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DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR MULTIMETER FLUKE, MODELS 73, 73 SERIES III, 75, 75 SERIES II, 75 SERIES III, 77, 77 SERIES II, 77 SERIES III, 77/AN, AND 77/BN

Headquarters, Department of the Army, Washington, DC
9 September 2004

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, US Army Aviation and Missile Command, 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 9-6625-2243-35, dated 3 March 1995.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Multimeter, Fluke, Models 73, 73 Series III, 75, 75 Series II, 75 Series III, 77, 77 Series II, 77 Series III, 77/AN, and 77/BN. The manufacturer's manuals 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. Variations among models are described in text and tables.

b. Time and Technique. The time required for each 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. Tables containing TI parameters, performance specifications, and performance checks which pertain to this calibration are listed in table 1.

Table 1. Test Instrument

Models	Tables
73	3
73 Series III	4
75	5
75 Series II	6
75 Series III	7
77	8
77 Series II	9
77 Series III	10
77/AN	11
77/BN	12

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. 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.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications[1]	Manufacturer and model (part number)
CALIBRATOR	Dc voltage: Range: 300 mV to 900 V Accuracy: ±0.83% Ac voltage: Range: 3 to 900 V Frequency: 45 to 1000 Hz Accuracy: ±0.52% Resistance: Range: 100 Ω to 10 MΩ Accuracy: ±0.15% Dc current: Range: 30 mA to 5 A Accuracy: ±0.39%	Fluke, Model 5720A (5700A/EP) (p/o MIS-35947), w/amplifier, Fluke, 5725A/AR (5725A/AR)

[1]The ranges and accuracies listed reflect the highest range required and the best accuracy required, respectively, in this technical bulletin.

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, refer to TI manufacturer's manual and take corrective action before continuing with the calibration.

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. Connect calibrator **OUTPUT HI** and **LO** to TI **VΩ** and **COM**.

b. For some checks throughout this procedure it may be necessary to manually set TI range by pressing **RANGE** pushbutton (if applicable).

8. Dc Voltage

a. Performance Check

(1) Set function switch to 300 mV dc (mV dc on some models).

(2) Set TI and calibrator to settings listed in table a for TI model Dc Voltage. TI will indicate within limits specified.

b. Adjustments. Refer to TI manufacturer's manual for corrective action.

9. Ac Voltage

a. Performance Check

(1) Set function switch to V ac.

(2) Set TI and calibrator to settings listed in table b for TI model Ac Voltage. TI will indicate within limits specified.

b. Adjustments. Refer to TI manufacturer's manual for corrective action.

10. Resistance

a. Performance Check

(1) Set function switch to **Ω**.

(2) Set TI and calibrator to settings listed in table c for TI model Resistance. At each setting, use calibrator output adjustment controls to set calibrator control display **Reading** equal to TI indication. Calibrator control display **Error** indications will be within limits specified.

b. Adjustments. Refer to TI manufacturer's manual for corrective action.

11. Dc Current

a. Performance Check

(1) For model 73 only, connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

(2) For all other models, connect calibrator **OUTPUT HI** and **LO** to TI **300 mA** and **COM**.

(3) Set function switch to A dc.

(4) Set TI and calibrator to settings listed in table d for TI model Dc Current. TI will indicate within limits specified.

b. Adjustments. Refer to TI manufacturer's manual for corrective action.

Table 3. Model 73 Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range: 320 mV to 320 V 1000 V	Accuracy: ±(0.7% + 1) ±(0.8% + 1)
Ac voltage	Range: 3.2 V, 45 to 500 Hz 32 to 750 V, 45 Hz to 1 kHz	Accuracy: ±(3.0% + 2) ±(3.0% + 2)
Dc Current	Range: 0 to 10 A Accuracy: ±(2.0% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(3.0% + 2)	
Resistance	Range: 320 Ω 3200 Ω to 3.2 MΩ 32 MΩ	Accuracy: ±(1.0% + 2) ±(1.0% + 1) ±(3.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 3a. Model 73 Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	297.8	302.2
3.2 V[1]	3 V	2.978	3.022
32 V	30 V	29.78	30.22
320 V	300 V	297.8	302.2
1000 V	900 V	892	908

[1]Set function switch to V dc.

Table 3b. Model 73 Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.908	3.092
3.2 V	3	500	2.908	3.092
32 V	30	45	29.08	30.92
32 V	30	1000	29.08	30.92
320 V	300	1000	290.8	309.2
320 V	300	45	290.8	309.2
750 V	700	45	677	723
750 V	700	1000	677	723

Table 3c. Model 73 Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	1.2
3200	1 k	1.1
32 k	10 k	1.1
320 k	100 k[2]	1.1
3.2 M	1 M	1.1
32 M	10 M	3.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 3d. Model 73 Dc Current

Performance Check			
Test instrument range setting	Calibrator output setting	Test instrument indication	
		Min	Max
10 A	5 A	4.88	5.12

Table 4. Model 73 Series III Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range:	Accuracy:
	320 mV to 320 V	±(0.3% + 1)
	600 V	±(0.4% + 1)
Ac voltage	Range:	Accuracy:
	3.2 V, 45 to 500 Hz	±(2.0% + 2)
	32 to 600 V, 45 Hz to 1 kHz	±(2.0% + 2)
Dc Current	Range: 32 mA, 320 mA and 10 A	
	Accuracy: ±(1.5% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz	
	Accuracy: ±(2.5% + 2)	
Resistance	Range:	Accuracy:
	320 Ω	±(0.5% + 2)
	3200 Ω to 3.2 MΩ	±(0.5% + 1)
	32 MΩ	±(2.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 4a. Model 73 Series III Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	299	301
3.2 V[1]	3 V	2.99	3.01
32 V	30 V	29.9	30.1
320 V	300 V	299	301
600 V	500 V	497	503

[1]Set function switch to V dc.

Table 4b. Model 73 Series III Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
600 V	500	45	488	512
600 V	500	1000	488	512

Table 4c. Model 73 Series III Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.7
3200	1 k	0.6
32 k	10 k	0.6
320 k	100 k[2]	0.6
3.2 M	1 M	0.6
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 4d. Model 73 Series III Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	295.3	304.7
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 5. Model 75 Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range:	Accuracy:
	320 mV to 320 V	±(0.5% + 1)
	1000 V	±(0.6% + 1)
Ac voltage	Range:	Accuracy:
	3.2 V, 45 to 500 Hz	±(2.0% + 2)
	32 to 750 V, 45 Hz to 1 kHz	±(2.0% + 2)
Dc Current	Range:	Accuracy:
	32 mA	±(1.5% + 2)
	320 mA	±(2.0% + 2)
	10 A	±(1.5% + 2)
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(3.0% + 2)	
Resistance	Range:	Accuracy:
	320 Ω	±(0.7% + 2)
	3200 Ω to 3.2 MΩ	±(0.7% + 1)
	32 MΩ	±(2.5% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 5a. Model 75 Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	298.4	301.6
3.2 V[1]	3 V	2.984	3.016
32 V	30 V	29.84	30.16
320 V	300 V	298.4	301.6
1000 V	900 V	894	906

[1]Set function switch to V dc.

Table 5b. Model 75 Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
750 V	700	45	684	716
750 V	700	1000	684	716

Table 5c. Model 75 Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.9
3200	1 k	0.8
32 k	10 k	0.8
320 k	100 k[2]	0.8
3.2 M	1 M	0.8
32 M	10 M	2.6

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 5d. Model 75 Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	293.8	306.2
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 6. Model 75 Series II Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range: 0 to 1000 V Accuracy: ±(0.4% + 1)	
Ac voltage	Range: 3.2 V, 45 to 500 Hz 32 to 750 V, 45 Hz to 1 kHz	Accuracy: ±(2.0% + 2) ±(2.0% + 2)
Dc Current	Range: 32 mA, 320 mA and 10 A Accuracy: ±(1.5% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(2.5% + 2)	
Resistance	Range: 320 Ω 3200 Ω to 3.2 MΩ 32 MΩ	Accuracy: ±(0.5% + 2) ±(0.5% + 1) ±(2.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 6a. Model 75 Series II Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	298.7	301.3
3.2 V[1]	3 V	2.987	3.013
32 V	30 V	29.87	30.13
320 V	300 V	297.8	301.3
1000 V	900 V	895	905

[1]Set function switch to V dc.

Table 6b. Model 75 Series II Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
750 V	700	45	684	716
750 V	700	1000	684	716

Table 6c. Model 75 Series II Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.7
3200	1 k	0.6
32 k	10 k	0.6
320 k	100 k[2]	0.6
3.2 M	1 M	0.6
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 6d. Model 75 Series II Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	295.3	304.7
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 7. Model 75 Series III Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range: 320 mV to 320 V 600 V	Accuracy: ±(0.3% + 1) ±(0.4% + 1)
Ac voltage	Range: 3.2 V, 45 to 500 Hz 32 to 600 V, 45 Hz to 1 kHz	Accuracy: ±(2.0% + 2) ±(2.0% + 2)
Dc Current	Range: 32 mA, 320 mA and 10 A Accuracy: ±(1.5% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(2.5% + 2)	
Resistance	Range: 320 Ω 3200 Ω to 3.2 MΩ 32 MΩ	Accuracy: ±(0.5% + 2) ±(0.5% + 1) ±(2.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 7a. Model 75 Series III Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	299	301
3.2 V[1]	3 V	2.99	3.01
32 V	30 V	29.9	30.1
320 V	300 V	299	301
600 V	500 V	497	503

[1]Set function switch to V dc.

Table 7b. Model 75 Series III Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
600 V	500	45	488	512
600 V	500	1000	488	512

Table 7c. Model 75 Series III Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.7
3200	1 k	0.6
32 k	10 k	0.6
320 k	100 k[2]	0.6
3.2 M	1 M	0.6
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 7d. Model 75 Series III Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	295.3	304.7
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 8. Model 77 Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range:	Accuracy:
	320 mV to 320 V	±(0.3% + 1)
	1000 V	±(0.4% + 1)
Ac voltage	Range:	Accuracy:
	3.2 V, 45 to 500 Hz	±(2.0% + 2)
	32 to 750 V, 45 Hz to 1 kHz	±(2.0% + 2)
Dc Current	Range:	Accuracy:
	32 mA	±(1.5% + 2)
	320 mA	±(2.0% + 2)
	10 A	±(1.5% + 2)
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz	
	Accuracy: ±(3.0% + 2)	
Resistance	Range:	Accuracy:
	320 Ω	±(0.5% + 2)
	3200 Ω to 3.2 MΩ	±(0.5% + 1)
	32 MΩ	±(2.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 8a. Model 77 Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	299	301
3.2 V[1]	3 V	2.99	3.01
32 V	30 V	29.9	30.1
320 V	300 V	299	301
1000 V	900 V	896	904

[1]Set function switch to V dc.

Table 8b. Model 77 Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
750 V	700	45	684	716
750 V	700	1000	684	716

Table 8c. Model 77 Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.7
3200	1 k	0.6
32 k	10 k	0.6
320 k	100 k[2]	0.6
3.2 M	1 M	0.6
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 8d. Model 77 Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	295.3	306.2
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 9. Model 77 Series II Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range: 320 mV to 320 V 1000 V	Accuracy: ±(0.3% + 1) ±(0.4% + 1)
Ac voltage	Range: 3.2 V, 45 to 500 Hz 32 to 750 V, 45 Hz to 1 kHz	Accuracy: ±(2.0% + 2) ±(2.0% + 2)
Dc Current	Range: 32 mA, 320 mA and 10 A Accuracy: ±(1.5% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(2.5% + 2)	
Resistance	Range: 320 Ω 3200 Ω to 3.2 MΩ 32 MΩ	Accuracy: ±(0.5% + 2) ±(0.5% + 1) ±(2.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 9a. Model 77 Series II Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	299	301
3.2 V[1]	3 V	2.99	3.01
32 V	30 V	29.9	30.1
320 V	300 V	299	301
1000 V	900 V	895	905

[1]Set function switch to V dc.

Table 9b. Model 77 Series II Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
750 V	700	45	684	716
750 V	700	1000	684	716

Table 9c. Model 77 Series II Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.7
3200	1 k	0.6
32 k	10 k	0.6
320 k	100 k[2]	0.6
3.2 M	1 M	0.6
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 9d. Model 77 Series II Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	295.3	304.7
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 10. Model 77 Series III Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range:	Accuracy:
	320 mV to 320 V	±(0.3% + 1)
	1000 V	±(0.4% + 1)
Ac voltage	Range:	Accuracy:
	3.2 V, 45 to 500 Hz	±(2.0% + 2)
	32 to 750 V, 45 Hz to 1 kHz	±(2.0% + 2)
Dc Current	Range: 32 mA, 320 mA and 10 A	
	Accuracy: ±(1.5% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz	
	Accuracy: ±(2.5% + 2)	
Resistance	Range:	Accuracy:
	320 Ω	±(0.5% + 3)
	3200 Ω to 3.2 MΩ	±(0.5% + 1)
	32 MΩ	±(2.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 10a. Model 77 Series III Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	299	301
3.2 V[1]	3 V	2.99	3.01
32 V	30 V	29.9	30.1
320 V	300 V	299	301
1000 V	900 V	895	905

[1]Set function switch to V dc.

Table 10b. Model 77 Series III Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.938	3.062
3.2 V	3	500	2.938	3.062
32 V	30	45	29.38	30.62
32 V	30	1000	29.38	30.62
320 V	300	1000	293.8	306.2
320 V	300	45	293.8	306.2
1000 V	900	45	880	920
1000 V	900	1000	880	920

Table 10c. Model 77 Series III Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	0.8
3200	1 k	0.6
32 k	10 k	0.6
320 k	100 k[2]	0.6
3.2 M	1 M	0.6
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 10d. Model 77 Series III Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.53	30.47
320 mA	300 mA	295.3	304.7
10 A[1]	5 A	4.9	5.1

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 11. Model 77/AN Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range: 320 mV to 320 V 1000 V	Accuracy: ±(1.0% + 1) ±(1.3% + 1)
Ac voltage	Range: 0 to 750 V, 45 Hz to 1 kHz Accuracy: ±(4.0% + 2)	
Dc Current	Range: 32 mA, 320 mA and 10 A Accuracy: ±(3.0% + 2)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(5.0% + 2)	
Resistance	Range: 320 Ω 3200 Ω to 3.2 MΩ 32 MΩ	Accuracy: ±(2.0% + 2) ±(2.0% + 1) ±(3.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 11a. Model 77/AN Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	296.9	303.1
3.2 V[1]	3 V	2.969	3.031
32 V	30 V	29.69	30.31
320 V	300 V	296.9	303.1
1000 V	900 V	887	913

[1]Set function switch to V dc.

Table 11b. Model 77/AN Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.878	3.122
3.2 V	3	1000	2.878	3.122
32 V	30	45	28.78	31.22
32 V	30	1000	28.78	31.22
320 V	300	1000	287.8	312.2
320 V	300	45	287.8	312.2
750 V	700	45	670	730
750 V	700	1000	670	730

Table 11c. Model 77/AN Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	2.2
3200	1 k	2.1
32 k	10 k	2.1
320 k	100 k[2]	2.1
3.2 M	1 M	2.1
32 M	10 M	3.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 11d. Model 77/AN Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.08	30.92
320 mA	300 mA	290.8	309.2
10 A[1]	5 A	4.83	5.17

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

Table 12. Model 77/BN Specifications

Test instrument parameters	Performance specifications ± (% of reading + counts)	
Dc voltage	Range: 0 1000 V Accuracy: ±(0.5% + 1)	
Ac voltage	Range: 320 mV to 320 V, 45 Hz to 1 kHz 750 V, 45 Hz to 500 Hz	Accuracy: ±(2.0% + 5) ±(2.0% + 5)
Dc Current	Range: 0 to 10 A Accuracy: ±(2.0% + 3)	
Ac Current[1]	Range: 0 to 10 A, 45 Hz to 1 kHz Accuracy: ±(3.0% + 2)	
Resistance	Range: 320 Ω 3200 Ω to 3.2 MΩ 32 MΩ	Accuracy: ±(2.0% + 1) ±(2.0% + 1) ±(3.0% + 1)

[1]Ac current verified by dc current checks because both use the same shunt resistors.

Table 12a. Model 77/BN Dc Voltage

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
320 mV	300 mV	298.4	301.6
3.2 V[1]	3 V	2.984	3.016
32 V	30 V	29.84	30.16
320 V	300 V	298.4	301.6
1000 V	900 V	894	906

[1]Set function switch to V dc.

Table 12b. Model 77/BN Ac Voltage

Performance Checks				
Test instrument range settings	Calibrator output settings		Test instrument indications	
	Voltage (V)	Frequency (Hz)	Min	Max
3.2 V	3	45	2.935	3.065
3.2 V	3	1000	2.935	3.065
32 V	30	45	29.35	30.65
32 V	30	1000	29.35	30.65
320 V	300	1000	293.5	306.5
320 V	300	45	293.5	306.5
750 V	700	45	681	719
750 V	700	500	681	719

Table 12c. Model 77/BN Resistance

Performance Checks		
Test instrument range settings (Ω)	Calibrator	
	Output settings (Ω)	**Error** display indications ±(%)
320	100[1]	2.1
3200	1 k	2.1
32 k	10 k	2.1
320 k	100 k[2]	2.1
3.2 M	1 M	2.1
32 M	10 M	2.1

[1]Set calibrator **2 wire Comp ON**.
[2]Set calibrator **2 wire Comp OFF**.

Table 12d. Model 77/BN Dc Current

Performance Checks			
Test instrument range settings	Calibrator output settings	Test instrument indications	
		Min	Max
32 mA	30 mA	29.37	30.63
320 mA	300 mA	293.7	306.3
10 A[1]	5 A	4.87	5.13

[1]Connect calibrator amplifier **CURRENT OUTPUT HI** and **LO** to TI **10A** and **COM**.

12. 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:

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

Official:

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

0419404

Distribution:
To be distributed in accordance with the initial distribution number (IDN) 343999, requirements for calibration procedure TB 9-6625-2243-35.

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.milT
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.