5	9.5
PILOTS control fully cw	J1 Pin 4	4.5	5.5
COPILOTS control fully cw	J4 Pin 4	4.5	5.5
COPILOTS control fully cw	AD/P test point	4.5	5.5
1 P/S CONTROL fully cw and PS CONT to REMOTE	IL/S test point	4.5	5.5

(9) Set **ON-OFF-SIM ONLY** switch to **ON**. Digital multimeter will indicate between 7.5 and 12.5 V ac.

(10) Set **ON-OFF-SIM ONLY** switch to **OFF**.

b. Adjustments. No adjustments can be made.

22. Display Update (Unit Tester)

a. Performance Check

(1) Connect equipment as shown in figure 6. Do not disconnect equipment connected in figure 1.

(2) Set **DISPLAY UPDATE** switch to **ON**.

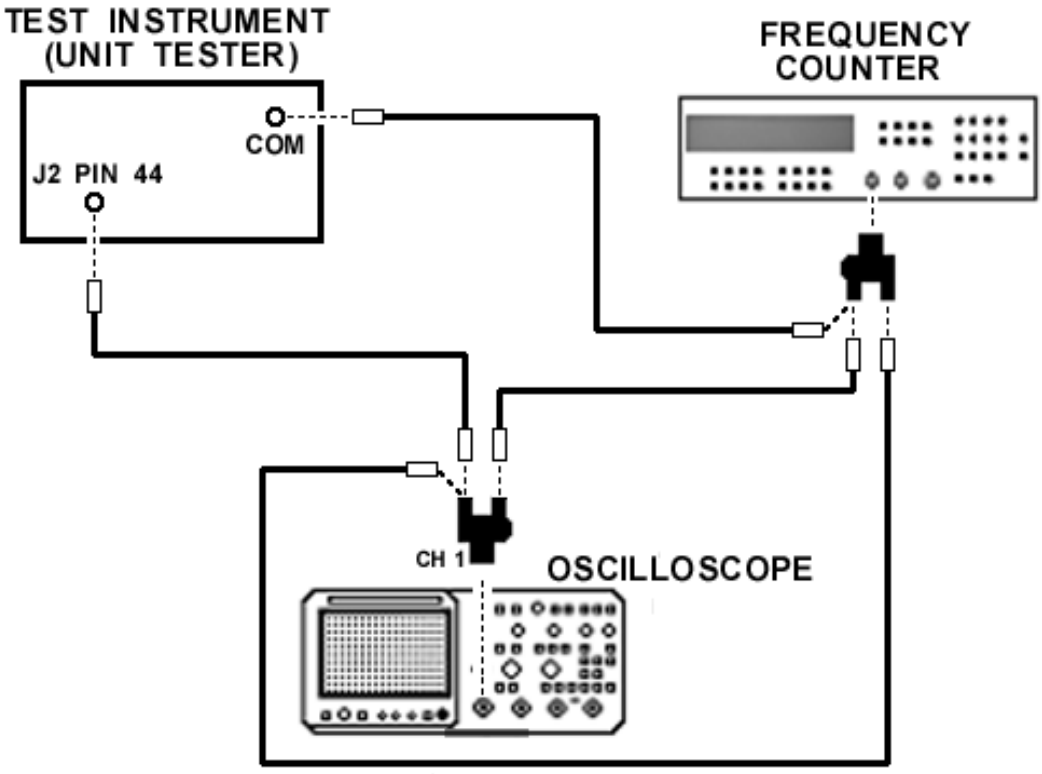


Figure 6. Display control - equipment setup.

NOTE

When measuring negative pulse amplitude with oscilloscope, disconnect frequency counter after verifying frequency.

(3) Set **ON-OFF-SIM ONLY** switch to **ON**. Oscilloscope will indicate negative pulses between 4.0 and 6.0 V and frequency counter will indicate between 1300 and 1900 Hz.

(4) Set **DISPLAY UPDATE** and **ON-OFF-SIM ONLY** switches to **OFF.**

(5) Repeat technique of (2) through (4) above, connecting lead to pin connections listed in table 6. Oscilloscope and frequency counter will indicate within limits specified.

b. Adjustments. No adjustments can be made.

Table 6. Display Update (Unit Tester)

Unit tester pin connections	Oscilloscope indications	Frequency counter indications
J2 Pin 45 46 47 48 49 50 J3 Pin 44 45 46 47 48 49 50 J6 Pin 17 18 19 20 21 22 23	Negative pulses between 4.0 and 6.0 V	Between 1300 and 1900 Hz
J2 Pin 51 52 J3 Pin 51 52 J6 Pin 14 15	Square wave between 4.0 and 6.0 V	Between 285 and 1000 ms (1.0 and 3.5 Hz)

23. Power Supply

NOTE

Do not perform power supply check if all other parameters are within tolerance.

a. Performance Check

(1) Set all power to TI to **OFF**.

(2) Remove power supply board (A1) (fig. 4) and reconnect, using extender board.

(3) Connect digital multimeter positive to loop 18 and negative to loop 14 on extender board.

(4) Set power to TI to **ON**. If digital multimeter does not indicate between 11.5 and 12.5 V dc, perform **b** (1) below.

(5) Disconnect lead from loop 18 and connect to loop 46. If digital multimeter does not indicate between 11.5 and 12.5 V dc, perform **b** (2) below.

(6) Disconnect lead from loop 46 and connect to loop 13. If digital multimeter does not indicate between -11.5 and -12.5 V dc, perform **b** (3) below.

(7) Remove extender board and reinstall power supply board.

b. Adjustments

(1) Adjust R19 (fig. 4) for 12.0 V dc indication on digital multimeter (R).

(2) Adjust A1R18 (fig. 4) for 12.0 V dc indication on digital multimeter (R).

(3) Adjust R20 (fig. 4) for -12.0 V dc indication on digital multimeter (R).

24. Final Procedure

a. Deenergize and disconnect all equipment and if required, reinstall protective cover on TI.

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

By Order of the Secretary of the Army:

Official:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army

0318909

Distribution:
To be distributed in accordance with the (IDN) 342048, requirements for calibration procedure TB 9-4920-316-35.

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.