

1 June 1962

BATTERY TEST SET AN/AMM-1

Cog Service: USN FSN:

Functional Class: 1.2.4

USA

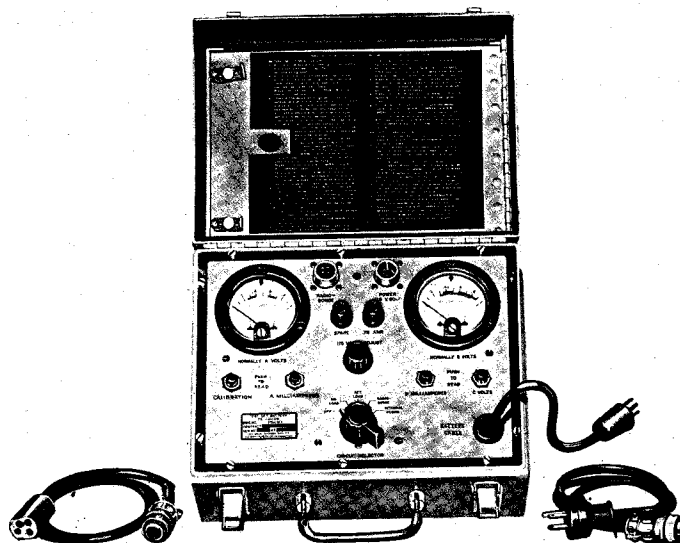
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER:



*Battery Test Set AN/AMM-1*

**FUNCTIONAL DESCRIPTION:**

Battery Test Set AN/AMM-1 is a portable instrument designed to detect voltage and current deficiencies in a malfunctioning Battery BA-353/AM prior to use with a radiosonde set in flight. The Test Set can also serve as a useful piece of test and maintenance equipment in the radiosonde preflight check-out procedures.

No field changes in effect at time of preparation (11 September 1961).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 115 v, 60 cyc, single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**AN/AMM-1 BATTERY TEST SET**

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Battery Test Set AN/AMM-1 includes:			
1	Test Set, Battery TS-1101/AM		7 x 9 x 12	
1	Power Cable			
1	Radio-sonde Cable			

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**REFERENCE DATA AND LITERATURE:**

NAVAER 16-45-633: Handbook of Operation and Maintenance with Illustrated Parts Breakdown for Battery Test Set AN/AMM-1.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (4) 1N253 (2) 1N255

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
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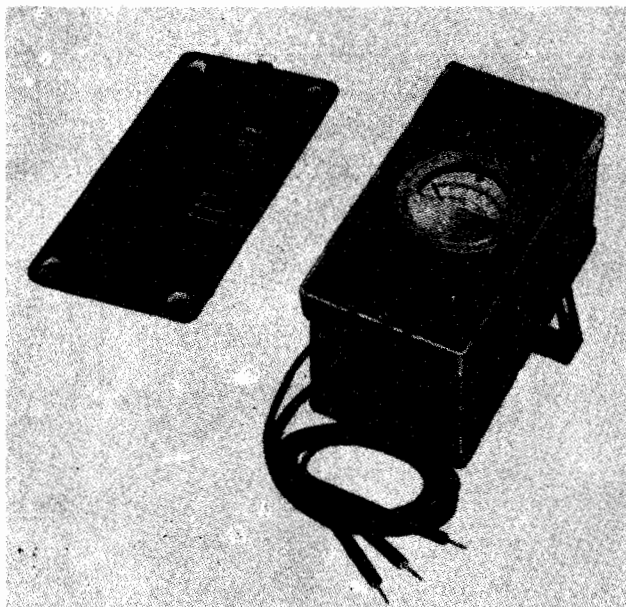
UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

### MULTIMETER

### AN/PRM-15



Multimeter AN/PRM-15

RESISTANCE RANGES: 0 to 1000, 10000, 100000 ohms and 0 to 1, 10, 100 meg.  
 ACCURACY:  $\pm 3\%$  of full scale at nominal ambient temperature of 25°C.  
 BATTERY TEST INDICATION: Replace, Good.  
 INPUT IMPEDANCE: 11 meg on all voltage ranges.  
 METER SENSITIVITY: 50 ua.  
 POWER REQUIREMENTS: Battery Power Supply PP-1247/PRM-15 consisting of:  
 (1) 45 v battery BA-414/U, (3) 1.5 v batteries BA-30.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

MIPR-R-54-884-43106, dated 5 October 1953.  
 Approximate Cost: \$150.00 with equipment spares.

#### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6418  
 Total Tubes: (1)

#### FUNCTIONAL DESCRIPTION

The AN/PRM-15 is used for measuring DC voltages, resistances, and continuity of wiring, cording and cabling. Its purpose is to determine the unknown resistances and DC voltages employed in electronic equipment.

No field changes in effect at time of preparation (29 October 1956).

#### REFERENCE DATA AND LITERATURE

TM-11-5090: Technical Manual for Multimeter AN/PRM-15.

#### RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Battery BA-414/U, (3) Batteries BA-30.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

VOLTAGE RANGES: 0 to -2.5, 10, 25, 100, 250, 1000 v DC.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE TASSA  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

#### SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter AN/PRM-15	0.4	8 x 9 x 11	

UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

AN/PRM-15

MULTIMETER

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter AN/PRM-15 consisting of:		
1	Multimeter TS-618/U	4-3/4 x 5-5/8 x 8-3/4	8.5
1	Battery Power Supply PP-1247/PRM-15	1-5/8 x 4-3/4 x 8-3/4	2.0
1	Technical Manual TM-11-5090		
2	Alligator Clips		
3	Miniature Probe Tips		
1	Spare Tube Type 6418		

## RADIO TEST SET

AN/PRM-23(XN-1)

### FUNCTIONAL DESCRIPTION

The AN/PRM-23(XN-1) is a portable test instrument used as a probe for tracing AF and RF signals in any piece of electronic gear operating within the audio frequency range of 20 to 9000 cps and radio frequency range of 50 kilocycles to 450 megacycles. Audio frequency tests for localization of dead stages, sources of distortion, stages of low gain and intermittent conditions of operation can be performed. Limited radio frequency tests may also be effected.

The instrument is compact and its pistol shape facilitates its use. The probe is located at the muzzle and the trigger controls the battery power applied to the self-contained amplifier. A meter for visual indication is located at the grip of the gun. A jack is located at the bottom of the grip so that an earphone may be connected to the output of the instrument for aural indication.

No field changes in effect at time of preparation (30 January 1957).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### AUDIO FREQUENCY

NOMINAL: 80 to 5000 cps.

USUABLE: 20 to 9000 cps.

MAX INPUT VOLTAGE: 6 V.

INPUT IMPEDANCE: greater than 0.5 meg, less than 12 uuf.

R.F. FREQUENCY RANGE: 50 kc to 450 mc.

SENSITIVITY: modulated signals only, above 23 millivolts.

POWER SOURCE REQUIRED: 1.25 V "A" battery. 20 V "B" battery or separate power supply with 115 V, 60 cps input.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Erie Resistor Corp, Erie, Pa  
Contract NObsr-57064

### TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6088

Total Tubes: (3)

### REFERENCE DATA AND LITERATURE

NAVSHIPS 92864: Technical Manual for Radio Test Set AN/PRM-23(XN-1).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Test Set AN/PRM-23 (XN-1)		

## MULTIMETER

## AN/PSM-4



*Multimeter AN/PSM-4*

### FUNCTIONAL DESCRIPTION

The AN/PSM-4 is a portable multirange equipment designed for general purpose electronic and electrical service work. It is shock resistant and waterproof and has usable ranges of 10 DC voltage ranges, 10 DC current ranges, 9 AC voltage ranges, and 5 ohm-meter ranges.

No field changes in effect at time of preparation (31 March 1958).

### RELATION TO OTHER EQUIPMENT

The AN/PSM-4 is similar to Navy Model OE Series and Multimeter TS-352/U Series, differing mainly in that the AN/PSM-4 is of lighter weight and more versatile than these equipments.

Equipment Required but not Supplied: (1) Battery BA-30, (1) Battery BA-261.

April 1958

Test-Voltage and Current Measuring

**AN/PSM-4****MULTIMETER****ELECTRICAL AND MECHANICAL CHARACTERISTICS**

Contract NObsr-49273, dated 28 June 1950.

Approximate Cost: \$68.00.

**RANGE DATA****VOLTAGE**

DC: 0 to 2, 4, 10, 20, 40, 100, 200, 400, 1000, 4000 v.

AC: 0 to 2, 4, 10, 20, 40, 100, 200, 400, 1000 v.

CURRENT (DC): 0 to 100 ua, 0 to 1, 4, 10, 40, 100, 400, 1000 ma, 0 to 10 amps.

RESISTANCE: 0 to 10000, 100000 ohms, 0 to 1, 10, 100 meg.

**SENSITIVITY****VOLTAGE**

DC: 20000 ohms per v.

AC: 1000 ohms per v.

**ACCURACY****VOLTAGE**DC:  $\pm 3\%$  of full scale reading.AC:  $\pm 5\%$  of full scale reading.CURRENT:  $\pm 3\%$  of full scale reading.RESISTANCE:  $\pm 3\%$  of full scale reading.

POWER REQUIREMENTS: 1.5 v and 22.5 v dry cell batteries.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals Used.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91583: Technical Manual for Multi-meter AN/PSM-4.

**MANUFACTURER'S OR CONTRACTOR'S DATA**Weston Electrical Instrument Corp, Newark,  
New Jersey.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-M-15134 (SHIPS)
STOCK NO.
R.D.B. IDENT. NO. 1.1.3.2.1

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter AN/PSM-4	0.4	7-3/8 X 7-3/4 X 12-1/2	9.375

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter AN/PSM-4 including: (2) Test Leads (1) High Voltage Probe (1) Phone Plug (2) Alligator Clip	4.78 X 7.38 X 6.00	5.313
1	Technical Manual NAVSHIPS 91583	0.25 X 8.50 X 11.00	

23 May 1962  
Cog Service:

6625-643-1668  
FSN: 6625-643-3399 W/S

MULTIMETER AN/PSM-4A

Functional Class:

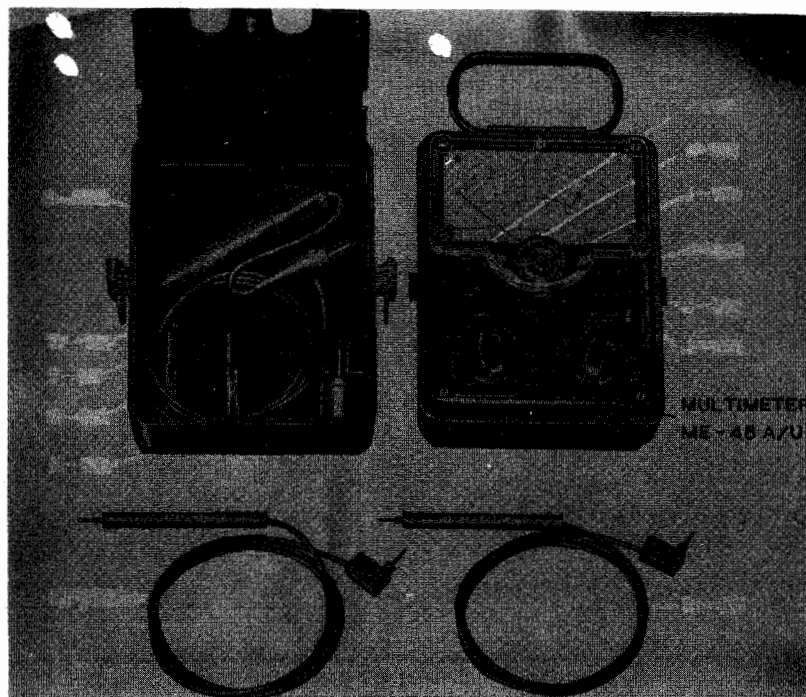
USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** The Simpson Electric Co.



*Multimeter AN/PSM-4A*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/PSM-4A is a complete portable volt-ohm-milliammeter. It can be used to make dc current, dc resistance, and dc, ac, and output voltage measurements. The complete unit includes test probes which may be used with their prod tips, or the tips can be fitted with alligator clips or with a telephone plug to simplify all contact arrangements and connections. A high voltage probe is also included, which makes it possible to read voltages up to 5,000 v dc. This probe contains a warning light to indicate the presence of high voltage.

No field changes in effect at time of preparation (6 July 1961).

**TECHNICAL CHARACTERISTICS:**

**VOLTAGE RANGE**

AC: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000 v.

DC: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000, 5,000 v.



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**AN/PSM-4A MULTIMETER**

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DC CURRENT RANGE: 0 to 100 ua; 0 to 1, 5, 10, 50, 100, 500, 1,000 ma; 0 to 10 amp.

RESISTANCE RANGE: 0 to 30, 300, 3,000, 30,000 ohms; 0 to 30 meg.

**INPUT IMPEDANCE**

DC VOLTS: 20,000 ohms/v.

AC VOLTS: 1,000 ohms/v.

OUTPUT VOLTS: 1,000 ohms/v in series with 500,000 uuf.

**OVER-ALL ACCURACIES**

DC CURRENT RANGES: 3% of full scale.

DC VOLTAGE RANGES: 3% of full scale (4% of full scale for 5,000 v dc range only).

AC VOLTAGE RANGES: 5% of full scale.

OUTPUT RANGES: 5% of full scale, plus frequency and range error.

OHMMETER RANGES: Within 3 deg of arc from absolute value of resistance indicated.

FREQUENCY ERROR: AC voltages do not vary more than 2% from the 1,000 cyc value from 20 cyc through 10,000 cyc.

POWER REQUIREMENTS: 1.5 v, 22.5 v dc.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(1) Battery BA-30(1.5 v); (1) Battery BA-261/U(22.5 v).

**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/PSM-4A includes:		4-23/32 x 5-15/16 x 7-15/32	5.75
1	Multimeter ME-48A/U		2-7/8 x 5-15/16 x 7-15/32	4
1	Cover CW-328/PSM-4A		2-3/8 x 5-15/16 x 7-15/32	1.5
1	Lead, Test, Red CX-2353/PSM-4A		48 lg	
1	Lead, Test, Black CX-2354/PSM-4A		48 lg	
1	Lead, Test, High Voltage CX-2355/PSM-4A		55 lg	
2	Clip, Alligator		3/8 x 15/16 x 2-15/16	
1	Plug, Telephone		1 od x 2-5/8	
2	Technical Manual NAVSHIPS 92051		1/4 x 8-1/2 x 11	0.4

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92051: Technical Manual for Multimeter AN/PSM-4A, AN/PSM-4B, and AN/PSM-4C.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N34

4.1 AN/PSM-4A: 2

## SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.13	19.5

## PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: USN, BuShips  
SPEC &/OR DWG: MIL-M-17096A(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Simpson Electric Co.	Chicago, Ill.	N0bsr-52559, 21 June 1951	
		N0bsr-57514, 30 June 1952	
		N0bsr-59581, 12 December 1952	\$49.50
		N0bsr-64699, 29 April 1955	\$73.30
		N0bsr-71389 N0bsr-71683, 11 February 1957	\$65.01

23 May 1962

MULTIMETER AN/PSM-4B

Cog Service:

FSN: 6625-585-9795

Functional Class:

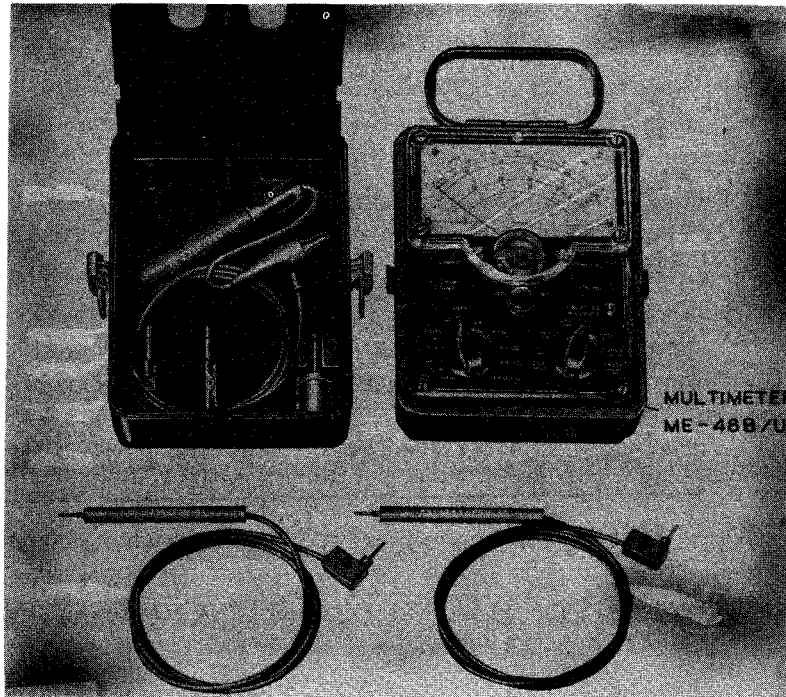
USA

USN

USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Industrial Television Inc.



*Multimeter AN/PSM-4B*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/PSM-4B is a complete portable volt-ohm-milliammeter. It can be used to make dc current, dc resistance, and dc, ac, and output voltage measurements. The complete unit includes test probes which may be used with their prod tips, or the tips can be fitted with alligator clips or with a telephone plug to simplify all contact arrangements and connections. A high voltage probe is also included, which makes it possible to read voltages up to 5000 v dc. This probe contains a warning light to indicate the presence of high voltage.

No field changes in effect at time of preparation (6 July 1961).

**TECHNICAL CHARACTERISTICS:**

**VOLTAGE RANGE**

AC: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000 v.

DC: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000, 5,000 v.

DC CURRENT RANGE: 0 to 100 ua; 0 to 1, 5, 10, 50, 100, 500, 1,000 ma; 0 to 10 amp.

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**AN/PSM-4B MULTIMETER**

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RESISTANCE RANGE: 0 to 30, 300, 3000, 30,000 ohms; 0 to 30 meg.

INPUT IMPEDANCE

DC VOLTS: 20,000 ohms/v.

AC VOLTS: 1,000 ohms/v.

OUTPUT VOLTS: 1,000 ohms/v in series with 500,000 uuf.

OVERALL ACCURACIES

DC CURRENT RANGES: 3% of full scale.

DC VOLTAGE RANGES: 3% of full scale (4% of full scale for 5,000 v dc range only).

AC VOLTAGE RANGES: 5% of full scale.

OUTPUT RANGES: 5% of full scale, plus frequency and range error.

OHMMETER RANGES: Within 3 deg of arc from absolute value of resistance indicated.

FREQUENCY ERROR: AC voltages do not vary more than 2% from the 1,000 cyc value from 20 cyc through 10,000 cyc.

POWER REQUIREMENTS: 1.5 v, 22.5 v dc.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Battery BA-30(1.5 v); (1) Battery BA-261/U(22.5 v).

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MAJOR COMPONENTS

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/PSM-4B includes:		4-23/32 x 5-15/16 x 7-15/32	5.75
1	Multimeter ME-48B/U		2-7/8 x 5-15/16 x 7-15/32	4
1	Cover CW-328/PSM-4A		2-3/8 x 5-15/16 x 7-15/32	1.5
1	Lead, Test, Red CX-2353/PSM-4A		48 lg	
1	Lead, Test, Black CX-2354/PSM-4A		48 lg	
1	Lead, Test, High Voltage CX-2355/PSM-4A		55 lg	
2	Clip, Alligator		3/8 x 15/16 x 2-15/16	
1	Plug, Telephone		1 od x 2-5/8	
2	Technical Manual NAVSHIPS 92051		1/4 x 8-1/2 x 11	0.4

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REFERENCE DATA AND LITERATURE:

NAVSHIPS 92051: Technical Manual for Multimeter AN/PSM-4A, AN/PSM-4B and AN/PSM-4C.

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TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N26A

4.1 AN/PSM-4B: 2

## SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.13	19.5

## PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: USN, BuShips  
SPEC &/OR DWG: MIL-M-17096A(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Industrial Television Inc.	Clifton, N. J.	N0bsr-75134, 14 February 1958	\$58.42
		N0bsr-75383, 27 June 1958	\$58.42

31 May 1962

MULTIMETER AN/PSM-4C

Cog Service:

FSN: 6625-893-3779

Functional Class:

USA

USN

USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Jetronic Industries Inc.



*Multimeter AN/PSM-4C*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/PSM-4C is a complete portable volt-ohm-milliammeter. It can be used to make dc current, dc resistance, and dc, ac, and output voltage measurements. The complete unit includes test probes which may be used with their prod tips, or the tips can be fitted with alligator clips or with a telephone plug to simplify all contact arrangements and connections. A high voltage probe is also included, which makes it possible to read voltages up to 5000 v dc. This probe contains a warning light to indicate the presence of high voltage.

No field changes in effect at time of preparation (6 July 1961).

**TECHNICAL CHARACTERISTICS:**

**VOLTAGE RANGE**

AC: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000 v.

DC: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000, 5,000 v.

**DC CURRENT RANGE:** 0 to 100 ua; 0 to 1, 5, 10, 50, 100, 500, 1,000 ma; 0 to 10 amp.

**RESISTANCE RANGE:** 0 to 30, 300, 3,000, 30,000 ohms; 0 to 30 meg.

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**AN/PSM-4C MULTIMETER**

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**INPUT IMPEDANCE**

DC VOLTS: 20,000 ohms/v.

AC VOLTS: 1,000 ohms/v.

OUTPUT VOLTS: 1,000 ohms/v in series with 500,000 uuf.

**OVER-ALL ACCURACIES**

DC CURRENT RANGES: 3% of full scale.

DC VOLTAGE RANGES: 3% of full scale (4% of full scale for 5,000 v dc range only).

AC VOLTAGE RANGES: 5% of full scale.

OUTPUT RANGES: 5% of full scale, plus frequency and range error.

OHMMETER RANGES: Within 3 deg of arc from absolute value of resistance indicated.

FREQUENCY ERROR: AC voltages do not vary more than 2% from the 1,000 cyc value from 20 cyc through 10,000 cyc.

POWER REQUIREMENTS: 1.5 v, 22.5 v dc.

**RELATION TO OTHER EQUIPMENT:** None.**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(1) Battery BA-30; (1) Battery BA-261/U.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/PSM-4C includes:		4-23/32 x 5-15/16 x 7-15/32	5.75
1	Multimeter ME-48C/U		2-7/8 x 5-15/16 x 7-15/32	4
1	Cover CW-328/PSM-4A		2-3/8 x 5-15/16 x 7-15/32	1.5
1	Lead, Test, Red CX-2353/PSM-4A		48 lg	
1	Lead, Test, Black CX-2354/PSM-4A		48 lg	
1	Lead, Test, High Voltage CX-2355/PSM-4A		55 lg	
2	Clip, Alligator		3/8 x 15/16 x 2-15/16	
1	Plug, Telephone		1 od x 2-5/8	
2	Technical Manual NAVSHIPS 92051		1/4 x 8-1/2 x 11	0.4

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92051: Technical Manual for Multimeter AN/PSM-4A, AN/PSM-4B, and AN/PSM-4C.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.13	19.5

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**PROCUREMENT DATA**

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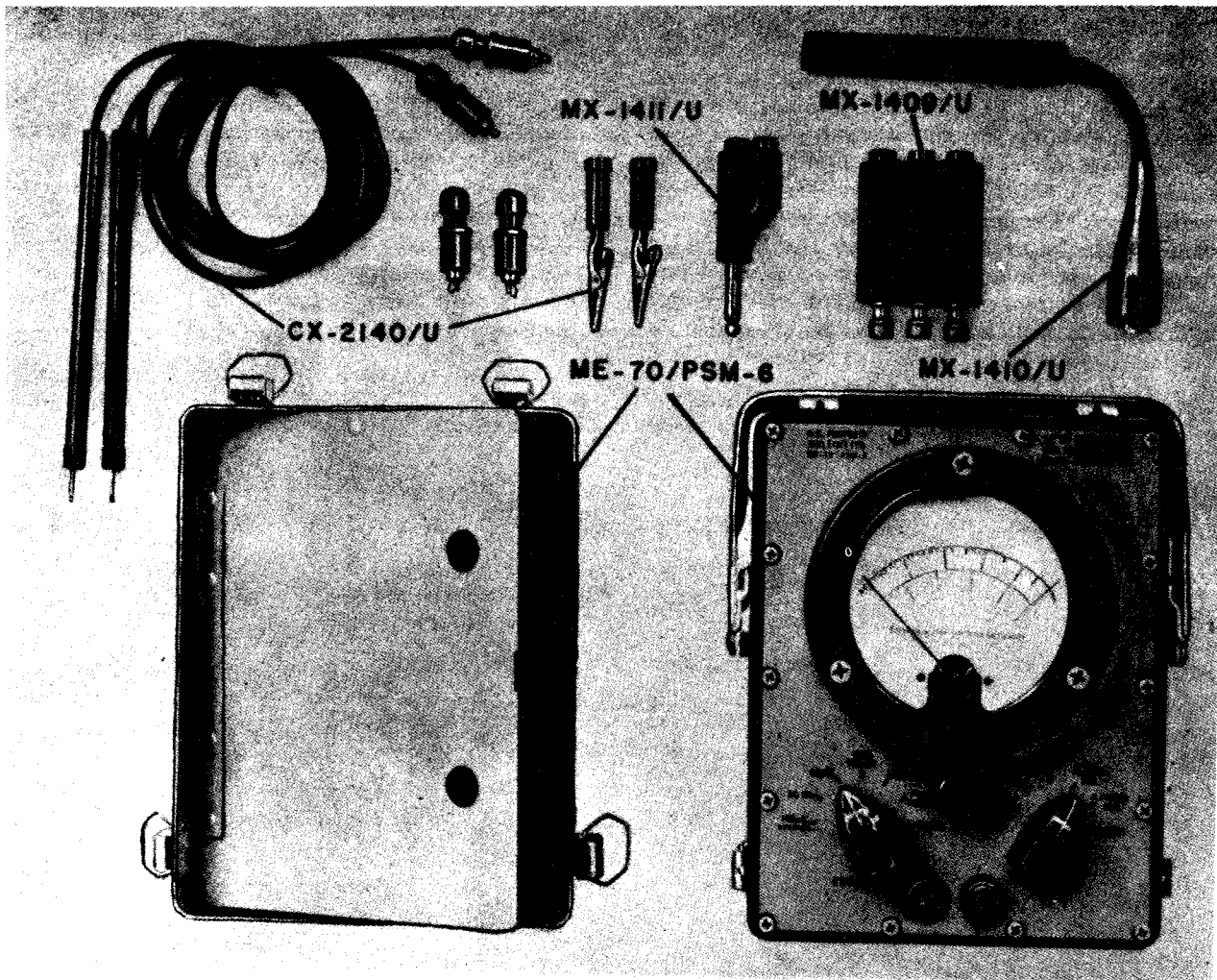
PROCURING SERVICE: DESIGN COG: USN, BuShips  
SPEC &/OR DWG: MIL-M-17096A(SHIPS), Amend 1  
and MIL-R-948 style RV-4, Amend 1

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Jetronic Industries Inc.	Philadelphia, Pa.	N0bsr-75941 N0bsr-81306	\$50.90 \$46.70

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Multimeter AN/PSM-6

**FUNCTIONAL DESCRIPTION**

The AN/PSM-6 is a portable general purpose test equipment which is designed to measure DC and AC voltages, DC current, Output voltage and resistance in the ranges most commonly encountered in electrical equipment.

No field changes in effect at time of preparation (20 June 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

DC VOLTAGE RANGE: 0 to 0.5, 2.5, 10, 50, 250, 500, 1000 v.

UNCLASSIFIED

AC VOLTAGE RANGE: 0 to 0.5, 2.5, 10, 50, 250, 500, 1000 v.

OUTPUT RANGE: 0 to 0.5, 2.5, 10, 50, 250, 500, 1000 v.

DC MA RANGE: 0 to 0.5, 2.5, 10, 50, 250, 500, 1000 ma.

100 UA SPECIAL RANGE: 0 to 100 ua DC.

OHMS RANGE: 0 to 1000, 10000, 100000, 1000000, 10000000 ohms.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

## AN/PSM-6

## MULTIMETER

December 1956

## REFERENCE DATA AND LITERATURE

AN/16-30PSM6-1: Technical Manual for Multi-  
meter AN/PSM-6.

TYPE CLASSIFICATION DESIGN COGNIZANCE USAF PROCUREMENT COGNIZANCE STOCK NO. R.D.B. IDENT. NO.
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## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter ME-70/PSM-6	4-1/4 X 7 X 8	6-3/4
1	Adapter, Test MX-1411/U	0.575 X 1-1/8 X 3-3/16	1/16
1	Prod, Test MX-1410/U	5/8 X 5/8 X 8-3/4	1/8
1	Shunt, Instrument Multirange MX-1409/U	3/4 X 2-1/16 X 3	3/16
1	Test Lead Set CX-2140/U	7/16 X 7/16 X 55-3/8	1/4

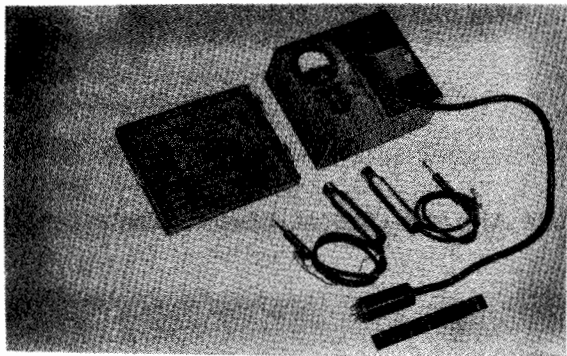
UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

## VOLTAGE POINT TEST SET

AN/URM-12



*Voltage Point Test Set AN/URM-12*

### FUNCTIONAL DESCRIPTION

Voltage Point Test Set AN/URM-12 is a portable voltmeter used in checking voltages on subchassis of radio sets.

Two rf probes, furnished with this equipment, can be inserted in the tube sockets of the rf monitor chassis to permit alignment of the transformer located on the monitor chassis.

No field changes in effect at time of preparation (17 March 1959).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

VOLTAGE RANGE: 0.3 to 400 v AC, DC.

BASIC MOVEMENT: 0 to 100 ua.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Bendix Aviation Corp., Baltimore, Md.

Contract W33-038-ac-13465.

Contract AF33(038)-5652.

Approximate Cost: \$165.00

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 93003, Vol.1: Technical Manual for Electronic Test Equipment.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE BUSHIPS  
PROCUREMENT COGNIZANCE MIL-T-945  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.1.5

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltage Point Test Set AN/URM-12 Including:	3-5/8 X 6-7/8 X 8-5/8	5.68
1	Voltmeter ME-36/URM-12	2-3/4 X 4-1/16 X 6-11/16	1.75
1	R.F. Probe MX-1016/URM-12	36 lg	0.31
1	R.F. Probe MX-1017/URM-12	36 lg	0.31

UNCLASSIFIED

4.1 AN/URM-12: 1

UNCLASSIFIED

August 1957

Test-Voltage and Current Measuring

# RADIO TEST SET

# AN/URM-69

## FUNCTIONAL DESCRIPTION

The AN/URM-69 is used to measure various radio frequency voltages appearing at test points in RF oscillator 0-153/URT, test performance of antenna control group, test performance of r-f tuner, and check rf output.

No field changes in effect at time of preparation (7 March 1957).

## MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone and Radio Corp. Contract NObsr-52021.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

Nomenclature Card for Radio Test Set AN/URM-69 dated 15 May 1953.

## RELATION TO OTHER EQUIPMENT

Used with Radio Transmitting Sets AN/URT-2, AN/URT-3 and AN/URT-4.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 0 to 3000 mc.  
VOLTAGE RANGE: 1/2 to 500 mv, 0 to 15 V.  
POWER SOURCE REQUIRED: 110 V, 60 cps, single ph.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Dummy Load, Electrical DA-91/U		
1	Tuner Test Set TS-803/URT		
1	Voltmeter ME-88/U		
1	Antenna Control Group TS-804/URT		

UNCLASSIFIED

4.1 AN/URM-69: 1

22 May 1962  
Cog Service: USN FSN: 6625-691-0192

ELECTRONIC VOLTMETER AN/USM-106  
Functional Class: I.I.I.I

USA

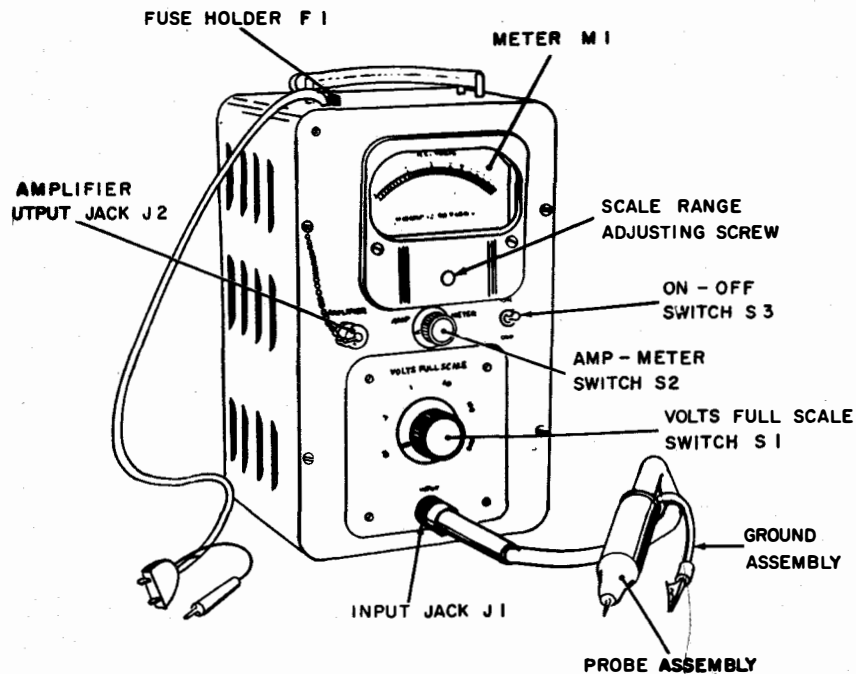
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Ballantine Laboratories Inc., (05535).



*Electronic Voltmeter AN/USM-106*

**FUNCTIONAL DESCRIPTION:**

Electronic Voltmeter AN/USM-106 is a precision test instrument designed to measure ac voltages with great sensitivity and over wide voltage and frequency ranges.  
No field changes in effect at time of preparation (4 November 1961).

**TECHNICAL CHARACTERISTICS:**

**VOLTAGE RANGE**

WITH PROBE: 0.001 to 1,000 v.  
WITHOUT PROBE: 100 uv to 1 mv.

FREQUENCY RANGE: 15 cps to 6 mc.

**ACCURACY**

15 CPS TO 3 MC: 3%.  
ABOVE 3 MC: 5%.

**INPUT IMPEDANCE**

WITH PROBE: 11.1 meg shunted by 7.5 uuf.  
WITHOUT PROBE: 1.11 meg shunted by 25 uuf.

**SCALES**

LOGARITHMIC VOLTAGE SCALE (ILLUMINATED):  
From 1 to 10.  
AUXILIARY SCALE IN DECIBELS: 0 to 20.

---

**AN/USM-106 ELECTRONIC VOLTMETER**

---

**AMPLIFIER**

MAXIMUM VOLTAGE GAIN: 60 db.

ADJUSTABLE: 40 or 20 db.

OUTPUT IMPEDANCE: 500 ohms.

MAXIMUM OUTPUT VOLTAGE: 1 v.

FLAT WITHIN: 1/2 db from 100 cps to 3 mc, 1 db from 50 cps to 6 mc.

POWER REQUIREMENTS: 105 to 125 v or 210 to 250 v, 50 to 400 cyc, single ph, 40 W.

**RELATION TO OTHER EQUIPMENT:** None.**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

---

**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electronic Voltmeter AN/USM-106 includes:			
1	Electronic Voltmeter ME-167/USM-106		6 x 6-3/4 x 10-7/8	11
1	Probe Assy		36 lg	
1	Ground Lead Assy			

---

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93362: Technical Manual for Electronic Voltmeter AN/USM-106.

---

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (2) 0A2 (1) 6X4 (6) 5654

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

---

**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		19

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

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**ELECTRONIC VOLTMETER AN/USM-106**

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
Ballantine Laboratories Inc. Model no. 314	Boonton, N. J.	N0bsr-75591, 4 November 1958	\$257.75

---

20 June 1962

Cog Service: USN FSN: 6625-783-6235

ELECTRONIC MULTIMETER AN/USM-116

Functional Class: 1.1.3.1.1

USA

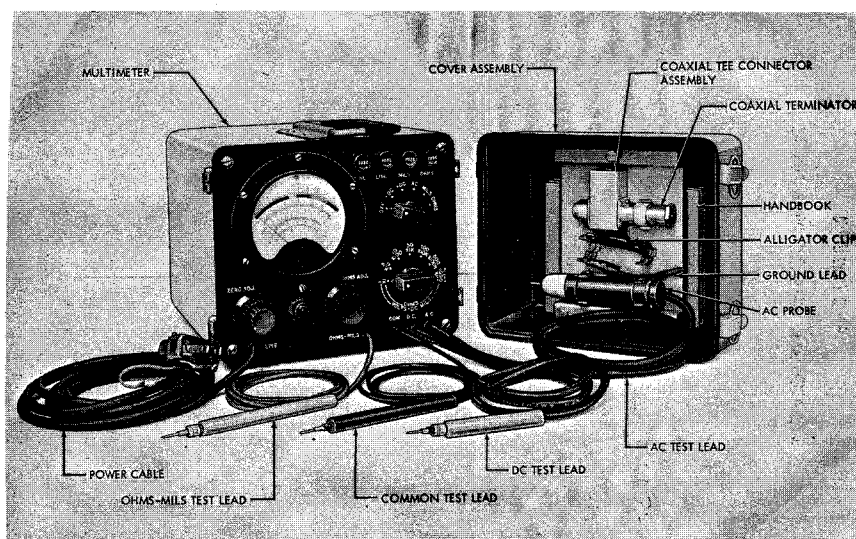
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Hickok Electrical Instrument Company, (28569).



*Electronic Multimeter AN/USM-116*

#### FUNCTIONAL DESCRIPTION:

Electronic Multimeter AN/USM-116 is a portable, combination electronic instrument used for general servicing of electronic equipment. It is designed for use where precise voltage, current and resistance measurements are required.

No field changes in effect at time of preparation (5 April 1962).

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v porm 10%, 50 to 400 cyc, single ph, 40 W.

##### RANGES

AC VOLTS: 0 to 1, 3, 10, 30, 100, 300.

DC VOLTS: 0 to 1, 3, 10, 30, 100, 300, 1000.

DC MILS: 0 to 1, 3, 10, 30, 100, 300, 1000.

RESISTANCE (AT CENTER SCALE OF 10 OHMS): X1, X10, X100, X1K, X10K, X100K, X1M.



## AN/USM-116 ELECTRONIC MULTIMETER

### ACCURACY

DC VOLTAGE: Porm 2% of full scale.  
AC VOLTAGE (TO 300 V): Porm 2% of full scale.  
DC CURRENT: Porm 2% of full scale.  
RESISTANCE: Porm 3%.

SENSITIVITY OF INDICATING METER: 100 ua.

AC INPUT IMPEDANCE: 8 meg at 20 cps, 5 meg shunted by 1.5 uuf at 300 kc, 80,000 ohms shunted by 1.5 uuf at 50 mc.

DC INPUT IMPEDANCE: 100 meg.

### FREQUENCY RESPONSE

50 CPS TO 100 MC: Flat within porm 2%.  
20 CPS TO 100 MC: Flat within porm 1 db (using ac probe alone).  
100 MC TO 700 MC: Flat within porm 1 db (using ac probe with coaxial tee connector).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electronic Multimeter AN/USM-116 includes:		6-7/8 x 8-1/4 x 12-3/4	17
1	Multimeter, Electronic ME-180/USM-116			
1	Adapter, Tee Connector		1 x 2 x 2-1/2	
1	Ground Lead		3/8 dia x 4-1/4	
1	Clip, Alligator w/Coupling		1/2 dia x 2-1/4	
1	Coaxial Termination Plug		7/8 dia x 1-1/2	
2	Technical Manual NAVSHIPS 93808		3/8 x 4-3/8 x 6-3/4	

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 93808: Technical Manual for Electronic Multimeter AN/USM-116.

### TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (3) 6136/6AU6WA (1) 6923/EA52 (1) 6X4WA

CRYSTALS: None used.

SEMI-CONDUCTORS: (4) 1N538 (1) 1N3030B (1) 2N297A

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**ELECTRONIC MULTIMETER AN/USM-116**

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.75	30

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG: SHIPS-M-3321

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hickok Electrical Instrument Company Part no. 902-339	Cleveland, Ohio	N0bsr-75953	\$335.44

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20 June 1962

Cog Service: USN

FSN: 6625-620-3100

TEST SET, ELECTRON TUBE AN/USM-118A

Functional Class: 1.2.1

USA

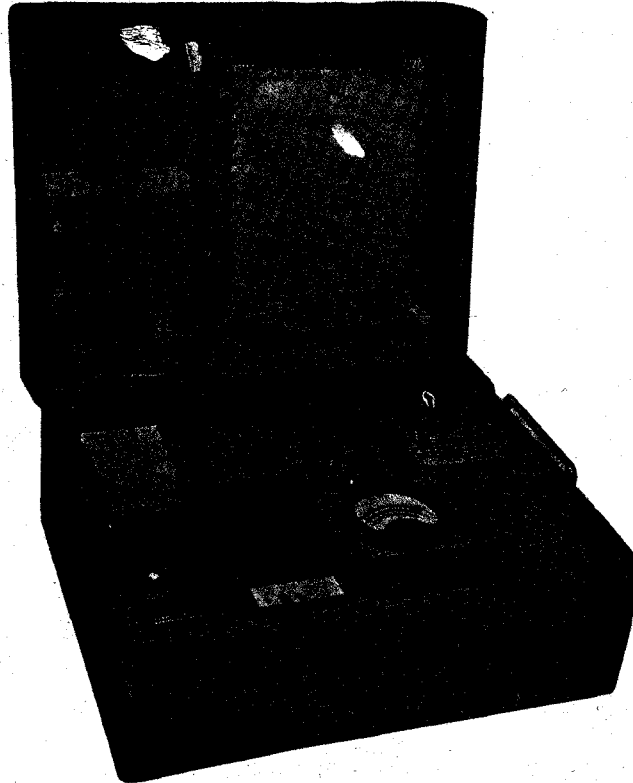
USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** Hickok Electrical Instrument Co., (28569).



*Test Set, Electron Tube AN/USM-118A*

**FUNCTIONAL DESCRIPTION:**

Test Set, Electron Tube AN/USM-118A provides a rapid yet highly accurate means of evaluating the operational capabilities of electron tubes. Test circuits for each tube type are automatically selected by the insertion of punched vinyl tube test data cards into the card switch. This automatic feature eliminates the possibilities for human error that is always present in testers which require manual operation of several circuit-selector switches. The design of the card switch and its associated circuits provide an extremely wide range of test voltages and test circuitry. This permits establishing test conditions which simulate actual operation conditions more closely than is possible in tube testers of conventional design.

No field changes in effect at time of preparation (15 March 1962).

**TECHNICAL CHARACTERISTICS:**

**POWER REQUIREMENTS:** 55 W, 105 to 125 v, 50 to 400 cyc, single ph.

4.1 AN/USM-118A:

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**AN/USM-118A TEST SET, ELECTRON TUBE**

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SOCKETS PROVIDED: 4, 5, 6, 7, 9 pin jumbo octal, 1 octal; 7 and 9 pin miniature; 7 pin in line and octal subminiature.

FILAMENT VOLTAGE RANGE: 0.6 to 117 v.

METER INDICATION

SCALE 1: (Good-Replace) Leakage.

SCALE 2: (Replace-Good) Quality.

SCALE 3: (Good-Replace) Gas.

NUMERICAL SCALE: 0 to 100.

FILAMENT VOLTAGES: 1,199 filament voltages are provided from 0 to 119.9 v in 0.1 v steps.

DC FILAMENT RANGE: Up to 50 v, 0.1 v steps.

FIXED BIAS VOLTAGES: 0 to 100 v, 0.1 v steps.

SELF-BIAS RESISTANCE: 10 to 71,000 ohms, 10 ohm steps.

MICROMHO RANGES (GM SENSITIVITIES)

RANGE ONE: 250 to 13,000 micromhos, 50 micromho steps.

RANGE TWO: 250 to 64,000 micromhos, 250 micromho steps.

SIGNAL VOLTAGE: 222 mv, regulated.

LEAKAGE SENSITIVITY: Rejects values from 10 to 150 ua dependent on tube types.

CURRENT RANGE

ONE: 50 to 2,600 ua, 10 ua steps.

TWO: 50 ua to 12.8 ma, 50 ua steps.

THREE: 1 to 255 ma, 1 ma steps.

SHORTS BETWEEN TUBE ELEMENTS: 1 meg sensitivity, special high sensitivity for grid to cathode (10 meg).

VOLTAGE REGULATOR TESTS

METER RANGE: 5 to 300 v, 1 v steps (half-scale value).

LOAD RESISTANCE: 10 to 71,000 ohms, 10 ohm steps.

RATED LOAD ON RECTIFIER TUBES: Up to 200 ma.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electron Tube Test Set AN/USM-118A		9-1/2 x 16-1/2 x 19-1/2	50
	includes:			
1	Test Set, Electron Tube TS-1479/USM-118A			

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93883: Technical Manual for Electron Tube Test Set AN/USM-118A.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 0A2WA (1) 5U4GB (1) 6AU8 (1) 6AW8A (1) 6C4W (1) 6CD6GA (1) 6CL6  
(1) 6203

CRYSTALS: None used.

4.1 AN/USM-118A: 2

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**TEST SET, ELECTRON TUBE AN/USM-118A**

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**SEMI-CONDUCTORS:** None used.

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**SHIPPING DATA**

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<b>PKGS</b>	<b>VOLUME (CU FT)</b>	<b>WEIGHT (LBS)</b>
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**PROCUREMENT DATA**

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**PROCURING SERVICE:** USN  
**SPEC &/OR DWG:**

**DESIGN COG:** USN, BuShips

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
Hickok Electrical Instrument Co. Model no. 1234A, Pt no. 501-243	Cleveland, Ohio	N0bsr-85003	\$784.98

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10 May 1962

TEST SET, ELECTRON TUBE AN/USM-23

Cog Service: USN FSN: 6625-643-8547

Functional Class: 1.2.1

USA

USN

USAF

TYPE CLASS: Std Std

MANUFACTURER'S NAME/CODE NUMBER: Electronic Products Co., (89459).



*Test Set, Electron Tube AN/USM-23*

#### FUNCTIONAL DESCRIPTION:

Test Set, Electron Tube AN/USM-23 is a portable, general purpose, field type equipment, especially designed for testing Geiger-Mueller and high voltage regulator tubes. The tester operates by the principle of ionization of radio-active material. This equipment is capable of testing radiation counter tubes types 5979/BS-1 and 5980/BS-2 and corona discharge voltage regulator tubes type 5962/BS-101. Provision is made for the insertion of adapters for testing other type tubes having similar characteristics. The following tests may be made: Counting Rate (Response), Plateau Slope, and Gama Sensitivity for counter tubes; Operating Voltage and Voltage Regulation tests for corona discharge voltage regulator tubes.

!Data on this sheet reflects the following field changes: FC1.

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v porm 10%, 60 cyc, single ph, 55 W.

4.1 AN/USM-23: 1

## AN/USM-23 TEST SET, ELECTRON TUBE

FREQUENCY STANDARD: 100 cps.  
COUNTING RATE: 100 counts per sec for 700 v energizing potential.  
REGULATED VOLTAGE LIMITS: 700 porm 10 v at 25 ua; 685 to 715 v at 5 to 55 ua.  
RADIATION RATING: Not over 300 mr/wk at any external point.  
SURROUNDING FIELD RADIATION LIMIT: Not over 0.01 mr/hr.  
AMMETER RANGE: M250 to 0 to P250 ua, and marked "BAD", "CAL", "GOOD", "BAD".  
ACCURACY

FREQUENCY DEVIATION: Not over 1 part in 3,000.  
INDICATING METER READING DEVIATION: Not over porm 3%.  
TEST REGULATED VOLTAGE DEVIATION: Not over porm 0.75%.  
TEMPERATURE RANGE: 0 to P50 deg C (operating); M65 to P65 deg C (non-operating).  
ALTITUDE RANGE: Up to 30,000 ft (non-operating).  
HUMIDITY RANGE: up to 90% (operating); up to 95% (non-operating).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electron Tube Test Set AN/USM-23 includes:		8-1/4 x 12 x 18	33.3
1	Test Set, Electron Tube TV-9/USM-23		6-7/8 x 12 x 18	
1	Cover CW-302/USM-23		1-1/8 x 12 x 18	
1	Cable Assy, Power, Electrical CX-2278/U		72 lg	
2	Test Lead			
3	Plug-in Holder			
2	Technical Manual		1/4 x 8-1/2 x 11	0.25

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 91936: Technical Manual for Electron Tube Test Set AN/USM-23.

### TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 0A2 (1) 5R4GY (1) 6AK5 (1) 6AL5 (1) 6X4 (2) 12AU7 (1) 12AX7  
(1) 5651 (1) 5692 (1) 5964 (2) 9002 (1) 5962/BS-101

CRYSTALS: None used.

SEMI-CONDUCTORS: (3) 1N34A





20 June 1962

6625-644-5755

TEST SET, ELECTRON TUBE AN/USM-31

Cog Service: USA FSN: 6625-643-3247 W/S

Functional Class: 1.2.1

USA

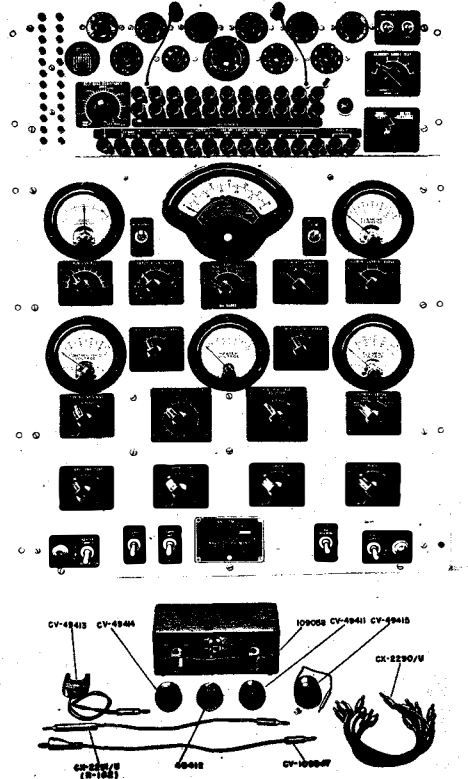
USN

USAF

TYPE CLASS: Std

Std

MANUFACTURER'S NAME/CODE NUMBER: Weston Electrical Instrument Corp., (65092).



Test Set, Electron Tube AN/USM-31

#### FUNCTIONAL DESCRIPTION:

Test Set, Electron Tube AN/USM-31 is designed to measure the electrical characteristics of an electron tube under simulated operating conditions. Basically, it is comprised of a well-filtered, accurately metered, adjustable power supply of ac and dc potentials, and a specially compensated and calibrated transconductance meter.

No field changes in effect at time of preparation (23 March 1962).

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 185 W, 105 to 125 v or 210 to 230 v, 50 to 60 cyc, single ph.

HEATER VOLTAGE: 0 to 2, 4, 8, 20, 50, 125 v ac; porm 2%.

ELEMENT VOLTAGE: 0 to 60, 150, 300 v dc; porm 2%.

ELEMENT CURRENT: 0 to 3, 12, 60, 120 ma dc; porm 2%.

GRID CURRENT: 15 to 0 to 15, 1500 to 0 to 1500 ua dc; porm 5%.

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**AN/USM-31 TEST SET, ELECTRON TUBE**

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GRID VOLTAGE: 0 to 10, 50, 100 v dc; porm 2%.

TRANSCONDUCTANCE: 600, 13000, 6000, 15000, 30000 micromhos; porm 6%.

**RELATION TO OTHER EQUIPMENT:**

This equipment is similar to Vacuum Tube Analyzer Equipment OD Series, except that it provides additional transconductance, voltage and current ranges.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Electron Tube AN/USM-31 includes:			
1	Test Set, Electron Tube TV-8/USM-31		7-3/8 x 19-7/8 x 26-1/8	105
1	Accessory Kit 49416		2-3/4 x 4-1/4 x 7-1/4	3
1	Tube Data Chart		8-1/2 x 11	0.43
1	Technical Manual		8-1/2 x 11	0.62
11	Patch Cord Leads CX-2290/U		14 lg	0.50
1	Resistor Patch Cord CX-2291/U		15 lg	0.06

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91734: Technical Manual for Electron Tube Test Set AN/USM-31.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 3B4 (1) 5U4G (1) 6CB6 (1) 6C4W (1) 6X4 (1) 0B2W

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	20.25	180

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG: SHIPS-T-852, Addend 2

DESIGN COG: USN, BuShips

---

**TEST SET, ELECTRON TUBE AN/USM-31**

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
Weston Electrical Instrument Corp. Model 686, Type 10B	Newark, New Jersey	NObsr-52388, 18 April 1951 NObsr-63317, 20 March 1954	\$545.57

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22 May 1962

Cog Service: USAF FSN: 6625-879-1231

MULTIMETER AN/USM-33

Functional Class: 1.1.3.2

USA

USN

USAF

**TYPE CLASS:**

Std

Used by

Std

**MANUFACTURER'S NAME/CODE NUMBER:** Weston Electrical Instrument Corp., (65092).

*(No Illustration Available)*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/USM-33 is a portable general purpose clamp-on-line ac ammeter for conventional ac voltmeter with a watertight enclosure for instrument protection.

No field changes in effect at time of preparation (15 December 1961).

**TECHNICAL CHARACTERISTICS:**

CURRENT RANGE: 0 to 15, 60, 150 and 600 amps.

VOLTAGE RANGE: 0 to 150, 300, and 600 v.

SINE WAVE FREQUENCY: 50 to 1,000 cyc.

ACCURACY: Porm 2% of full scale deflection at P77 deg F (25 deg C).

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/USM-33 includes:			7.5
1	Multimeter ME-79/USM-33		2-1/2 x 4-1/2 x 13	4
1	Case, Test Set CY-1329/USM-33		3-1/2 x 6 x 14-1/2	3
2	Lead, Test CX-2281/USM		60 lg	

**REFERENCE DATA AND LITERATURE:**

TM11-6625-314-12P: Technical Manual for Multimeter AN/USM-33.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**AN/USM-33 MULTIMETER**

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USAF	DESIGN COG: USAF
SPEC &/OR DWG: MIL-M-26896(USAF)	

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Weston Electrical Instrument Corp.	Newark, N. J.	AF33(604)-29454	

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6 March 1963

F6625-643-1769

MULTIMETER AN/USM-34

Cog Service: USN

FSN:

F6625-643-3394 W/S

Functional Class:

1.1.3.1.1

USA

USN

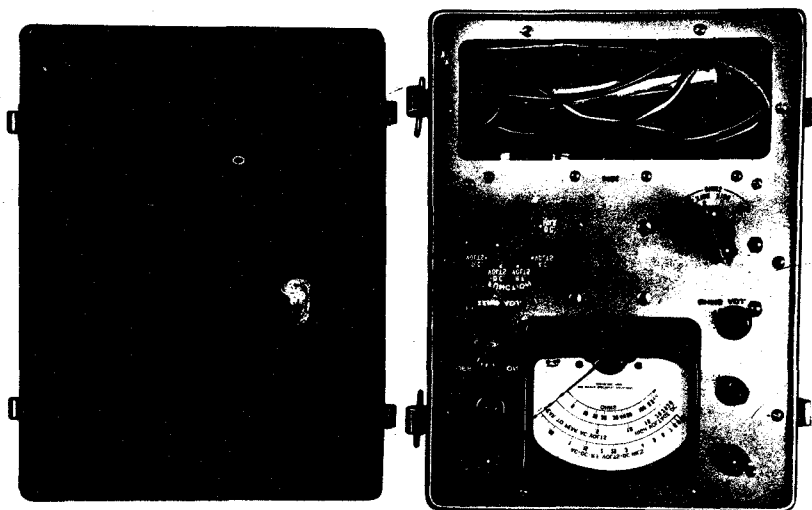
USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:**

The Hickok Electrical Instrument Co., (28569)



*Multimeter AN/USM-34*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/USM-34 is a portable combination electronic ac voltmeter for measurement of peak-to-peak and rms voltages; dc voltmeter, ohmmeter and milliammeter which can be advantageously used wherever it is necessary to make current, resistance and voltage measurements with the use of only one equipment. Circuit design permits rf measurements from 1 kc to 100 mc, ac measurements from 50 cps to 50 kc, electronic dc voltage measurements and electronic ohms measurements. In addition, electronic current measurements up to 1000 milliamperes may be made.

No field changes in effect at time of preparation (23 May 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 12 W, 105 to 125 v, 50 to 1000 cyc, single ph.

FREQUENCY RANGE: 50 cyc to 100 mc.

## AN/USM-34 MULTIMETER

### INPUT IMPEDANCE

DC: 13.3 meg; with H.V. Multiplier test prod 38.3 meg.

RF: 8 uuf shunted by 13 meg on 100 v range.

AC: 100 uuf shunted by 14 meg.

### RANGES

DC VOLTS: 0 to 1, 10, 100, 1000 v full scale; 3000 v full scale using 1000 v range and high.

RF VOLTS (PEAK INDICATING CIRCUIT, SCALE CALIBRATED IN RMS): 1 v full scale (using curve correction chart); 10 and 100 v full scale (direct reading).

AC VOLTS (PEAK-TO-PEAK INDICATING CIRCUIT): Scale 0 to 1 calibrated in rms; 1 v full scale (using curve correction chart); 10, 100 and 1000 (direct reading); scale 0 to 3 calibrated in peak-to-peak; 3 v full scale (using curve correction chart) 30, 300, and 3000 v (direct reading).

RESISTANCE: 0 to 1000 ohms, 100000 ohms, 10 meg, 1000 meg.

DC MILS: 1, 10, 100, 1000 full scale.

### OVER-ALL ACCURACIES

#### DC VOLTAGE

ALL RANGES THRU 1000 VOLTS: Porm 4%.

OVER 1000 VOLTS (USING HIGH VOLTAGE MULTIPLIER): Porm 7%.

#### RF VOLTS (FREQ FROM 1 KC TO 100 MC)

1 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.

10 TO 100 VOLT RANGES: Porm 6%.

#### AC VOLTAGE, RMS SCALES (FREQ FROM 50 CPS TO 50 KC)

1 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.

10 AND 100 VOLT RANGES: Porm 6%.

1000 VOLT RANGE: Porm 7%.

#### AC VOLTAGE PEAK-TO-PEAK SCALES (FREQ FROM 50 CPS TO 50 KC)

3 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.

30 AND 300 VOLT RANGES: Porm 6%.

3000 VOLT RANGE: Porm 7%.

DC MILLIAMPERES: Porm 5% (all ranges).

RESISTANCE: Porm 5% deg of arc (all ranges).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/USM-34 includes:		5-3/8 x 8-21/32 x 11-21/32	11
1	Multimeter ME-81/USM-34			

8.1 AN/USM-34: 2

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92197: Technical Manual for Multimeter AN/USM-34.  
 NAVSHIPS 92197-1: Supplementary Technical Manual for Multimeter AN/USM-34.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 5726 (1) 5751 (1) 5814A (1) 9006

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N48

**SHIPPING DATA**

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.63	34

**PROCUREMENT DATA**

PROCURING SERVICE: USN DESIGN COG: USN, BuShips  
 SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Hickok Electrical Instrument Co.	Cleveland, Ohio	N0bsr-5	
		N0bsr-57494	\$134.87
		N0bsr-64663	\$162.00



5 March 1963

Cog Service: USN FSN: F6625-618-0118

MULTIMETER AN/USM-34A

Functional Class: 1.1.3.1.1

USA

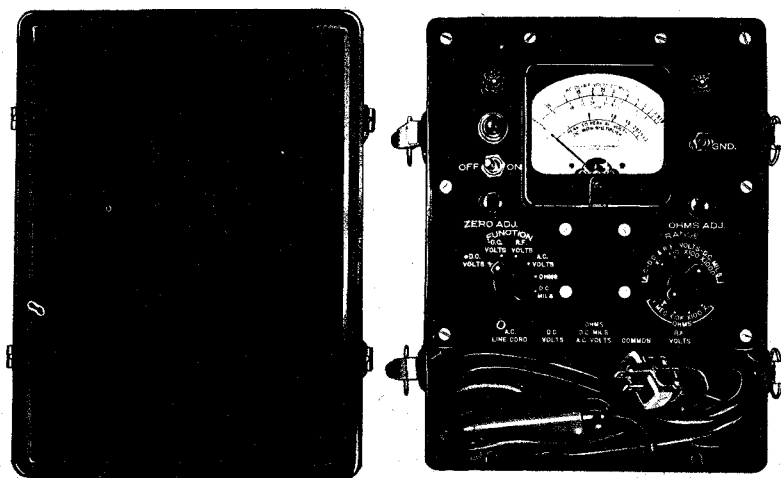
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: The Hickok Electrical Instrument Co., (28569).



*Multimeter AN/USM-34A*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/USM-34A is a portable combination electronic ac voltmeter for measurement of peak-to-peak and rms voltages; dc voltmeter, ohmmeter and milliammeter which can be advantageously used wherever it is necessary to make current, resistance and voltage measurements with the use of only one equipment. Circuit design permits rf measurements from 1 kc to 250 mc, ac measurements from 50 cps to 50 kc, electronic dc voltage measurements and electronic ohms measurements. In addition electronic current measurements up to 1000 milliamperes may be made.

No field changes in effect at time of preparation (23 May 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 12 W, 105 to 125 v, 50 to 1000 cyc, single ph.

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**AN/USM-34A MULTIMETER**

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FREQUENCY RANGE: 50 cyc to 250 mc.

INPUT IMPEDANCE

DC: 13.3 meg; with H.V. Multiplier test prod 38.3 meg.

RF: 2 uuf shunted by 12 meg on 100 v range.

AC: 100 uuf shunted by 14 meg.

RANGES

DC VOLTS: 0 to 1, 10, 100, 1000 v full scale; 3000 v full scale using 1000 v range and high.

RF VOLTS (PEAK INDICATING CIRCUIT, SCALE CALIBRATED IN RMS): 1 v full scale (using curve correction chart); 10 and 100 v full scale (direct reading).

AC VOLTS (PEAK-TO-PEAK INDICATING CIRCUIT): Scale 0 to 1 calibrated in rms; 1 v full scale (using curve correction chart); 10, 100 and 1000 (direct reading); scale 0 to 3 calibrated in peak-to-peak; 3 v full scale (using curve correction chart) 30, 300 and 3000 v (direct reading).

RESISTANCE: 0 to 1000 ohms, 100000 ohms, 10 meg, 1000 meg.

DC MILS: 1, 10, 100, 1000 full scale.

OVER-ALL ACCURACIES

DC VOLTAGE

ALL RANGES THRU 1000 VOLTS: Porm 4%.

OVER 1000 VOLTS (USING HIGH VOLTAGE MULTIPLIER): Porm 7%.

RF VOLTS (FREQ FROM 1 KC TO 250 MC)

1 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.

10 TO 100 VOLT RANGES: Porm 6%.

AC VOLTAGE, RMS SCALES (FREQ FROM 50 CPS TO 50 KC)

1 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.

10 AND 100 VOLT RANGES: Porm 6%.

1000 VOLT RANGE: Porm 7%.

AC VOLTAGE PEAK-TO-PEAK SCALES (FREQ FROM 50 CPS TO 50 KC)

3 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.

30 AND 300 VOLT RANGES: Porm 6%.

3000 VOLT RANGE: Porm 7%.

DC MILLIAMPERES: Porm 5% (all ranges).

RESISTANCE: Porm 5 deg of arc (all ranges).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/USM-34A includes:		5-11/16 x 9-3/8 x 12-5/32	16
1	Multimeter ME-81A/USM-34			

4.1 AN/USM-34A: 2

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92197: Technical Manual for Multimeter AN/USM-34.  
 NAVSHIPS 92197-1: Supplementary Technical Manual for Multimeter AN/USM-34.  
 NAVSHIPS 92197-2: Supplementary Technical Manual for Multimeter AN/USM-34A.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 5726 (1) 5751 (1) 5814A (1) KP-105

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N69

**SHIPPING DATA**

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		39

**PROCUREMENT DATA**

PROCURING SERVICE: USN DESIGN COG: USN, BuShips  
 SPEC &/OR DWG: MIL-M-15629D

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX.
The Hickok Electrical Instrument Co.	Cleveland, Ohio	N0bsr-71755	\$113.06
		N0bsr-75151	\$114.87
Part no. 902-308		N0bsr-75361	\$123.79

25 February 1963

MULTIMETER AN/USM-34B

Cog Service: USM FSN: F6625-799-8673

Functional Class: 1.1.3.1.1

USA

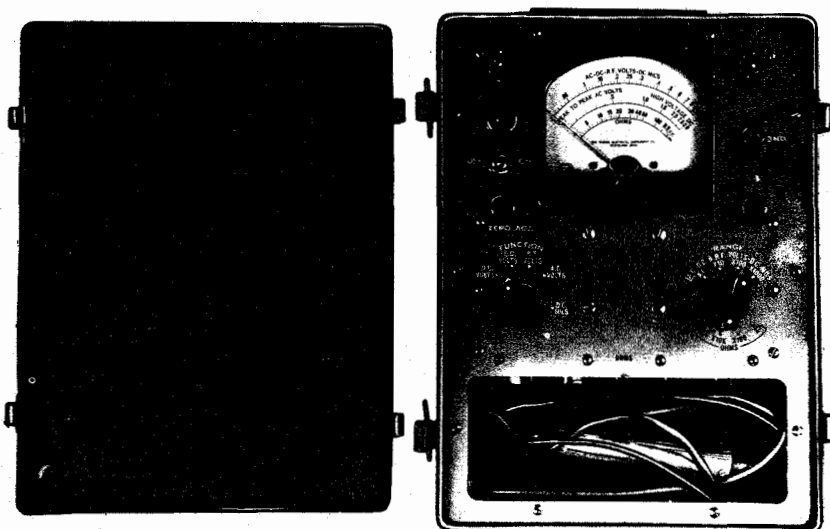
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: B. M. Harrison Electrosonics, Incorporated, (99548).



*Multimeter AN/USM-34B*

**FUNCTIONAL DESCRIPTION:**

Multimeter AN/USM-34B is a portable combination electronic ac voltmeter for measurement of peak-to-peak and rms voltages; dc voltmeter, ohmmeter and milliammeter which can be advantageously used wherever it is necessary to make current, resistance and voltage measurements with the use of only one equipment. Circuit design permits rf measurements from 1 kc to 250 mc, ac measurements from 50 cps to 50 kc, electronic dc voltage measurements and electronic ohms measurements. In addition electronic current measurements up to 1,000 milliamperes may be made.

No field changes in effect at time of preparation (23 May 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 12 w, 105 to 125 v, 50 to 1,000 cyc, single ph.

FREQUENCY RANGE: 50 cyc to 250 mc.

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**AN/USM-34B MULTIMETER**

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**INPUT IMPEDANCE**

DC: 13.3 meg; with H.V. Multiplier test prod 38.3 meg.  
RF: 2 uuf shunted by 12 meg on 100 v range.  
AC: 100 uuf shunted by 14 meg.

**RANGES**

DC VOLTS: 0 to 1, 10, 100, 1,000 v full scale; 3,000 v full scale using 1,000 v range and high.  
RF VOLTS (PEAK INDICATING CIRCUIT, SCALE CALIBRATED IN RMS): 1 v full scale (using curve correction chart); 10 and 100 v full scale (direct reading).  
AC VOLTS (PEAK-TO-PEAK INDICATING CIRCUIT): Scale 0 to 1 calibrated in rms; 1 v full scale (using curve correction chart); 10, 100 and 1,000 (direct reading); scale 0 to 3 calibrated in peak-to-peak; 3 v full scale (using curve correction chart) 30, 300, and 3,000 v (direct reading).  
RESISTANCE: 0 to 1,000 ohms, 100,000 ohms, 10 meg, 1,000 meg.  
DC MILS: 1, 10, 100, 1,000 full scale.

**OVER-ALL ACCURACIES****DC VOLTAGE**

ALL RANGES THRU 1,000 VOLTS: Porm 4%.  
OVER 1,000 VOLTS (USING HIGH VOLTAGE MULTIPLIER): Porm 7%.  
RF VOLTS (FREQ FROM 1 KC TO 250 MC)  
1-VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.  
10 TO 100 VOLT RANGES: Porm 6%.  
AC VOLTAGE, RMS SCALES (FREQ FROM 50 CPS TO 50 KC)  
1 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.  
10 AND 100 VOLT RANGES: Porm 6%.  
1,000 VOLT RANGE: Porm 7%.  
AC VOLTAGE PEAK-TO-PEAK SCALES (FREQ FROM 50 CPS TO 50 KC)  
3 VOLT RANGE (USING CURVE CORRECTION CHART): Porm 10%.  
30 AND 300 VOLT RANGES: Porm 6%.  
3,000 VOLT RANGE: Porm 7%.  
DC MILLIAMPERES: Porm 5% (all ranges).  
RESISTANCE: Porm 5 deg of arc (all ranges).

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter AN/USM-34B includes:		5-11/16 x 9-3/8 x 12-5/32	16
1	Multimeter ME-81B/USM-34			

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**REFERENCE DATA AND LITERATURE:**

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

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TUBES: (1) 5726 (1) 5751 (1) 5814A (1) KP-105

4.1 AN/USM-34B: 2

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N69

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		39

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/OR DWG: MIL-M-15629D

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
B.M. Harrison Electro-sonics Inc.	Newton Highlands, Mass.	NObsr-71379	\$112.64

UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

## OHMMETER

## AN/USM-52

### FUNCTIONAL DESCRIPTION

The AN/USM-52 is designed to be used to test insulation resistance and conductor resistance of cables and electrical machinery.

No field changes in effect at time of preparation (28 July 1958).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

**OHMMETER OPERATION:** Operates from self contained constant pressure hand generator.

**RANGE:** 0 to 200 megohms.

### MANUFACTURER'S OR CONTRACTOR'S DATA

James G. Biddle Co., Philadelphia, Pa.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tube or Crystal data available.

### REFERENCE DATA AND LITERATURE

Nomenclature Card AN/USM-52 for the Ohmmeter.

TYPE CLASSIFICATION

DESIGN COGNIZANCE BUORD

PROCUREMENT COGNIZANCE

STOCK NO.

R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ohmmeter AN/USM-52	7 X 8-3/4 X 12	

UNCLASSIFIED

4.1 AN/USM-52: 1

**MAGNETRON TEST SET****AN/USM-57***Magnetron Test Set AN/USM-57***FUNCTIONAL DESCRIPTION**

The AN/USM-57 is designed to test magnetron tubes to determine whether the tube filaments or heaters are functioning and whether their radio-frequency operation is in accordance with specifications. It includes an RF Unit, Filament Test Unit, Storage Locker, and miscellaneous equipment including test-selector plates, mounting adapters, dummy loads, electromagnet pole pieces, and cable assemblies.

It will, by means of a test-selector plate, pre-select the circuits required to test a magnetron.

No field changes in effect at time of preparation (5 December 1957).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**POWER REQUIREMENTS:** 115 or 230 v, 50 to 60 cps, 50 amps at 115 v, 25 amps at 230 v.

**VOLTAGE REGULATOR DATA**

**RATING:** 5 kva.

**INPUT:** 95 to 130 v, 50 to 60 cps, 67 amps.

**OUTPUT:** 115 v.

**HI-VOLTAGE POWER SUPPLY DATA**

**INPUT:** 0 to 180 v AC.

**OUTPUT**

**VOLTAGE:** 0 to 12 kv DC.

**CURRENT:** 0 to 200 ma.

**MODULATING PULSE DATA**

**REPETITION RATE:** 500 cps.

**PULSE WIDTH:** 1 usec 50 ohm, 1 usec 25 ohm, 0.25 usec 50 ohm.



January 1958

Test-Voltage and Current Measuring

**AN/USM-57****MAGNETRON TEST SET**

PEAK VOLTAGE: 0 to 39 kv.  
 AVERAGE CURRENT: 0 to 35 ma.  
 TRIGGER PULSE DATA  
 REPETITION RATE: 500 cps.  
 PULSE WIDTH: 2 usec.  
 PEAK VOLTAGE: 800 v.  
 MAGNETRON HEATER  
 VOLTAGE: 0 to 24 v AC.  
 CURRENT: 0 to 50 amps.  
 ELECTROMAGNET  
 VOLTAGE: 0 to 150 v DC.  
 CURRENT: 0 to 3.5 amps.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

F-R Machine Works, Inc, Electronics and  
 X-Ray Div, Woodside, N.Y.  
 Contract NObsr-64826, dated 27 June  
 1955.  
 Approximate Cost: \$16,800.00 with  
 equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(4) 6626/OA2WA	(1) 2A5-15
(1) 8020	(2) 3C45
(1) 4C35	(1) 5C22/HT-415
(4) 5R4WGY	(1) 5U4G

(6) 5751	(5) 576A
(2) 371B	(5) 5814A
(1) 5949/1907	(2) 6BG6
(1) 6SQ7GT	(5) 6482
(1) 6627/OB2WA	

Total Tubes: (43)

Crystals: Not Available.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 93080: Manuscript Copy of Techni-  
 cal Manual for Magnetron Test Set AN/USM-  
 57.

<b>TYPE CLASSIFICATION</b>	
<b>DESIGN COGNIZANCE</b>	BUSHIPS
<b>PROCUREMENT COGNIZANCE</b>	SHIPS-T-1916
<b>STOCK NO.</b>	
<b>R.D.B. IDENT. NO.</b>	1.2.1

# AMMETER

# AN/USM-69

## FUNCTIONAL DESCRIPTION

The AN/USM is a portable direct current type ammeter and necessary accessories for use in service laboratories, higher echelon maintenance shops and depots where engine driven generators, rotary converters and rectifiers are used, repaired and maintained to measure direct current up to and including 300 amperes.

No field changes in effect at time of preparation (16 May 1957).

SENSITIVITY: 50 mv drop across terminals.  
DIAL COLOR: black scale markings, white background.

## TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

## REFERENCE DATA AND LITERATURE

Nomenclature Card for Ammeter AN/USM-69 dated 1 October 1956.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: DC.

ELECTRICAL QUANTITY MEASURED: current.

RANGE: 0 to 150 amp, cw.

GRADUATION: linear.

SCALE DIVISIONS: 150.

ACCURACY: 1/2 of 1%.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter ME-103/U		
1	Instrument Shunt MX-2133/USM		
1	Instrument Shunt MX-2123/USM		
1	Instrument Shunt MX-2124/USM		
1	Instrument Shunt MX-2125/USM		
1	Instrument Shunt MX-2126/USM		
1	Instrument Shunt MX-2127/USM		
1	Instrument Shunt MX-2134/USM		
1	Instrument Shunt MX-2135/USM		
1	Electrical Lead CX-3984/USM		
1	Electrical Lead CX-3985/USM		
1	Meter Case CY-2095/USM		

UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

## TEST SET, ELECTRICAL METER

AN/USM-71

### FUNCTIONAL DESCRIPTION

The AN/USM-71 is a lightweight electrical indicating meter checker used for rapid testing of AC and DC voltage and direct current meters and test sets. Test Lead Set CX-1331/U is supplied to provide means of connecting meters to the test set.

No field changes in effect at time of preparation (3 May 1957).

### RELATION TO OTHER EQUIPMENT

The AN/USM-71 is the Roflan Co. Model 4007, and is the same as TS-656( )/U except that it is supplied with Test Lead Set CX-1331/U.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RANGES

##### VOLTAGE

DC: 0 to 2.5 thru 0 to 500, 11 ma power.

AC: 0 to 500, 40 ma power.

DIRECT CURRENT: 0 to 100 uamp thru 0-1 amps, 750 mv power.

POWER REQUIREMENTS: 115 v, 60 cps, single ph.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Roflan Company, Tepsfield, Mass.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

Nomenclature Card for Test Set, Electrical Meter AN/USM-71.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-11538
STOCK NO.
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set, Electrical Meter TS-656( )/U	12-1/4 X 14 X 18-3/8	
1	Test Lead Set CX-1331/U		

UNCLASSIFIED

4.1 AN/USM-71: 1

10 May 1962

Cog Service: USN FSN:

ELECTRICAL CONTINUITY TEST SET AN/USM-75

Functional Class: 1.1.1

USA

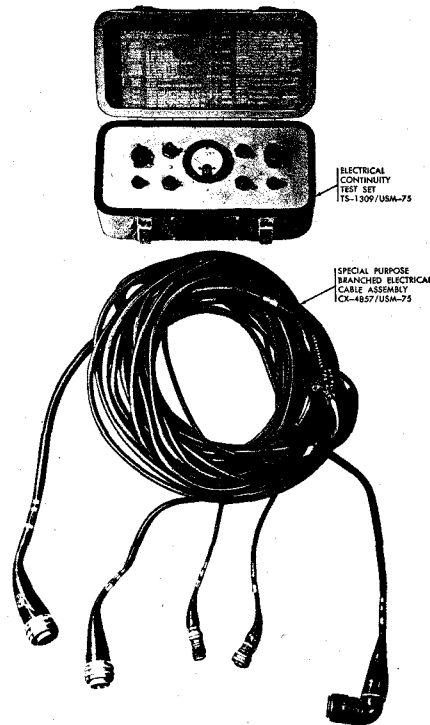
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: The Martin Co., (04939).



*Electrical Continuity Test Set AN/USM-75*

**FUNCTIONAL DESCRIPTION:**

Electrical Continuity Test Set AN/USM-75 is a special purpose voltmeter which verifies the electrical operation of the ASM-N-7/7a Guided Missile Weapon System circuits in A4D-2 and FJ-4B airplanes. The test set is a portable unit of special support equipment for the weapon system and cannot be used for any other purpose without modification.

No field changes in effect at time of preparation (9 March 1962).

**TECHNICAL CHARACTERISTICS:**

METER SCALE: 0 to 10 v, perm 2%.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**AN/USM-75 ELECTRICAL CONTINUITY TEST SET**

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electrical Continuity Test Set AN/USM-75 includes:			
1	Electrical Continuity Test Set TS-1309/USM-75		5-5/8 x 6-5/16 x 12-5/8	7
1	Special Purpose Branched Electrical Cable Assy CX-4857/USM-75		360 lg	7.75

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**REFERENCE DATA AND LITERATURE:**

NAVWEPS 16-30USM75-1: Handbook of Operation and Service Instructions with Illustrated Parts Breakdown for Electrical Continuity Test Set AN/USM-75.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N255 (4) 1N457

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: USN, BuWeps

SPEC &/OR DWG: MIL-T-21419(AER)

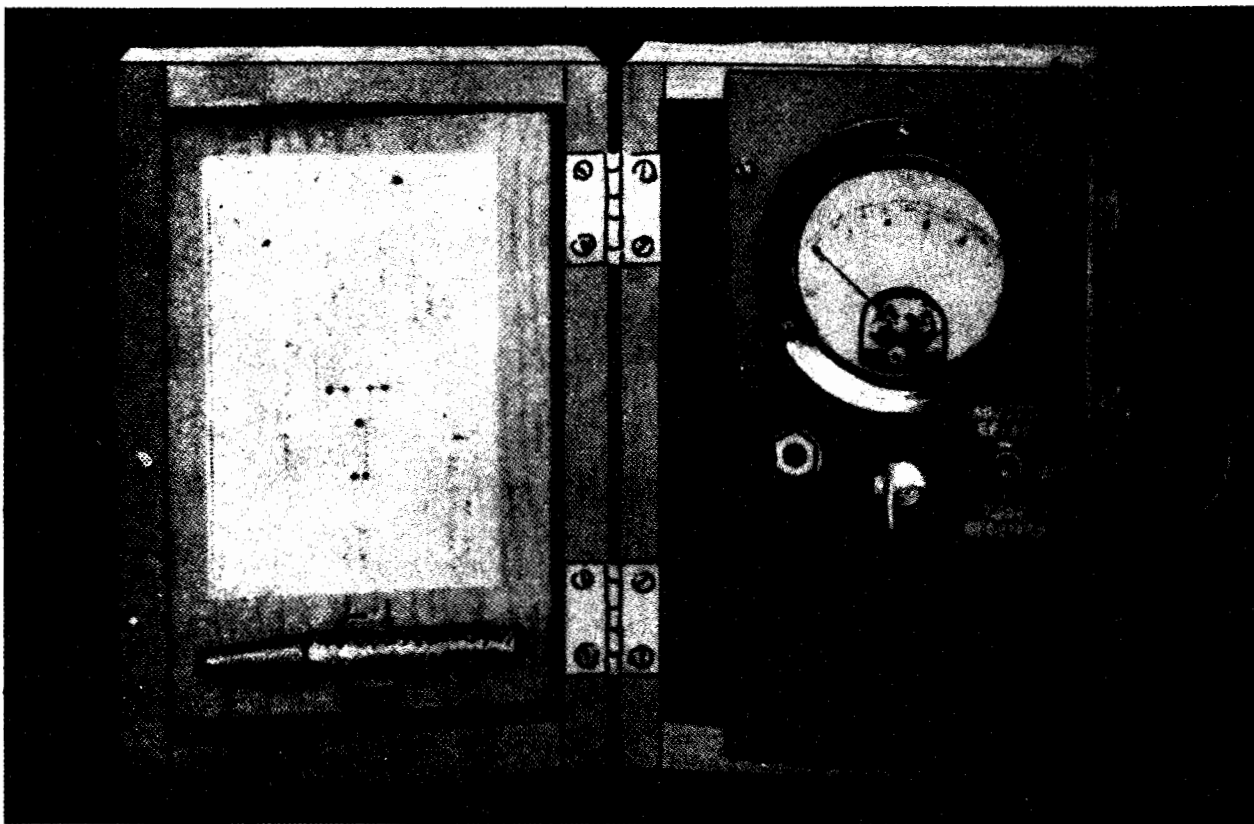
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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Martin Co.	Orlando, Florida	N0as-58-613	

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## TEST INDICATOR

BE-67



Test Indicator BE-67

**FUNCTIONAL DESCRIPTION**

The BE-67 is used as an output meter to tune marker beacon receivers, and to supply direct current to the relay for relay adjustment. It is used in conjunction with Test Oscillators BX-376-A, B, C, D, E, F, G, H and K.

No field changes in effect at time of preparation (28 September 1956).

**RELATION TO OTHER EQUIPMENT**

The BE-67 is similar to the BE-67-A electrically and mechanically, but differ as to reference symbols used for components.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

RANGE: 0 to 1 ma.  
 SCALE DIVISIONS: 50  
 POWER REQUIREMENTS: Two 4-1/2 v internal batteries

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

T. O. 33A1-8-24-2 (Formerly 16-40 BC376-2):  
 Technical Manual for Test Indicator BE-67  
 and BE-67-A.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

Test-Voltage and Current Measuring

**BE-67****TEST INDICATOR****EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Indicator BE-67 consisting of:	5-1/8 X 5-15/16 X 7-7/8	
1	Ammeter IS-125		
1	Cabinet		
1	Tuning Tool TL-140		
1	Potentiometer RS-199		
1	Jack JK-34A		

8 February 1963

Cog Service: USN FSN:

VACUUM TUBE VOLTMETER CAQI-400D

Functional Class: 1.1.1.1

USA

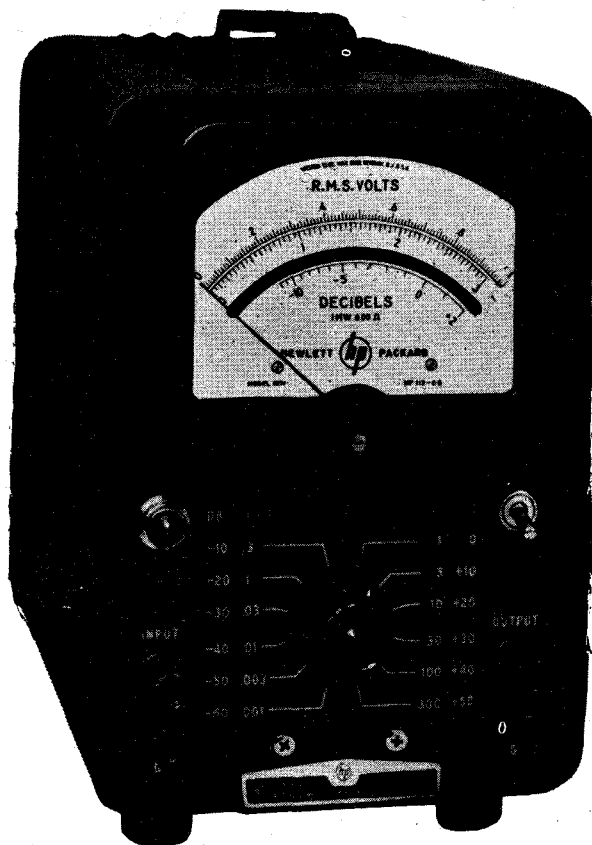
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Hewlett-Packard Company, (28480).



*Vacuum Tube Voltmeter CAQI-400D*

#### FUNCTIONAL DESCRIPTION:

Vacuum Tube Voltmeter CAQI-400D is a portable, vacuum tube, voltage measuring equipment for audio, super-sonic, and lower rf regions, amplifier gain, network response, output level, hum level, power circuit voltage, video voltage, carrier voltage, capacity, and coil figure of merit.

No field changes in effect at time of preparation (16 August 1962).

#### TECHNICAL CHARACTERISTICS:

VOLTAGE RANGE: 0.1 mv to 300 v, 12 ranges.

FULL SCALE READINGS: 0.001, 0.003, 0.010, 0.030, 0.100, 0.300, 1, 3, 10, 30, 100, 300 v.

DECIBEL RANGE: M72 to P52 db, 12 ranges.

FREQUENCY RANGE: 10 cps to 4 mc.



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**CAQI-400D VACUUM TUBE VOLTMETER**

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**ACCURACY**

20 CPS TO 1 MC: Form 2% of full scale.

20 CPS TO 2 MC: Form 3% of full scale.

10 CPS TO 4 MC: Form 5% of full scale.

**STABILITY:** Reduced in gm of amplifier tubes to 75% of nominal value results in less than 0.5% error from 20 cps to 1 mc.

**INPUT IMPEDANCE:** 10 meg shunted by 15 uuf, 1.0 to 300 v range; 25 uuf, 0.001 to 0.3 v range.

**AMPLIFIER:** Output approx 0.15 v max; internal impedance 50 ohms; max gain approx 150 on 0.001 v range.

**POWER REQUIREMENTS:** 115 or 230 v form 10%, 50 to 1,000 cyc, single ph, 80 W.

**RELATION TO OTHER EQUIPMENT:**

This equipment is similar to Voltmeter, Electronic ME-30A/U, in appearance and operation, but contains modified electrical circuits to obtain improved performance.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Vacuum Tube Voltmeter CAQI-400D		7-1/2 x 11-3/4 x 12	18
2	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93764A: Operating and Service Manual for Vacuum Tube Voltmeter Model 400D/H/L and H02-400D.

T0 33A1-12-349-1: Operating and Service Manual for Vacuum Tube Voltmeter Model 400D/H/L and H02-400D.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 6AX5GT (5) 6CB6A (1) 6U8 (1) 12B4A (1) 5651

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		23

4.1 CAQI-400D: 2

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**VACUUM TUBE VOLTMETER CAQI-400D**

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: Commercial

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
Hewlett-Packard Company Model no. 400D	Palo Alto, California	N0bsr-75635 N0bsr-85494	\$225.00 250.00

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8 February 1963

Cog Service: USN FSN: F6625-557-8261

VACUUM TUBE VOLTMETER CAQI-400H  
Functional Class: 1.1.1.1

USA

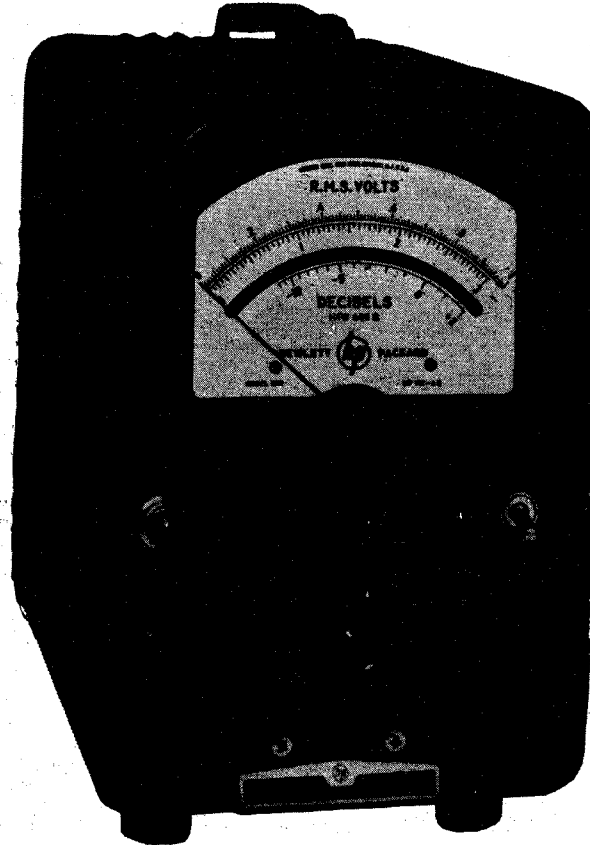
USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** Hewlett-Packard Company, (28480).



*Vacuum Tube Voltmeter CAQI-400H*

**FUNCTIONAL DESCRIPTION:**

Vacuum Tube Voltmeter CAQI-400H is a portable, vacuum tube, voltage measuring equipment for audio, super-sonic, and lower rf regions, amplifier gain, network response, output level, hum level, power circuit voltage, video voltage, carrier voltage, capacity, and coil figure of merit.

No field changes in effect at time of preparation (16 August 1962).

**TECHNICAL CHARACTERISTICS:**

VOLTAGE RANGE: 0.1 mv to 300 v, 12 ranges.

FULL SCALE READINGS: 0.001, 0.003, 0.010, 0.030, 0.100, 0.300, 1, 3, 10, 30, 100, 300 v.

DECIBEL RANGE: M72 to P52 db, 12 ranges.

FREQUENCY RANGE: 10 cps to 4 mc.

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**CAQI-400H VACUUM TUBE VOLTMETER**

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**ACCURACY**

50 CPS TO 500 KC: Porm 1% of full scale.  
20 CPS TO 1 MC: Porm 2% of full scale.  
20 CPS TO 2 MC: Porm 3% of full scale.  
10 CPS TO 4 MC: Porm 5% of full scale.

STABILITY: Reduced in gm of amplifier tubes to 75% of nominal value results in less than 0.5% error from 20 cps to 1 mc.

INPUT IMPEDANCE: 10 meg shunted by 15 uuf, 1.0 to 300 v range; 25 uuf, 0.001 to 0.3 v range.

AMPLIFIER: Output approx 0.15 v max; internal impedance 50 ohms; max gain approx 150 on 0.001 v range.

POWER REQUIREMENTS: 115 or 230 v porm 10%, 50 to 1,000 cyc, single ph, 80 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Vacuum Tube Voltmeter CAQI-400H		7-1/2 x 11-3/4 x 12	1B
2	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93764A: Operating and Service Manual for Vacuum Tube Voltmeter Model 400D/H/L and H02-400D.

TO 33A1-12-349-1: Operating and Service Manual for Vacuum Tube Voltmeter Model 400D/H/L and H02-400D.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 6AX5GT (5) 6CB6A (1) 6U8 (1) 12B4A (1) 5651

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

---

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		23

---

**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: Commercial

SPEC &/OR DWG:

4.1 CAQI-400H: 2

April 1959

Test-Voltage and Current Measuring

**VOLTMETER****MR52W030DCVV****FUNCTIONAL DESCRIPTION**

The MR52W030DCVV is designed as a Double Range, permanent magnet moving coil type movement, Direct Current (DC) portable Voltmeter, for use as a voltage tester in the range of 0 to 15 volts (v) and 0 to 30 volts (v); with 0.5 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (15 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR52W030DCVV is similar to the MR52W150DCVV and the MR52W300DCVV but differs in voltage testing ranges, and price of equipment.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.5% max error.  
 DAMPING FACTOR: 5 min.  
 RESPONSE TIME: 2 seconds max.  
 POWER CONSUMPTION: 20 ma max change.  
 HEAT EFFECT AT 65 DEGREE "C"  
 VOLTMETERS: 2% max change at 65° C.  
 MILLIVOLTMETER: 4% max change at 65° C.  
 PERMANENT CHANGE: 5% max.  
 TEMPERATURE INFLUENCE  
 VOLTMETERS: 5% max change.

MILLIVOLTMETER: 1% max change.

**LOW TEMPERATURE EXPOSURE**

VOLTMETERS: 1.25% max change at 0° C.

MILLIVOLTMETERS: 2.5% max change at 0° C.

PERMANENT CHANGE: 0.5% max.

SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$55.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENTS**

Electron tube and crystal data not available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/15 for the Portable Double Range Voltmeter.

TYPE CLASSIFICATION DESIGN COGNIZANCE TASSA PROCUREMENT COGNIZANCE MIL-M-16034A STOCK NO. R.D.B. IDENT. NO. 1.1.1.3
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**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Direct Current Voltmeter MR52W030DCVV		

UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

## AMMETER

### MR52W020DCAA

### FUNCTIONAL DESCRIPTION

The MR52W020DCAA is designed as a portable, Double Range, Direct Current (DC) Ammeter. Used for current testing in the ranges from 0 to 10 ampere (amps) and from 0 to 20 ampere (amps); with 0.5 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (18 December 1958)

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 3.2 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.5% max error.  
DAMPING FACTOR: 5 min.  
RESPONSE TIME: 2 seconds max.  
POWER CONSUMPTION: 50 ±0.25 mv max kilo-ammeters and ammeters for use with external shunts.  
HEAT EFFECT AT 65 DEGREE "C": 4% max change at 65° C; 0.5% max permanent change.  
TEMPERATURE INFLUENCE: 1% max change.  
LOW TEMPERATURE EXPOSURE: 2.5% max change at 0° C, 0.5 percent max permanent change.  
MOMENTARY OVERLOAD: 1% max change.  
SUSTAINED OVERLOAD: 1% of scale length max

temporary zero shift, 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$53.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal data not available.

### REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/16 for the Double Range D.C. Ammeter.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE MIL-M-16034A  
STOCK NO.  
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Ammeter MR52W020DCAA		

UNCLASSIFIED

4.1 MR52W020DCAA: 1 |

April 1959

Test-Voltage and Current Measuring

**VOLTMETER****MR51W600ACVV****FUNCTIONAL DESCRIPTION**

The MR51W600ACVV is designed as a portable Single Range; moveable iron type movement, Alternating Current (AC) Voltmeter. Used for voltage testing in the range from 0 to 600 volts (v), with 0.75 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (16 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR51W600ACVV is similar to the MR51W150ACVV, MR51W225ACVV and MR51W300ACVV except it differs in test voltage range and in price of equipment.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.75% max error.  
 DAMPING FACTOR: 3 min.  
 RESPONSE TIME: 3.4 seconds max.  
 POWER CONSUMPTION: 20 va max.  
 FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
 FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
 HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 0.5% max permanent change  
 TEMPERATURE INFLUENCE: 0.5% max change

LOW TEMPERATURE EXPOSURE: 1.25% max change at 0° C; 0.5% max permanent change.

SUSTAINED OVERLOAD: 1% of scale length max temporary change zero shift; 0.5% of scale length max permanent zero shift; 0.33% permanent zero shift.

VIBRATION: 1% max change.

FRICITION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$47.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/13 for the Single Range Portable A.C. Voltmeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Portable A.C. Voltmeter MR51W600ACVV		

UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

## VOLTMETER

## MR51W300ACVV

### FUNCTIONAL DESCRIPTION

The MR51W300ACVV is designed as a Single Range, movable iron type movement, Portable Alternating Current (AC) Voltmeter, with 0.75 percent (%) accuracy at full scale deflection. Used for Voltage testing in the ranges from 0 to 300 volts (v).

No field changes in effect at time of preparation (16 December 1958).

### RELATION TO OTHER EQUIPMENT

The MR51W300ACVV is similar to the MR51W150ACVV, MR51W225ACVV and the MR51W600ACVV, except it differs in voltage testing range and in price of equipment.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 3.2 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.75% max error.  
DAMPING FACTOR: 3 min.  
RESPONSE TIME: 3.4 seconds max.  
POWER CONSUMPTION: 20 va max.  
FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.  
LOW TEMPERATURE EXPOSURE: 1.25% max change at 0° C; 0.5% max permanent change.  
SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.  
VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$38.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal data not available.

### REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/13 for the Portable A.C. Voltmeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.3

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	A.C. Voltmeter MR51W300ACVV		

UNCLASSIFIED

4.1 MR51W300ACVV: 1



UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring.

### AMMETER

### MR51W200ACAA

#### FUNCTIONAL DESCRIPTION

The MR51W200ACAA is designed as a portable alternating current (AC) type ammeter, use as a general purpose piece of test equipment in the range from 0 to 200 ampere (amps).

No field changes in effect at time of preparation (8 December 1958).

VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.  
SCALE RANGE: 0 to 200 clockwise.  
OPERATING POWER REQUIREMENT: 115 v, 60 cps, single ph.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
CIRCUIT APPLICATION: AC.  
ACCURACY AT FULL SCALE DEFLECTION: 0.75%.  
DAMPING FACTOR: 3 min.  
RESPONSE TIME: 3.4 seconds max.  
POWER CONSUMPTION: 2 va max ammeter; 5-ampere single range; 5 va max ammeters, any range except 5 ampere single range.  
FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
HEAT EFFECT AT 65 DEGREE C: 2% max change; 0.5% max permanent.  
TEMPERATURE INFLUENCE: 0.5% max change.  
LOW TEMPERATURE EXPOSURE: 1.25% max change; 0.5% max permanent change.  
MOMENTARY OVERLOAD: 1% max change.  
SUSTAINED OVERLOAD: 1% of scale length, max temporary zero shift. 0.5% of scale length, max permanent zero shift. 0.33% permanent change in indication.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$55.00 with equipment spares.

#### TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

#### REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/14 for Ammeters Alternating Current.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter MR51W200ACAA		

UNCLASSIFIED

4.1 MR51W200ACAA: 1

UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

# VOLTMETER

# MR51W150ACVV

## FUNCTIONAL DESCRIPTION

The MR51W150ACVV is designed as a Single Range, moveable iron type movement, portable Alternating Current (AC) Voltmeter; with 0.75 percent (%) accuracy at full scale deflection. Used for voltage testing in the range from 0 to 150 volts (v).

No field changes in effect at time of preparation (15 December 1958).

## RELATION TO OTHER EQUIPMENT

The MR51W150ACVV is similar to the MR51W225ACVV, MR51W300ACVV and the MR51W600ACVV except it differs in voltage testing range and equipment price.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 3.2 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.75% max error.  
DAMPING FACTOR: 3 min.  
RESPONSE TIME: 3.4 seconds max.  
POWER CONSUMPTION: 10 va max.  
FREQUENCY RANGE: 1% max change at 24 and 125 cycles.  
FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.

HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 5% permanent change.

SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$42.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal data not available.

## REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/13 for the Portable AC Voltmeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.3

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	AC Voltmeter MR51W150ACVV		

UNCLASSIFIED

4.1 MR51W150ACVV: 1

April 1959

Test-Voltage and Current Measuring

**AMMETER****MR51W025DCAA****FUNCTIONAL DESCRIPTION**

The MR51W025DCAA is designed as a portable Single Range Direct Current (DC) Ammeter. Used for current testing in the range from 0 to 25 ampere (amps); with 0.5 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (17 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR51W025DCAA is similar to the MR51W001DCAA, and MR51W010DCAA except it differs in the current testing ranges and in price of equipment.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.5% max error.  
 DAMPING FACTOR: 5 min.  
 RESPONSE TIME: 2 seconds max.  
 POWER CONSUMPTION: 50  $\pm$ 0.25 mv kiloammeters and ammeters for use with external shunts.  
 HEAT EFFECT AT 65 DEGREE "C": 4% max change at 65° C; 0.5% max permanent change.  
 TEMPERATURE INFLUENCE: 1% max change.  
 LOW TEMPERATURE EXPOSURE: 2.5% max change at 0° C; 0.5% max permanent change.

MOMENTARY OVERLOAD: 1% max change.  
 SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.  
 FRICTION: 2% max change.  
 HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$42.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron tube and crystal data not available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/16 for the Portable D.C. Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Ammeter MR51W025DCAA		

## AMMETER

## MR51W025ACAA

### FUNCTIONAL DESCRIPTION

The MR51W025ACAA is designed as a Single Range, Alternating Current (AC) Ammeter; used for current testing purpose in the range from 0 to 25 ampere (amps); with 0.75 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (22 December 1958).

### RELATION TO OTHER EQUIPMENT

The MR51W025ACAA is similar to the MR51W001ACAA, MR51W005ACAA, MR51W010ACAA and MR51W200ACAA except it differs in the current testing range and in price of equipment.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 3.2 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.7% max error.  
DAMPING FACTOR: 3 min.  
RESPONSE TIME: 3.4 seconds max.  
POWER CONSUMPTION: 5 va max ammeters any range except 5 ampere single range.  
FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
HEAT EFFECT AT 65 DEGREE "C": 2% max change; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.  
LOW TEMPERATURE EXPOSURE: 1.25% max change; 0.5% max permanent change.  
MOMENTARY OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% permanent change in indication.  
VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$36.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

### REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/14 for The Alternating Current Ammeter.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE MIL-M-16034A  
STOCK NO.  
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	A.C. Ammeter MR51W025ACAA		

**AMMETER**

**MR51W010DCAA**

**FUNCTIONAL DESCRIPTION**

The MR51W010DCAA is designed as a portable, Single Range, Direct Current (DC) Ammeter. Used for current testing purposes; with 0.5 per cent (%) accuracy at full scale deflection. It is designed to be cable of measurement tests in the range from 0 to 10 ampere (amps).

No field changes in effect at time of preparation (18 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR51W010DCAA is similar to the MR51W001DCAA, and MR51W025DCAA except it differs in the current testing range and in price.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 3.2 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.5% max error.  
DAMPING FACTOR: 5 min.  
RESPONSE TIME: 2 seconds.  
POWER CONSUMPTION: 50± 0.25 mv max Kiloameters and ammeters for use with external shunts.  
HEAT EFFECT AT 65 DEGREE "C": 4% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 1% max change.  
LOW TEMPERATURE EXPOSURE: 25% max change at 0° C; 0.5% max permanent change.  
MOMENTARY OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max change in indication.  
VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$48.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/16 for the Portable Single Range D.C. Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Ammeter MR51W010DCAA		

UNCLASSIFIED  
April 1959

Test-Voltage and Current Measuring

## AMMETER

## MR51W010ACAA

### FUNCTIONAL DESCRIPTION

The MR51W010ACAA is designed as a portable, Single Range, Alternating Current (AC) Ammeter. Used for current testing purposes in the range from 0 to 10 ampere (amps), with 0.75 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (19 December 1958).

### RELATION TO OTHER EQUIPMENT

The MR51W010ACAA is similar to the MR51W001ACAA, MR51W005ACAA, MR51W025ACAA and MR51W200ACAA except it differs in the current testing range and in price of equipment

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 3.2 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.75% max error.  
DAMPING FACTOR: 3 min.  
RESPONSE TIME: 3.4 seconds max.  
POWER CONSUMPTION: 5 va max ammeters any range except 5 ampere single.  
FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
HEAT EFFECT AT 65 DEGREE "C": 2% max change; 0.5% max change permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.  
LOW TEMPERATURE EXPOSURE: 1.25% max change 0.5% max permanent change.  
MOMENTARY OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift.  
VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$46.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

### REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/14 for the Single Range Alternating Current Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	A.C. Ammeter MR51W010ACAA		

UNCLASSIFIED

4.1 MR51W010ACAA: 1

April 1959

Test-Voltage and Current Measuring

**AMMETER****MR51W005ACAA****FUNCTIONAL DESCRIPTION**

The MR51W005ACAA is designed as a Portable Single Range, Alternating Current (AC) Ammeter. Used for current testing purposes in the range from 0 to 5 ampere (amps); with 0.75 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (19 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR51W005ACAA is similar to the MR51W001ACAA, MR51W010ACAA, MR51W025ACAA and MR51W200ACAA except it differs in the current testing range and in price of equipment.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.75% max error.  
 DAMPING FACTOR: 3 min.  
 RESPONSE TIME: 3.4 seconds max.  
 POWER CONSUMPTION: 2 va max ammeters 5 amp single range.  
 FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
 FREQUENCY INFLUENCE: 0.2% max change.  
 HEAT EFFECT AT 65 DEGREE "C": 2% max change, 0.5% permanent change

TEMPERATURE INFLUENCE: 0.5% max change.  
 LOW TEMPERATURE EXPOSURE: 1.25% max change; 0.5% max permanent change.  
 SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% permanent change in indication.  
 VIBRATION: 1% max change.  
 FRICTION EFFECT: 2% max change.  
 HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$31.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/14 for the Single Range Alternating Current Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	A.C. Ammeter MR51W005ACAA		

## AMMETER

## MR51W001DCAA

### FUNCTIONAL DESCRIPTION

The MR51W001DCAA is designed as a portable Single Range, Direct Current (DC) Ammeter. Used for current testing purposes in the range from 0 to 1 ampere (amps), with 0.5 per cent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (18 December 1958).

LOW TEMPERATURE EXPOSURE: 25% max change at 0° C; P.5% max permanent change.

MOMENTARY OVERLOAD: 1% of scale length max temporary zero shift, 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICITION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

### RELATION TO OTHER EQUIPMENT

The MR51W001DCAA is similar to the MR51W010DCAA and MR51W025DCAA except it differs in the current testing range and in equipment price.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$42.00 with equipment spares.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 3.2 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.5% max error.

DAMPING FACTOR: 5 min.

POWER CONSUMPTION: 50 ±0.25 mv max Kiloameters and ammeters for use with external shunts.

RESPONSE TIME: 2 seconds max.

HEAT EFFECT AT 65 DEGREE "C": 4% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 1% max change.

### TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

### REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/16 for the Portable Single Range D.C. Ammeter.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE MIL-M-16034A  
STOCK NO.  
R.D.B. IDENT. NO.

### SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	D.C. Ammeter MR51W001DCAA			



April 1959

Test-Voltage and Current Measuring

**AMMETER****MR51W001ACAA****FUNCTIONAL DESCRIPTION**

The MR51W001ACAA is designed as a portable, Single Range, Alternating Current (AC) Ammeter. Used for current testing purposes; with 0.75 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (19 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR51W001ACAA is similar to the MR51W005ACAA, MR51W010ACAA, MR51W025ACAA and the MR51W200ACAA except it differs in the current testing range and in price of equipment.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 inch min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.75% max error.  
 DAMPING FACTOR: 3 min.  
 RESPONSE TIME: 3.4 seconds max.  
 POWER CONSUMPTION: 2 va max ammeters 5-amps single range.  
 FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
 FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
 HEAT EFFECT AT 65 DEGREE "C": 2% max change; 0.5% max permanent change.  
 TEMPERATURE INFLUENCE: 0.5% max permanent change.  
 LOW TEMPERATURE EXPOSURE: 1.25% max change; 0.5% max permanent change.

MOMENTARY OVERLOAD: 1% max change.  
 SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% permanent change in indication.  
 VIBRATION: 1% max change.  
 FRICTION EFFECT: 2% max change.  
 HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$31.50 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/14 for the Single Range Alternating Current Ammeter.

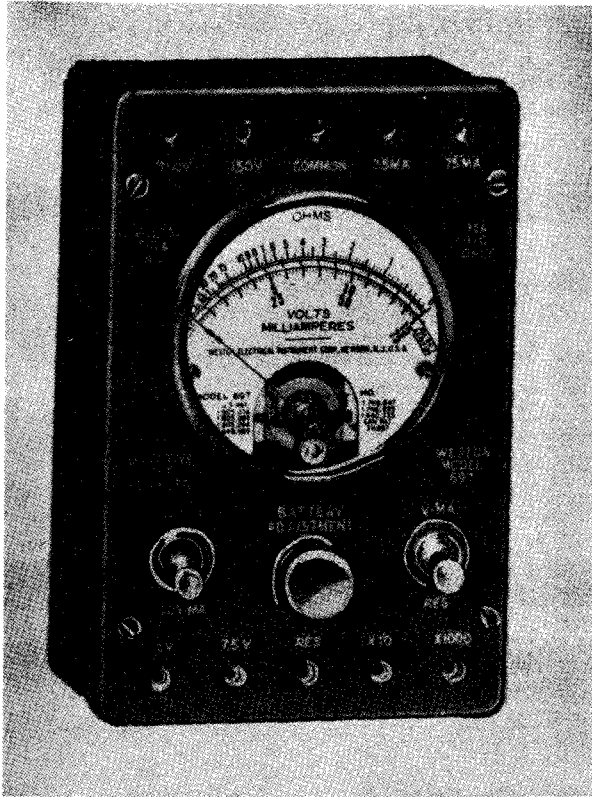
TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	A.C. Ammeter MR51W001ACAA		

UNCLASSIFIED  
April 1959

Test-Voltage and Current Measuring  
**VOLT-OHM-MILLIAMMETER** **MODEL 697**



Model 697 Volt Ohm Milliammeter

**FUNCTIONAL DESCRIPTION**

The Model 697 is designed as a portable, low cost, lightweight instrument with a well selected group of ranges to cover the majority of measurements required in electrical and electronic equipment. The Model 697 is small enough to be included in a kit of general maintenance tools.

No field changes in effect at time of preparation (29 September 1958).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

ACCURACY: 2% DC, 5% AC.  
RANGES: 0-7.5/15/150/750 AC and DC (1000 ohms per volt).  
CURRENT: 0-7.5/75 milliamperes DC.  
RESISTANCE  
FULL SCALE: 5,000/500,000 ohms.  
CENTER SCALE: 35/3500 ohms.  
OPERATING POWER REQUIREMENT: 4-1/2 v DC battery.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp, Newark, N. J.  
Approximate Cost: \$49.50 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal data not available.

**REFERENCE DATA AND LITERATURE**

Weston Electrical Instrument Corporation  
Catalog No. 02743 for Model 697 Volt-Ohm-Milliammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 1.1.3.2.1

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Milliammeter Model 697 Included:	3-9/16 X 3-3/4 X 5-9/16	
1	Set of Test Leads		

UNCLASSIFIED

4.1 Model 697: 1

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**ME-88/U VOLTMETER**

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**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Voltmeter ME-88/U		4 x 4-3/16 x 6-3/4	

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91833(A): Technical Manual for Radio Transmitting Sets AN/URT-2, AN/URT-3, AN/URT-4, AN/URT-2A, AN/URT-3A, and AN/URT-4A.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N38A

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: DESIGN COG: USN, BuShips  
SPEC &/OR DWG:

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Federal Telephone and Radio Corp.	Clifton, N. J.	NObsr-43409, 17 June 1949 NObsr-52021, 1 September 1950 NObsr-63444 NObsr-64710	

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4 April 1962

Cog Service:

FSN: 6625-643-0623

Functional Class:

VOLTMETER ME-88/U

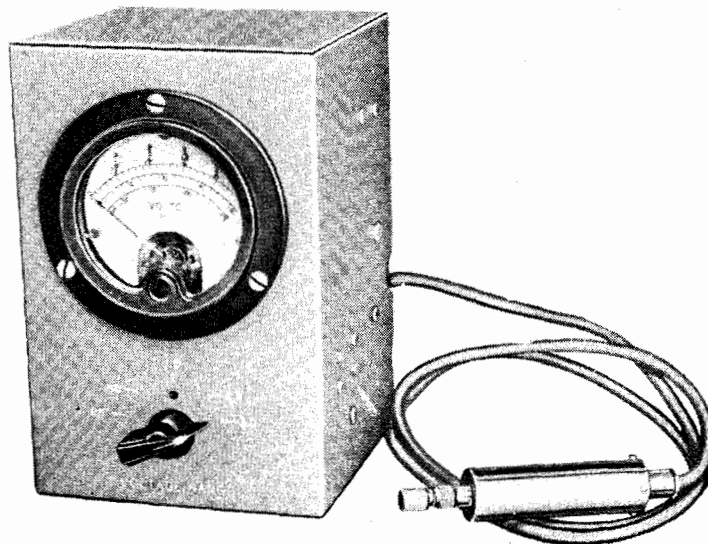
USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** Federal Telephone and Radio Corp.



*Voltmeter ME-88/U*

**FUNCTIONAL DESCRIPTION:**

Voltmeter ME-88/U is used in servicing the rf oscillator to measure the rf voltages at the input and output test points of the various sub-chassis.

No field changes in effect at time of preparation (12 December 1961).

**TECHNICAL CHARACTERISTICS:**

**VOLTAGE RANGE**

SCALE 1: 0 to 0.25, 50 scale div.  
SCALE 2: 0 to 0.50.  
SCALE 3: 0 to 1.0, 50 scale div.  
SCALE 4: 0 to 2.5.  
SCALE 5: 0. to 5.0, 20 scale div.  
SCALE 6: 0 to 15.0, 30 scale div.

**ACCURACY**

FULL SCALE DEFLECTION: Porm 7%.  
METER MOVEMENT: Porm 2%.  
SENSITIVITY: 30,000 ohms per v.



30 April 1962

VOLTMETER ME-64/U

Cog Service: USA FSN:

Functional Class: 1.1.1.2

USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** Weston Electrical Instrument Corp., (65092).

*(No Illustration Available)*

**FUNCTIONAL DESCRIPTION:**

Voltmeter ME-64/U is a portable miniature instrument used in checking small electrical components.

No field changes in effect at time of preparation (11 December 1961).

**TECHNICAL CHARACTERISTICS:**

FREQUENCY RANGE: 25 to 125 cyc.

INPUT RESISTANCE: 100,000 ohms for 0 to 600 v; 25,000 ohms for 0 to 150 v.

VOLTAGE RANGES: 0 to 150 v, 0 to 600 v ac.

ACCURACY: Form 2% of scale reading.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Voltmeter ME-64/U includes:			
1	Case		2-1/8 x 3-5/32 x 3-27/32	6.8
2	Test Lead		48 lg	

**REFERENCE DATA AND LITERATURE:** None.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

## ELECTRONIC MULTIMETER ME-6D/U

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Daven Company	Newark, New Jersey	N0bsr-59640, 24 June 1953 N0bsr-64794 N0bsr-71565 N0bsr-71723 N0bsr-75895, 24 June 1959	\$159.00
Crescent Communications Corporation	New London, Connecticut	N0bsr-81449, 14 June 1960	113.34
Gilliland Instrument Co., Incorporated	Oakland, California	N0bsr-71195, 13 February 1956 N0bsr-75135, 29 May 1958	82.60 118.30
B.M. Harrison Laboratories, Incorporated	Newton, Massachusetts	N0bsr-71321, 21 June 1956	79.12
Howal-Ronset Instrument Company, Incorporated	Tuckahoe, New York	N0bsr-75658, 12 January 1959	94.42

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**ME-6D/U ELECTRONIC MULTIMETER**

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METER RANGES: 500 uv to 5 mv, 5 mv to 50 mv, 50 mv to 500 mv, 0.5 to 5 v, 5 v to 50 v, 50 v to 500 v; M65 db to M43 db, M45 db to M23 db, M25 db to M3 db, M5 db to P17 db, P15 db to P37 db, P35 db to P57 db.

INPUT IMPEDANCE: 2 meg in shunt with 25 uuf.

INSTRUMENT ACCURACY: Porm 3% from 15 cyc to 250 kc per sec.

STABILITY: Porm 1% over line variation from 105 to 125 v ac.

AMPLIFIER UNDISTORTED OUTPUT: Up to 23 v ac, supplied from an internal impedance.

MAXIMUM INPUT VOLTAGE: Not to exceed 500 v rms, or 707 v peak.

AMPLIFIER GAIN: 4500.

BANDWIDTH OF INTERNAL AMPLIFIER: 15 cps to 250 kc porm 3%.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electronic Multimeter ME-6D/U includes:		5-13/16 x 6-1/2 x 11-7/32	9.6
2	Technical Manual NAVSHIPS 92423		3/16 x 8-1/2 x 11	2/3

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92423; TO 33A1-12-102-1: Technical Manual for Electronic Multimeter ME-6D/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR:**

TUBES: (1) 0A2WA (1) 2A12 (1) 5726/6AL5W (1) 5879 (2) 6AH6

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.06	20.00

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/OR DWG: MIL-E-17001(SHIPS) Amend 7;  
MIL-V-17001A(SHIPS)

4.1 ME-6D/U: 2



21 February 1963

Cog Service: USN FSN: F6625-643-1663

ELECTRONIC MULTIMETER ME-6D/U

Functional Class: 1.1.1.1

USA

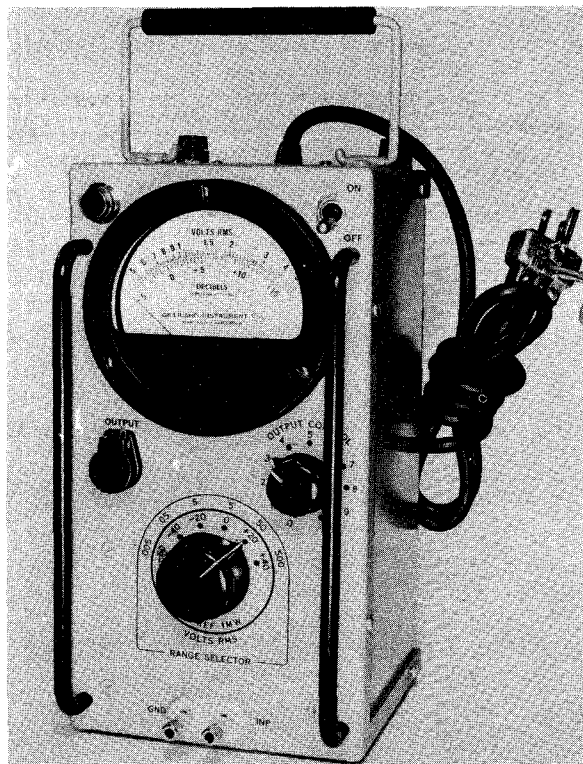
USN

USAF

TYPE CLASS:

Std

MANUFACTURER'S NAME/CODE NUMBER: The Daven Company.



*Electronic Multimeter ME-6D/U*

**FUNCTIONAL DESCRIPTION:**

Electronic Multimeter ME-6D/U is a portable, vacuum-tube equipment for measuring ac voltage. This equipment can function as an amplifier and ammeter.

Data on this sheet reflects the following field changes: F.C. #1.

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 24 W, 117 v porm 10%, 50 to 400 cyc, 1 ph.

AC VOLTAGE RANGE: 500 uv to 500 v rms (or M65 to P57 vu).

FREQUENCY PASS BAND: 15 cyc to 250 kc.

VOLTAGE METER SCALE RANGE: 0.5 to 5, with 3 scale markings above and below this range.

DECIBEL METER RANGE: M65 to P57 db.

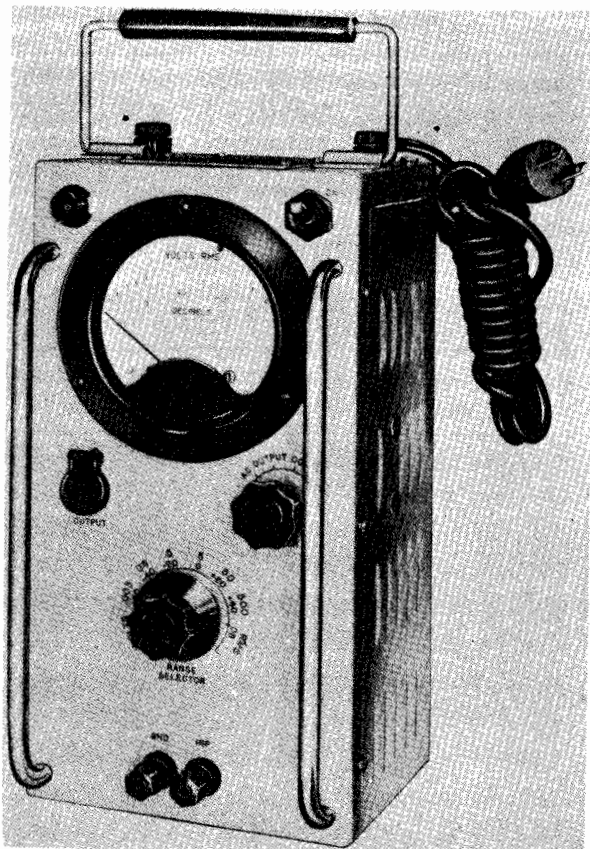
DECIBEL CONVERSION BASIS: 0.001 W reference level in 600 ohm line.

**ME-6C/U****ELECTRONIC MULTIMETER****SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electronic Multimeter ME-6C/U	1.8	11-5/8 X 12-1/2 X 20	30

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (Inches)	WEIGHT (lbs.)
1	Electronic Multimeter ME-6C/U includes:	5-3/4 X 5-13/16 X 11-11/16	9.5
2	Technical Manual NAVSHIPS 91797	3/16 X 8-1/2 X 11	

**ELECTRONIC MULTIMETER****ME-6C/U**

*Electronic Multimeter ME-6C/U*

**FUNCTIONAL DESCRIPTION**

Electronic Multimeter ME-6C/U is a portable, vacuum-tube equipment for measuring ac voltage. This equipment can function as an amplifier and ameter.

No field changes in effect at time of preparation (10 December 1959).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 31 W, 117 v  $\pm 10\%$ , 50 to 400 cy, 1 ph.

AC VOLTAGE RANGE: 500 uv to 500 v rms (or -65 to +57 vu).

FREQUENCY PASS BAND: 15 cy to 259 kc  $\pm 3\%$ .

VOLTAGE METER SCALE RANGE: 0.5 to 5, with 3 scale markings.

DECIBEL METER RANGE: -5 to +17 db.

DECIBEL CONVERSION BASIS: 0.001 W reference

level in 600 ohm line.

METER RANGES: 500 uv to 5 mv, 5 mv to 50 mv, 50 mv to 500 mv, 0.5 to 5 v, 5 v to 50 v, to 500 v.

INPUT IMPEDANCE: 2 meg in shunt with 25 uuf.

INSTRUMENT ACCURACY:  $\pm 3\%$  from 15 cy to 250 kc per sec.

STABILITY:  $\pm 1\%$ .

AMPLIFIER UNDISTORTED OUTPUT: Up to 8 v AC.

MAXIMUM INPUT VOLTAGE: Not to exceed 500 v rms, or 707 v peak.

AMPLIFIER GAIN: 1600.

BANDWIDTH OF INTERNAL AMPLIFIER: 15 cps to 250 kc  $\pm 3\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Specialty Engineering Div of the Special Assembling and Pkg Co., Inc., Brooklyn, New York,  
Contract NObsr-57577, dated 30 June 1952.

**TUBE AND/OR CRYSTAL COMPLEMENT**

- |                |                |
|----------------|----------------|
| (1) 5651       | (4) 5654/6AK5W |
| (1) 6005/6AQ5W | (2) 6J6W       |
| (1) 6X4W       |                |

Total Tubes: (9)

No Crystals used.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91797: Technical Manual for ELECTRONIC MULTIMETER ME-6C/U.

TYPE CLASSIFICATION (NAVY) STD
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-E-17001
STOCK NO. (SHIPS)
R.D.B. IDENT. NO. 1.1.1.1

## ME-6B/U

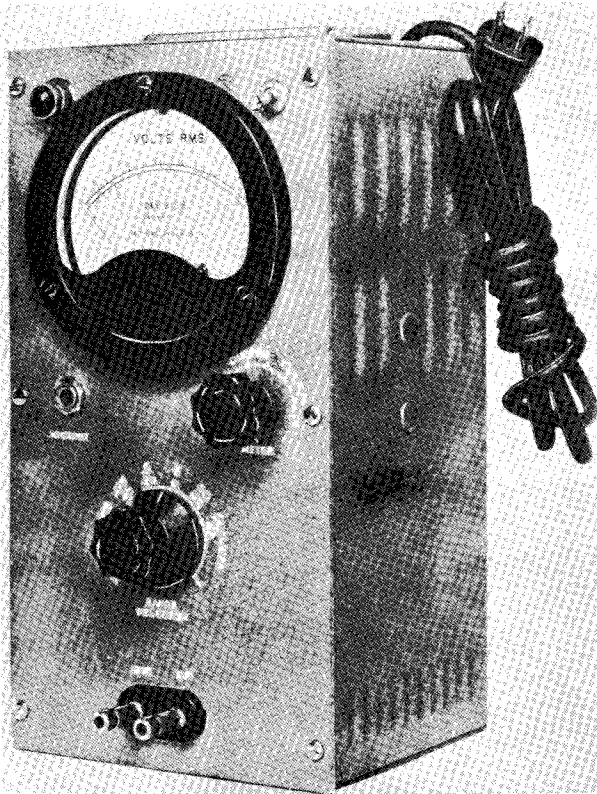
## ELECTRONIC MULTIMETER

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electronic Multimeter ME-6B/U	1.8	11-5/8 X 12-1/2 X 20	30

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1.	Electronic Multimeter ME-6B/U includes:	5-3/4 X 5-7/8 X 11-5/16	9.5
2.	Technical Manual NAVSHIPS 91493	1/2 X 8-1/2 X 11	1.5

**ELECTRONIC MULTIMETER****ME-6B/U***Electronic Multimeter ME-6B/U***FUNCTIONAL DESCRIPTION**

Electronic Multimeter ME-6B/U is a portable, vacuum-tube equipment for measuring ac voltage. This equipment can function as an amplifier and ammeter.

No field changes in effect at time of preparation (10 December 1959).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 31 W, 117 v  $\pm 10\%$ , 50 to 400 cy, 1 ph.

AC VOLTAGE RANGE: 500 uv to 500 v rms (or -65 to +75 vu).

FREQUENCY PASS BAND: 15 cy to 250 kc  $\pm 2\%$ .

VOLTAGE METER SCALE RANGE: 0.5 to 5, with 3 scale markings.

DECIBEL METER RANGE: -5 to +17 db.

DECIBEL CONVERSION BASIS: 0.001 W reference level in 600 ohm line.

METER RANGES: 500 uv to 5 mv, 5 mv to 50 mv, 50 mv to 500 mv, 0.5 to 5 v, 5 v to 50 v, 50 v to 500 v.

INPUT IMPEDANCE: 2 meg in shunt with 15 uuf.

INSTRUMENT ACCURACY:  $\pm 2\%$  from 15 cy to 250 kc per sec.

STABILITY:  $\pm 1\%$ .

AMPLIFIER UNDISTORTED OUTPUT: Up to 8 v AC.

MAXIMUM INPUT VOLTAGE: Not to exceed 500 v rms, or 707 v peak.

AMPLIFIER GAIN: 1600.

BANDWIDTH OF INTERNAL AMPLIFIER: 15 cps to 250 kc  $\pm 2\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

A. F. Smucker and Co., Inc., Brooklyn, New York.

Contract NObsr-49174, dated 6 June 1950.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 5651      (4) 6AK5      (1) 6AQ5  
(2) 6J6      (1) 6X4

Total Tubes: (9).

No Crystals used.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91493: Technical Manual for ELECTRONIC MULTIMETER ME-6B/U.

TYPE CLASSIFICATION (NAVY) STD  
DESIGN COGNIZANCE USN, BUSHIPS  
PROCUREMENT COGNIZANCE SPEC: SHIPS-M-63  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.1.1

Test-Voltage and Current Measuring

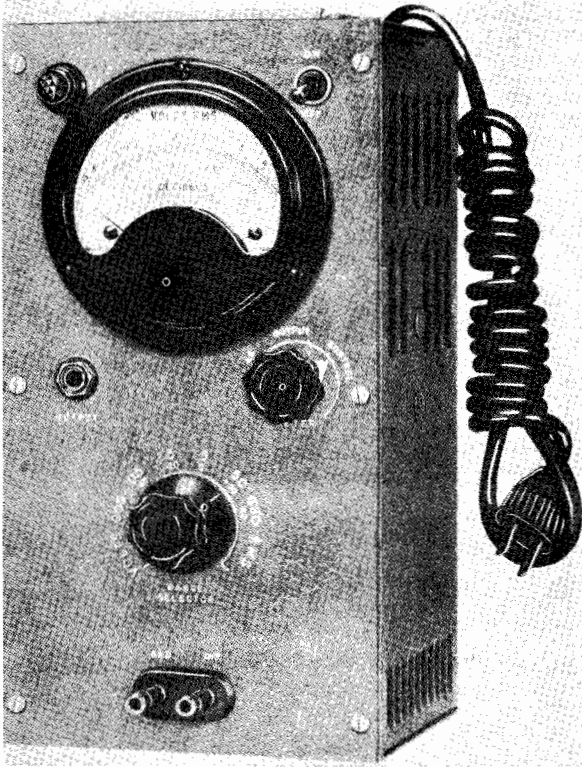
February 1960

**ME-6A/U****ELECTRONIC MULTIMETER****SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electronic Multimeter ME-6A/U	1.8	11-5/8 x 12-1/2 x 20	30

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electronic Multimeter ME-6A/U includes:	5-3/4 x 5-7/8 x 11-5/16	9.5
2	Technical Manual NAVSHIPS 91269	1/2 x 8-1/2 x 11	1.5

**ELECTRONIC MULTIMETER****ME-6A/U***Electronic Multimeter ME-6A/U***FUNCTIONAL DESCRIPTION**

Electronic Multimeter ME-6A/U is a portable, vacuum-tube equipment for measuring ac voltage. This equipment can function as an amplifier and ammeter.

No field changes in effect at time of preparation (10 December 1959).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 31 W, 117 v  $\pm 10\%$ , 50 to 400 cy, 1 ph.

AC VOLTAGE RANGE: 500 uv to 500 v rms (or -65 to +57 vu).

FREQUENCY PASS BAND: 15 cy to 250 kc  $\pm 2\%$ .

VOLTAGE METER SCALE RANGE: 0.5 to 5, with 3 scale markings.

DECIBEL METER RANGE: -5 to +17 db.

DECIBEL CONVERSION BASIS: 0.001 W reference

level in 600 ohm line.

METER RANGES: 500 uv to 5 mv to 50 mv to 500 mv, 0.5 to 5 v, 5 v to 50 v, 50 v to 500 v.

INPUT IMPEDANCE: 2 meg in shunt with 15 uuf.

INSTRUMENT ACCURACY:  $\pm 2\%$  from 15 cy to 250 kc per sec.

STABILITY:  $\pm 1\%$ .

AMPLIFIER UNDISTORTED OUTPUT: Up to 8 v AC.

MAXIMUM INPUT VOLTAGE: Not to exceed 500 v rms, or 707 v peak.

AMPLIFIER GAIN: 1600.

BANDWIDTH OF INTERNAL AMPLIFIER: 15 cps to 250 kc  $\pm 2\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Instrument Electronics Corp., Little Neck, New York.

Contract NObsr-43357, dated 3 June 1949.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 5651	(4) 6AK5	(1) 6AQ5
(2) 6J6	(1) 6X4	

Total Tubes: (9)

No crystals used.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91269: Technical Manual for ELECTRONIC MULTIMETER ME-6A/U.

TYPE CLASSIFICATION (NAVY) S/STD
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: RE13A974A
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.1

Test-Voltage and Current Measuring

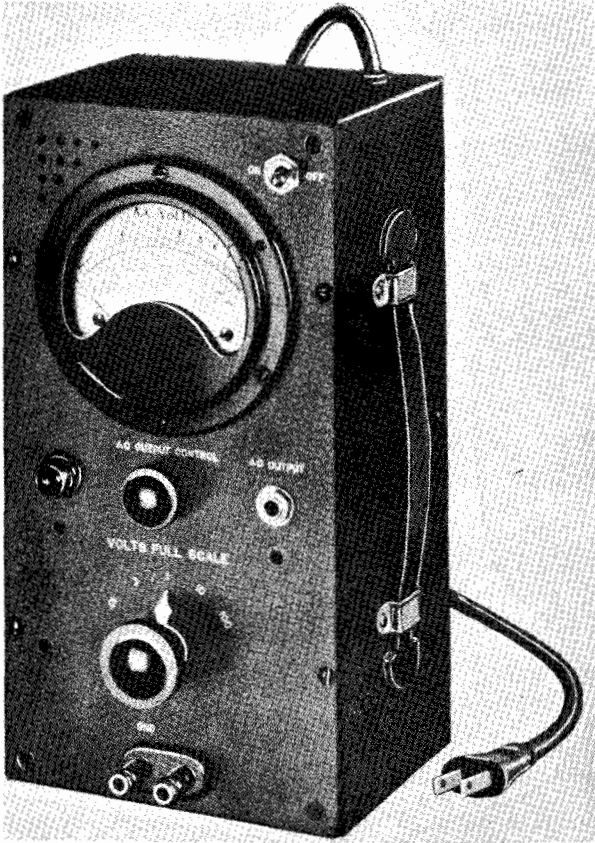
February 1960

**ME-6/U****ELECTRONIC MULTIMETER**

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electronic Multimeter ME-6/U includes:	4-1/2 X 5-3/4 X 11	9.5
2	Technical Manual NAVSHIPS 95564		



**ELECTRONIC MULTIMETER****ME-6/U***Electronic Multimeter ME-6/U***FUNCTIONAL DESCRIPTION**

Electronic Multimeter ME-6/U is a portable, vacuum-tube equipment for measuring ac voltage. This equipment can function as an amplifier and ammeter.

No field changes in effect at time of preparation (10 December 1959).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 30 W, 110 to 120 v, 50 to 60 cy, 1 ph.

AC VOLTAGE RANGE: 1 mv to 100 v rms.  
 FREQUENCY PASS BAND: 10 cy to 150 kc.  
 VOLTAGE METER SCALE RANGE: 0.1 to 1, with 2 scale markings.  
 DECIBEL METER RANGE: 0 to 20 db.  
 DECIBEL CONVERSION BASIS: 0.001 W reference level in 600 ohm line.  
 METER RANGES: 1 to 10 mv, 10 mv to 100 mv, 0.1 v to 1 v, 1 v to 10 v, 10 v to 100 v.  
 INPUT IMPEDANCE: 500,000 ohms in shunt with 30 uuf.  
 INSTRUMENT ACCURACY:  $\pm 2\%$ .  
 STABILITY:  $\pm 1\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Ballantine Laboratories Inc., Boonton, New Jersey.  
 Model 300.  
 Contract NObsr-39230.  
 Contract NObsr-57089.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 6H6                      (1) 6J7  
 (2) 6SJ7                    (1) 6X5

Total Tubes: (5)

No Crystals used.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 95564: Technical Manual for ELECTRONIC MULTIMETER ME-6/U.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.1

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electronic Multimeter ME-6/U			

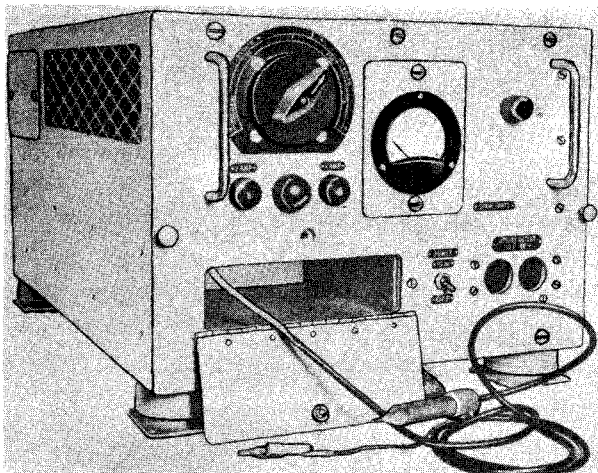
UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

# ELECTRONIC VOLTMETER

# ME-55/SSA



Electronic Voltmeter ME-55/SSA

No field changes in effect at time of preparation (16 Sept 1957).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 5 and 0 to 50 v.  
 INPUT IMPEDANCE: Variable, 51, 75 and 750 ohms available; 51 and 75 ohms available on 5 v range, 75 and 750 ohms available on 50 v range.  
 LINEARITY: Fair above 0.5 volts.  
 FREQUENCY EFFECTS: Independent of frequency from below 60 cps to above 20 mc.  
 POWER SOURCE REQUIRED: 115 v, 60 cps, single ph.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Bendix Aviation Corp, Pacific Div, North Hollywood, California.  
 Contract NObsr-57137 dated 19 December 1951.

### FUNCTIONAL DESCRIPTION

The ME-55/SSA provides a readily accessible means of checking the gain of video drivers, checking trigger voltage and measuring signal voltages in the electronic circuits. A compartment at the bottom of the voltmeter panel, accessible through a hinged door, contains a length of coaxial cable equipped with a test probe and clip. A 0 to 5 voltmeter is located above the drawer panel. A pilot light indicates when the voltmeter is energized for operation. Toggle switch is provided for turning on power. A locked zeroing adjustment is located to the right of the meter. To the left of the meter, a switch is provided to select proper termination and to change scale. This permits the measurement of peak-to-peak voltages of 5 volts and 50 volts respectively.

### TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6AL5 (1) 12AU7  
 Total Tubes: (4)

### REFERENCE DATA AND LITERATURE

NAVSHIPS 91639(A), Technical Manual for Data Switching Group OA-266/SSA, OA-266A/SSA and OA-266B/SSA and Associated Units, Amplifier Assembly AM-518/SSA, Rotary Switch SA-242/SSA, Rotary Switch SA-247/SSA, Electronic Voltmeter ME-55/SSA.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

### SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Voltmeter Electronic ME-55/SSA	8.2	18 x 23.5 x 33.7	110

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter, Electronic ME-55/SSA	13.5 x 16.8 x 27.2	62.0

UNCLASSIFIED

4.1 ME-55/SSA: 1

UNCLASSIFIED

Test-Voltage and Current Measuring

April 1959

**ME-30A/U**

**VOLTMETER METER**

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Voltmeter Meter	1.9	13 X 16 X 18	35

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter Meter ME-30A/U	7-1/4 X 11-1/4 X 11-3/4	18
2	Technical Manual NAVSHIPS 92976		

UNCLASSIFIED

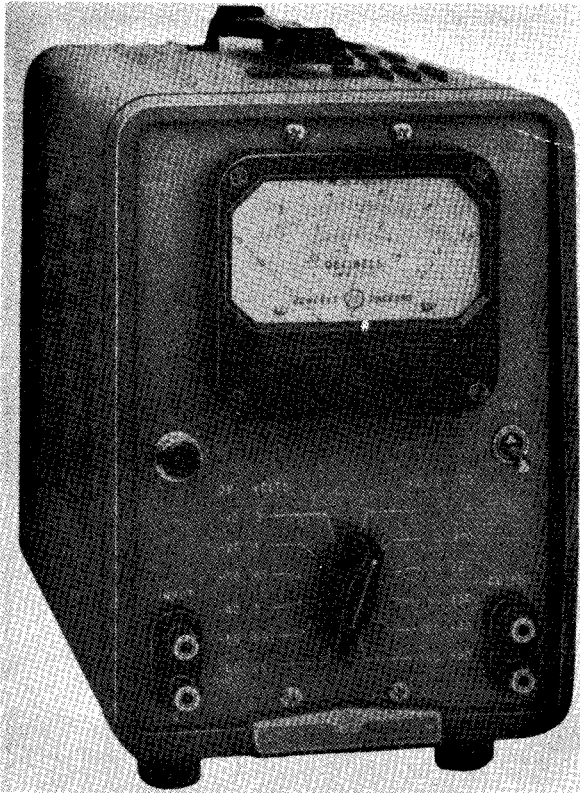
UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

## VOLTMETER METER

ME-30A/U



*Voltmeter Meter ME-30A/U*

FREQUENCY RANGE: 10 cps to 4 mc.  
VOLTAGE RANGE: 0 to 300 in 12 ranges.  
INPUT IMPEDANCE  
1-VOLT TO 300-VOLT RANGES: 10 meg shunted by 15 uuf.  
.001-VOLT TO 0.3-VOLT RANGES: 10 meg shunted by 25 uuf.  
OUTPUT CIRCUIT  
MAXIMUM OPEN-CIRCUIT VOLTAGE: 0.15 v.  
OPEN-CIRCUIT INTERNAL IMPEDANCE: 50 ohms.  
ACCURACY:  $\pm 2\%$  (20 cps to 1 mc);  $\pm 3\%$  (20 cps to 2 mc); 5% (10 cps to 4 mc).

### MANUFACTURER'S OR CONTRACTOR'S DATA

Hewlett-Packard Company, Palo Alto, Calif.  
Model 400D Dwg No. 400D-E-322.  
Contract NObsr-64076, dated 5 April 1957.  
Approximate Cost: \$235.25.

### TUBE AND/OR CRYSTAL COMPLEMENT

(6) 6CB6	(1) 6AU5
(1) 6AX5	(1) 0B2

Total Tubes: (9)

No Crystals used.

### FUNCTIONAL DESCRIPTION

Voltmeter Meter ME-30/U is a portable, vacuum-tube, voltage measuring equipment for audio, supersonic, and lower rf regions, amplifier gain, network response, output level, hum level, power circuit voltage, video voltage, carrier voltage, capacity, and coil figure of merit. The instrument may also be used as a high gain, broad-band amplifier to increase sensitivity of oscilloscopes.

No field changes in effect at time of preparation (17 March 1959).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 70 W, 103.5 to 126.5 of 207 to 253 v, 50 to 1000 cps, 1 phase.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 92976: Technical Manual for VOLT-METER METER ME-30A/U.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE BUSHIPS  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.1.1.

UNCLASSIFIED

4.1 ME-30A/U: 1

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**ME-30/U VOLTMETER METER**

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**OUTPUT CIRCUIT**

MAXIMUM OPEN-CIRCUIT VOLTAGE: 0.3 v.

INTERNAL IMPEDANCE: 50 ohms.

ACCURACY: Form 3% (below 100 kc); form 5% (100 kc to 2 mc).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Voltmeter Meter ME-30/U		7-1/2 x 8-1/2 x 9-1/2	14
2	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

Hewlett-Packard General Catalog.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 0A2WA (1) 5Y3WGTB (4) 5654/6AK5W (1) 6AQ6 (1) 6SQ7 (1) 6Y6G

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N69

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		18

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &amp;/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hewlett-Packard Co. Model no. 400C	Palo Alto, Calif.	N0bsr-57065	\$200.00

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13 February 1963

Cog Service: USN FSN: F6625-376-4921

VOLTMETER METER ME-30/U

Functional Class: I.I.I.I

USA

USN

USAF

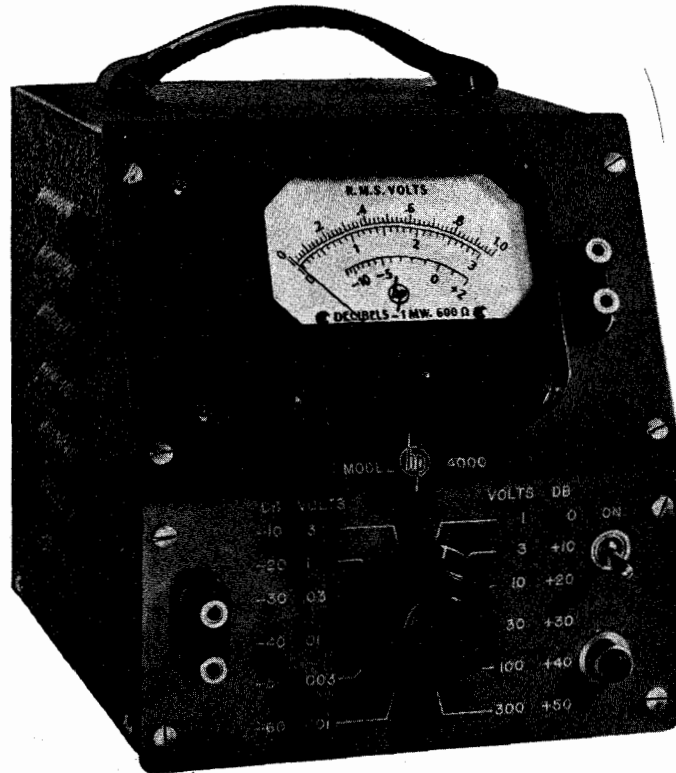
TYPE CLASS:

Std

Std

Std

MANUFACTURER'S NAME/CODE NUMBER: Hewlett-Packard Co., (28480).



*Voltmeter Meter ME-30/U*

#### FUNCTIONAL DESCRIPTION:

Voltmeter Meter ME-30/U is a portable, vacuum-tube, voltage measuring equipment for audio, supersonic, and lower rf regions, amplifier gain, network response, output level, hum level, power circuit voltage, video voltage, carrier voltage, capacity, and coil figure of merit. The instrument may also be used as a high gain, broad-band amplifier to increase sensitivity of oscilloscopes.

No field changes in effect at time of preparation (4 February 1963).

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 70 W, 103.5 to 126.5 or 207 to 253 v, 50 to 60 cyc, single ph.

FREQUENCY RANGE: 20 cps to 2 mc.

VOLTAGE RANGE: 0 to 300 v in 12 ranges.

INPUT IMPEDANCE

1-VOLT TO 300-VOLT RANGES: 10 meg shunted by 15 uuf.

0.001-VOLT TO 0.3 VOLT RANGES: 10 meg shunted by 24 uuf.

UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

### AMMETER

ME-3/U

#### FUNCTIONAL DESCRIPTION

The ME-3/U is a self-contained, portable instrument designed to measure alternating current from 0 to 50 amperes in three ranges. It is shielded, has a selector switch, and a leather carrying strap.

No field changes in effect at time of preparation (9 September 1957).

#### RELATION TO OTHER EQUIPMENT

The ME-3/U is the same as the Weston Model 433.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE (AC): 0 to 10, 20, 50 amps.

SCALE DIVISIONS: 100.

ACCURACY: 0.75% at full scale deflection.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp., Newark, N.J.

Contract NObsr-42311, dated 5 May 1948.  
Contract NObsr-43163, dated 15 December 1948.

Approximate Cost: \$87.00 with equipment spares.

#### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

#### REFERENCE DATA AND LITERATURE

Weston Electrical Instrument Corporation Circular A-8-D.  
NAVSHIPS 900155: Electronic Test Equipment Handbook.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE COMMERCIAL
STOCK NO.
R.D.B. IDENT. NO. 1.1.2.2

#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter ME-3/U	3-1/4 X 5 X 5-1/4	2.5

UNCLASSIFIED

4.1 ME-3/U: 1

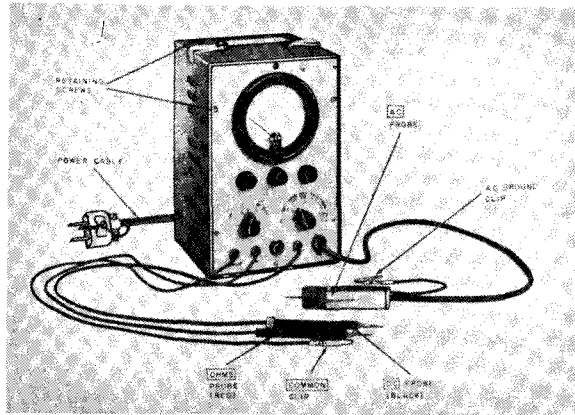
UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

**MULTIMETER**

**ME-26B/U**



Multimeter ME-26B/U

FREQUENCY RANGE: 20 cy to 700 mc (on ac voltage measurement).  
 FREQUENCY RESPONSE: Flat within  $\pm 1$  db from 20 cy to 700 mc.  
 INPUT IMPEDANCE  
 DC: 122 meg.  
 AC: 10 meg below 100kc, more than .1 meg at 100 mc, and .01 meg at 700 mc.  
 RESISTANCE RANGE: 0 to 500 meg in seven ranges.  
 VOLTAGE RANGE: 0 to 300 v AC in six ranges  $\pm 3\%$ ; 0 to 1,000 v DC in seven ranges  $\pm 3\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Jetronic Industries Inc, Philadelphia, Pennsylvania.

**FUNCTIONAL DESCRIPTION**

Multimeter ME-26B/U is a portable, vacuum tube, ac-dc voltmeter and ohmmeter. It is used in measuring af, supersonic, rf, and VHF voltage; antenna voltage, current, and power; transmission line characteristics; standing waves; dc voltage in high impedance circuits; as well as gain in audio, video, a vhf amplifiers.

No field changes in effect at time of preparation (11 May 1959).

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

TM11-6625-200-12: Technical Manual for MULTIMETER ME-26B/U.

<b>TYPE CLASSIFICATION</b>
<b>DESIGN COGNIZANCE</b> BUSHIPS
<b>PROCUREMENT COGNIZANCE</b>
<b>STOCK NO.</b>
<b>R.D.B. IDENT. NO.</b> 1.1.3.1.2

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 40 W, 115 or 230 v, 50 to 1,000 cy, 1 ph.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter ME-26B/U	.93	10-1/4 X 10-3/4 X 14-1/2	14

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter ME-26B/U	7-1/8 X 7-1/4 X 11	11.5

UNCLASSIFIED

4.1 ME-26B/U: 1



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**MULTIMETER ME-25B/U**

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SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.9	33

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/OR DWG: SHIPS-M-111A and Amend 1

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Simpson Electric Company	Chicago, Illinois	N0bsr-49264, 28 June 1950	

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**ME-25B/U MULTIMETER**

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AC VOLTAGE: 1, 2.5, 10, 25, 100, 250, 500, 1,000 v rms and peak-to-peak.

RF VOLTAGE: 1, 2.5, 10, 25, 100 v rms and peak-to-peak.

DIRECT CURRENT: 100 ua, 1, 2.5, 10, 25, 100, 250, 500, 1,000 ma.

RESISTANCE: 0 to 1,000 meg.

DECIBELS: M12 to P42 db, where 0 db is 1 mw in 600 ohms.

**OVER-ALL ACCURACY**

DC VOLTAGE (1 THRU 25 V): Porm 4% of full scale.

DC VOLTAGE (100 THRU 1,000 V): Porm 5% of full scale.

DC VOLTAGE (5,000 V): Porm 6% of full scale.

AC VOLTAGE: Porm 5% of full scale.

RF VOLTAGE: Porm 5% of full scale.

RESISTANCE: Within 3 deg of arc from absolute value of resistance indicated on meter scale.

**INPUT IMPEDANCE**

DC VOLTS: At least 40 meg, with probe extension at least 200 meg.

AC VOLTS (WITH PROBE W-104): Approx 10 uuf.

AC VOLTS (WITH PROBE W-102): 40 meg partially shunted by approx 10 uuf.

RF VOLTS: Approx 10 uuf.

**RELATION TO OTHER EQUIPMENT:**

This equipment is basically similar to the ME-25/U and ME-25A/U, differing mainly in that the ME-25B/U has all its cables permanently connected and has additional voltage and current measurement ranges.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(1) Battery BA-30.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter ME-25B/U includes:		6-1/4 x 9-1/2 x 9-3/4	12
1	High Voltage DC Probe Extension		5/8 x 5/8 x 11	
1	Diode Probe Ground Lead		3/8 x 1/2 x 3-3/4	
3	Alligator Clip Assembly		5/16 x 3/8 x 2-15/16	
1	Set of Equipment Spares			
2	Technical Manual NAVSHIPS 92250		1/4 x 8-1/2 x 11	0.4

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92250: Technical Manual for Multimeter ME-25B/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 5726/6AL5W (1) 6SN7WGTA (1) 6X4WA

CRYSTALS: None used.

19 February 1963

MULTIMETER ME-25B/U

Cog Service: USN FSN: F6625-643-1669

Functional Class: 1.1.3.1.1

USA

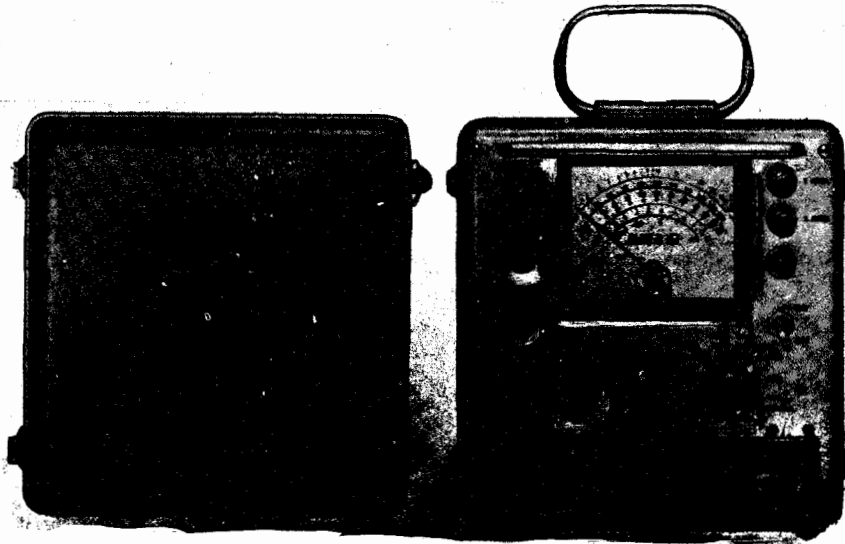
USN

USAF

TYPE CLASS:

Std

MANUFACTURER'S NAME/CODE NUMBER: Simpson Electric Co., (55026).



*Multimeter ME-25B/U*

**FUNCTIONAL DESCRIPTION:**

Multimeter ME-25B/U is a portable electronic combination dc voltmeter and milliammeter, ac and rf voltmeter, and ohmmeter which can be used to make a large variety of electrical measurements over a wide range of values. It requires an ac power source for measurements of voltage and resistance. It does not require any outside source of power for making dc current measurements, but can make dc current measurements without disconnecting the outside power source.

No field changes in effect at time of preparation (4 February 1963).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 13 W, 105 to 125 v, 50 to 1,000 cyc, single ph; 1.5 v dc.

FREQUENCY RANGE: 50 cps to 100 mc.

**RANGE DATA**

DC VOLTAGE: 1, 2.5, 10, 25, 100, 250, 500, 1,000, 5,000 v.

4.1 ME-25B/U: 1

Test-Voltage and Current Measuring

**ME-25A/U**

**MULTIMETER**

FOUR LOWER RANGES:  $\pm 4\%$  of full scale.  
250, 1000, 5000 V RANGES:  $\pm 5\%$  of full scale.

CURRENT RANGES:  $\pm 3\%$  of full scale.  
RESISTANCE RANGES: Within 3 deg of arc from absolute value of resistance indicated on meter scale.

INPUT IMPEDANCE

DC: 13.3 meg, with test prod MX-1101/U it is 66.5 meg.

AC

WITH PROBE: 7 uuf shunted by 13 meg.  
1000 V RANGE: 10 uuf shunted by 5 meg.

POWER REQUIREMENTS: 105 to 125 v, 50 to 1600 cps, 12 W at 115 v, and 1.5 v DC dry cell battery.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 12AU7 (1) 5726/6AL5W  
(1) 6X4WA  
Total Tubes: (3)

(1) 1N34  
Total Crystals: (1)

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91415: Technical Manual for Multi-meter ME-25A/U.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

The Hickok Electrical Instrument Co,  
Cleveland, Ohio.  
Contract NObsr-43313, dated 19 May 1949.  
Approximate Cost: \$100.00 with equipment spares.

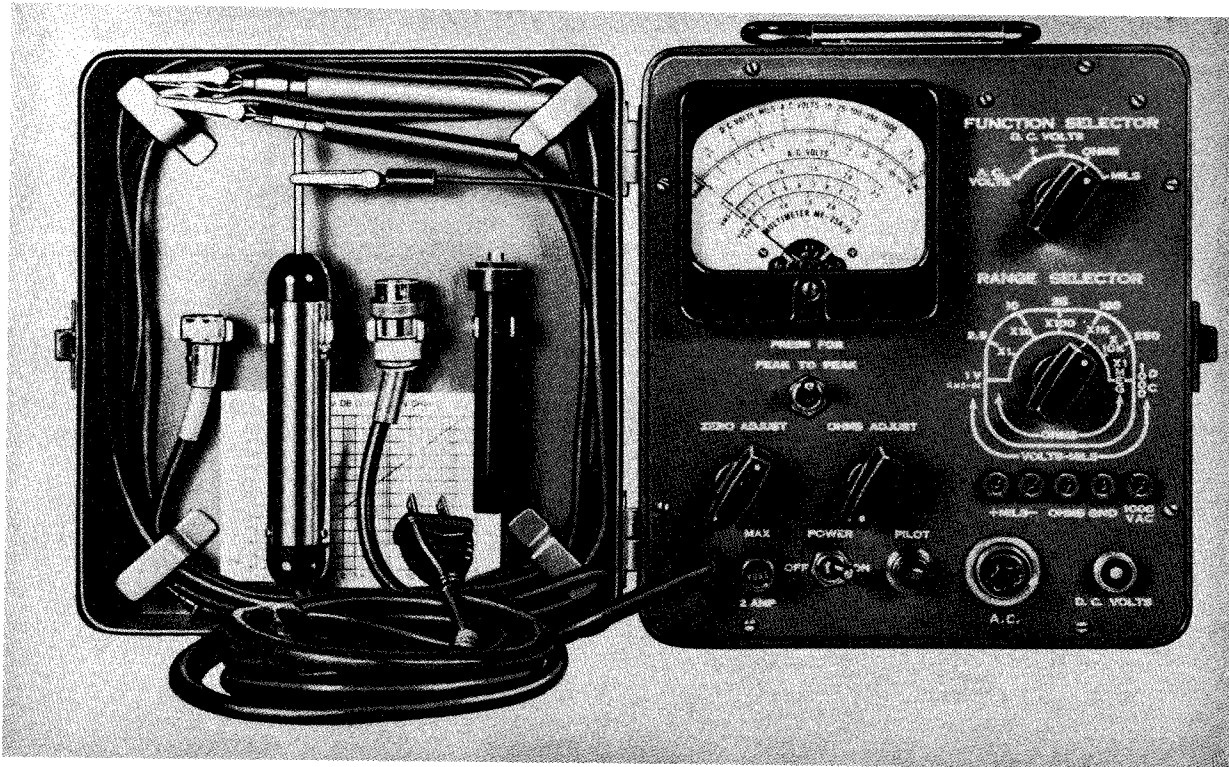
<p>TYPE CLASSIFICATION DESIGN COGNIZANCE BUSHIPS PROCUREMENT COGNIZANCE RE-9300-B STOCK NO. R.D.B. IDENT. NO. 1.1.3.1.1</p>
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**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter ME-25A/U	1.9	12-1/2 x 13-1/2 x 19-1/2	41

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter ME-25A/U	6-5/8 x 8-7/8 x 9-3/4	13
1	AC Probe and Cable Assembly	48 lg	
1	Ground Lead	48 lg	
1	Test Lead, Shielded	48 lg	
1	Test Lead, Unshielded	48 lg	
1	Ground Lead	5 lg	
1	High Voltage Adapter	5/8 dia x 5-3/16	
1	Set of Equipment Spares		
2	Technical Manual NAVSHIPS 91415	1/4 x 9 x 11-1/2	

**MULTIMETER****ME-25A/U***Multimeter ME-25A/U***FUNCTIONAL DESCRIPTION**

The ME-25A/U is a portable combination electronic AC voltmeter for measurement of peak-to-peak and RMS voltages, DC voltmeter, ohmmeter, and milliammeter which can be advantageously used wherever it is necessary to make current, resistance, and voltage measurements with the use of only one instrument. Circuit design permits measurements to well over 100 megacycles with the accuracy and the high impedance input of an electronic DC voltmeter and electronic ohmmeter. In addition, current measurements up to 1000 milliamperes may be made.

No field changes in effect at time of preparation (21 March 1958).

**RELATION TO OTHER EQUIPMENT**

The ME-25A/U is similar to the ME-25/U and Navy Model OBQ Series. The ME-25A/U features indications based on peak-to-peak value of

the AC voltage being measured, an additional RMS AC voltage range of 1000 v, a high voltage DC extension probe to increase the DC range to 5000 v, and a 0 to 1 v RMS range. The Navy Model OBQ Series did not have an enclosing cover for the case.

Equipment Required but not Supplied: (1) Dry Battery BA-30.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

FREQUENCY RANGE: 50 cps to 100 mc.  
RANGES

**VOLTAGE**

AC RMS: 0 to 1000 v in 7 steps.

AC PEAK-TO-PEAK: 0 to 250 v in 5 steps.

DC: 0 to 1000 v in 7 steps.

CURRENT(DC): 0 to 1000 ma in 6 steps.

RESISTANCE: 0 to 1000 meg in 6 steps.

**OVERALL ACCURACIES****VOLTAGE RANGES**

AC:  $\pm 5\%$  of full scale.

DC

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/OR DWG: RE-9300B

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Hickok Electrical Instrument Company	Cleveland, Ohio	N0bsr-39222, 13 June 1947	\$125.00

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**ME-25/U MULTIMETER**

---

DIRECT CURRENT: 0 to 1000 ma.

RESISTANCE: 0 to 1000 meg.

DECIBELS: M10 to P42 db.

**OVER-ALL ACCURACY**

DC VOLTAGE (FOUR LOWER RANGES): Form 4% of full scale.

DC VOLTAGE (250 AND 1000 V RANGE): Form 5% of full scale.

AC VOLTAGE: Form 5% of full scale.

DIRECT CURRENT: Form 3% of full scale.

RESISTANCE: Within 3 deg of arc from absolute value of resistance indicated on meter scale.

**INPUT IMPEDANCE**

DC VOLTS: 9 meg.

AC VOLTS: 6 uuf shunted by 12 meg.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

---

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter ME-25/U includes:		6-5/8 x 8-7/8 x 9-3/4	20.5
1	AC Probe and Cable Assy		48 lg	
1	Ground Lead		48 lg	
1	Test Lead-Shielded		48 lg	
1	Test Lead-Unshielded		48 lg	
1	Ground Lead		5 lg	

---

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91159: Technical Manual for Multimeter ME-25/U.

---

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTORS:**

TUBES: (1) 12AU7 (1) 6X4 (1) 9006

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

---

**SHIPPING DATA**

---

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	2	63

4.1 ME-25/U: 2

21 February 1963

MULTIMETER ME-25/U

Cog Service: USN FSN: F6625-049-8224

Functional Class: 1.1.3.1.1

USA

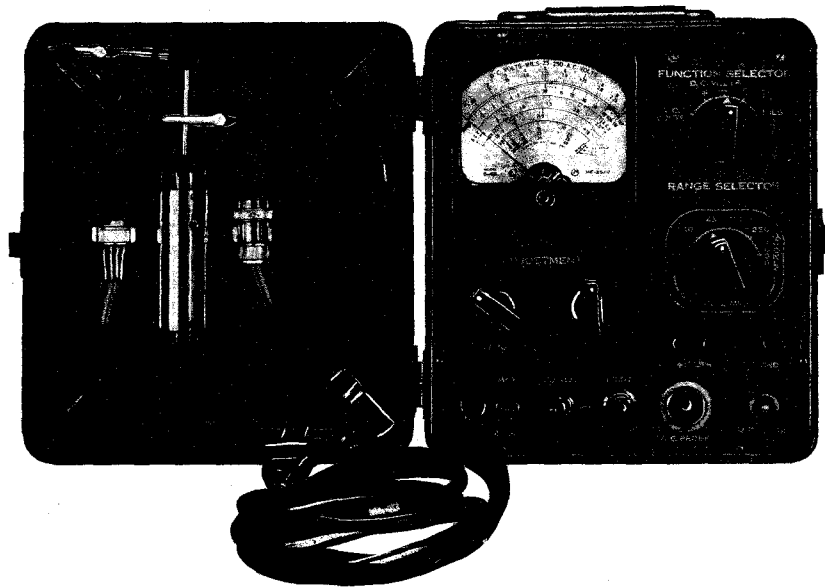
USN

USAF

TYPE CLASS:

Std

MANUFACTURER'S NAME/CODE NUMBER: The Hickok Electrical Instrument Company, (28569).



*Multimeter ME-25/U*

**FUNCTIONAL DESCRIPTION:**

Multimeter ME-25/U is a portable, electronic combination ac and dc voltmeter, ohmmeter, and milliammeter which can be advantageously used wherever it is necessary to make current, resistance and voltage measurements. It will measure dc current to 1000 milliamperes, dc voltage to 1000 volts, ac voltage to 250 volts, and resistance to 1000 meg.

No field changes in effect at time of preparation (23 December 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 20 W, 105 to 125 v, 50 to 60 cyc, single ph; 3 v dc.

FREQUENCY RANGE: 50 cps to 100 mc.

**RANGE DATA**

DC VOLTAGE: 0 to 1000 v.

AC VOLTAGE: 0 to 250 v.



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ELECTRONIC VOLTMETER ME-207/U

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO	APPROX. UNIT COST
Hewlett-Packard Co. Model no. 400H	Palo Alto, California	N0bsr-75865, 22 June 1959	\$300.15

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**ME-207/U ELECTRONIC VOLTMETER**

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**ACCURACY**

50 CPS TO 500 KC: Porm 1% of full scale.

20 CPS TO 1 MC: Porm 2% of full scale.

20 CPS TO 2 MC: Porm 3% of full scale.

10 CPS TO 4 MC: Porm 5% of full scale.

LONG TERM STABILITY: Reduced in GM of amplifier tubes to 75% of nominal value results in less than 0.5% error from 20 cps to 1 mc.

CALIBRATION: Reads rms value of sine wave. Linear voltage scales, 0 to 3 and 0 to 1.0; db scale, M12 db to P2 db, based on 0 dbm equals 1 mw in 600 ohms, 12 ranges in 10 db steps.

INPUT IMPEDANCE: 10 meg shunted by 15 uuf, 1 to 300 v; 25 uuf, 0.001 to 0.3 v.

AMPLIFIER: Output approx. 0.15 v max. Internal impedance 50 ohms. Max gain approx. 150 on 0.001 v range.

POWER REQUIREMENTS: 115 or 230 v porm 10%, 50 to 1,000 cyc, single ph, 80 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electronic Voltmeter ME-207/U		7-1/2 x 11-1/2 x 12	18
2	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

Technical Manual for Electronic Voltmeter ME-207/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 6AX5GT (5) 6CB6 (1) 6U8 (1) 12B4A (1) 5651

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

---

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		23

---

---

**PROCUREMENT DATA**

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PROCURING SERVICE:

DESIGN COG: USN, BuShips

SPEC &/OR DWG:

4.1 ME-207/U: 2

11 January 1962  
Cog Service:

FSN:

ELECTRONIC VOLTMETER ME-207/U  
Functional Class:

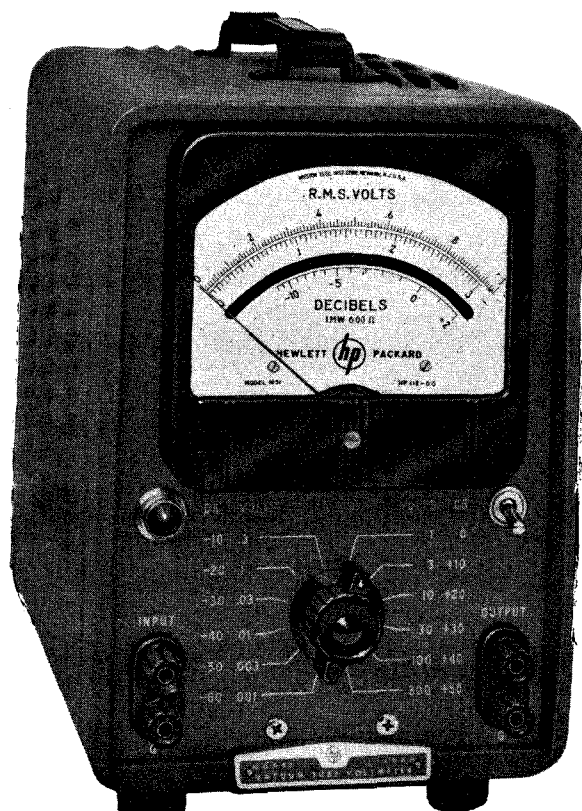
USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** Hewlett-Packard Co.



*Electronic Voltmeter ME-207/U*

**FUNCTIONAL DESCRIPTION:**

Electronic Voltmeter ME-207/U is an accurate and sensitive average-responding, rms-calibrated voltmeter which measures voltages from 0.001 to 300 v full scale over a frequency range of 10 cycles to 4 mc. It has a high input resistance of approx. 10 megohms, which effectively prevents disturbance to circuits under tests.

No field changes in effect at time of preparation (22 May 1961).

**TECHNICAL CHARACTERISTICS:**

VOLTAGE RANGE: 0.1 mv to 300 v, 12 ranges.

FULL SCALE READINGS: 0.001, 0.003, 0.01, 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300 v.

DECIBEL RANGE: M72 to P52 db, 12 ranges.

FREQUENCY RANGE: 10 cps to 4 mc.

ME-156/U AMMETER

PROCUREMENT DATA

PROCURING SERVICE:

DESIGN COG: USMC

SPEC &/OR DWG: MIL-M-16034A/10

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Weston Electrical Instru- ment Corp. Model no. 904	Newark, New Jersey	N0m 70400	

11 January 1962

AMMETER ME-156/U

Cog Service:

FSN:

Functional Class:

USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** Weston Electrical Instrument Corp.

*(No Illustration Available)*

**FUNCTIONAL DESCRIPTION:**

Ammeter ME-156/U is a portable unit for measuring ac current.  
No field changes in effect at time of preparation (24 May 1961).

**TECHNICAL CHARACTERISTICS:**

FREQUENCY RANGE: 25 to 400 cyc.

CURRENT RANGE: 0 to 2, 5, 10, 20, 50, 100, 200 amp ac.

ACCURACY: Porm 5% full scale deflection.

SENSITIVITY: 38 mv (200 amp range), 25 mv (100 amp range), 22 mv (50 amp range), 116 mv (20 amp range), 190 mv (10 amp range), 380 mv (5 amp range), 940 mv (2 amp range).

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Ammeter ME-156/U		3-5/8 x 7-1/4 x 7-1/2	

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93400: Preliminary Data Sheet for Ammeter ME-156/U.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

**SHIPPING DATA**

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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4.1 ME-156/U: 1

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**ME-111/U VOLTMETER, ELECTRONIC**

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SIGNAL INPUT IMPEDANCE: 2 meg resistive, shunted by 50 uuf.  
POWER REQUIREMENTS: 115 v, 400 cyc, single ph.  
OPERATORS REQUIRED: 1.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Voltmeter, Electronic ME-111/U		7-1/2 x 9-3/4 x 10-3/4	13

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93492: Technical Manual for Phase Sensitive Voltmeter ME-111/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (3) 6AU6WA (1) 6AV6 (1) 6X4W (1) 5814A

CRYSTALS: None used.

SEMI-CONDUCTORS: (4) 600C

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1	18

---

**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

---

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Sperry Gyroscope Co. Model 100	Lake Success, N. Y.	N0bs-65955	
Sperry Piedmont Co., Div. of Sperry Rand Corp. Part no. 1675176	Charlottesville, Va.	N0bsr-75849, 18 May 1959 N0bsr-85465	\$540.00 \$552.82

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13 February 1963

Cog Service: USN FSN: F6625-665-5482

VOLTMETER, ELECTRONIC ME-111/U  
Functional Class: I.I.I.I

USA

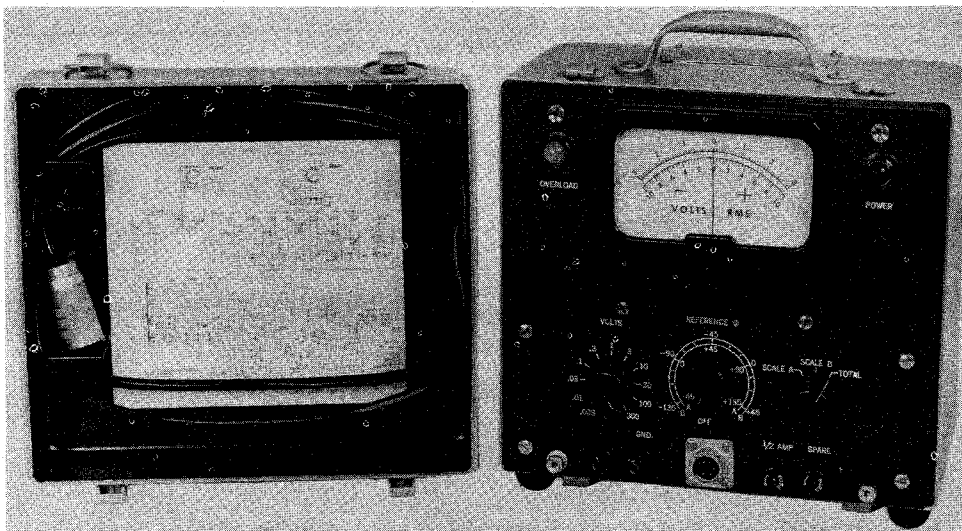
USN

USAF

TYPE CLASS:

Std

MANUFACTURER'S NAME/CODE NUMBER: Sperry Gyroscope Co., (56232).



*Voltmeter, Electronic ME-111/U*

#### FUNCTIONAL DESCRIPTION:

Electronic Voltmeter ME-111/U is a specialized vacuum tube voltmeter for measuring the phase relationship and amplitudes of two or more 400 cycle voltages. This instrument can be used on any system or equipment where phase relationship is important, such as fire control systems, gyro compasses, and automation type production equipment. Useful applications are many and varied.

No field changes in effect at time of preparation (14 June 1962).

#### TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 400 cycles porm 15 cycles.

RANGES: 0 to 0.003, 0.010, 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300 v either side of center scale 0.

ACCURACIES: Porm 3% on voltages and nulls; accuracy of phase measurement is dependent on the interpolation ability of the operator and the size of the phase angle.

Test-Voltage and Current Measuring

ID-292/PRC-6

## CHANNEL ALIGNMENT INDICATOR

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
	Channel Alignment Indicator ID-292/PRC-6	.08		2

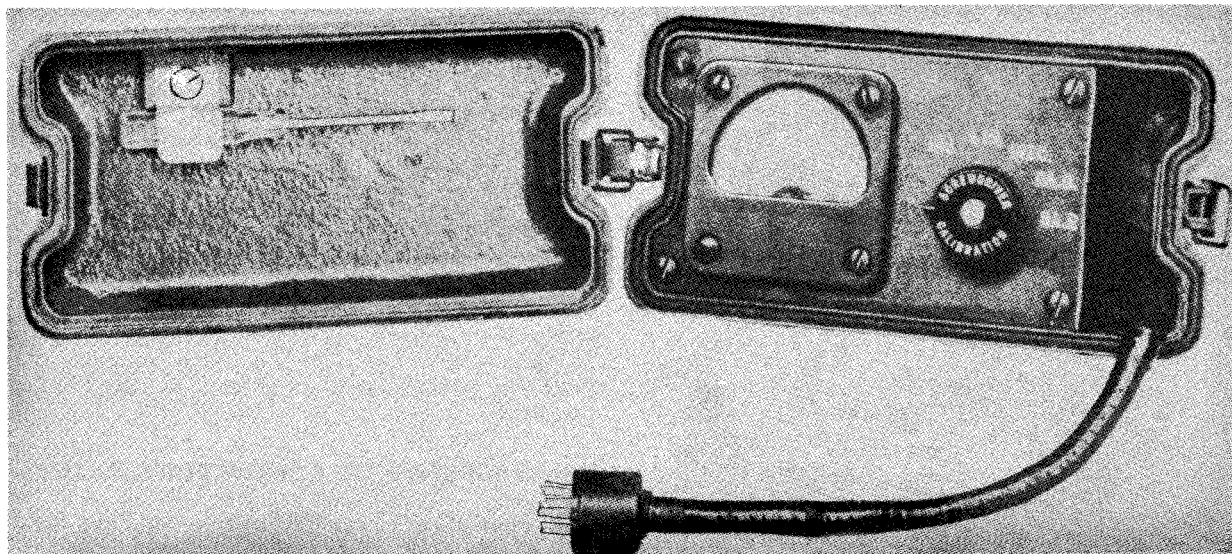
## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Channel Alignment Indicator ID-292/PRC-6	2-1/2 X 2-3/8 X 5	
2	Technical Manual TM-11-5059		
1	Screwdriver	3-3/4 lg	



June 1957

Test-Voltage and Current Measuring

**CHANNEL ALIGNMENT INDICATOR****ID-292/PRC-6**

*Channel Alignment Indicator ID-292/PRC-6*

**FUNCTIONAL DESCRIPTION**

The ID-292/PRC-6 is used for the measurement of filament and B plus voltages and for aligning receiver and transmitter circuits. It is a portable instrument contained in an aluminum case equipped with a carrying handle and is suitable for desk or bench mounting.

The bridge circuit has been designed to function properly when the indicator's voltage amplifier tube is of low transconductance or when bridge input voltage is low. Overloading of the meter with the switch in the "injection" position is also prevented by the modified circuit design.

Data on this sheet reflects the following field changes, MWOSIG11-5059-2 (28 Sept 1956).

**RELATION TO OTHER EQUIPMENT**

Used to align channels of Radio Set AN/PRC-6.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

INPUT SIGNAL: 1-1/2 v.  
POWER SOURCE: 1.5 v and 90 v DC.  
VOLTMETER

RANGE: 0 to 1.5, 100 v DC.  
SENSITIVITY: 2000 ohms per volt.  
VACUUM TUBE VOLTMETER  
RANGE: 0 to 1, 8 v DC, 0 to 30 ma.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Raytheon Mfg Corp.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 5678

Total Tubes: (1)

**REFERENCE DATA AND LITERATURE**

Catalog of U.S. Marine Corp Material, Electronics Division, T/A Descriptive Section Nomenclature Card for ID-292/PRC-6.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	MIL-R-10250
STOCK NO.	
R.D.B. IDENT. NO.	

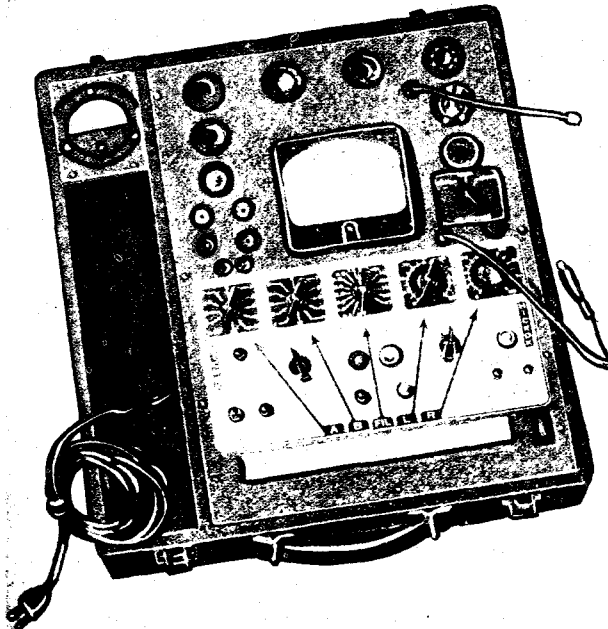
UNCLASSIFIED

March 1957

Test-Voltage and Current Measuring

### TEST SET

### I-180-A



*Test Set I-180-A*

#### FUNCTIONAL DESCRIPTION

The I-180-A measures the dynamic mutual conductance directly in micro-ohms on a meter. It is used for testing standard receiver tubes, loktals, ballast, miniature and acorn tubes; with filament rating from 1.1 to 117 v. A roller type index chart is built in the instrument and contains complete testing data for receiver tubes. Tubes under test are modulated 100% while measuring the mutual conductance. Noise, gas, shorts and leakage may be detected.

No field changes in effect at time of preparation (11 October 1956).

#### RELATION TO OTHER EQUIPMENT

Same as Hickok Electrical Instrument Model 540.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

MICRO-OHMS: 0 to 3000, 6000 and 15,000.  
 FILAMENT RANGE: 1.5 to 117 v in steps.  
 OPERATING POWER: 115 v, 60 cps, single phase.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

Hickok Electrical Instrument Company,  
 Cleveland, Ohio.

#### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 83 (1) 5W4GT  
 Total Tubes: (2).

#### REFERENCE DATA AND LITERATURE

TM11-1200: Technical Manual for Radar Test Equipment.

<b>TYPE CLASSIFICATION</b>
DESIGN COGNIZANCE TESSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

#### SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Test Set I-180-A Technical Manuals	1.33	8 X 16 X 18	20

#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set I-180-A	6 X 14 X 16	17
1	Technical Manual		

UNCLASSIFIED

**TUBE TESTER****I-177-A***Tube Tester I-177-A*

this equipment is tropicalized and has a re-arranged control panel. Tube Socket Adapter Kit MX-949/U is used in conjunction with this equipment for testing miniature and subminiature tubes.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 115 v porm 10%, 5 amp,  
60 cy, single ph.  
MUTUAL CONDUCTANCE RANGE: 0 to 3,000; 6,000;  
15,000 umhos.  
FILAMENT RANGE: 1.1 to 117 v.  
ACCURACY: Porm 7% of scale reading.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 5Y3GT (1) 83

Total Tubes: (2)

No Crystals used.

**REFERENCE DATA AND LITERATURE**

TM11-2627: Technical Manual for TUBE TESTER  
I-177, I-177-A and I-177-B.

TYPE CLASSIFICATION (NAVY)  
DESIGN COGNIZANCE USA, SIG C  
PROCUREMENT COGNIZANCE SPEC: 71-1757  
STOCK NO.  
R.D.B. IDENT. NO. 1.2.1

**FUNCTIONAL DESCRIPTION**

Tube Tester I-177-A is a portable instrument used in measuring conductance, in detecting gas, internal shorts, and intermittent contacts of tubes, in checking emission, and in testing pilot lamps having a miniature base.

No field changes in effect at time of preparation (12 August 1960).

**RELATION TO OTHER EQUIPMENT**

This equipment is similar to I-177, except

**SHIPPING DATA**

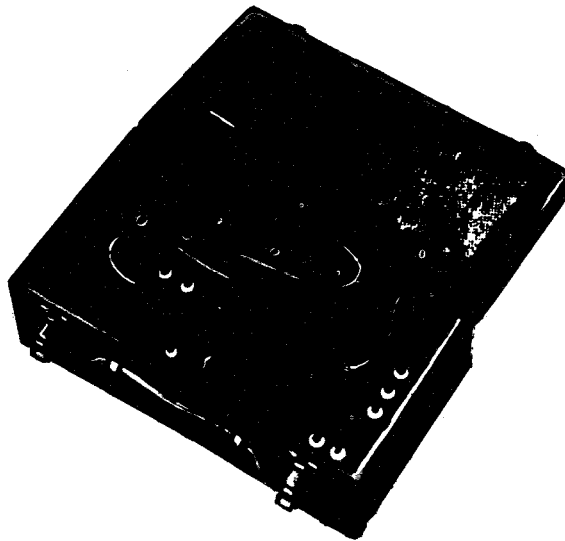
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Tube Tester I-177-A	1.51	9-1/2 x 12 x 23	26

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester I-177-A including:		
2	Technical Bulletin TB11-2627-2	5-1/2 x 8 x 15-3/8	17.5
2	Technical Manual TM11-2627		
1	Test Lead	14 lg	

**TUBE TESTER**

**I-177**



*Tube Tester I-177*

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 115 v porm 10%, 60 cy, single ph.  
 MUTUAL CONDUCTANCE RANGE: 0 to 3,000; 6,000; 15,000 umhos.  
 FILAMENT RANGE: 1.1 to 117 v.  
 ACCURACY: Porm 7% of scale reading.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 5Y3GT (1) 83

Total Tubes: (2)

No Crystals used.

**REFERENCE DATA AND LITERATURE**

TM11-2627: Technical Manual for TUBE TESTER I-177, I-177-A, and I-177-B.

**FUNCTIONAL DESCRIPTION**

Tube Tester I-177 is a portable instrument used in measuring conductance, in detecting gas, internal shorts, and intermittent contacts of tubes, in checking emission, and in testing pilot lamps having a miniature base.

No field changes in effect at time of preparation (12 August 1960).

**TYPE CLASSIFICATION** (NAVY)  
**DESIGN COGNIZANCE** USA, SIG C  
**PROCUREMENT COGNIZANCE** SPEC: 71-1757  
**STOCK NO.**  
**R.D.B. IDENT. NO.** 1.2.1

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Tube Tester I-177	1.51	9-1/2 x 12 x 23	26

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester I-177 including:	5-1/2 x 8 x 15-3/8	17.5
2	Technical Bulletin TB11-2627-2		
2	Technical Manual TM11-2627	14 lg	
1	Test Lead		

**TEST UNIT****I-176, I-176A**

No field changes in effect at time of preparation (17 July 1957).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****RANGES**

AC VOLTAGE: 0 to 5 v, 0 to 25 v, 0 to 100 v, 0 to 250 v, 0 to 1000 v.

DC VOLTAGE: 0 to 5 v, 0 to 25 v, 0 to 100 v, 0 to 250 v, 0 to 1000 v, 0 to 5000 v.

AC CURRENT: 0 to 0.5 amp, 0 to 1 amp, 0 to 5 amp, and 0 to 10 amp.

DC CURRENT: 0 to 50 ua, 0 to 1 ma, 0 to 10 ma, 0 to 100 ma, 0 to 500 ma, 0 to 1 amp, 0 to 5 amp.

RESISTANCE: 0 to 1000 ohms, 0 to 100000 ohms and 0 to 10 megs.

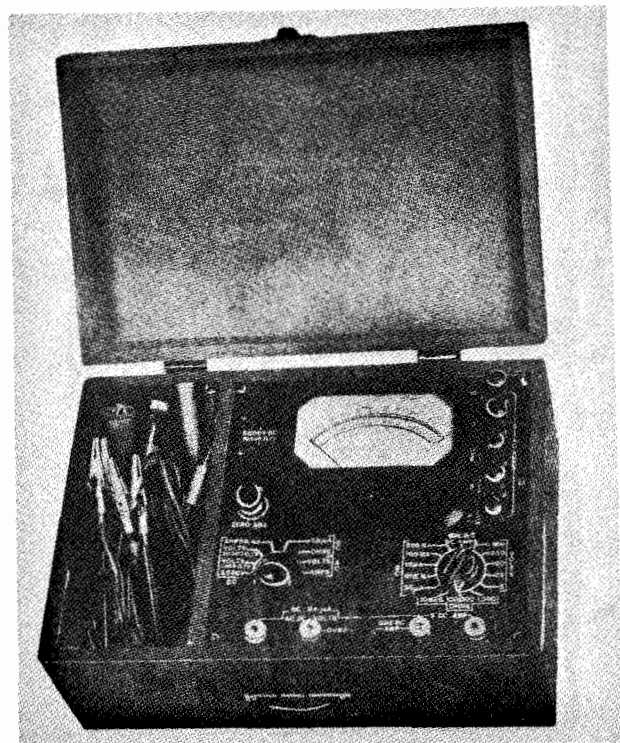
**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

TM-11-2626, Technical Manual for Test Unit I-176.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE TASSA  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO. 1.1-3.2-1



Test Unit I-176, I-176A

**FUNCTIONAL DESCRIPTION**

The I-176 is an instrument designed to measure resistance, alternating current, direct current and voltage over a wide range of values.

This unit is furnished both separately and as part of Test Set I-56-K.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Test Unit I-176 or I-176A			

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Unit I-176 or I-176A	5-1/2 X 8-1/2 X 11-1/2	9

## TUBE TESTER

I-171

### FUNCTIONAL DESCRIPTION

The I-171 (Hickok model 560) is a dynamic mutual conductance tube tester designed to provide either REPLACE-GOOD readings or mutual conductance values in micromhos for receiving and small transmitting tubes. Noise tests of tubes can be made by connecting the input of a radio receiver to two noise test jacks. Special switches are provided for making gas tests of tubes. Mutual conductance values of tubes can be measured in three ranges: 0 to 3000 micromhos, 0 to 6000 micromhos and 0 to 15000 micromhos. The tube tester operates on 105 to 125 volts, 60 cycle alternating current. Tube testing data is given in a loose leaf booklet attached to the inside of the cover of the instrument. The instrument also provides a filament activity test circuit controlled by the toggle switch designated "FIL-ACT" with a NORM position and a TEST position. In the TEST position the filament voltage of the tube is reduced by 10% of its normal value.

No field changes in effect at time of preparation (8 Feb 1957).

### RELATION TO OTHER EQUIPMENT

Similar to I-177 except for filament activity test provisions.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RANGES

RELATIVE QUALITY: "DIODES O-K" and "REPLACE" in red sector, ? sector, "GOOD" in green sector.

MICROMHOS: 0 to 3000, 6000, 15000 umhos.  
POWER SOURCE REQUIRED: 105 to 125 v, 60 cps, single ph.

### MANUFACTURER'S OR CONTRACTOR'S DATA

The Hickok Electrical Instrument Co.,  
Cleveland, Ohio Model - 560.

### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 83

(1) 5W4

Total Tubes: (2)

### REFERENCE DATA AND LITERATURE

I-171: Operating Instructions for Hickok  
Radio Test Equipment Model 560.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester I-171		

Test-Voltage and Current Measuring

January 1958

**I-166****VOLTOHMMETER****REFERENCE DATA AND LITERATURE**

TM11-2613: Technical Manual for Voltohmmeter I-166.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	1.1.3.2.2

**SHIPPING DATA**

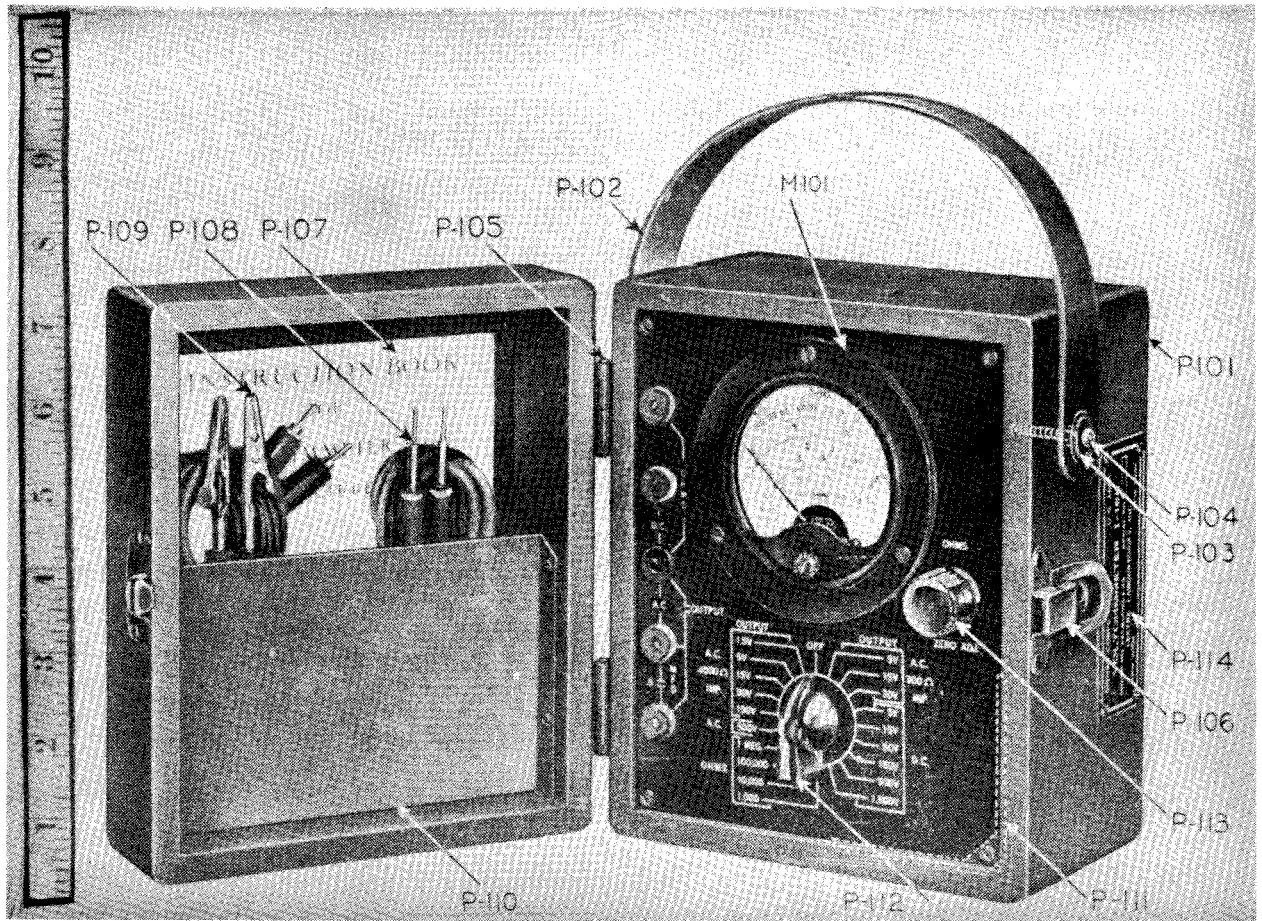
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Voltohmmeter I-166			

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltohmmeter I-166	5-1/2 X 6 X 7	3.75

# VOLTOHMMETER

I-166



Voltohmmeter I-166

## FUNCTIONAL DESCRIPTION

The I-166 is a general purpose measuring instrument especially designed for the servicing of radio equipment. It is capable of measuring AC and DC voltages as well as DC resistance.

The instrument is entirely self-contained in a wooden carrying case. Contained within the lid is a compartment which has two sets of test leads, detachable clips and two copies of the technical manual. The voltohmmeter uses battery BA-31, but this battery is not supplied with it.

No field changes in effect at time of preparation (16 July 1957).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

### DC VOLTAGE MEASUREMENTS

SENSITIVITY: 1000 ohms per volt.

RANGES: 0 to 5, 0 to 15, 0 to 50, 0 to 150, 0 to 500, 0 to 1500 v.

AF OUTPUT VOLTAGE RANGE: 0 to 1.5 v, 0 to 5 v, 0 to 15 v, 0 to 50 v, 0 to 150 v at 4000 ohms impedance; 0 to 5 v, 0 to 15 v, 0 to 30 v at 300 ohms.

AC VOLTAGE RANGES: 0 to 500 at a sensitivity of 2666 ohms per volt.

DC RESISTANCE RANGES: 0 to 1000, 0 to 10000, 0 to 100000 ohms, 0 to 1 meg.

BATTERY VOLTAGE: 4-1/2 v.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.



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**I-139-A TEST SET**

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	0.16	

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**PROCUREMENT DATA**

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PROCURING SERVICE: USA  
SPEC &/OR DWG: USAF Dwg 51C13019

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Argus Inc.	Ann Arbor, Michigan	205-45-SE, 5 August 1944	\$11.00
Hudson American Co.	New York, New York	359-45-SE, 28 August 1944	\$11.00
Rauland Corp.	Chicago, Illinois	12014-43, 27 October 1943	\$11.00

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15 February 1963

TEST SET I-139-A

Cog Service: USA FSN:

Functional Class: 1.1.2.3

USA

USN

USAF

TYPE CLASS: Std

Std

MANUFACTURER'S NAME/CODE NUMBER: Argus Inc.

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Test Set I-139-A is a portable dc milliammeter used with radar and radio equipment in checking low range dc, voltage or rf output.

No field changes in effect at time of preparation (22 January 1963).

**TECHNICAL CHARACTERISTICS:**

METER RANGE: 0 to 1 ma, dc.

METER RESISTANCE: 26 ohms (int); 49 ohms (ext).

TEMPERATURE RANGE: M20 deg F to P122 deg F.

ACCURACY: Form 3% (approx).

**RELATION TO OTHER EQUIPMENT:**

This equipment is identical with Test Meter TS-60/U and is similar to Milliammeter, Weston type 501.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set I-139-A		3-1/2 x 4 x 4	1.1

**REFERENCE DATA AND LITERATURE:**

TO 16-10-111: Instruction Book for Operation and Maintenance of Test Equipment IE-19-A.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

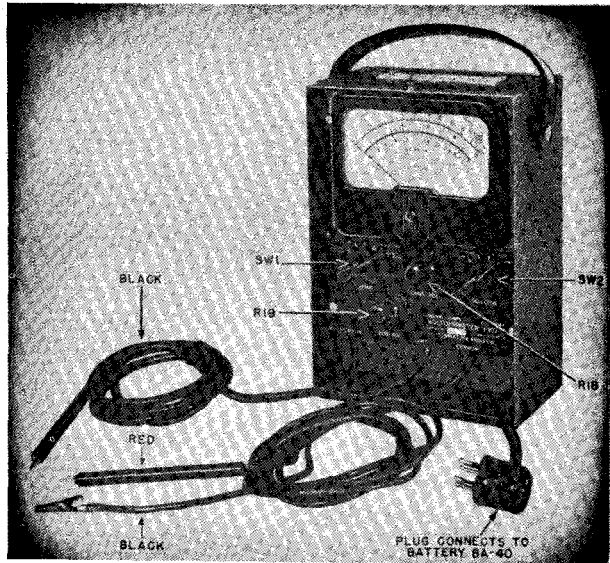
TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

**MULTIMETER**

Test-Voltage and Current Measuring  
**I-107, I-107-A thru G**



*Voltohmmeter I-107-G*

DC VOLTS: 0 to 3, 10, 30, 300.  
RESISTANCE: 0 to 1000, 10000, 100000  
ohms, 0 to 1, 10 megohms.  
ACCURACY: 5%.  
POWER REQUIREMENTS: (2) 1.5 v internal bat-  
teries, (1) 90 v and 1.5 v external bat-  
tery.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 1L3/1LE3  
Total Tubes: (1)

**REFERENCE DATA AND LITERATURE**

TM11-306: Technical Manual for Maintenance  
Equipments ME-13-A, B, C, and D.

**FUNCTIONAL DESCRIPTION**

The I-107 and I-107-A thru I-107-G are electronic multirange voltohmmeters that differ only in minor circuit changes that were made to decrease the pick-up of extraneous alternating-current voltages, to increase the over-all stability, and to enable satisfactory performance under adverse climatic conditions. They are portable instruments with carrying handles and are designed for general purpose use.

No field changes in effect at time of preparation (16 July 1957).

**TYPE CLASSIFICATION**  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.3.1.2

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

RANGE DATA

**EQUIPMENT SUPPLIED DATA**

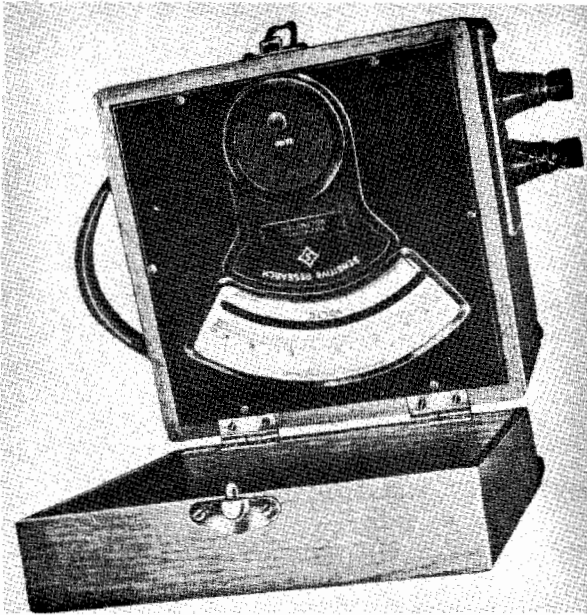
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltohmmeter I-107, I-107-A thru I-107-G	4-1/4 x 6 x 9-5/8	7.75
1	Battery BA-40	4-1/16 x 5-3/16 x 7-1/2	0.05
2	Battery BA-30	1-1/4 dia x 2-1/2	
2	Tube 1LE3		

UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

## VOLTMETER ESD (0-1500), ESD (0-5000)



*Voltmeter ESD*

### FUNCTIONAL DESCRIPTION

The Model ESD (Sensitive Research Instruments) are high sensitivity electro-static voltmeters designed to read equally well on alternating, radio frequency, or direct current circuits.

They are portable instruments in walnut cases with heavy leather carrying strap and external terminals. They have five inch long scales with a knife edge pointer moving over a mirror to avoid parallax errors in reading.

No field changes in effect at time of preparation (25 September 1957).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### SCALE DATA

##### RANGE:

MODEL ESD(0-1500): 0 to 1500 v.

MODEL ESD(0-5000): 0 to 5000 v.

ACCURACY: 1% at full scale deflection.

GRADUATION: Nonlinear scale.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Sensitive Research Instrument Corp., New York, N.Y.

Approximate Cost \$145.00.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

Sensitive Research Instruments Corp. Catalog No. 60 for Electrical Measuring Instruments.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE COMMERCIAL  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.1.5

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter Model ESD(0 to 1500 v) or Model ESD(0 to 5000 v)	6 x 7-1/2 x 8	

UNCLASSIFIED

4.1 ESD(0-1500): 1

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**CTO-1200-G VOLT-OHM-MILLIAMMETER**

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**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

Batteries: (1) Eveready no. 763; (1) Eveready no. 935.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Volt-Ohm-Milliammeter CTO-1200-G Includes:		6-5/8 x 6-5/8 x 7-7/8	7.5
2	Test Lead		50 1g	
1	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

Operating Instructions for Model 1200-G Test Meter.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: Commercial

SPEC &/OR DWG:

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Tripplett Electrical Instrument Co. Model no. 1200-G	Bluffton, Ohio		\$49.50

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13 February 1963

Log Service: USN FSN: F6625-151-7797

VOLT-OHM-MILLIAMMETER CT0-1200-G  
Functional Class: 1.1.3.2.1

USA

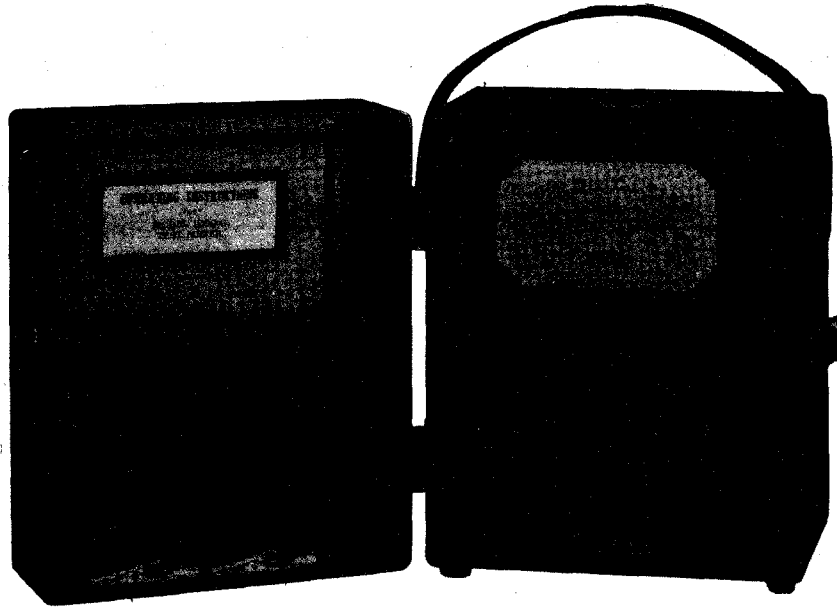
USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** Tripplett Electrical Instrument Co., (60741).



*Volt-Ohm-Milliammeter CT0-1200-G*

**FUNCTIONAL DESCRIPTION:**

Volt-Ohm-Milliammeter CT0-1200-G is a portable, multi-range ac-dc meter for general electronic and electrical service use.

No field changes in effect at time of preparation (16 August 1962).

**TECHNICAL CHARACTERISTICS:**

**RANGES**

DC VOLTS: 0 to 10, 50, 250, 500, 2500 at 1000 ohms per v.

AC VOLTS: 0 to 10, 50, 250, 500, 2500 at 1000 ohms per v.

DC MILLIAMPERES: 0 to 0.5, 1, 5, 50, 500 at 100 mv.

AC MILLIAMPERES: 0 to 1 at approx 1.5 v.

OHMS: 0 to 30, 10000 ohms, 1 meg, 10 meg.

OUTPUT: Jack and condenser in series with ac ranges.

OVER-ALL ACCURACY: Porm 4% on dc; porm 5% on ac, porm 20% on resistance.

POWER REQUIREMENTS: 1-1/2 v dc, 22-1/2 v dc.

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**CTO-1200-E VOLT-OHM-MILLIAMMETER**

---

**RELATION TO OTHER EQUIPMENT:** None

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

Batteries: (2) Eveready 935; (1) Eveready 763.

---

**MAJOR COMPONENTS**

---

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Volt-Ohm-Milliammeter CTO-1200-E includes:		5-5/8 x 6-1/2 x 7-7/8	7.25
2	Test Lead		50 lg	
1	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

Operating Instructions for Model 1200-E Volt-Ohm-Milliammeter.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: Commercial

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Triplet Electrical Instru- ment Company Model no. 1200-E	Bluffton, Ohio		\$43.25

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5 March 1963

Cog Service: USN FSN:

VOLT-OHM-MILLIAMMETER CTO-1200-E  
Functional Class: 1.1.3.2.1

USA

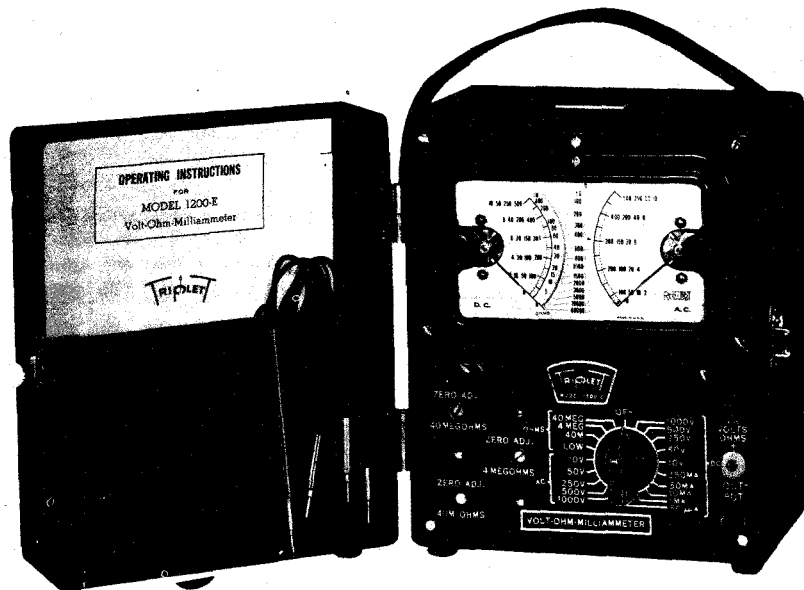
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Triplet Electrical Instrument Co., (60741).



*Volt-Ohm-Milliammeter CTO-1200-E*

**FUNCTIONAL DESCRIPTION:**

Volt-Ohm-Milliammeter CTO-1200-E is a portable, multi-range ac-dc meter for general electronic and electrical service use.

No field changes in effect at time of preparation (16 August 1962).

**TECHNICAL CHARACTERISTICS:**

**RANGES**

DC VOLTS: 0 to 10, 50, 250, 500, 1,000 at 25,000 ohms per v.

AC VOLTS: 0 to 10, 50, 250, 500, 1,000 at 40 ohms per v.

DC MILLIAMPERES: 0 to 1, 10, 50, 250 at 200 mv.

OHMS: 0 to 1,000, 40,000 ohms, 4 meg, 40 meg.

DC MICROAMPERES: 0 to 50.

OVER-ALL ACCURACY: Porm 4% on dc; porm 4% on ac; porm 20% on resistance.

POWER REQUIREMENTS: 22-1/2 v dc, 3.0 v dc.



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**CCUH-803 DC-AC DIFFERENTIAL VOLTMETER**

---

**ACCURACY**

AC: Porm 0.2% from 0.5 to 500 v.

DC: Porm 0.05% from 0.1 to 500 v; porm 0.1% or 50 uv, whichever is greater, below 0.1 v.

MAXIMUM METER RESOLUTION: 50 uv.

AC TO DC CONVERTER FREQUENCY RESPONSE: 30 cps to 5 kc.

POWER REQUIREMENTS: 117, 220, or 234 v, 60 cps, single ph.

INPUT POWER: 175 W.

INPUT POLARITY: P or M, floating.

REFERENCE STABILITY: Porm 0.01% max for 105 to 130 v line, porm 0.01% per hr after 30 min. warm-up.

**RELATION TO OTHER EQUIPMENT:** None.**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	DC-AC Differential Voltmeter CCUH-803		9-3/4 x 13 x 16	30

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**REFERENCE DATA AND LITERATURE:**

Technical Manual for Precision DC-AC Differential Voltmeter Model 803.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		38

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**PROCUREMENT DATA**

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PROCURING SERVICE:

DESIGN COG: Commercial

SPEC &amp;/OR DWG:

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
John Fluke Mfg Co. Inc. Model no. 803	Seattle, Washington		\$845.00

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4.1 CCUH-803: 2

11 May 1962

Cog Service:

FSN: 6625-980-1940

DC-AC DIFFERENTIAL VOLTMETER CCUH-803

Functional Class:

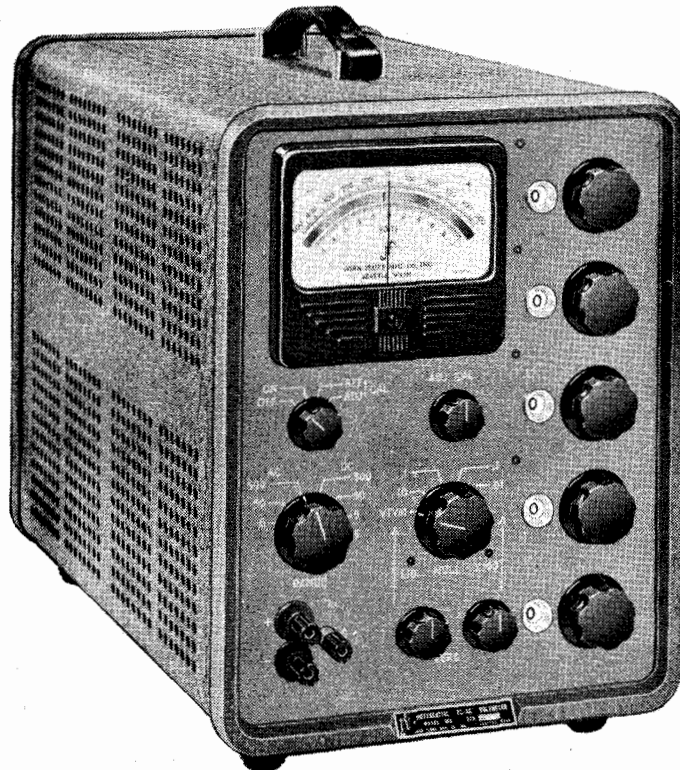
USA

USN

USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: John Fluke Mfg Co. Inc.



*DC-AC Differential Voltmeter CCUH-803*

**FUNCTIONAL DESCRIPTION:**

DC-AC Differential Voltmeter CCUH-803 is a compact portable instrument used with Radar Set AN/SPS-42 for precise measurement of ac or dc voltages. The instrument may be used as a vacuum-tube voltmeter, as a differential dc voltmeter, or as a differential ac voltmeter.

No field changes in effect at time of preparation (14 June 1961).

**TECHNICAL CHARACTERISTICS:**

**VOLTAGE RANGE**

AC: 0.05 to 5, 5 to 50, 50 to 500.

DC: 0.0 to 0.5, 0.5 to 5, 5 to 5, 50 to 50.

**INPUT IMPEDANCE**

AC: 1 meg, 25 uuf.

DC: Infinite at null.

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**CCUH-800 DC DIFFERENTIAL VOLTMETER**

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ever is greater, below 10 volts.  
RESOLUTION: 0.01 volt read directly on calibrated control.  
MEASUREMENT RANGE: 1-0-1 v dc, 10-0-10 v dc.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	DC Differential Voltmeter Model CCUH-800		9-3/4 x 13 x 14	20

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**REFERENCE DATA AND LITERATURE:**

John Fluke Manufacturing Company Incorporated Catalog ESO's Copy no. 04058-F for DC Differential Voltmeter CCUH-800.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: DESIGN COG: USN, BuShips  
SPEC &/OR DWG: Commercial

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
John Fluke Manufacturing Company Model no. CCUH-800	Seattle, Washington		\$355.00

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29 May 1962

Cog Service:

FSN:

DC DIFFERENTIAL VOLTMETER CCUH-800

Functional Class:

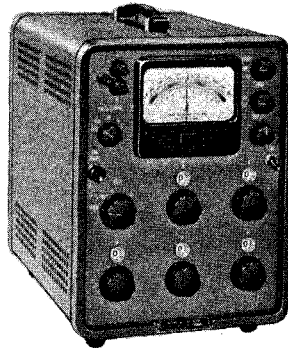
USA

USN

USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: John Fluke Manufacturing Co., Inc.



*DC Differential Voltmeter CCUH-800*

**FUNCTIONAL DESCRIPTION:**

The DC Differential Voltmeter CCUH-800 is a sensitive, high resolution instrument designed to permit rapid measurement of dc voltage. Extreme accuracy and stability is achieved by advance circuit design which incorporates a chopper stabilized null amplifier and a standard cell reference.

No field changes in effect at time of preparation (3 July 1961).

**TECHNICAL CHARACTERISTICS:**

TYPE OF INSTALLATION: Portable - bench mounted.

VOLTAGE RANGE: 0 to 500 v.

INPUT RESISTANCE: .10 megohms in 500-0-500 search range; 2000 megohms/volt of input voltage for 0.005 volt unbalanced on meter, infinite at null.

ACCURACY: 0.05% of actual voltage from 10 to 500 v; 0.1% of actual voltage or 5 mv, which-

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**CCTY-501 DC DIGITAL VOLTMETER**

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93400: Preliminary Data Form for DC Digital Voltmeter CCTY-501.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE:  
SPEC. &/OR DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Kintel Division of Cohu Electronics, Inc. Model no. 501	San Diego, California		\$2995.00

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29 May 1962

DC DIGITAL VOLTMETER CCTY-501

Cog Service:

FSN:

Functional Class:

USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** Kintel Division of Cohu Electronics, Incorporated.

*(No Illustration Available)*

**FUNCTIONAL DESCRIPTION:**

The DC Digital Voltmeter CCTY-501 is a 4-digit, over-ranging dc voltmeter with digital presentation. It has automatic polarity and ranging. The range of measurement is from 0.0001 volt to 1000 volt dc, either positive or negative in four steps. This meter is a precision instrument and should be stored in an upright position, preferably on a shock-absorbent material and free from excessive vibration.

No field changes in effect at time of preparation (29 June 1961).

**TECHNICAL CHARACTERISTICS:**

TYPE OF INSTALLATION: Portable, bench-mounted.

TYPE OF POLARITY AND RANGING: Automatic.

MEASUREMENT RANGE: 0.0001 to 1000 v dc.

**MEASUREMENT STEPS**

ONE: 0.0001 to 1.9999 v dc.

TWO: 2.000 to 19.999 v dc.

THREE: 20.000 to 199.99 v dc.

FOUR: 200 to 1000 v dc.

READING ACCURACY: Form 0.01% form one digit.

INPUT IMPEDANCE AT NULL: 10 megohms.

OUTPUT SIGNAL CHARACTERISTICS: Digital display.

OPERATING POWER REQMT: 115 v ac, 60 cps, single ph.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
	DC Digital Voltmeter CCTY-501			
	consists of:			
1	Control Unit Model 456		5-1/4 x 18 x 19	45
1	Readout Unit Model 473		3-1/2 x 9 x 19	10
*1	AC Cable - 40		24 lg	
1	Probe Model 481			
1	Shorting Plug P104A			

Note: \*Optional ten (10) foot cable AC-40-8 can be used.

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**CAUY-101-50 AC VOLTMETER**

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: DESIGN COG: USN, BuShips  
SPEC &/OR DWG: Commercial

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Beckman Instruments Inc. Type no. 101-50	Fullerton, California		

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29 May 1962  
Cog Service:

FSN:

AC VOLTMETER CAUY-101-50  
Functional Class:

USA

USN

USAF

**TYPE CLASS:**

**MANUFACTURER'S NAME/CODE NUMBER:** Beckman Instruments Incorporated.

*(No Illustration Available)*

**FUNCTIONAL DESCRIPTION:**

The AC Voltmeter CAUY-101-50 is a portable voltmeter capable of measuring voltages from 50 to 250 volts rms with accuracy of form 0.25%.

No field changes in effect at time of preparation (27 June 1961).

**TECHNICAL CHARACTERISTICS:**

TYPE OF INSTALLATION: Portable, bench-mounted.

VOLTAGE MEASUREMENT RANGE: 50 to 250 v rms.

ACCURACY: 0.25%.

OPERATING FREQUENCY RANGE: 50-2000 cps.

**RELATION TO OTHER EQUIPMENT:**

The CAUY-101-50 is designed to be used with, but not part of, Radar Set AN/FPS-16 and SINS MK 1.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	AC Voltmeter CAUY-101-50		8 x 9 x 9-3/4	14

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93400: Preliminary Data Form for AC Voltmeter CAUY-101-50.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 12AT7 (1) 5965 (2) 6AL5

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.



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**VACUUM TUBE VOLTMETER CAQI-400L**

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
Hewlett-Packard Company	Palo Alto, California	N0bsr-75923	\$325.00
Model no. 400L		N0bsr-87114	299.46
		N0bsr-87184	299.00

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**CAQI-400L VACUUM TUBE VOLTMETER**

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**ACCURACY**

- 50 CPS TO 500 KC: Porm 2% of reading or porm 1% of full scale.
- 20 CPS TO 1 MC: Porm 3% of reading or porm 2% of full scale.
- 20 CPS TO 2 MC: Porm 4% of reading or porm 3% of full scale.
- 10 CPS TO 4 MC: Porm 5% of reading.

STABILITY: Reduced in gm of amplifier tubes to 75% of nominal value results in less than 0.5% error from 20 cps to 1 mc.

INPUT IMPEDANCE: 10 meg shunted by 15 uuf, 1.0 to 300 v range; 25 uuf, 0.001 to 0.3 v range.

AMPLIFIER: Output approx 0.15 v max; internal impedance 50 ohms; max gain approx 150 on 0.001 v range.

POWER REQUIREMENTS: 115 or 230 v porm 10%, 50 to 1,000 cyc, single ph, 80 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Vacuum Tube Voltmeter CAQI-400L		7-1/2 x 11-3/4 x 12	18
2	Technical Manual			

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93764A: Operating and Service Manual for Vacuum Tube Voltmeter Model 400D/H/L and H02-400D.

TO 33A1-12-349-1: Operating and Service Manual for Vacuum Tube Voltmeter Model 400D/H/L and H02-400D.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 6AX5GT (5) 6CB6A (1) 6U8 (1) 12B4A (1) 5651

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		23

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: Commercial

SPEC &/OR DWG:

4.1 CAQI-400L: 2

8 February 1963

VACUUM TUBE VOLTMETER CAQI-400L

Cog Service: USN FSN:

Functional Class: I.I.I.I

USA

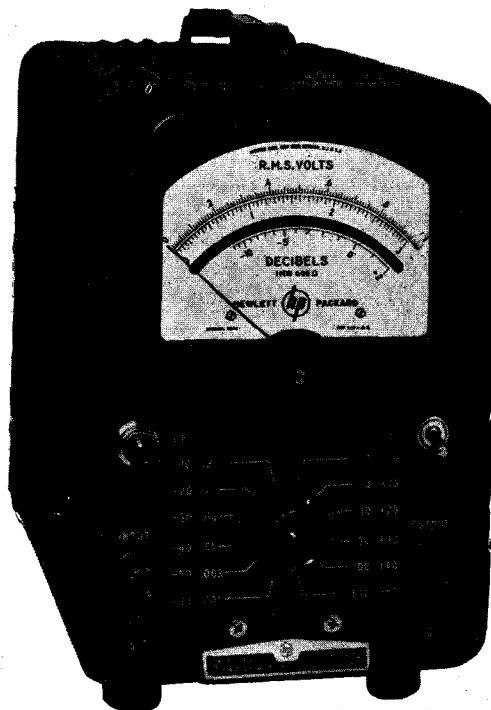
USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** Hewlett-Packard Company, (28480).



*Vacuum Tube Voltmeter CAQI-400L*

**FUNCTIONAL DESCRIPTION:**

Vacuum Tube Voltmeter CAQI-400L is a portable, vacuum tube, voltage measuring equipment for audio, super-sonic and lower rf regions, amplifier gain, network response, output level, hum level, power circuit voltage, video voltage, carrier voltage, capacity, and coil figure of merit.

No field changes in effect at time of preparation (16 August 1962).

**TECHNICAL CHARACTERISTICS:**

VOLTAGE RANGE: 0.1 mv to 300 v, 12 ranges.

FULL SCALE READINGS: 0.001, 0.003, 0.010, 0.030, 0.100, 0.300, 1, 3, 10, 30, 100, 300 v.

DECIBEL RANGE: M72 to P52 db, 12 ranges.

FREQUENCY RANGE: 10 cps to 4 mc.

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**VACUUM TUBE VOLTMETER CAQI-400H**

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
Hewlett-Packard Company Model no. 400H	Palo Alto, California	N0bsr-75238, 12 May 1958	\$325.00
		N0bsr-81371, 3 June 1960	299.23
		N0bsr-85125, 28 November 1960	325.00
		N0bsr-85327	299.69
		N0bsr-85545	245.46
		N0bsr-87114	299.46
		N0bsr-87184	299.00
		N0bsr-87200	330.00

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April 1959

Test-Voltage and Current Measuring

**VOLTMETER****MR52W150DCMV****FUNCTIONAL DESCRIPTION**

The MR52W150DCMV is designed as a Double Range, permanent magnet moving coil type movement, Direct Current (DC) Millivolt (mv) meter, with 0.5 percent (%) accuracy at full scale deflection, used for voltage testing and measurement purposes.

No field changes in effect at time of preparation (11 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR52W150DCMV is similar to the MR52W030DCVV, MR52W150DCVV and MR52W300DCVV except that its measurements are in millivolts instead of volts, and the scale range of measurement differs.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.5% max error.  
 DAMPING FACTOR: 5 min.  
 RESPONSE TIME: 2 seconds max.  
 POWER CONSUMPTION: 20 ma max change.  
 HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C for voltmeters; 4% max change at 65° C for millivolt; 0.5% max permanent change.  
 TEMPERATURE INFLUENCE  
 VOLTMETERS: 0.5% max change.  
 MILLIVOLTMETERS: 1% max change.  
 LOW TEMPERATURE EXPOSURE

VOLTMETERS: 1.25% max change at 0° C.  
 MILLIVOLTMETERS: 2.5% max change at 0° C.

PERMANENT CHANGE: 0.5% max.

**SUSTAINED OVERLOAD**

TEMPORARY ZERO SHIFT: 1% of scale length max.

PERMANENT ZERO SHIFT: 0.5% of scale length max.

PERMANENT CHANGE IN INDICATION: 0.33% max.

VIBRATION: 1% max change.

FRICITION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$60.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/15 for Dual Range Direct Current Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Dual Range DC Voltmeter MR52W150DCMV Incl:		
3	External Shunts (30, 50, 100 mv)		
2	Leads	36 lg	

UNCLASSIFIED

4.1 MR52W150DCMV: 1

April 1959

Test-Voltage and Current Measuring

**VOLTMETER****MR52W150DCVV****FUNCTIONAL DESCRIPTION**

The MR52W150DCVV is designed as a portable Double Range; permanent magnet moving coil type movement; Direct Current (DC) Voltmeter. Use for Voltage testing in the ranges from 0 to 3 volts and 0 to 150 volts (v), with 0.25 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (16 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR52W150DCVV is similar to the MR52W030DCVV and MR5W300DCVV except it differs test voltage ranges and equipment price.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.75% max error.  
 DAMPING FACTOR: 3 min.  
 RESPONSE TIME: 3.4 seconds max.  
 POWER CONSUMPTION: 10 va max.  
 FREQUENCY RANGE: 1% max change at 25 and 125 cycles.  
 FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
 HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C, 0.5% max change.

TEMPERATURE INFLUENCE: 0.5% max change.  
 LOW TEMPERATURE EXPOSURE: 1.25% max change at 0° C; 0.5% max permanent change.  
 SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.  
 VIBRATION: 1% max change.  
 FRICTION EFFECT: 2% max change.  
 HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$55.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron tube and crystal data not available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/13 for the portable Direct Current Voltmeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Voltmeter MR52W150DCVV		

April 1959

**VOLTMETER****MR52W300DCVV****FUNCTIONAL DESCRIPTION**

The MR52W300DCVV is designed as a Double Ring; permanent magnet moving coil type movement, Direct Current (DC) Voltmeter, used for general purpose voltage testing in the range of 0 to 150 volts (v), 0 to 300 volts (v); with 0.5 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (12 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR52W300DCVV is similar to the MR72W300DCVV except it differs in the scale range measurement and in cheaper in purchase price.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 3.2 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.5% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

POWER CONSUMPTION: 20 ma max change.

HEAT EFFECT AT 65 DEGREE "C".

VOLTMETERS: 2% max change at 65° C.

MILLIVOLTMETERS: 4% max change at 65° C.

PERMANENT CHANGE: 5% max.

TEMPERATURE INFLUENCE: 0.5% max permanent change; 0.5% max change for voltmeters.

LOW TEMPERATURE EXPOSURE

VOLTMETERS: 1.25% max change at 0° C.

MILLIVOLTMETERS: 2.5% max change at 0° C.

PERMANENT CHANGE: 0.5% max.

SUSTAINED OVERLOAD: 1% of scale length, max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICITION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$55.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/15 for the Double Range Portable Direct Current Voltmeter.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE MIL-M-16034A

STOCK NO.

R.D.B. IDENT. NO. 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Double Range D.C. Voltmeter MR52W300DCVV		

April 1959

Test-Voltage And Current Measuring

**AMMETER****MR53W004DCKA****FUNCTIONAL DESCRIPTION**

The MR53W004DCKA is designed as Triple Range Direct Current (DC) Ammeter, used for general purpose current testing, in the ranges from 0 to 1000 ampere (amps), 0 to 2000 ampere (amps) and 0 to 4000 ampere (amps); with a 0.5 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (10 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR53W004DCKA is similar to the MR53W500DCAA except that it is a triple range ammeter from 0 to 1000 amps, 0 to 2000 amps and 0 to 4000 amps.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 3.2 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.5% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

**POWER CONSUMPTION**

MILLIAMMETERS: 250 mv max.

KILOAMMETERS AND AMMETER: 50± and 0.25 mv max.

SELF CONTAINED AMMETERS: 100 mv max.

HEAT EFFECT AT 65 DEGREE "C": 4% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 1% max change.

LOW TEMPERATURE EXPOSURE: 2.5% max change at 0° C; 0.5% max permanent change.

MOMENTARY OVERLOAD: 1% max change.

SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICITION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$178.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/16 for Triple Range Direct Current Ammeter.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE MIL-M-16034A  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Triple Range Direct Current Ammeter MR53W004DCKA Including:		
2	Leads	36 lg	
3	External Shunts		



UNCLASSIFIED

April 1959

Test-Voltage And Current Measuring

# AMMETER

# MR53W300DCAA

## FUNCTIONAL DESCRIPTION

The MR53W300DCAA is designed as a Triple Range; Direct Current (DC) Ammeter; used for current measuring in the ranges from 0 to 3 ampere (amps), 0 to 30 ampere (amps) and 0 to 300 ampere (amps); with 0.5% accuracy at full scale deflection.

No field changes in effect at time of preparation (17 December 1958).

## RELATION TO OTHER EQUIPMENT

The MR53W300DCAA is similar to the MR53W500DCAA and the MR53W004DCKA except it differs in current testing range and in price of equipment.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

- TYPE OF INSTALLATION: Portable.
- SCALE LENGTH: 3.2 in. min.
- POSITION INFLUENCE (BALANCE): 1% of scale max change.
- INITIAL ACCURACY: 5 max error.
- DAMPING FACTOR: 5 min.
- RESPONSE TIME: 2 seconds.
- POWER CONSUMPTION: 50 ±.25 mv max kilowatts and ammeters for use with external shunts.
- HEAT EFFECT AT 65 DEGREE "C": 4% max change at 65° C; 0.5% max permanent change.
- TEMPERATURE INFLUENCE: 1% max change.

- LOW TEMPERATURE EXPOSURE: 2.5% max change at 0° C; 0.5% max permanent change.
- MOMENTARY OVERLOAD: 1% max change.
- SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.
- VIBRATION: 1% max change.
- FRICITION EFFECT: 2% max change.
- HUMIDITY RESISTANCE: 1% max change.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$71.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

## REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/16 for the Triple Range D.C. Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Ammeter MR53W300DCAA		

UNCLASSIFIED

4.1 MR53W300DCAA: 1

April 1959

Test-Voltage and Current Measuring

**AMMETER****MR53W500DCAA****FUNCTIONAL DESCRIPTION**

The MR53W500DCAA is designed as a Triple Range Direct Current (DC) ammeter, used for general purpose current testing in the ranges from 0 to 100 ampere (amps), 0 to 200 ampere (amps) and 0 to 500 ampere (amps), with a 0.5 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (11 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR53W500DCAA is similar to the MR53W004DCKA except for the difference in the current testing ranges, which are from 0 to 100 amps, 0 to 200 amps and 0 to 500 amps.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 SCALE LENGTH: 3.2 inches min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
 INITIAL ACCURACY: 0.5% max error.  
 DAMPING FACTOR: 5 min.  
 RESPONSE TIME: 2 seconds max.  
 POWER CONSUMPTION  
 MILLIAMMETERS: 250 mv max.  
 KILOAMMETERS AND AMMETERS: 50  $\pm$ 0.25 mv max for use with external shunts.  
 SELF CONTAINED AMMETERS: 100 mv max.  
 HEAT EFFECT AT 65 DEGREE "C": 4% max change

at 65° C; 0.5% max permanent change.  
 TEMPERATURE INFLUENCE: 1% max change.  
 LOW TEMPERATURE EXPOSURE: 2.5% max change at 0° C; 0.5% max permanent change.  
 MOMENTARY OVERLOAD: 1% max change.  
 SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift, 0.5% of scale length max permanent zero shift, 0.33% max permanent change in indication.  
 VIBRATION: 1% max change.  
 FRICTION EFFECT: 2% max change.  
 HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$64.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal data not available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/16 for Triple Range Direct Current Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Triple Range D.C. Ammeter MR53W500DCAA Incl:		
3	External Shunt (30, 50, 100 mv)		
2	Leads	36 lg	

April 1959

**AMMETER****MR71W005ADAA****FUNCTIONAL DESCRIPTION**

The MR71W005ADAA is designed as a portable alternating current (AC) and direct current (DC), electro-dynamometer type, used for general purpose testing in the range of 0 to 5 ampere (amps).

No field changes in effect at time of preparation (8 December 1958).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.  
 CIRCUIT APPLICATION: AC and DC.  
 ACCURACY AT FULL SCALE DEFLECTION: 0.25%.  
 SCALE LENGTH: 5 in. min.  
 POSITION INFLUENCE (BALANCE): 1% of scale length, max change.  
 INITIAL ACCURACY: 0.25% max error.  
 DIRECT CURRENT REVERSAL ERROR: 0.25% max change.  
 WAVE FORM EFFECT: 0.33% max change.  
 DAMPING FACTOR: 3 min.  
 RESPONSE TIME: 3.4 seconds max.  
 POWER CONSUMPTION: 5 va max; 5 amps single range; 15 va max, all ranges except 5 ampere single range.  
 FREQUENCY RANGE: 0.5% max change at 25 and 125 cycles.  
 FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
 EXTERNAL FIELD INFLUENCE: 0.75% max change in 5-oersted field.  
 HEAT EFFECT AT 65 DEGREE "C": 1% max change at 65° C; 0.5% max permanent change.  
 TEMPERATURE INFLUENCE: 0.25% max change.  
 LOW TEMPERATURE EXPOSURE: 0.63% max change at 0° C; 0.5% max permanent change.

MOMENTARY OVERLOAD: 1% max change.

SUSTAINED OVERLOAD: 1% of scale length, max temporary zero shift; 0.5% of scale length, max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

SCALE RANGE: 0 to 5 amps.

OPERATING POWER REQUIREMENT: 115 v AC, 60 cps, single ph.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$242.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/10 for Ammeters Alternating Current and Direct Current.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE MIL-M-16034A

STOCK NO.

R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter MR-71W005ADAA		

April 1959

Test-Voltage And Current Measuring

**AMMETER****MR71W025DCAA****FUNCTIONAL DESCRIPTION**

The MR71W025DCAA is designed as a single range portable direct current (DC) ammeter, used for general current testing purposes, in the range from 0 to 25 ampere (amps).

No field changes in effect at time of preparation (10 December 1958).

**RELATION TO OTHER EQUIPMENT**

Similar to the MR72W150DCAA except that the MR71W025DCAA is a single range ammeter.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 5 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.25% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

**POWER CONSUMPTION**

MILLIAMMETERS: 500 mv.

SELF CONTAINED AMMETERS: 250 mv max.

NOMINAL EXTERNAL SHUNT AMMETERS: 50 or 100 mv.

EXTERNAL FIELD INFLUENCE: 0.75% max change in 5 oersted field.

HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.

LOW TEMPERATURE EXPOSURE: 1.25% max change

at 0° C; 0.5% permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.

MOMENTARY OVERLOAD: 1% max change.

SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$61.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATIONS MIL-M-16034/12 for Single Range Portable Direct Current Ammeter.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE MIL-M-16034A

STOCK NO.

R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Single Range Portable Direct Current Ammeter MR71W025DCAA Including:		
2	Leads	36 lg	
1	Shunt (External)		

UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

# VOLTMETER

# MR71W150ADV

## FUNCTIONAL DESCRIPTION

The MR71W150ADV is designed as a portable Single Range, electro-dynamometer type movement, Alternating Current (AC) and Direct Current (DC) Voltmeter, used for testing in the range of 0 to 150 volts; with 0.25 percent (%) at full scale deflection.

No field changes in effect at time of preparation (15 December 1958).

## RELATION TO OTHER EQUIPMENT

The MR71W150ADV is similar to the MR71W600ADV except that it differs in testing range and price of equipment.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
SCALE LENGTH: 5 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.25% max error.  
DIRECT CURRENT REVERSAL ERROR: 0.25% max change.  
WAVE FORM EFFECT: 0.33% max change.  
DAMPING FACTOR: 3 min.  
RESPONSE TIME: 3.4 seconds max.  
POWER CONSUMPTION: 10 va max, 15 v range, 25 va max; all meters except 150 v.  
FREQUENCY RANGE: 0.5% max change at 24 and 125 cycles.  
FREQUENCY INFLUENCE: 0.2% max change at 54 and 66 cycles.  
EXTERNAL FIELD INFLUENCE: 0.75% max change in 5-oersted field.

HEAT EFFECT AT 65 DEGREE C: 1% max change at 65° C; 0.5% max permanent change.  
TEMPERATURE INFLUENCE: 0.25% max change.  
LOW TEMPERATURE EXPOSURE: 0.63% max change at 0° C; 0.5% max permanent change.  
SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.  
VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$162.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal data not available.

## REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/9 for the AC and DC Voltmeter.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE MIL-M-16034A  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.1.3

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	AC and DC Voltmeter MR71W150ADV		

UNCLASSIFIED

4.1 MR71W150ADV: 1

April 1959

Test-Voltage And Current Measuring

**VOLTMETER****MR71W600ADV****FUNCTIONAL DESCRIPTION**

The MR71W600ADV is designed as a portable Single Range; electro-dynamometer type movement, Alternating Current (AC) and Direct Current (DC) Voltmeter. Used for voltage testing in the range from 0 to 600 volts (v), with 0.25 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (16 December 1958).

**RELATION TO OTHER EQUIPMENT**

The MR71W600ADV is similar to the MR71W150ADV except it differs in voltage testing range and equipment price.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 5 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.25% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

POWER CONSUMPTION: 20 ma max.

EXTERNAL FIELD INFLUENCE: 0.75% max change in 5-oersted field.

HEAT EFFECT AT 65 DEGREE "C": 1% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.25% max change.

LOW TEMPERATURE EXPOSURE: 0.63% max change at 0° C; 0.5% max permanent change.

SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICITION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$165.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/11 for the Portable Single Range AC and DC Voltmeter.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE MIL-M-16034A

STOCK NO.

R.D.B. IDENT. NO. 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	A.C. and D.C. Voltmeter MR71W600ADV		

# AMMETER

# MR72W150DCAA

## FUNCTIONAL DESCRIPTION

The MR-72W150DCAA is designed as a portable Double Range direct current (DC) ammeter, used for current testing purposes in the ranges of 0 to 15 ampere (amps) and 0 to 150 ampere (amps) with 0.25 percent at full scale deflection.

No field changes in effect at time of preparation (10 December 1958).

## RELATION TO OTHER EQUIPMENT

The MR72W150DCAA is similar to the MR73W300DCAA except that it is a double range ammeter.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.  
CIRCUIT APPLICATION: DC.  
SCALE LENGTH: 5 in. min.  
POSITION INFLUENCE (BALANCE): 1% of scale length max change.  
INITIAL ACCURACY: 0.25% max error.  
DAMPING FACTOR: 5 min.  
RESPONSE TIME: 2 seconds max.

### POWER CONSUMPTION

MILLIAMMETERS: 500 mv.  
SELF CONTAINED AMMETERS: 250 mv max.  
NOMINAL EXTERNAL SHUNT AMMETERS: 50 or 100 mv.  
EXTERNAL FIELD INFLUENCE: 0.75% max change in oersted field.  
HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.  
LOW TEMPERATURE EXPOSURE: 1.25% max change at 0° C; 0.5% max permanent change.  
MOMENTARY OVERLOAD: 1% max change.  
SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift.  
VIBRATION: 1% max change.  
FRICTION EFFECT: 2% max change.  
HUMIDITY RESISTANCE: 1% max change.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$66.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

## REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-16034/12 for Direct Current Portable Dual Range Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Direct Current Portable Ammeter MR72W150DCAA Incl:		
2	Leads		
1	External Shunt		

**VOLTMETER**

**MR72W300DCVV**

**FUNCTIONAL DESCRIPTION**

The MR72W300DCVV is designed as a Double Range, permanent magnetic moving coil type movement, portable Direct Current (DC) Voltmeter with 0.25 percent (%) accuracy at full scale deflection. Testing scale ranges are from 0 to 30 volts (v) and 0 to 300 volts (v).

No field changes in effect at time of preparation (11 December 1958).

MILLIVOLTMETERS: 1.25% max change at 0° C.

PERMANENT CHANGE: 0.5% max.

SUSTAINED OVERLOAD: 1% of scale length, max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 5 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.25% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

**POWER CONSUMPTION**

MILLIVOLTMETER: 30 ma max.

VOLTMETER: 20 ma max.

EXTERNAL FIELD INFLUENCE: 0.75% max change in 5-oersted field.

**HEAT EFFECT AT 65 DEGREE**

VOLTMETERS: 1% max change at 65° C.

MILLIVOLTMETERS: 2% max change at 65° C.

PERMANENT CHANGE: 0.5% max.

TEMPERATURE INFLUENCE: 0.25% max change for voltmeters; 0.5% max change millivoltmeters.

**LOW TEMPERATURE EXPOSURE**

VOLTMETERS: 0.63% max change at 0° C.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$88.00 with equipment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal Data not Available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/11 for Double Range Direct Current Voltmeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Double Range Direct Current Voltmeter MR72W300DCVV		



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April 1959

Test-Voltage and Current Measuring

# AMMETER

# MR73W300DCAA

## FUNCTIONAL DESCRIPTION

The MR73W300DCAA is designed as a portable Triple Range ammeter, used for current testing purposes; with a 0.25 percent accuracy at full scale deflection.

No field changes in effect at time of preparation (8 December 1958).

temporary zero shift; 0.5% of scale length, max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

SCALE RANGE

TYPE OF READING: DC.

THREE RANGES: 0 to 3, 0 to 30, 0 to 300.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Portable.

CIRCUIT APPLICATION: DC.

SCALE LENGTH: 5 in. min.

POSITION INFLUENCY (BALANCE): 1% of scale length, max change.

INITIAL ACCURACY: 0.25% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

POWER CONSUMPTION

MILLIAMMETERS: 500 mv max.

SELF CONTAINED AMMETERS: 250 mv max.

EXTERNAL SHUNT AMMETERS: 50 or 100 mv nominal.

EXTERNAL FIELD INFLUENCE: 0.75% max change in 5-oersted field.

HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.

MOMENTARY OVERLOAD: 1% max change.

LOW TEMPERATURE EXPOSURE: 1.25% max permanent change.

SUSTAINED OVERLOAD: 1% of scale length, max

## MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: \$71.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and Crystal Data not Available.

## REFERENCE DATA AND LITERATURE

MILITARY SPECIFICATION MIL-M-1603/12 for Ammeters Direct Current Portable.

TYPE CLASSIFICATION

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE MIL-M-16034A

STOCK NO.

R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter Type MIL-M-16034A Including:		
1	50 Millivolt Shunt		
1	100 Millivolt Shunt		
1	200 Millivolt Shunt		
2	Leads (36" 1g)	36 1g	

UNCLASSIFIED

4.1 MR73W300DCAA: 1

April 1959

Test-Voltage and Current Measuring

**AMMETER****MR73W500DCAA****FUNCTIONAL DESCRIPTION**

The MR73W500DCAA is designed as a triple range, Direct Current (DC) Ammeter, used for current testing purposes; in the ranges from 0 to 100 ampere, 0 to 200 ampere and 0 to 500 ampere (Amps); with 0.25 percent (%) accuracy at full scale deflection.

No field changes in effect at time of preparation (22 December 1958).

LOW TEMPERATURE EXPOSURE: 1.25% max change at 0° C; 0.5% max permanent change.

MOMENTARY OVERLOAD: 1% max change.

SUSTAINED OVERLOAD: 1% of scale length max temporary zero shift; 0.5% of scale length max permanent zero shift; 0.33% max permanent change in indication.

VIBRATION: 1% max change.

FRICTION EFFECT: 2% max change.

HUMIDITY RESISTANCE: 1% max change.

**RELATION TO OTHER EQUIPMENT**

The MR73W500DCAA is similar to the MR73W300DCAA except it differs in the current testing ranges and in the price of equipment.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Approximate Cost: \$94.00 with equipment spares.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TYPE OF INSTALLATION: Portable.

SCALE LENGTH: 5 in. min.

POSITION INFLUENCE (BALANCE): 1% of scale length max change.

INITIAL ACCURACY: 0.25% max error.

DAMPING FACTOR: 5 min.

RESPONSE TIME: 2 seconds max.

POWER CONSUMPTION: 250 mv max self contained ammeters.

EXTERNAL FIELD INFLUENCE: 0.75% max change in 5-oersted field.

HEAT EFFECT AT 65 DEGREE "C": 2% max change at 65° C; 0.5% max permanent change.

TEMPERATURE INFLUENCE: 0.5% max change.

**TUBE AND/OR CRYSTAL COMPLEMENT**

Electron Tube and Crystal data not available.

**REFERENCE DATA AND LITERATURE**

MILITARY SPECIFICATION MIL-M-16034/12 for the Triple Range Direct Current Ammeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-M-16034A
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

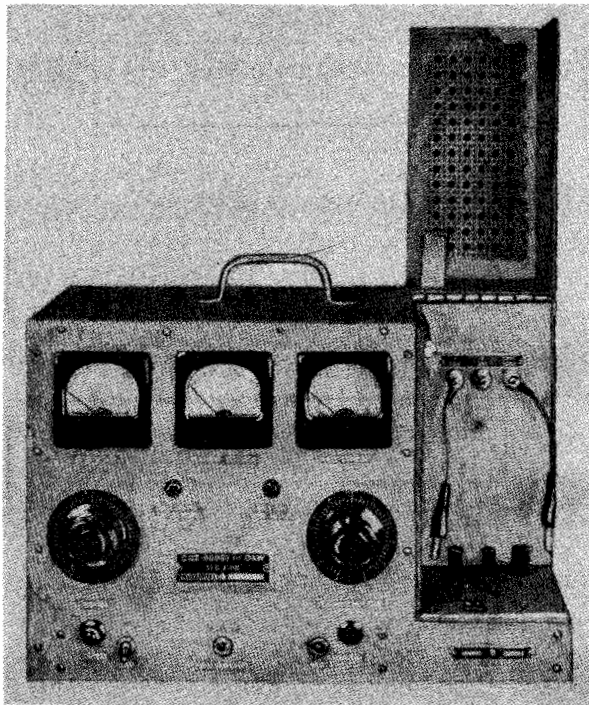
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Ammeter MR73W500DCAA		

UNCLASSIFIED  
April 1958

Test-Voltage and Current Measuring

## TRANSMITTING TUBE TESTER

OAW, OAW-1



*Transmitting Tube Tester OAW, OAW-1*

### FUNCTIONAL DESCRIPTION

Portable Tube Testing Equipment Navy Model OAW Series is designed to permit rapid determination of the peak emission and the cut-off point of various tubes such as Types 15E, 227, 327, and VT90(8011). As it is not practical to produce peak emission, this ability of the tube is predicted by a temperature limited continuous emission test. The cut-off point is determined by applying rated filament voltage and the grid bias is gradually decreased until the plate meter shows a deflection of 1/2 milliamperes. The cut-off can then be read on the "Grid Voltage" meter.

No field changes in effect at time of preparation (10 April 1958).

### RELATION TO OTHER EQUIPMENT

The OAW and OAW-1 are electrically the same. Their sizes are also the same but slight differences exist in the layout and the components. They are used with radars such as Navy Model SA and SC Series.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SUPPLY: 115 v ac, 60 cycle, approx 100 w.

#### RANGES

PLATE VOLTAGE: +250 and +1000.

BIAS VOLTAGE: 0 to -150.

FILAMENT VOLTAGE: 0 to 10 v ac (meter ranges 0-3 and 0-12).

PLATE CURRENT: 0-1 and 0-10 ma.

PRESENTATION: Calibrated meter readings and their interpretation on graphs for each tube type.

TERMINALS: Alligator clips used to connect to plate and grid connections of tubes. Filament connection made in two-hole test socket or by flexible leads to binding posts.

CONSTRUCTION: Metal case with electrically interlocked compartment for tube under test.

### MANUFACTURER'S OR CONTRACTOR'S DATA

General Communication Co, Boston, Mass.  
Contract NXsa-26587 (OAW).

Contract NXsr-86365, dated 12 January (1945 (OAW-1)).

### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 2X2A

(1) 6X5WGT

Total Tubes: (2)

No Crystals used.

### REFERENCE DATA AND LITERATURE

NAVAER 08-5S-103: Technical Manual for Navy Model OAW Transmitting Tube Tester.

NAVSHIPS 900722: Technical Manual for Navy Model OAW-1 Portable Tube Testing Equipment.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

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## OAW, OAW-1

## TRANSMITTING TUBE TESTER

## SHIPPING DATA

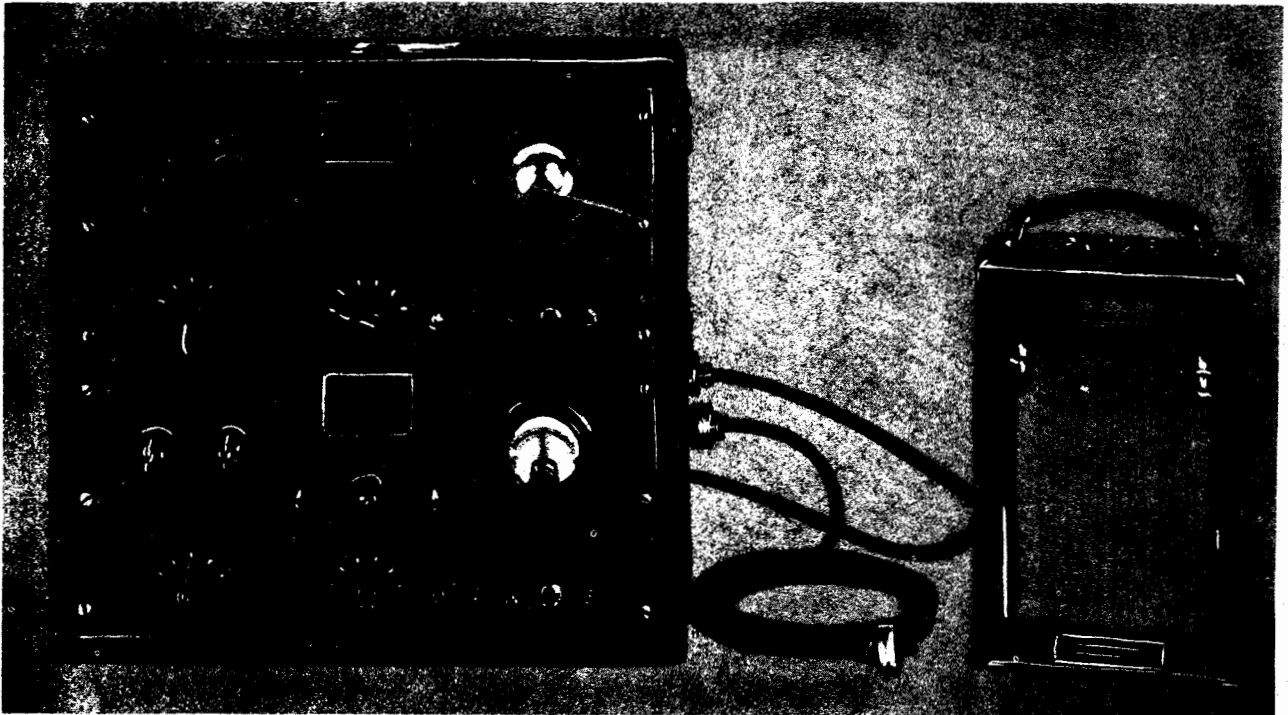
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Portable Tube Testing Equipment OAW/W Cord or			
1	Portable Tube Testing Equipment OAW-1 (Complete w/cord)			

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester OAW or OAW-1	9-29/32 x 12-13/16 x 17-1/2	50.0

## RECORDING MICROVOLT METER

OBO



*Recording Microvoltmeter Equipment OBO*

### FUNCTIONAL DESCRIPTION

Recording Microvoltmeter OBO graphically registers minute DC voltages. It is intended for shore use only.

No field changes in effect at time of preparation (22 July 1960).

### EQUIPMENT REQUIRED BUT NOT SUPPLIED

Battery: (6)NT-19031.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 30 W, 115 v porm 10%, 60 cyc.

FREQUENCY RESPONSE: Linear, 0 to 0.2 cyc; down 12% at 0.5 cy; down 46% at 0.9 cy.

AUTOMATIC DRIFT CONTROL: 1,200 uv (max) operating level.

SENSITIVITY: 50% recorder deflection at 50 uv, 100 uv, 200 uv, 400 uv, 800 uv, 50 mv for gain selector positions 1, 2, 3, 4, 5, and 6 respectively.

RECORDER DEFLECTION vs INPUT: Recorder is linear with respect to input from approx.

10% to 65% of full scale.  
BATTERY COMPLEMENT: (6) 1.5 v, size D batt

### MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Frequency Laboratories Inc, Boonton, N.J.  
Contract NXsr-62322, dated 23 May 1944  
Approximate Cost \$2250.00.

### TUBE AND/OR CRYSTAL COMPLEMENT

(4) 6SL7G (2) 6SN7G (2) 6X5G  
(2) 2050  
Total Tubes: (10)  
No Crystals used.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 900, 562A: Technical Manual for RECORDING MICROVOLT METER OBO.

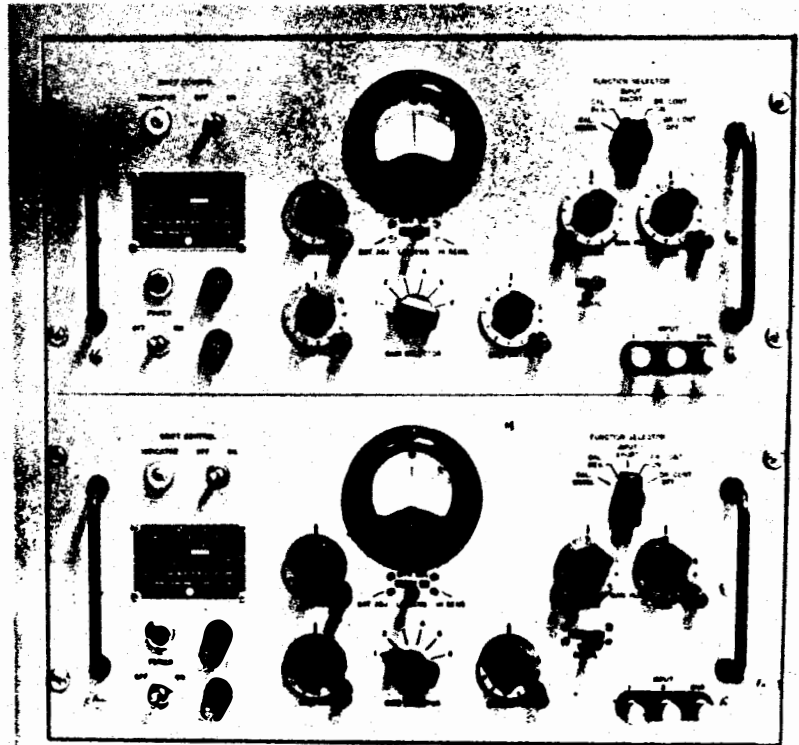
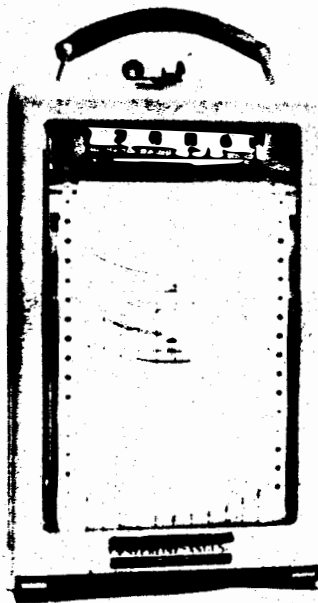
TYPE CLASSIFICATION	STD.
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	SPEC: MIL-R-16162
STOCK NO.	(SHIPS)
R.D.B. IDENT. NO.	1.1.1.4

**OBO****RECORDING MICROVOLTMETER****SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Cabinet (including 2 DC Amplifiers, operating components and Converter Test Jig)		28 x 34 x 34	245
1	Tape Recorder NT-55172		24 x 25 x 34	135
1	Equipment Spare Parts Box		22 x 25 x 35	135

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Recording Microvoltmeter OBO including:		
1	Cabinet NT-10432	17 x 20 x 22	
2	Amplifier, DC NT-50214		
1	Tape Recorder NT-55172	9 x 9 x 15	42
1	Converter Test Jig (Accessory) NT-10433	2-1/4 x 3-5/8 x 5-7/16	
1	Equipment Spare Parts Box	12 x 15 x 24	63



*Recording Microvoltmeter OBO-1*

### FUNCTIONAL DESCRIPTION

The Model OBO-1 is designed for general application wherever a high sensitivity recording apparatus is required. It consists of two separate but identical DC amplifiers, each having its own power supply, and both contained in one cabinet. Included also as a part of the equipment, but in a separate cabinet, is a tape recorder which transcribes the output of one or both of the amplifiers on a roll chart.

No field changes in effect at time of preparation (23 May 1956).

### RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (2)  
Batteries BA-30.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### FREQUENCY DATA

OVER-ALL: 0 to 0.5 cps.

RESPONSE AT 0.2 cps: Within  $\pm 5\%$  of response at 0 cps.

RESPONSE AT 0.5 CPS: Within  $\pm 20\%$  of response at 0 cps.

RESPONSE ABOVE 0.5 CPS: Held to minimum.

POWER REQUIREMENTS: 115 v, 60 cps, single ph, 90 W.

**ACCURACY AND SENSITIVITY**

VOLTAGE APPLIED	RANGE	RECORDER DEFLECTION 50% of full scale deflection	ACCURACY
50 Microvolts	1	"	±2%
100 "	2	"	15%
200 "	3	"	15%
400 "	4	"	15%
800 "	5	"	15%
50 Millivolts	6	"	20%

**TUBE AND/OR CRYSTAL COMPLEMENT**

(4) 6SL7GT (2) 6X5  
 (2) 2050 (2) 6SN7GT  
 Total Tubes: (10)

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 92017: Technical Manual for Recording Microvoltmeter OBO-1.  
 NAVSHIPS 900074: Operating Manual for OBO-1.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Electronic Engineering and Service Co.,  
 Inc., Fall Church, Va.  
 Contract NObsr 57270, dated 17 March 1952.  
 Approximate Cost: \$2300.00 including equipment spares.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE SPEC-SHIPS MIL-R-16162  
 STOCK NO.  
 R.D.B. IDENT. NO.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	(2) Amplifier AM-933/USH including: Cabinet CY-1492/USH Accessories	8.75	22 X 24-1/2 X 28	158
1	Ammeter ME-89/USH including: Spare Parts	3.45	15-5/8 X 15-3/4 X 24-1/2	

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Amplifier AM-933/USH	8-3/4 X 11 X 19	43
1	Cabinet CX-1492/USH	15 X 19-1/2 X 21-3/8	20
1	Ammeter Recording, ME-89/USH	8-9/16 X 8-3/4 X 13-1/8	25
1	Cable Assembly CX-2609/U	96 Lg.	
1	Cable Assembly CX-2610/U	96 Lg.	
1	Cable Assembly CX-2611/U	96 Lg.	
1	Technical Manual NAVSHIPS 92017		
1	Equipment Spares		

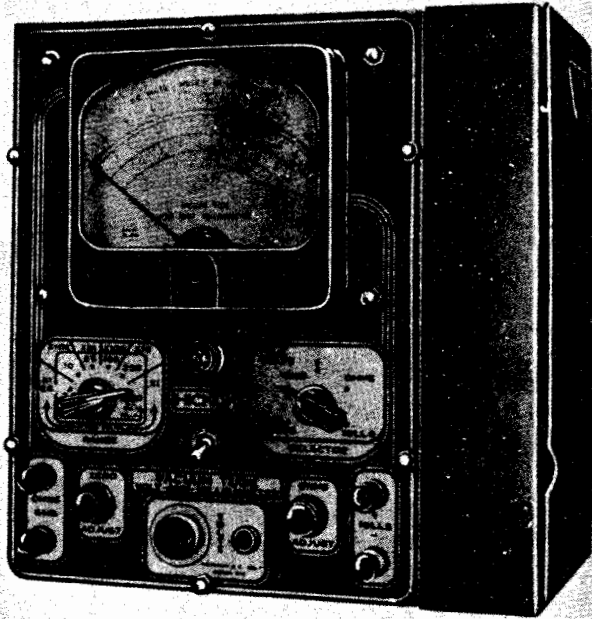


UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

## VACUUM TUBE VOLT-OHM-MILLIAMMETER **OBQ,-1,-2,-3**



Vacuum Tube Volt-Ohm Milliammeter OBQ,-1,-2,-3

### FUNCTIONAL DESCRIPTION

The OBQ,-1,-2,-3 are portable multimeters for general purpose testing of electronic equipment. They incorporate a five-position selector switch, a six-position range switch, zero adjust and ohms adjust controls.

No field changes in effect at time of preparation (14 September 1956).

### RELATION TO OTHER EQUIPMENT

The OBQ thru 3 are similar except for basic meters used.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RANGES

AC VOLTS: 0 to 2.5, 10, 25, 100, 250 v,

DC VOLTS: 0 to 2.5, 10, 25, 100, 250, 1000 v.

DC CURRENT: 0 to 2.5, 10, 25, 100, 250, 1000 ma.

RESISTANCE: 0 to 1000, 10000, 100000 ohms; 0 to 1, 10, 1000 meg.

#### SENSITIVITY OF METER

OBQ: 180 ua.

OBQ-1, 3: 400 ua.

OBQ-2: 450 ua.

ACCURACY:  $\pm 2\%$  to  $\pm 10\%$  depending upon range and equipment used.

POWER SOURCE REQUIRED: 115 v, 50 to 60 cps, single ph, 25 Ward 3 v DC.

#### INPUT IMPEDANCE

##### OBQ

DC VOLTMETER PROBE: 2 uuf and 11 meg for all ranges.

AC VOLT METER PROBE: 1 meg shunted by 10 uuf.

##### OBQ-1

DC VOLTMETER PROBE: 9 meg for all ranges.

AC VOLTMETER PROBE: 12 meg shunted by 6 uuf.

##### OBQ-2

DC VOLTMETER PROBE: 10 meg for all ranges.

AC VOLTMETER PROBE: 5 meg shunted by 8 uuf.

##### OBQ-3

DC VOLTMETER PROBE: 9 meg for all ranges.

AC VOLTMETER PROBE: 12 meg shunted by 6 uuf.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Reiner Electronics Co; Inc, New York, N. Y.

Contract NXsr 45465, dated 31 December 1943. (OBQ).

Hickok Electrical Instruments Co; Cleveland, Ohio.

Contract NXsr 51506 (OBQ-1).

Contract NXsr 30134, dated 21 June 1946. OBQ-3

Telequip Radio Co. Chicago, Illinois.

Contract NXsr 39213, dated 1 November 1943.

Approximate Cost: \$200.00 with equipment spares. (OBQ).

Approximate Cost: \$150.00 with equipment spares. (OBQ-1, 2, 3).

### TUBE AND/OR CRYSTAL COMPLEMENT

#### OBQ

(1) OD3W

(1) 6H6

Total Tubes: (5)

(2) 6G6G

(1) 6X5VVG7

#### OBQ-1

(1) OD3VV

(1) 6X5VVG7

Total Tubes: (5)

(2) 6SN6VVG7A

(1) 9006

UNCLASSIFIED

4.1 OBQ: 1

Test-Voltage and Current Measuring

June 1957

**OBO-1,-2,-3 VACUUM TUBE VOLT-OHM-MILLIAMMETER**

OBO-2

(1) 6H6

(1) 6X5WGT

Total Tubes: (4)

OBO-3

(1) OD3VV

(1) 6X5WGT

Total Tubes: (5)

(2) 6J5GT

(2) 6SN7WGT

(1) 9006

NAVSHIPS 900,641: Technical Manual for  
Vacuum Tube Volt-Ohm-Milliammeter Navy  
Model OBO-2.NAVSHIPS 900,945: Technical Manual for  
Vacuum Tube Volt-Ohm-Milliammeter Navy  
Model OBO-3.**REFERENCE DATA AND LITERATURE**NAVSHIPS 900,496: Technical Manual for  
Vacuum Tube Volt-Ohm-Milliammeter Navy  
Model OBO.NAVSHIPS 900,318 IB: Technical Manual for  
Electronic Volt-Ohm-Milliammeter Navy  
Model OBO-1.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
OBO	OBO			
	1 2 3			
1	Vacuum Tube Volt-Ohm-Milliammeter OBO and Accessories	1.5	13 X 15-1/4 X 16-5/8	46
	1 Vacuum Tube Volt-Ohm-Milliammeter OBO-1 and Accessories	5.2	20 X 20 X 23	65
	1 Electronic Multimeter w/diode Probe OBO-2 and Accessories			
	1 Volt-Ohm Milliammeter OBO-3 and Accessories	1.8	13 X 15-1/4 X 16-1/4	31.5

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	OBO		
1	Vacuum Tube Volt-Ohm-Milliammeter OBO	8 X 9 X 10-3/4	20
1	DC Lead w/Probe and Plug ends	48 in. lg	
1	Ohm and Mils Test Lead w/Probe and Pin tip ends		
1	Common Test Lead with alligator clip and Pin tip ends		
1	AC Line Service Cord w/Male and Female connector ends	72 lg	
	OBO-1		
1	Electronic Volt-Ohm-Milliammeter OBO-1	6 X 10 X 10-1/2	17.5
1	AC Shielded Cable and Probe		
1	Ohmmeter-DC. Volts-Mills Test Lead	36 in. lg	

UNCLASSIFIED

Test-Voltage and Current Measuring

## VACUUM TUBE VOLT-OHM-MILLIAMMETER

OBQ,-1,-2,-3

## EQUIPMENT SUPPLIED DATA

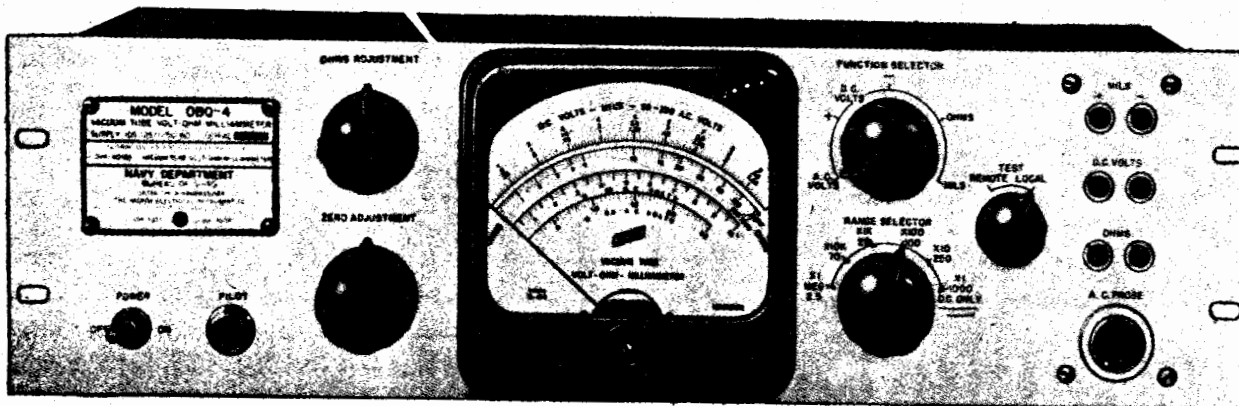
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ground Lead	42 in. lg	
1	Ground Lead	12 in. lg	
	OBQ-2		
1	Electronic Multimeter OBQ-2	7 X 8 X 10-1/2	0.33
3	Test Lead	36 in. lg	
	OBQ-3		
1	Volt-Ohm-Milliammeter OBQ-3	7 X 10 X 11	16
1	AC Probe and Cable Assembly	36 in. lg	
1	AC Probe and Cable Assembly	36 in. lg	
1	Ground Lead-Probe	8 in. lg	
1	Ground Lead	42 in. lg	
1	Test Lead (Shielded)	42 in. lg	
1	Test Lead (unshielded)	42 in. lg	

UNCLASSIFIED

4.1 OBQ: 3

March 1957

Test Voltage and Current Measuring

**VACUUM TUBE VOLT-OHM-MILLIAMMETER****OBQ-4***Vacuum Tube Volt-Ohm-Milliammeter***FUNCTIONAL DESCRIPTION**

The OBQ-4 is a combination electronic AC and DC voltmeter, ohmmeter and milliammeter which is designed primarily for cabinet mounting for use in conjunction with other electronic equipment for which it is necessary to make general test measurements.

No field changes in effect at time of preparation (14 September 1956).

**RELATION TO OTHER EQUIPMENT**

The OBQ-4 is similar to the OBQ, -1, -2 and -3 except for cabinet design and basic meter movement.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****RANGES**

AC VOLTS: 0 to 2.5, 10, 25, 100, 250 v.

DC VOLTS: 0 to 2.5, 10, 25, 100, 250, 1000 v.

DC CURRENT: 0 to 2.5, 10, 25, 100, 250, 1000 ma.

RESISTANCE: 0 to 1000, 10000, 100000 ohms and 0 to 1, 10, 1000 meg.

FREQUENCY RANGE: 100 mc.

**INPUT IMPEDANCE**

DC: 9 meg.

AC: 12 meg shunted by 6 uuf.

METER ACCURACY: 400 ma.

POWER REQUIREMENTS: 105 to 125 v, 50 to 60 cps, single ph 20 W (at 115 v) and 3 v DC.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

The Hickok Electrical Instrument Company,  
Cleveland, Ohio.

Contract NObsr 30174, dated 21 Jan  
1947

Approximate Cost: \$250.00 with equip-  
ment spares.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) OD3/VR150 (2) 6SN7

(1) 6X5GT (1) 9006

Total Tubes: (5)

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 900,988: Technical Manual for  
Vacuum Tube Volt-Ohm-Milliammeter Navy  
Model OBQ-4.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE BUSHIPS  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

Test Voltage and Current Measuring

**OBQ-4****VACUUM TUBE VOLT-OHM-MILLIAMMETER****SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Volt-Ohm-Milliammeter OBQ-4 including: (1) Set of Accessories (1) Set of Spare Parts	2.65	12-1/2 X 17-1/4 X 21-1/4	50

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Milliammeter OBQ-4	5-1/4 X 7-1/2 X 19	12
1	AC Power Cable	84 in. lg	
1	AC Probe and Cable Assembly	60 in. lg	
1	Dual Plug Test Lead	60 in. lg	
1	Set of Spare Parts	9 X 9 X 18-1/2	20

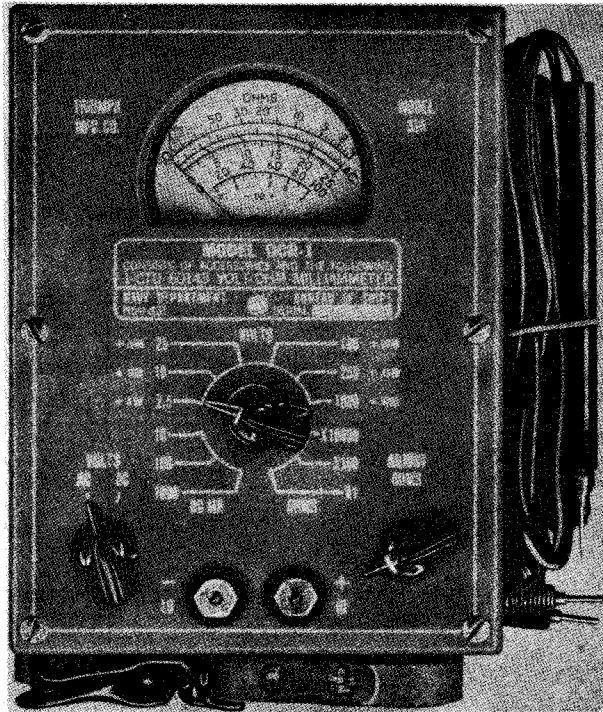
4.1 OBQ-4: 2

April 1958

Test-Voltage and Current Measuring

## PORTABLE VOLT-OHM-MILLIAMMETER (SUBMERSION PROOF)

OCR-1



Portable Volt-Ohm-Milliammeter OCR-1

lent. (1) 67.5 v dry battery NT-19032 or equivalent.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RANGES

VOLTS, DC OR AC: 0 to 2.5/10/25/100/250/1000 at 1000 ohms per volt.

RESISTANCE: 0 to 1000 ohms, midscale 20 ohms. 0 to 100000 ohms, midscale 2000 ohms. 0 to 10 megohms, midscale 200000 ohms.

MILLIAMPERES DC: 0 to 10/100/1000.

POWER LEVEL: -16 to +54 db in six overlapping ranges.

ACCURACY: 2%.

FULL SCALE DEFLECTION: 200 ua, DC, 0.25 v, 1250 ohms resistance.

POWER REQUIREMENTS: 1.5 and 67.5 v DC.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Triumph Mfg Co., Chicago, Illinois.  
Contract N5sr-831, dated 25 April 1945.  
Approximate Cost: \$50.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 900739: Technical Manual for Volt-Ohm-Milliammeter Navy Model OCR-1.

#### TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE RE13A1020A

STOCK NO.

R.D.B. IDENT. NO.

### FUNCTIONAL DESCRIPTION

The OCR-1 is a small portable submersion proof multimeter designed to measure DC and AC voltage, resistance, direct current and audio power levels encountered in radio and radar receivers, transmitters, audio amplifiers and comparable electronic equipments.

No field changes in effect at time of preparation (10 April 1958).

### RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) 1.5 v dry battery Army Type BA-42 or equivalent.

### SHIPPING DATA

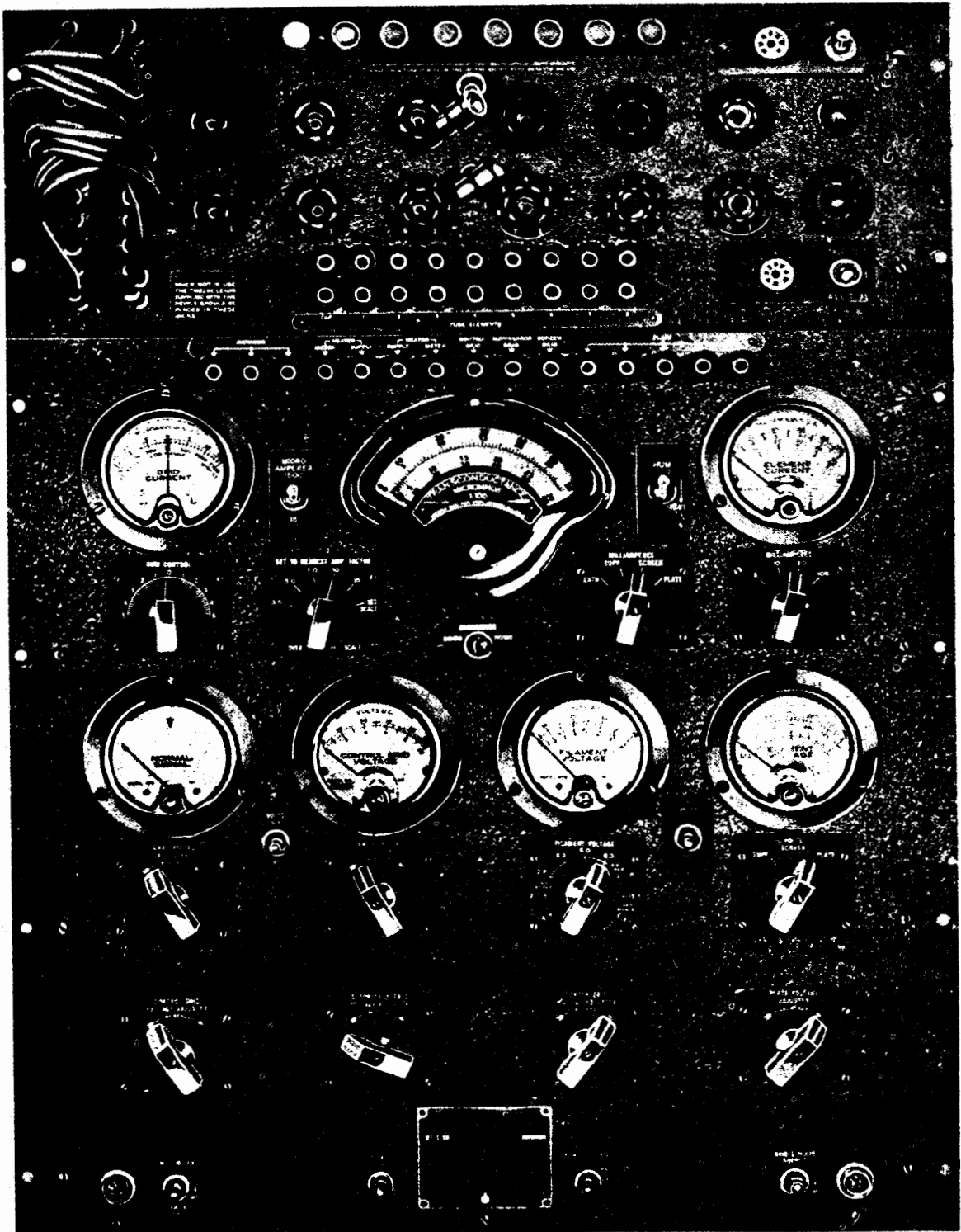
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Volt-Ohm-Milliammeter OCR-1	0.32		4.1

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Milliammeter NT-60143	3-1/2 X 5-1/2 X 7-1/2	3.8
1	Set of Test Leads	48 in. lg	
1	Carrying Strap	48 in. lg	

# VACUUM TUBE ANALYZING EQUIPMENT

OD, 1,2,3,4,  
5,6,7,A,B



Vacuum Tube Analyzing Equipment OD, 1,2,3,4,5,6,7,A,B

**OD, 1,2,3,4,  
5,6,7,A,B**

**VACUUM TUBE ANALYZING EQUIPMENT**

December 1956

**FUNCTIONAL DESCRIPTION**

The OD, 1,2,3,4,5,6,7,A,B are used to measure the dynamic transconductance of electron tubes in micromhos. Each model includes an assortment of vacuum tube sockets designed to accommodate all tubes correctly used in radio equipment. A patch panel with cards permits the change of socket pin connections according to the type of tube under test. By means of various switches and panel meters, it is possible to vary and to measure the parameters (voltage and currents) typical of the function of a given tube, and thereby determine whether it is still acceptable for further service or should be rejected. Tube data chart is supplied with the equipments.

No field changes in effect at time of preparation (2 August 1956).

Contract NOs-56258, (OD-2)  
 Contract NOs-65070, dated 13 February 1939. (OD-3)  
 Contract NOs-71780, dated 15 February 1940. (OD-4,5)  
 Contract NXss-20153, dated 26 December 1943. (OD-6)  
 Contract NXsr-41025, dated 22 November 1943. (OD-7)  
 Contract NXs-3983, dated 28 September 1942. (OD-8)  
 Approximate Cost: \$380.00 with equipment spares.

**RELATION TO OTHER EQUIPMENT**

The OD Series is now superseded by Electron Tube Test Set AN/USM-31.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TUBE SOCKETS PROVIDED: 4,5,6,7S,7L,8, octal, loctal, and acorn.

**ACCURACY**

INDICATING INSTRUMENTS: ±2%.

POSSIBLE ACCUMULATIVE ERROR: +6 to 8%.

**RANGES**

TRANSCONDUCTANCE: 0 to 6000 micromhos.

FILAMENT VOLTS: 1.0 to 27.5 AC.

GRID CURRENT: 0 to 1500 ma.

ELEMENT CURRENT: 0 to 100 ma.

ELEMENT VOLTAGE: 0 to 300 v DC.

CONTROL GRID VOLTAGE: 0 to 50 v DC.

**TUBE AND/OR CRYSTAL COMPLEMENT**

OD-1,2,3

(1) 80

OD-4,5,6,7,A,B

(1) 5U4

Total Tubes: (1) OD,1,2,3

Total Tubes (1) OD,4,5,6,7,A,B

**REFERENCE DATA AND LITERATURE**

- NAVSHIPS 95172: Technical Manual for Vacuum Tube Analyzing Equipment OD-3.
- NAVSHIPS 95173: Technical Manual for Vacuum Tube Analyzing Equipment OD-4.
- NAVSHIPS 95608: Technical Manual for Vacuum Tube Analyzing Equipment OD-5.
- NAVSHIPS 95609: Technical Manual for Vacuum Tube Analyzing Equipment OD-6.
- NAVSHIPS 95174: Technical Manual for Vacuum Tube Analyzing Equipment OD-7.
- NAVSHIPS 95171: Technical Manual for Vacuum Tube Analyzing Equipment OD-B.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp.,  
 Newark, N.J.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1 ea.	Vacuum Tube Analyzing Equipment OD,OD-1,2,3,4,6,7			



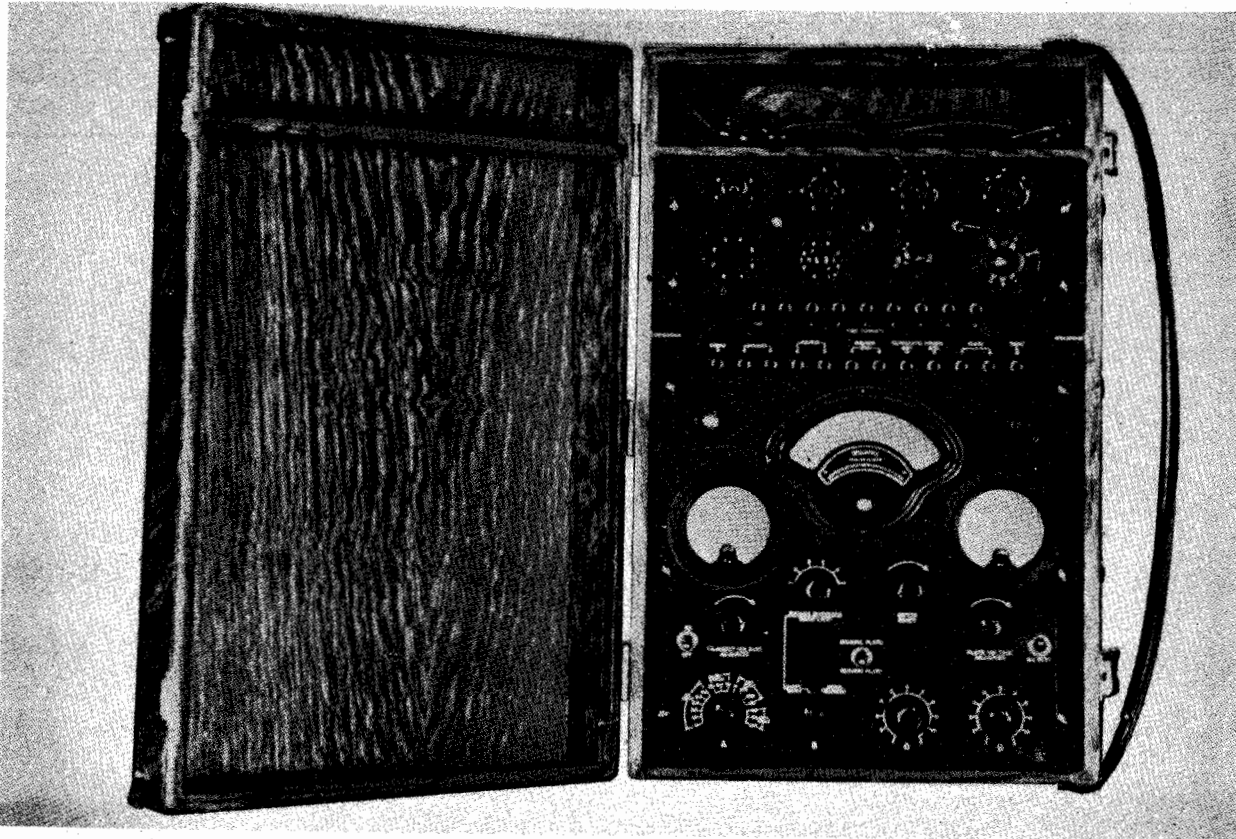
# VACUUM TUBE ANALYZING EQUIPMENT

OD, 1,2,3,4,  
5,6,7,A,B

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Vacuum Tube Analyzing Equipment OD, OD-1,2,3,4,6,7,A,B	8-3/4 X 19-3/4 X 26-1/4	105
12	Patch Cords		
3	Spare Fuses		
4	Spare Neon Lamps		
*1	Miniature Adapter NT-49398		
*1	Loctal Adapter NT-49596		
*1	Acorn Adapter NT-49397		

\*For OD, OD-1, OD-2, OD-3, and OD-4 only.

**VACUUM TUBE TESTING EQUIPMENT****OO, 1, 2, 3***Vacuum Tube Tester Model OO***FUNCTIONAL DESCRIPTION**

These equipments were designed to measure proportional transconductance above or below the normal listed value as specified by the various tube manufacturers. It will also test electron tubes for emission and interelectrode shorts.

All models of the Navy Model OO, Series Vacuum Tube Testing Equipment are similar. The model OO Vacuum Tube Testing Equipment does not have a 7-pin miniature socket.

No field changes in effect at time of preparation (11 April 1958).

**RELATION TO OTHER EQUIPMENT**

The OO, 1, 2 and 3 are similar to Weston Instrument Corp Model 788.

UNCLASSIFIED

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**TUBE SOCKETS:** 4 pin, 5 pin, 6 pin; combination large and small 7 pin; 8 pin locktal 8 pin octal; acorn; Western Electric 215A peanut tube; and 7 pin miniature socket for Models OO-1, 2, 3.

**HEATER VOLTAGE RANGE:** 1 to 120 v.

**FILAMENT VOLTAGE (WITH HEATER VOLTS SELECTOR)**

4 VOLT SCALE: 0, 1.1, 1.5, 2, 2.5, 3.3  
4 v.

8 VOLT SCALE: 5, 6.3, 7.5 v.

40 VOLT SCALE: 10, 12.5, 27.5, 35 v.

120 VOLT SCALE: 50, 70, 90, 120 v.

**PLATE AND SCREEN VOLTAGE:** Adjustable between 35 and 130 v.

**MUTUAL CONDUCTANCE RANGE:** Extend from 0 to 130% of manufacturer's means rating.

**ACCURACY**

**INDICATING INSTRUMENTS:**  $\pm 2\%$  each.

April 1958

Test-Voltage and Current Measuring

**OQ, 1, 2, 3****VACUUM TUBE TESTING EQUIPMENT**OVER-ALL:  $\pm 6$  to 8%.POWER REQUIREMENTS: 115 v, 60 cps, single  
ph, 35 W.**MANUFACTURER'S OR CONTRACTOR'S DATA**Weston Electrical Instrument Corp., Newark,  
N.J.Contract NOs-87567, dated 23 June 1941  
(OQ).Contract NOs-87567, dated 23 March 1942  
(OQ-1).Contract NXss/a-13581, dated 30 Sep-  
tember 1942 (OQ-2).

Contract NXsr-33795 (OQ-3).

**REFERENCE DATA AND LITERATURE**NAVSHIPS 95186: Technical Manual for Model  
OQ Vacuum Tube Testing Equipment.NAVSHIPS 95188: Technical Manual for Model  
OQ-1 Vacuum Tube Testing Equipment.NAVSHIPS 95189: Technical Manual for Model  
OQ-2 Vacuum Tube Testing Equipment.NAVSHIPS 95190: Technical Manual for Model  
OQ-3, Vacuum Tube Testing Equipment.**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 71A

Total Tubes: (1)

No Crystals used.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE Navy Spec No. RE13A955,

STOCK NO. RE 9423

R.D.B. IDENT. NO. 1.2.1

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Vacuum Tube Tester Model OQ, OQ-1, OQ-2 or OQ-3	5.2		52

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Vacuum Tube Tester Model OQ, OQ-1, OQ-2 or OQ-3	8 x 13 x 23-3/4	35
12	Patch Cords		
2	Spare Fuses		
2	Technical Manuals		

UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

# VOLTMETER PX-4 (0 TO 15,150 v DC)

## FUNCTIONAL DESCRIPTION

The PX-4 (Westinghouse) is a portable direct current voltmeter designed for general purpose testing of electronic equipment.

No field changes in effect at time of preparation (18 October 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 15, 150 v DC.

SCALE DATA: 10 scale div. linear

ACCURACY: 3/4% at full scale deflection

SENSITIVITY: 1000 ohms per volt.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

Federal Item Identification Card.

TYPE CLASSIFICATION
DESIGN COGNIZANCE Commercial
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter PX-4 Style single	2-1/4 x 4-3/4 x 5	

UNCLASSIFIED

4.1 PX-4 (0 TO 15,150 v DC): 1

UNCLASSIFIED

March 1957

Test-Voltage and Current Measuring

### AMMETER

### PX-4 (0 TO 3,30, 300 AMPS)

#### FUNCTIONAL DESCRIPTION

The PX-4 (Westinghouse) is a portable ammeter used for general purpose testing.

No field changes in effect at time of preparation (27 September 1956).

#### RELATION TO OTHER EQUIPMENT

Similar to Westinghouse PY-4, which is for Alternating Current and is shielded from effects of external fields and is of the repulsion moving iron type. While the PX-4 is a Direct Current Meter and is not shielded and is of the permanent magnet moving coil type.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 3, 30, 300 amp.

SCALE DIVISION: 60.

ACCURACY: 3/4% of full scale deflection.

SENSITIVITY: 100 mv drop across terminals.

#### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

#### REFERENCE DATA AND LITERATURE

I.L.43-120-D: Westinghouse Electric Corp.  
Technical Manual for Portable Instruments  
PX-4 and PY-4.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	Commercial
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter PX-4	2 x 4-1/2 x 4-1/2	
1	External Shunt		
1	Shunt Lead		

UNCLASSIFIED

4.1 PX-4(0 to 3,30,300 AMPS): 1

UNCLASSIFIED

March 1957

Test-Voltage and Current Measuring

## VOLTMETER

PX-4 (0 TO 30,  
150 v DC)

### FUNCTIONAL DESCRIPTION

The PX-4 (Westinghouse) is a portable direct current voltmeter designed for general purpose testing of electronic equipment.

No field changes in effect at time of preparation (18 October 1956).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 30, 150 v DC.

SCALE DATA: 10 scale div linear.

ACCURACY: 3/4% at full scale deflection.

SENSITIVITY: 1000 ohms per volt.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

Federal Item Identification Card.

TYPE CLASSIFICATION
DESIGN COGNIZANCE Commercial
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

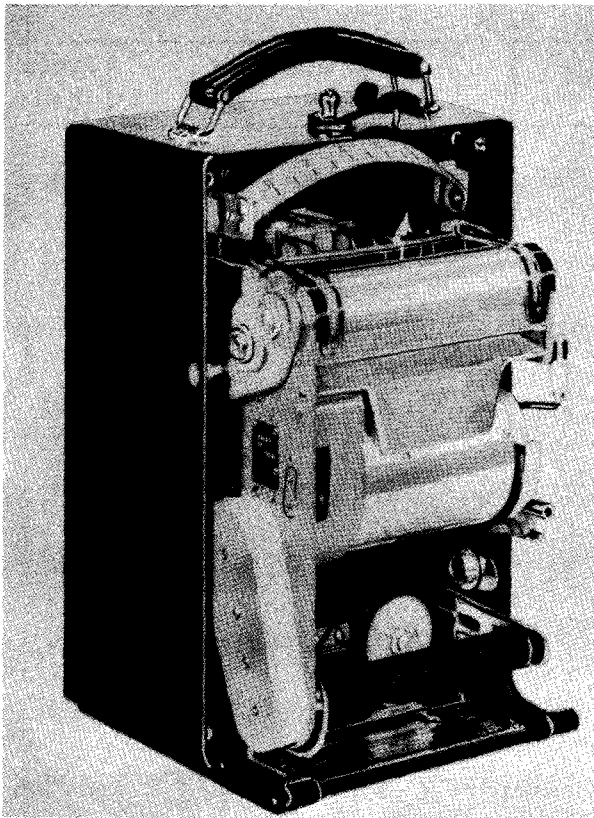
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter PX-4 Style 810156	2-1/4 x 4-3/4 x 5	

UNCLASSIFIED

4.1 PX-4(0 to 30,150 v DC): 1

# MILLIAMMETER RECORDER

# RD-49/U



Milliammeter Recorder RD-49/U

## FUNCTIONAL DESCRIPTION

The RD-49/U is a portable instrument used in recording fluctuations of a current as a function of time. It may be applied as an auxiliary to field strength measuring and surveying equipments.

No field changes in effect at time of preparation (24 April 1958).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

### CURRENT RANGE DATA

RANGE: 0 to 1, 2, 3, 5, 10, 25, 50 or 100 ma.  
ACCURACY:  $\pm 1\%$  of full scale.  
CRITICAL DAMPING DATA  
EXTERNAL CIRCUIT RESISTANCE: 35,000 ohms.  
SWING TIME (ONE WAY): 0.5 sec.  
FULL SCALE VOLTS: 1.4 v (avg).  
COIL RESISTANCE: 1,400 ohms (avg).  
POWER CONSUMPTION: 1.4 mw (avg).  
CHART DATA  
LENGTH: 103 ft, useful 100 ft.  
WIDTH: 6 in., ruled portion 4-1/2 in.  
SPEED  
INCHES PER HOUR: 3/4, 1-1/2, 3, 6 or 12  
INCHES PER MINUTE: 3/4, 1-1/2, 3, or 6  
MOTOR DATA  
DRIVE: Synchronous.  
REROLL: Induction.  
CHRONOGRAPH PEN  
TYPE: Left hand.  
VOLTAGE: 6 v DC.  
POWER REQUIREMENTS: 115 v, 60 cps, 1 ph.

## MANUFACTURER'S OR CONTRACTOR'S DATA

The Esterline Angus Co Inc, Indianapolis, Indiana.  
Contract NObsr-49133.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals Used.

## REFERENCE DATA AND LITERATURE

NAVSHIPS 91365: Technical Manual for Milliammeter Recorder RD-49/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Recorder-Milliammeter RD-49/U			70

April 1958

Test-Voltage and Current Measuring

RD-49/U

## MILLIAMMETER RECORDER

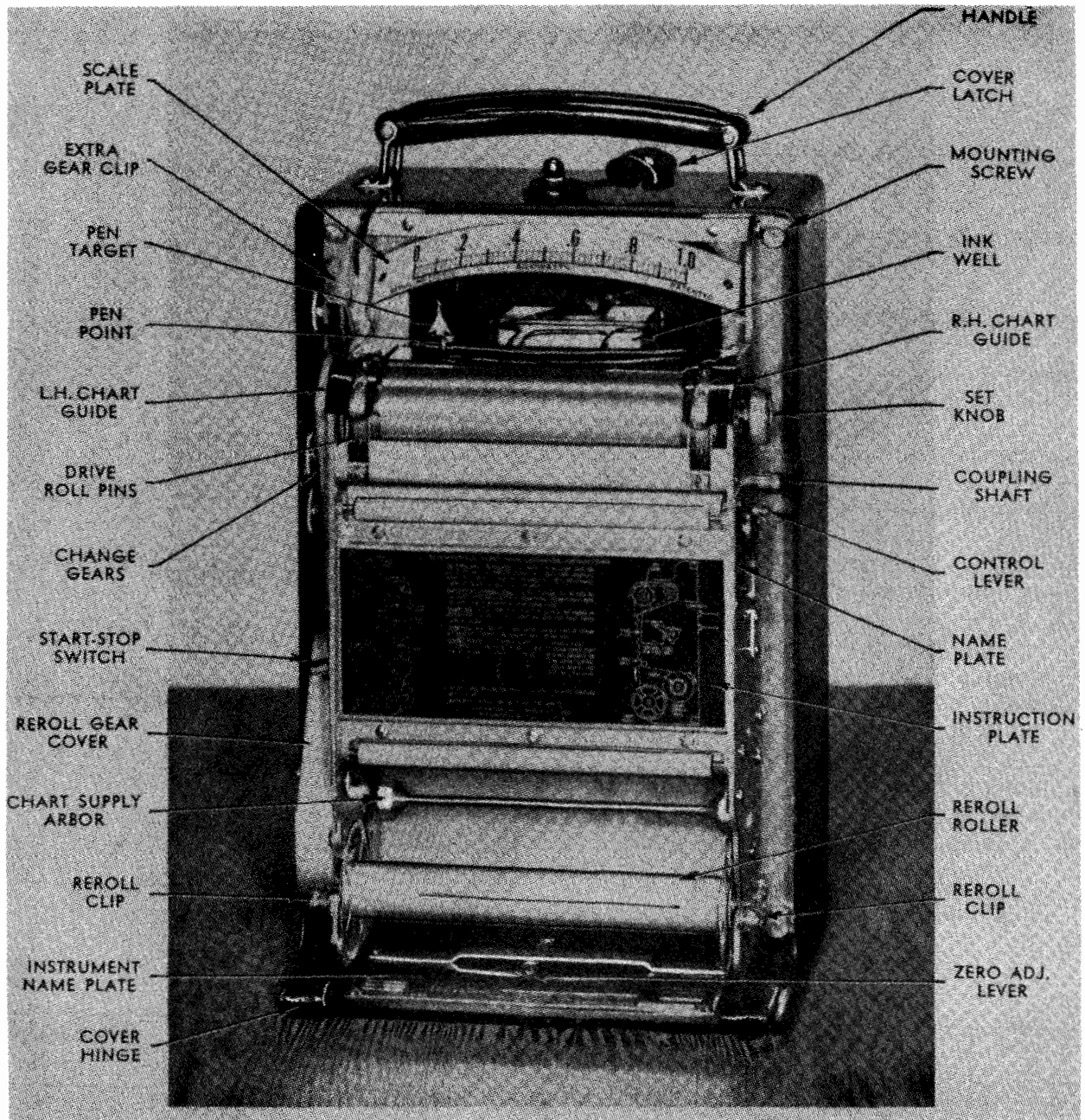
## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Recorder-Milliammeter RD-49/U including:	8-9/16 X 8-3/4 X 14-1/2	34
2	Technical Manual NAVSHIPS 91365		



# MILLIAMMETER RECORDER

Test-Voltage and Current Measuring  
RD-49A/U



Milliammeter Recorder RD-49A/U

## FUNCTIONAL DESCRIPTION

The RD-49A/U is a portable DC milliammeter recorder which records permanently and continuously the fluctuations of a current as a function of time. A full scale reading for only one millampere input makes

it a highly sensitive measuring device. Various rates of chart speed make possible the recording of fast or slow phenomena, as compared to seconds or hours. It is useful for the recording of the variations of direct currents and as an auxiliary to field strength measuring and surveying equipments.

Test-Voltage and Current Measuring

**RD-49A/U**

**MILLIAMMETER RECORDER**

No field changes in effect at time of preparation (7 January 1957).

TYPE: Left hand.  
VOLTAGE REQUIRED: 6 v DC.  
POWER REQUIREMENTS: 115 v, 60 cps, single ph.

**RELATION TO OTHER EQUIPMENT**

Electrically and mechanically interchangeable with Recorder-Milliammeter RD-49/U.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

The Esterline-Angus Company, Inc., Indianapolis, Ind.  
Contract NObsr-71280, dated 25 April 1956.  
Approximate Cost: \$420.00 with equipment spares.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**CURRENT RANGE DATA**

RANGE: 0 to 1 ma.  
ACCURACY:  $\pm 1\%$  of full scale reading.

**CRITICAL DAMPING DATA**

EXTERNAL CIRCUIT RESISTANCE: 35000 ohms.  
SWINGING TIME (ONE WAY): 0.5 sec.

FULL SCALE VOLTS: 1.4 v average.

COIL RESISTANCE: 1400 ohms average.

POWER CONSUMPTION: 1.4 mw average.

**CHART DATA**

LENGTH: 103 ft, useful 100 ft.  
WIDTH: 6 in., ruled portion 4-1/2 in.

**SPEED**

INCHES PER HOUR: 3/4, 1-1/2, 3, 6 or 12.

INCHES PER MINUTE: 3/4, 1-1/2, 3 or 6,

**MOTOR DATA**

DRIVE: Synchronous type.

REROLL: Induction type.

**CHRONOGRAPH PEN DATA**

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 92842: Technical Manual for Milliammeter Recorder RD-49A/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE      COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Milliammeter Recorder RD-49A/U	8-9/16 X 9-5/16 X 15-1/4	34
2	Technical Manual NAVSHIPS 92842	1/4 X 9 X 11-3/8	
1	Set of Accessories		

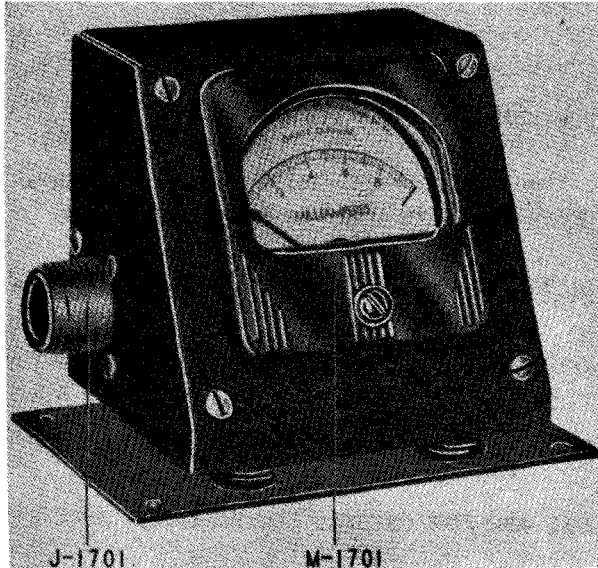
UNCLASSIFIED

April 1959

Test-Current and Voltage Measurement

### MILLIAMMETER

TS-116/APS-15



Milliammeter TS-116/APS-15

#### FUNCTIONAL DESCRIPTION

The Navy Model TS-116/APS-15 is a 0-1 milliamp milliammeter designed to measure crystal current in the AN/SPS-15 Radar Equipment. Meter is housed in a small metal case and includes AN connector, AN-3102-128-38. Case is shock mounted to a mounting plate which can be attached to the bottom or rear of case.

No field changes in effect at time of preparation (25 August 1958).

#### RELATION TO OTHER EQUIPMENT

Identical to Crystal Current Meter used

in the AN/SPS-3A.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0-1 milliamp.

RESISTANCE: 90 ohms.

ADJUSTMENT: 3 percent of scale.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

Philco Corp., Philadelphia, Pa.

Contract NXsa-32850.

#### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals.

#### REFERENCE DATA AND LITERATURE

Nomenclature Card, Technical Manual for AN/APS Aircraft Radar Equipment.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

#### EQUIPMENT SUPPLIED DATA

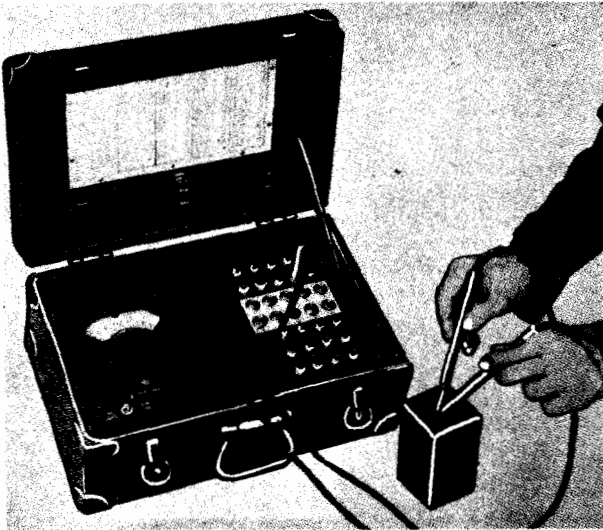
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Milliammeter	3 X 3-3/16 X 4-3/16	

UNCLASSIFIED

4.1 TS-116/APS-15: 1

**BATTERY TESTER**

**TS-183/U**



Battery Tester

**RELATION TO OTHER EQUIPMENT**

Same as 183A/U, TS-183B/U except for physical differences in component parts.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

BATTERY VOLTAGE TEST RANGE: 1.3 v to 200 v.  
VOLTMETER  
RANGES: 0 to 2, 0 to 10, 0 to 50, 0 to 200 v.  
SENSITIVITY: 1000 ohms per v.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**FUNCTIONAL DESCRIPTION**

The TS-183/U is a completely self-contained and portable piece of equipment for checking the terminal voltages of dry batteries.

By using a multirange voltmeter, a set of load resistors, a set of multiplier resistors and a jack switching arrangement that gives a total of 32 different load resistor combinations, a rapid and accurate check of dry batteries under load can be made. The voltage rating of these batteries may range from 1.3 volts to 200 volts.

The battery tester is contained in a waterproof and dustproof wooden case.

No field changes in effect at time of preparation (23 August 1956).

**REFERENCE DATA AND LITERATURE**

TM 11-2571 Technical Manual for Battery Testers TS-183/U.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TESSA  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Case	7 X 9-1/2 X 15	7.75
1	Operating Panel	1/8 X 8-3/8 X 13-5/8	1.3
1	Voltmeter (TS-183/U only)	3 X 4-1/2 X 4-1/2	2.6
1	Load Resistor Assembly (TS-183/U only)	2-3/4 X 2-7/8 X 4-7/8	2.4
1	Multiplier Resistor Assembly (TS-183/U only)	7/8 X 1-1/2 X 2-3/4	.16
32	Jack	7/8 X 7/8 X 1	.03
2	Test Cord	36	.2
1	Test Cord	9	.06
1	Switch	5/8 X 1-1/8 X 2	.06

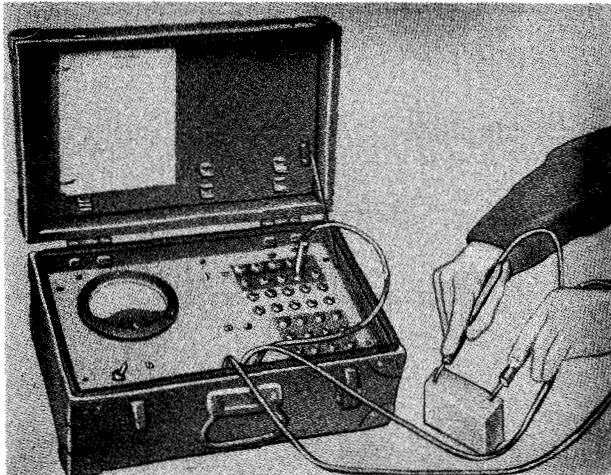
UNCLASSIFIED

December 1956

Test-Voltage and Current Measuring

**BATTERY TESTER**

**TS-183B/U**



*Battery Tester TS-183B/U*

**FUNCTIONAL DESCRIPTION**

The TS-183B/U is a self-contained, portable battery testing device designed primarily for checking the terminal voltages of dry batteries.

A multirange voltmeter, a set of load resistors, a set of multiplier resistors, and a jack switching arrangement that provide 32 different load resistor combinations are included in this unit permitting a rapid and accurate measurement of battery potentials under load conditions.

No field changes in effect at time of preparation (10 August 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**METER DATA**

TYPE: D'Arsonval.

SCALES: 0 to 2, 0 to 10, 0 to 50 and 0 to 200 v DC.

SENSITIVITY: 1000 ohm per v.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Munston Mfg. and Service Inc., New York, N.Y.

Sig Order-2379-Ph-50.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

TM11-2571: Dept of Army Technical Manual for Battery Testers TS-183/U, TS-183A/U, TS-183B/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Case	7 X 9-1/2 X 15	7.75
1	Operating Panel	1/8 X 8-3/8 X 13-5/8	1.3
1	Voltmeter and Multiplier Resistor Assembly	1-3/8 X 3-3/4	2.0
1	Load Resistor Assembly	2-3/4 X 7 X 7-1/2	1.8
32	Jack	7/8 X 7/8 X 1	0.03
2	Test Cord	36	0.2
1	Test Cord	9	0.06
1	Switch	5/8 X 1-1/8 X 2	0.06

UNCLASSIFIED

4.1 TS-183B/U: 1

19 February 1963

Cog Service: USAF FSN:

TEST SET TS-257/ARW

Functional Class: 1.1.3

USA

USN

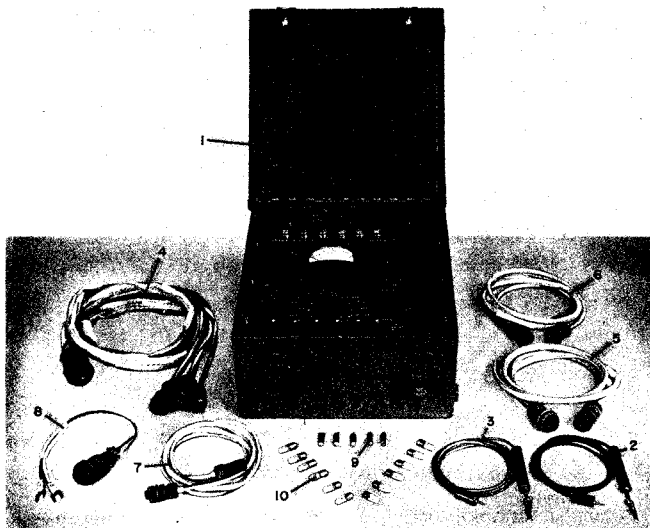
USAF

TYPE CLASS:

Std

Std

MANUFACTURER'S NAME/CODE NUMBER: Lavoie Laboratories, (35225).



1. Test Set TS-257/ARW
2. Cord CX-529/U (black)
3. Cord CX-529/U (red)
4. Special Purpose Cable Assembly CX-1164/ARW
5. Special Purpose Cable Assembly CX-1247/U (6 ft.)
6. Special Purpose Cable Assembly CX-1248/U (6 ft.)
7. Special Purpose Cable Assembly CX-1249/U (6 ft.)
8. Special Purpose Cable Assembly CX-1255/U (1 ft.)
9. Crystals, 1N21B
10. Lamps, Incandescent, LM-52 (Mazda No. 47)

*Test Set TS-257/ARW*

#### FUNCTIONAL DESCRIPTION:

Test Set TS-257/ARW is a portable test set designed to check the operation of Radio Receiving Sets AN/ARW-26, AN/ARW-26X, and AN/ARW-26Y, and their associated servo mechanisms. The checking of the latter can be accomplished either by audible or visual indication within 50 feet. In addition, the test set provides a means of locally operating the servo equipment associated with these equipments.

No field changes in effect at time of preparation (24 May 1962).

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 1.5 v dc, 6.0 v dc.

RANGES

DC VOLTS: 0 to 5, 10, 50, 100, 300.

---

**TS-257/ARW TEST SET**

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DC MILLIAMPERES: 0 to 15, 30.  
OHMS: 0 to 50,000.  
RF VOLTS: (30% modulated) 0 to 0.4 (not calibrated).  
SENSITIVITY: 5000 ohms per v.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(1) Battery BA-35; (1) Battery BA-210/U; (1) Headset HS-23 or HS-33.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set TS-257/ARW includes:		8 x 12 x 13	13
1	Cord CX-529/U (Black)		48 1g	0.13
1	Cord CX-529/U (Red)		48 1g	0.13
1	Cable Assy, Special Purpose CX-1164/ARW		72 1g	1.25
1	Cable Assy, Special Purpose CX 1247/U		72 1g	0.5
1	Cable Assy, Special Purpose CX-1248/U		72 1g	0.5
1	Cable Assy, Special Purpose CX-1249/U		72 1g	0.25
1	Cable Assy, Special Purpose CX-1255/U		12 1g	0.25
5	Crystals 1N21B			0.06
12	Lamp, Incandescent LM-52(Mazda no. 47)			0.13

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**REFERENCE DATA AND LITERATURE:**

TO 33A1-3-63-1: Handbook of Operating Instructions for Test Set TS-257/ARW.  
TO 33A1-3-63-3: Handbook of Maintenance Instructions for Test Set TS-257/ARW.  
TO 33A1-3-63-4: Parts Catalog for Test Set TS-257/ARW.  
TO 33A1-3-63-24: Maintenance Spare Parts List for Test Set TS-257/ARW.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N21B

## SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.91	30

## PROCUREMENT DATA

PROCURING SERVICE: USAF   DESIGN COG: USAF, WADC  
SPEC &/OR DWG: USAF Exhibit MCREE-545;  
                          USAF Spec 71-5056;  
                          Dwgs 46D40807, 49D12653

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Lavoie Laboratories	Morganville, New Jersey	AF33(038)-7677	
Technitrol Engineering Co.	Philadelphia, Pennsylvania	AF33(038)-11898	\$212.00

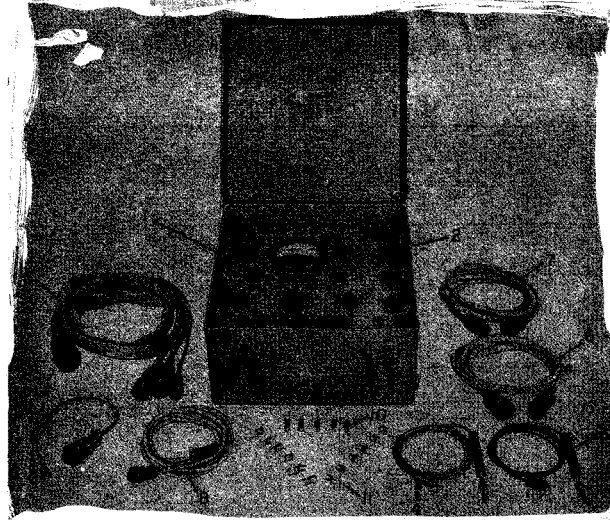


25 February 1963  
Cog Service: USAF FSN:

TEST SET TS-257A/ARW  
Functional Class: 1.1.3

	USA	USN	USAF
TYPE CLASS:		Std	Std

MANUFACTURER'S NAME/CODE NUMBER: Hauman Instruments Company, Incorporated, (01362).



1. Panel Assembly, Test Set TS-257A/ARW
2. Cabinet, Test Set 257A/ARW
3. Cord Assembly CX-529/U (black)
4. Cord Assembly CX-529/U (red)
5. Special Purpose Cable Assembly CX-1164/ARW
6. Special Purpose Cable Assembly CX-1247/U (6 ft)
7. Special Purpose Cable Assembly CX-1248/U (6 ft)
8. Special Purpose Cable Assembly CX-1249/U (6 ft)
9. Special Purpose Cable Assembly CX-1255/U (1 ft)
10. Crystals, 1N21B (spare parts)
11. Lamps, Incandescent No. 47 (spare parts)

*Test Set TS-257A/ARW*

**FUNCTIONAL DESCRIPTION:**

Test Set TS-257A/ARW is a portable test set designed to check the operation of Radio Receiving Sets AN/ARW-26, AN/ARW-26X, and AN/ARW-26Y, and their associated servo mechanisms. The checking of the latter can be accomplished either by audible or visual indication within 50 feet. In addition, the test set provides a means of locally operating the servo equipment associated with these equipments.

No field changes in effect at time of preparation (24 May 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 1.5 v dc, 6.0 v dc.

RANGES

DC VOLTS: 0 to 5, 10, 50, 100, 300.

---

**TS-257A/ARW TEST SET**

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DC MILLIAMPERES: 0 to 15, 30.

OHMS: 0 to 50,000.

RF VOLTS: (30% modulated) 0 to 0.4 (not calibrated).

SENSITIVITY: 5,000 ohms per v.

RELATION TO OTHER EQUIPMENT: None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(1) Battery BA-35; (1) Battery BA-210/U; (1) Headset HS-23 or HS-33.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set TS-257A/ARW includes:		8 x 12 x 13	13
1	Cord CX-529/U (Black)		48 lg	0.13
1	Cord CX-529/U (Red)		48 lg	0.13
1	Cable Assy, Special Purpose CX-1164/ARW		72 lg	1.25
1	Cable Assy, Special Purpose CX-1247/U		72 lg	0.5
1	Cable Assy, Special Purpose CX-1248/U		72 lg	0.5
1	Cable Assy, Special Purpose CX-1249/U		72 lg	0.25
1	Cable Assy, Special Purpose CX-1255/U		12 lg	0.25
5	Crystals 1N21B			0.06
12	Lamp, Incandescent (G.E. no. 47)			0.13

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**REFERENCE DATA AND LITERATURE:**

TO 33A1-3-63-11: Handbook of Operation and Service Instructions for Test Set TS-257A/ARW.

TO 33A1-3-63-14: Illustrated Parts Breakdown for Test Set TS-257A/ARW.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N21B

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.91	30

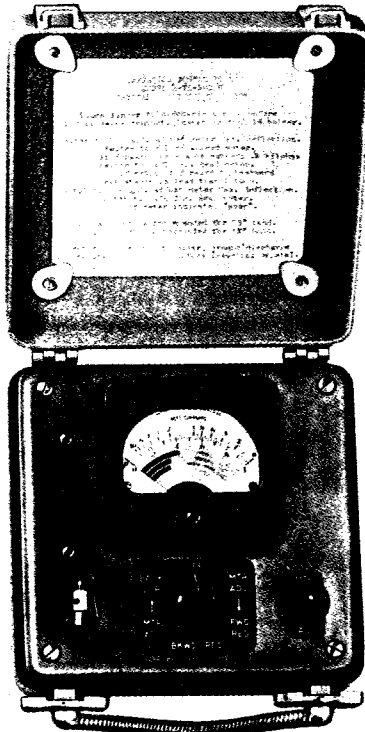
PROCUREMENT DATA

PROCURING SERVICE: USAF  
SPEC &/OR DWG:

DESIGN COG: USAF, WADC

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hauman Instruments Co., Inc.	Watertown, Mass.		

March 1957

**CRYSTAL RECTIFIER TEST SET****TS-268/U SERIES**

*Crystal Rectifier Test Set TS-268/U Series*

**FUNCTIONAL DESCRIPTION**

The TS-268/U series is a portable, self-contained test unit designed to make speedy qualitative tests on certain types of crystal rectifiers.

It measures the forward and the backward resistance of the crystal under test in order to obtain a ratio which indicates quality. The condition of the crystal can further be determined by measure of backward current flow.

Following is a partial list of crystal rectifiers which may be tested with this equipment.

	LEAST SENSITIVE	MEDIUM SENSITIVE	MOST SENSITIVE	HIGH BURN OUT
L-Band	1N21			1N25
S-Band	1N21	1N21A	1N21B	
X-Band	1N23	1N21A	1N21B	

No field changes in effect at time of preparation (24 August 1956).

**RELATION TO OTHER EQUIPMENT**

It is part of Test Kit AN/UPM-7, and of Radar Test Set AN/TPM-3. TS-268/U is the interim model for TS-268A/U, and is similar to MIT type TMN-10RL. TS-268A/U is the tro-

pical version of TS-268/U. TS-268B/U replaces TS-268/U, TS-268C/U replaces TS-268B/U, functions and characteristics being the same, except for the water tight case cover.

**METER**

RANGE: 0 to 10,000 ohms: 0 to 1 ma DC.

ACCURACY:  $\pm 2\%$ .

TEMPERATURE RANGE:  $-4$  deg F to  $+120$  deg F.

OPERATING POWER: 1.5 v DC from dry battery.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

(TS-268/U Radio Frequency Laboratories, Inc., Boonton, N. J.

Contract NXsr-84999, dated 12 December 1944.

Contract LL-NXsr-93897, dated 17 April 1945.

(TS-268A/U) Marion Electrical Instrument Company, Manchester, N. H.

(TS-268B/U) Contract 28-099-45-343.

(TS-268C/U) Munston Manufacturing and Service Inc., New York, N. Y.

Contract W-33-038-AC-17893.

Approximate Cost: \$60.00 with equipment spares. (All models.)

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 900, 647: Technical Manual for Crystal Rectifier Test Set TS-268/U.

AN16 35TS268-2: Technical Manual for Crystal Rectifier Test Set TS-268/U.

TM11-1242: Technical Manual for Crystal Rectifier Test Set TS-268/U.

TM11-1200: Technical Manual for Radar Test Equipment.

TM1-215: Technical Manual for Crystal Rectifier Test Set TS-268B/U.

NAVAER 08-55-78: Technical Manual for Test Equipment TS-268B/U.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE

STOCK NO.

R.D.B. IDENT. NO.

## TS-268/U SERIES

## CRYSTAL RECTIFIER TEST SET

March 1957

## SHIPPING DATA

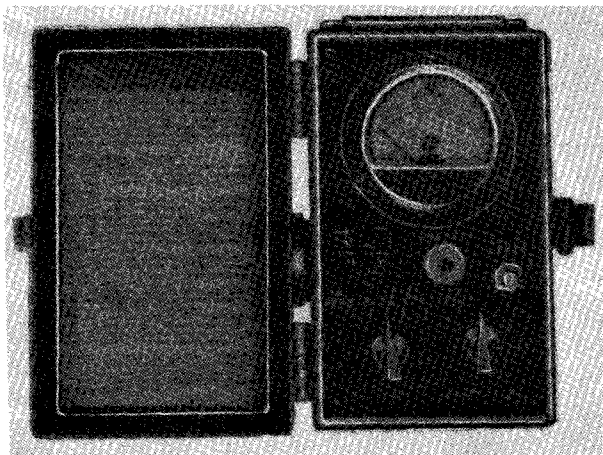
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Crystal Rectifier Test Set TS-268/U, domestic package	0.15	6-1/4 X 6-1/2 X 7-3/4	4.0
1	Crystal Rectifier Test Set TS-268BA/U, shelf package	0.10		
1	Crystal Rectifier Test Set TS-268B/U, shelf package	0.10		
1	Crystal Rectifier Test Set TS-268C/U, in water-resistant carton	0.31		
1	Crystal Rectifier Test Set TS-268D/U			

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Crystal Rectifier Test Set TS-268/U	3 X 6 X 7	3.0
1	Dry Battery BA-30		
2	Technical Manuals NAVSHIPS 900,647		
1	Crystal Rectifier Test Set TS-268A/U	4-1/2 X 6 X 7-1/2	
1	Dry Battery BA-30		
2	Technical Manuals		
1	Crystal Rectifier Test Set TS-268B/U	4-3/8 X 5-3/4 X 7-1/2	3.5
1	Dry Battery BA-30		
2	Technical Manuals		
1	Crystal Rectifier Test Set TS-268C/U	3-1/2 X 5-1/2 X 8	3.4
1	Dry Battery BA-30		
2	Technical Manuals		
1	Crystal Rectifier Test Set TS-268D/U	4-3/4 X 5-3/4 X 7-1/2	
1	Dry Battery BA-30		
2	Technical Manuals		

### CRYSTAL RECTIFIER TEST SET

### TS-268E/U



*Crystal Rectifier Test Set TS-268E/U*

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 1.5 v DC.  
METER RANGE: 0 to 10,000 ohms; 0 to 1 ma DC.  
TYPE CRYSTALS CHECKED: 1N21, 1N23, 1N25,  
1N26.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

George Voran and Co, Philadelphia, Pa.

No Electron Tubes or Crystals used.

#### REFERENCE DATA AND LITERATURE

TM11-1259: Technical Manual for Radar Test  
Set AN/MPN-24.  
Nomenclature Card for Crystal Rectifier Test  
Set TS-268E/U.

#### FUNCTIONAL DESCRIPTION

Crystal Rectifier Test Set TS-268E/U is a portable equipment used in testing of specific types of rf crystal rectifiers.

No field changes in effect at time of preparation (25 March 1959).

#### RELATION TO OTHER EQUIPMENT

This equipment is part of Radar Test Set AN/MPN-24.

#### EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Battery BA-30.

<b>TYPE CLASSIFICATION</b>	
<b>DESIGN COGNIZANCE</b>	TASSA
<b>PROCUREMENT COGNIZANCE</b>	Spec MIL-C-10731
<b>STOCK NO.</b>	(Sig C)
<b>R.D.B. IDENT. NO.</b>	1.2.3

#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Crystal Rectifier Test Set TS-268E/U	3-5/8 X 6 X 8-3/16	3.0

**MULTIMETER**

**TS-290/U**



*Multimeter TS-290/U*

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 6 v DC.  
 VOLTAGE RANGE: 0 to 6; 30; 150; 600 v AC;  
 0 to 6; 150; 300; 1,500 v DC.  
 CURRENT RANGE: 0 to 0.3, 6, 30, 150 ma DC.  
 ATTENUATION RANGE: -6 to +50 db.  
 RESISTANCE RANGE: 0 to 2,000; 20,000;  
 200,000 ohms; 2 meg.  
 SENSITIVITY: 5,000 ohms/v.  
 ACCURACY: ±3% (ac); ±5% (dc).  
 METER MOVEMENT: 200 ua.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Supreme Instruments Corp., Greenwood,  
 Miss.  
 Contract No. NXs-3530.

**FUNCTIONAL DESCRIPTION**

Multimeter TS-290/U is a portable instrument used in measuring ac and dc voltage, direct current, resistance, and attenuation.

No field changes in effect at time of preparation (14 July 1959).

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**RELATION TO OTHER EQUIPMENT**

This equipment is similar to Supreme Model 542-B.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 95647: Technical Manual for Pocket Multimeter Supreme Model 542.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED**

Battery: (4) 1.5 v.

TYPE CLASSIFICATION STD  
 DESIGN COGNIZANCE USA, SIG C  
 PROCUREMENT COGNIZANCE NAVY SPEC RE9374  
 STOCK NO.  
 R.D.B. IDENT. NO. 1.1.3

**SHIPPING DATA**

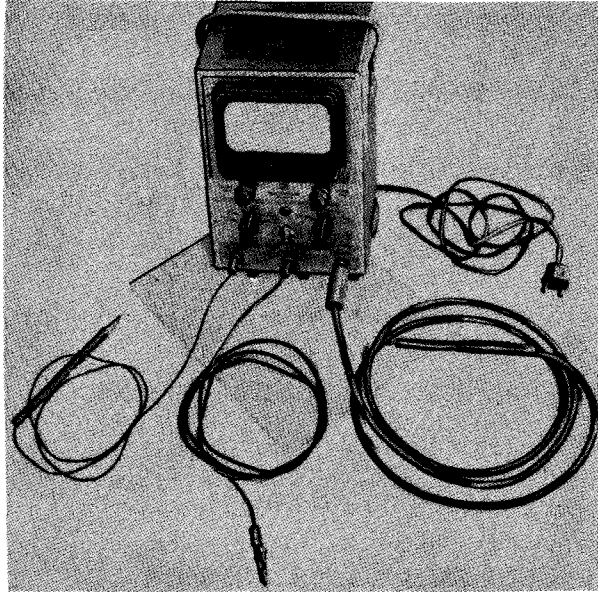
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter TS-290/U			2

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-290/U	2-1/8 X 3-1/16 X 5-7/8	1.5

**VOLTOHMMETER**

**TS-294/U, TS-294A/U,  
TS-294B/U**



*Voltohmmeter TS-294/U, TS-294B/U*

Equipment Required but not Supplied: 2 Batteries.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 12 W, 115 v, 60 cps, 1 ph; 3 v DC.  
VOLTAGE RANGE  
AC: 0 to 10, 30, 100, 300, 1000 v.  
DC: 0 to 3, 10, 30, 100, 300, 1000 v.  
RESISTANCE RANGE: 0.1 ohm to 1000 megohms, in 6 ranges.  
INPUT RESISTANCE: 11 megohms DC for all ranges.  
SENSITIVITY: 1000 ohms/v AC; 3.66 meg/v DC on 3 v scale.  
ACCURACY:  $\pm 2\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Radio Corp of America, Camden, N. J. (TS-294/U).  
Radio City Products Corp, New York, N. Y. (TS-294A/U).  
Order No. 1872-MPD-44.  
Radio Corp of America, Camden, N. J. (TS-294B/U).

**FUNCTIONAL DESCRIPTION**

The TS-294/U, TS-294A/U, and TS-294B/U are portable, vacuum-tube testing units used in measuring alternating or direct voltage and resistance in high impedance electronic circuits. It measures oscillator strength, automatic volume control voltage, bias cell voltage, automatic frequency control discriminator voltage, frequency modulation discriminator voltage and insulation leakage.

No field changes in effect at time of preparation (2 May 1958).

**RELATION TO OTHER EQUIPMENT**

The TS-294/U is similar to RCA Model 165, TS-294A/U is similar to Radio City Prod Model 664, TS-294B/U is similar to RCA Model 165A.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(2) 6K6GT (1) 6X5GT

Total Tubes: (3)  
No Crystals Used.

**REFERENCE DATA AND LITERATURE**

TM11-2624B: Technical Manual for Voltohmmeters TS-294/U, TS-294B/U, TS-294C/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Voltohmmeter TS-294/U w/Accessories	1.65		14
1	Voltohmmeter TS-294A/U w/Accessories			
1	Voltohmmeter TS-294B/U w/Accessories	1.65		14



**TS-294/U, TS-294A/U,  
TS-294B/U**

**VOLTOHMMETER**

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT			NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
TS-294/U	TS-294A/U	TS-294B/U			
1			Volt ohmmeter TS-294/U	6-5/16 X 6-1/2 X 9-1/2	
	1		Volt ohmmeter TS-294A/U	5-1/2 X 5-7/8 X 9-3/8	
		1	Volt ohmmeter TS-294B/U	6-5/16 X 6-1/2 X 9-1/2	
2	2	2	Technical Manuals		
1	1	1	Lead, Test	50 lg	
1	1	1	Lead, Test	50 lg	
1	1	1	Lead, Test	50 lg	

September 1956

**VOLTOHMMETER****TS-294C/U***Voltohmmeter TS-294C/U***FUNCTIONAL DESCRIPTION**

The TS-294C/U is a portable electronic voltohmmeter used to measure AC and DC voltages and resistance, and also to align frequency modulated discriminator circuits. It is used specifically where only a very small current drain is permitted. DC voltages may be measured at any point in a circuit even though alternating or R-F currents are present at the test point.

No field changes in effect at time of preparation (25 May 1956).

**RELATION TO OTHER EQUIPMENT**

To be replaced by Electronic Multimeter TS-505/U.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

VOLTAGE: 0 to 1000 v AC and DC in 6 steps.

RESISTANCE: 0.1 ohm to 1000 meg in 6 steps.

DECIBELS: -20 to +16 db.

ACCURACY:  $\pm 2\%$ .

SENSITIVITY: 200 ua.

INPUT IMPEDANCE: 10 meg on AC and DC voltage ranges.

POWER REQUIREMENTS: 105 to 125 v AC, 50 to 60 cps, single ph; 105 to 125 v DC; 3 v DC from self contained batteries.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Espey Manufacturing Co., Inc., New York, N.Y., Type FJ237.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 6H6 (2) 6K6GT (1) 6X5WGT

Total Tubes: (4)

**REFERENCE DATA AND LITERATURE**

TM-11-2624B: Technical Manual.

TM-11-487H: Directory of Signal Corps Equipments-Test Equipment.

TM-11-5026: Technical Manual of Test Equipment. IE-9-C.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Volttohmmeter TS-294C/U	1.65		30

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volttohmmeter TS-294C/U	6-3/16 x 6-3/4 x 9-5/8	14
2	Technical Manual TM-11-2624B		
1	Lead, Test RG-58C/U	40 lg	
1	Lead, Test RG-58C/U	46 lg	
1	Lead, Test 71-4945	46 lg	

March 1957

**VOLTOHMMETER****TS-294D/U****FUNCTIONAL DESCRIPTION**

The TS-294D/U is a vacuum tube volt-ohm-meter used to measure AC and DC voltage and resistance over a wide range. It is used specifically where only a very small current drain is permitted. Each instrument consists basically of a 200 microampere d-c meter, a d-c amplifier, a rectifier, a 3-volt internal battery and a power supply. All readings are taken on the scale of the d-c microammeter. A 115-volt, 60 cycle supply is required for operation of the instrument. The instrument is portable, with a carrying handle on top and incorporates a 4-1/2 inch meter and operating controls on the front panel.

No field changes in effect at time of preparation (27 September 1956).

**RELATION TO OTHER EQUIPMENT**

Similar to TS-294/U, TS-294D/U, TS-294B/U and TS-294C/U except for changes in circuitry and component parts.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****RANGE DATA**

DC VOLTMETER: 0 to 3, 10, 30, 100, 300, and 1000 v.

AC VOLTMETER: 0 to 10, 30, 100, 300 and 1000 v.

OHMMETER: From 0-1 to 1000 megohms in six ranges.

ACCURACY:  $\pm 2\%$  of full scale.

**SENSITIVITY**

DC VOLTMETER: 3,660,000 ohms per v on 3 v scale.

AC VOLTMETER: 1000 ohms per volt.

DC INPUT RESISTANCE: 11 meg all ranges.

METER SENSITIVITY: 200 uamp.

POWER SOURCE: 115 v, 60 cps, single ph, and 3 v DC.

POWER CONSUMPTION: 12 W.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Electronic Design Co. Model R-100.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

TM-11-2624B: Technical Manual for Voltohmmeters TS-294/U, TS-294B/U and TS-294C/U.  
Nomenclature Card for TS-294D/U.

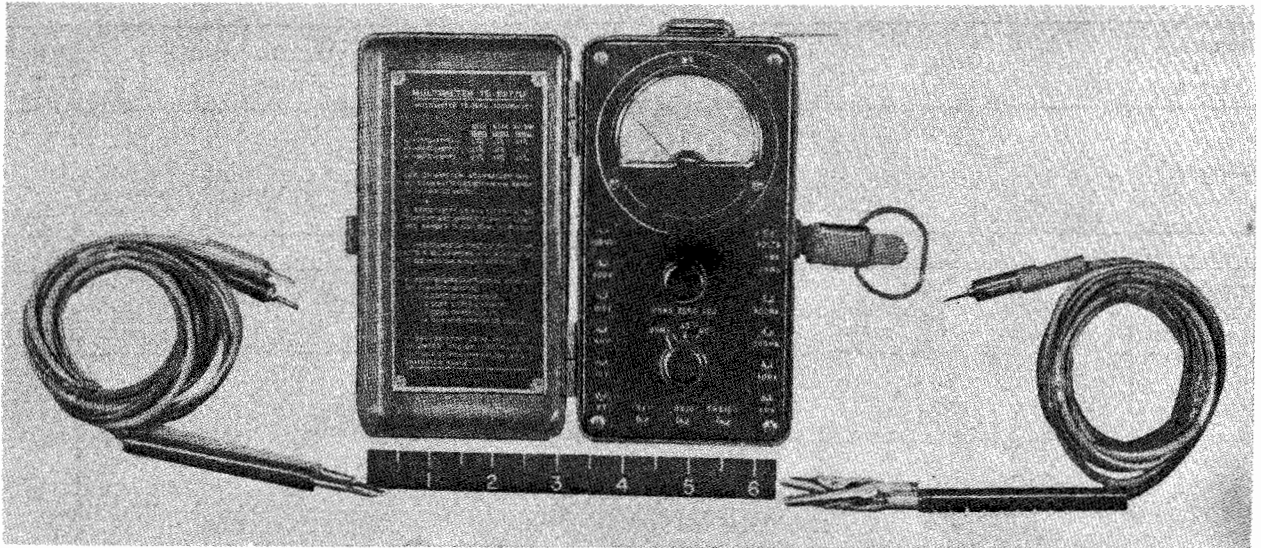
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO:	
R.D.B. IDENT. NO.	

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltohmmeter TS-294D/U	5-9/16 X 5-7/8 X 9-3/8	

## MULTIMETER

TS-297/U



*Multimeter TS-297/U*

### FUNCTIONAL DESCRIPTION

The TS-297/U is a portable test instrument used in the maintenance and repair of electronic equipment. It checks voltage, current, or resistance.

No field changes in effect at time of preparation (25 April 1958).

### RELATION TO OTHER EQUIPMENT

This equipment replaces Test Set I-77, Test Unit I-136, and Multimeters I-239 and TS-380/U.

Equipment Required but not Supplied: (1) Battery BA-42.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

VOLTAGE RANGE: 0 to 4, 10, 40, 100, 400, 1000 v AC, DC.

CURRENT RANGE: 0 to 4, 40, 100, 400 ma DC.

RESISTANCE RANGE: 0 to 1,000; 10,000; 100,000 ohms.

SENSITIVITY: 1,000 ohms/v.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Chicago Industrial Instrument Co, Chicago, Ill.

Contract W36-039-AC-35613 (1938).

Order No. 11906-Phila-47-77.

Utility Electronics Corp, Newark, N.J.

Contract DA-36-039SC-1284.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### REFERENCE DATA AND LITERATURE

TM11-5500: Technical Manual for Multimeter TS-297/U.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE MIL-M-10263  
STOCK NO.  
R.D.B. IDENT. NO.

## TS-297/U

## MULTIMETER

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter TS-297/U		5 x 6 x 8-1/2	5.25

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-297/U including	3-1/4 x 3-1/4 x 6-1/8	2.4
2	Cords CX-529/U	48 lg	
1	Cord CX-468/U	48 lg	
2	Alligator Clips		
2	Technical Manual		

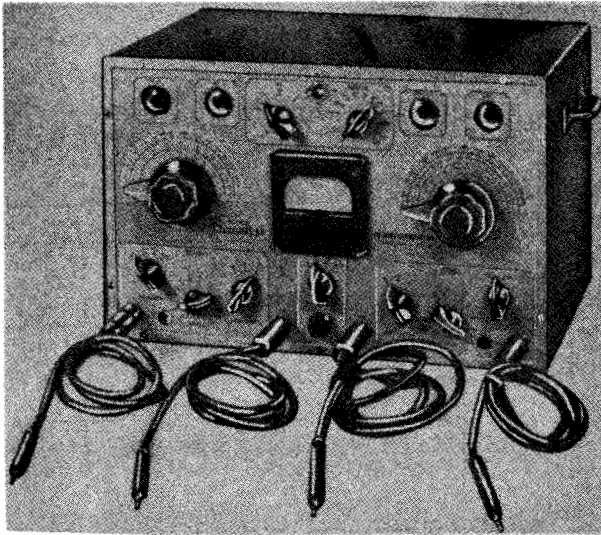
UNCLASSIFIED

August 1957

Test-Voltage and Current Measuring

## TEST SET

## TS-303/G,303A/G



Test Set TS-303/G,303A/G

### FUNCTIONAL DESCRIPTION

The TS-303/G and TS-303A/G are designed for dynamic testing of radio receivers. It includes provisions for signal tracing radio-frequency, intermediate-frequency and audio-frequency signals, for checking tube and stage gains in r.f., i.f. and a-f circuits, for measuring direct current voltages under operating conditions, and for testing alternating current power consumption. These facilities may be combined for the localization of troubles caused by faulty components, for aligning, for selectivity checking and for localizing the source of noise and distortion. The TS-303/G and TS-303A/G are functionally identical but differ in certain minor physical and electrical characteristics, mainly in the lower limit of the low frequency band, degree of sensitivity and in the lower limit of the power range.

No field changes in effect at time of preparation (8 January 1957).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RF-IF CHANNEL  
FREQUENCY RANGE

UNCLASSIFIED

BAND A: 96 kc to 260 kc for TS-303A/G;  
95 kc to 260 kc for TS-303/G  
BAND B: 240 kc to 630 kc.  
OUTPUT INDICATOR: Electron ray tube.  
SENSITIVITY: 50 to 70 uv to close indicating "eye" when direct probe is used; 5 to 7 millivolts to close "eye" when rf-if probe is used.  
CALIBRATION ACCURACY:  $\pm 2\%$  for frequency calibrations;  $\pm 20\%$  for multiplier and level control calibrations.

#### OSCILLATOR CHANNEL

##### FREQUENCY RANGE

BAND A: 600 kc to 1700 kc.  
BAND B: 1650 kc to 4900 kc.  
BAND C: 4800 kc to 15000 kc.

OUTPUT INDICATOR: Electron ray tube.  
SENSITIVITY: Approx 0.1 volt to close indicating "eye" when direct probe is used; approx. 10 volts when oscillator probe is used.  
CALIBRATION ACCURACY:  $\pm 2\%$  for frequency calibrations;  $\pm 20\%$  for level control calibrations.

#### A.F. CHANNEL

FREQUENCY RANGE: 150 to 50000 cps.  
OUTPUT INDICATOR: Electron-ray tube.  
SENSITIVITY: Approx 0.1 v to close indicating "eye" in TS-303A/G; 0.15 v in TS-303/G.  
INPUT IMPEDANCE: Approx 2 megohms.  
CALIBRATION ACCURACY:  $\pm 20\%$  for multiplier and level control calibrations.  
ELECTRONIC VOLTMETER:  
VOLTAGE RANGES:  $-5$  to  $+5$ ,  $-25$  to  $+25$ ,  $-125$  to  $+125$ ,  $-500$  to  $+500$  v DC.  
INPUT RESISTANCE: Approx 11 megohms.  
CALIBRATION ACCURACY:  $\pm 4\%$  at 60% of full-scale readings.

#### WATTAGE INDICATOR CHANNEL

POWER RANGE: 30 to 250 W in TS-303A/G;  
25 to 250 W in TS-303/G.  
OUTPUT INDICATOR: Electron ray tube.  
CALIBRATION ACCURACY:  $\pm 20\%$  (based on 80% power factor).

### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6ACWA (4) 6E5 (1) 6H6 (2) 6K7  
(1) 6Q7 (1) 6SK7WA (1) 6X5WGT (1) 76

Total Tubes: (12)

**TS-303/G,303A/G**

**TEST SET**

**REFERENCE DATA AND LITERATURE**

TM11-2659, Technical Manual for Test Sets  
TS-303/G and TS-303A/G.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	TEST SET TS-303/G or TS-303A/G	*1.75 <del>4.33</del>	*12 X 14 X 18 <del>16 X 18 X 26</del>	*28 <del>64</del>
NOTES:	*Domestic shipments <del>Export shipments</del>			

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set TS-303/G or TS-303A/G	9 X 10-3/4 X 16	
2	Clip Attachments for Probes		
1	Voltmeter Cable Assembly		
1	A.F. Cable Assembly		
2	Flexible Connectors for Probes		
1	Ground Lead		
1	Oscillator Cable Assembly		
1	RF-IF Cable Assembly		
1	Interchannel Cable Assembly		



UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

### TEST SET

### TS-313/U

#### FUNCTIONAL DESCRIPTION

The TS-313/U is a portable instrument designed as a combination tube, battery, and capacitor tester as well as a multimeter that incorporates seven functions. It tests most receiving type tubes, batteries under load, capacitors at rated voltage, and most voltages and currents encountered in electronic servicing.

The multimeter includes a total of 29 selected ranges and provisions for electrolytic and electrostatic capacitor checks, 27 multimeter functions being operated from only one pair of pin jacks by means of two sets of push button switches which make it a completely automatic unit.

No field changes in effect at time of preparation (17 July 1957).

#### RELATION TO OTHER EQUIPMENT

The TS-313/U is the same as Supreme Model 504-A.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

##### RANGES

DIRECT CURRENT: 0 to 0.5, 2.5, 10, 50, 250 ma, 0.25 to 1, 10 amps.

##### VOLTAGE

DC: 0 to 5, 25, 100, 250, 500, 1000, 2500 v.

AC: 0 to 5, 10, 50, 250, 1000 v.

RESISTANCE: 0 to 20, 200, 2000, 20000 ohms, 20 megohms.

OUTPUT VOLTAGE: 0 to 5, 10, 50, 250, 1000 v approx at 400 cps.

CAPACITOR LEAKAGE: 2 to 50 ufd, 25 to 450 wv.

SENSITIVITY: 500 ua.

POWER REQUIREMENTS: 110 to 133 v, 60 cps, 25 W.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

Supreme Instrument Corp, Greenwood, Miss.

#### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 71A

Total Tubes: (1)

#### REFERENCE DATA AND LITERATURE

TM11-2517: Technical Manual for Supreme Tubes Tester Model 504-A.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

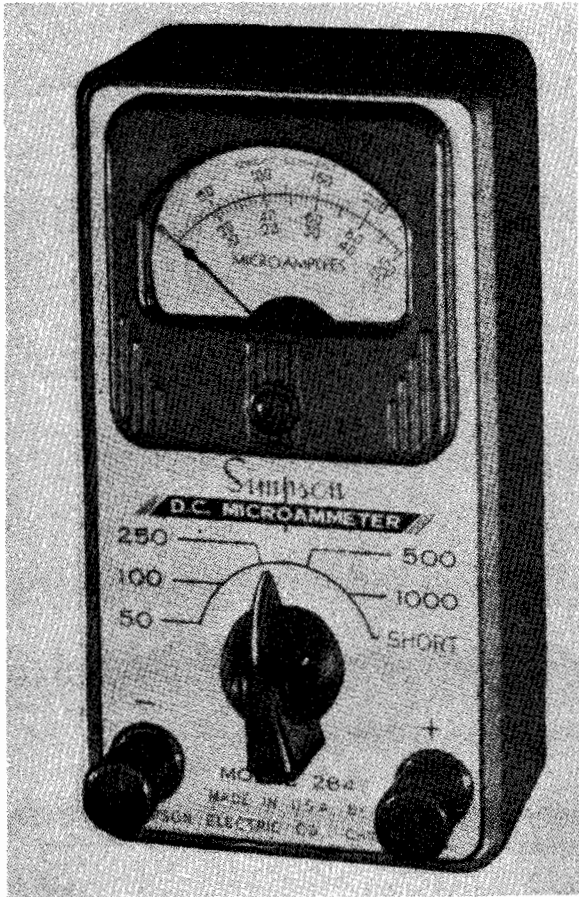
#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set TS-313/U	6 X 12-3/8 X 14-1/4	15.5
1	Set of Test Leads		

UNCLASSIFIED

**D.C. MICROAMMETER**

**TS-325/U, 60107**



D.C. Microammeter TS-325/U

**RELATION TO OTHER EQUIPMENT**

This equipment identical with Simpson Model 284.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

CURRENT RANGE: 0 to 50; 100; 250; 500; 1,000  
ua.

ACCURACY:  $\pm 2\%$ .

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Simpson Electric Co., Chicago, Illinois.  
Contract NXsr-71264.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**REFERENCE DATA AND LITERATURE**

Simpson Electrical Instruments Catalog No.  
15.

**FUNCTIONAL DESCRIPTION**

D.C. Microammeter TS-325/U, 60107 is a portable multirange equipment used in tuning and adjusting receivers, transmitters, and other electronic equipment.

No field changes in effect at time of preparation (18 March 1959).

**TYPE CLASSIFICATION**  
DESIGN COGNIZANCE BUSHIPS  
PROCUREMENT COGNIZANCE Navy Spec RE-13A985  
STOCK NO.  
R.D.B. IDENT. NO. 1.1.2.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	D.C. Microammeter TS-325/U 60107	1-3/4 X 2-7/8 X 5-1/4	1.33
2	Test Leads		
2	Technical Manual		

26 February 1963

Cog Service: USN FSN:

VOLTMETER TS-340/U  
Functional Class: 1.1.1.5

USA

USN

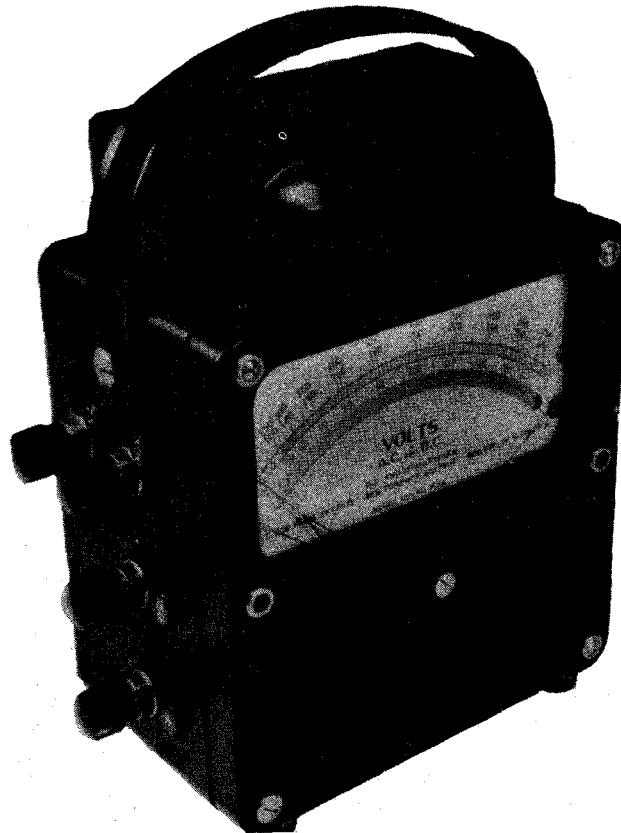
USAF

TYPE CLASS:

Std

Std

MANUFACTURER'S NAME/CODE NUMBER: Weston Electrical Instrument Corp., (65092).



*Voltmeter TS-340/U*

#### FUNCTIONAL DESCRIPTION:

Voltmeter TS-340/U is a portable, general purpose, self-contained instrument used to measure ac and dc voltages. Measurements are presented on a calibrated scale. The meter uses an electro-dynamometer type movement and has a mirror scale which, in conjunction with the knife edge pointer, eliminates parallax errors. AC and dc inputs have separate terminals.

No field changes in effect at time of preparation (15 June 1962).

#### TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 25 to 400 cyc.

METER RANGES, AC: 0 to 150, 0 to 300, 0 to 750 v.

METER RANGES, DC: 0 to 150, 0 to 300, 0 to 750 v.

SCALE LENGTH: 4.04 in.

NUMBER OF SCALE DIVISIONS: 150.

ACCURACY: Porm 0.5%.

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**TS-340/U VOLTMETER**

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**RELATION TO OTHER EQUIPMENT:**

This equipment is similar to Weston Model 455.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Voltmeter TS-340/U		3-1/2 x 5-3/4 x 6-5/8	3.62

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**REFERENCE DATA AND LITERATURE:**

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.18	8

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

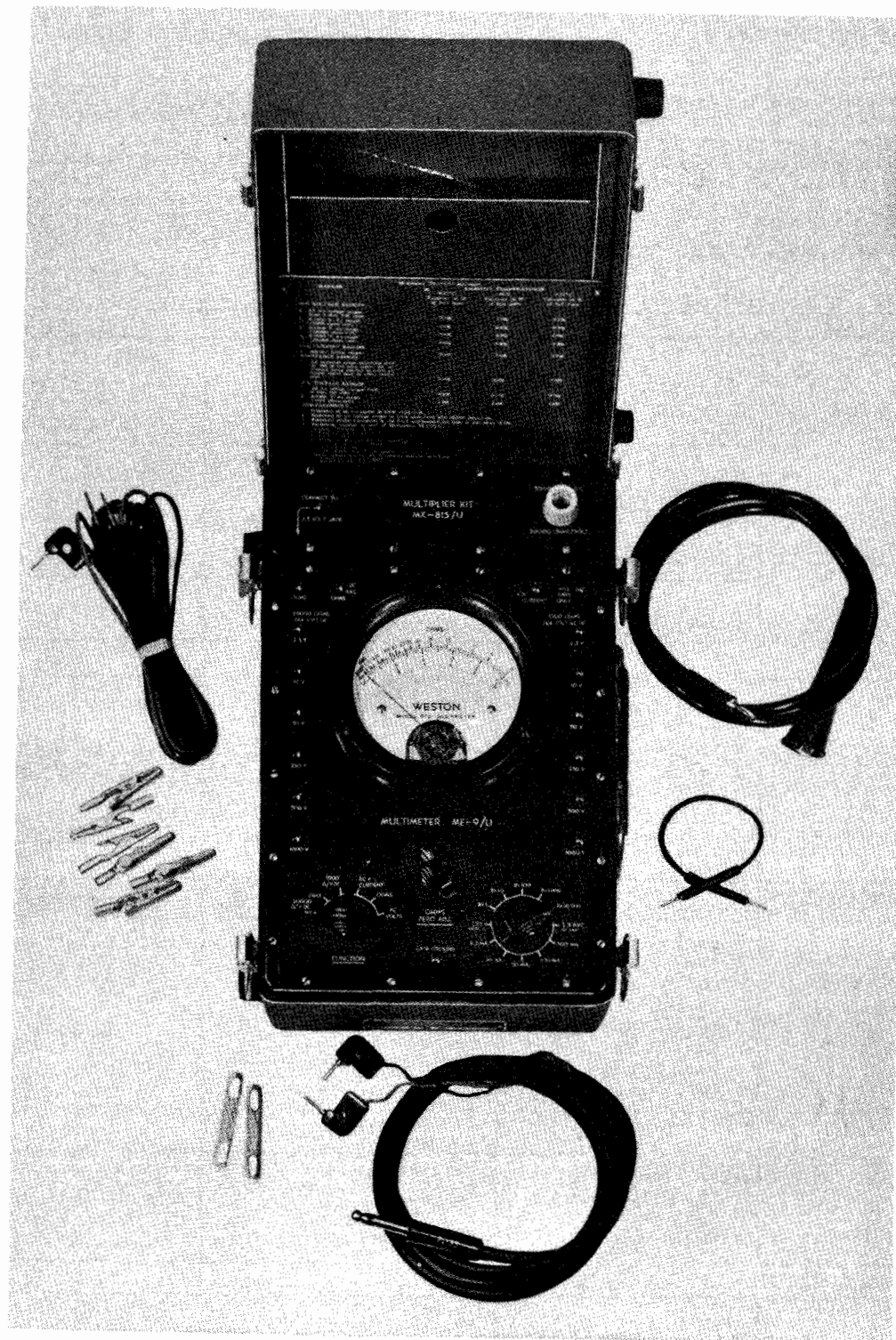
DESIGN COG: USN, BuShips

SPEC &/OR DWG: Sig C Spec 71-2202A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Weston Electrical Instrument Corp.	Newark, N.J.		\$133.00

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**MULTIMETER**



*Multimeter TS-352/U*

**TS-352/U**

**MULTIMETER**

**FUNCTIONAL DESCRIPTION**

The Multimeter TS-352/U is a portable, general purpose, multi-range equipment for use in circuit analysis and trouble-shooting. The Multimeter is constructed to give accurate and reliable readings on all ranges under extreme conditions of temperature and moisture.

No field changes in effect at time of preparation (30 April 1958).

**RELATION TO OTHER EQUIPMENT**

Multimeter TS-352/U supersedes Navy Model OE Series. It will be superseded by Multimeter AN/PSM-4 for Navy BuShips purposes.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER SUPPLY 15 v, dc, from dry batteries (not supplied)

DC VOLTAGE	RANGES	SENSITIVITY	ACCURACY
	0 to 2.5 v 0 to 10 v 0 to 50 v 0 to 250 v	1000 ohms per v and 20,000 ohms per v	±3% of full scale
	0 to 500 v 0 to 1000 v	1000 ohms per v	±3% of full scale
	0 to 1000 v	20,000 ohms per v	±4% of full scale
	0 to 5000 v (using MX-815/U)	20,000 ohms per v	±6% of full scale
AC VOLTAGE			
	0 to 2.5 v 0 to 10 v 0 to 50 v 0 to 250 v 0 to 500 v	1000 ohms per v	±4% of full scale between 25 and 5000 cps ±3% of full scale at 10,000 cps ±7% of full scale at 20,000 cps
	0 to 1000 v	1000 ohms per v	±5% of full scale
DIRECT CURRENT	RANGES	SENSITIVITY	ACCURACY
	0 to 250 ua 0 to 2.5 ma 0 to 10. ma 0 to 50 ma 0 to 100 ma 0 to 500 ma 0 to 2.5 amp 0 to 10 amp	On the 2.5 ma range, the re- sistance of the Meter is 100 ohms ±1%	±3% of full scale
RESISTANCE	RANGES	CENTER-SCALE	ACCURACY
	0 to 1000 ohms 0 to 10,000 ohms 0 to 1 meg 0 to 10 meg	25 ohms 250 ohms 25,000 ohms 250,000 ohms	±3% of full scale arc length
ACCURACY FUNCTION OF TEMPERATURE			
	-40°C	+25°C	+55°C
0 to 500 v, dc	±6%	±3%	±5%

MULTIMETER

TS-352/U

0 to 1000 v, dc, 1000 ohms per v	±6%	±3%	±5%
0 to 1000 v, dc, 20,000 ohms per v	±8%	±4%	±6%
0 to 5000 v, dc, 20,000 ohms per v	±9%	±6%	±8%
0 to 500 v, ac	±7%	±4%	±5%
0 to 1000 v, ac	±8%	±5%	±6%
All ranges dc milliamperes	±6%	±3%	±5%
All ranges, ohms	±8% of full scale arc	±3% of full scale arc	±5% of full scale arc

**PRESENTATION AND CONTROLS:** The meter is a 4-1/2 inch diameter sealed instrument, which has three scale arcs of different colors. The top scale is used for ohms, the lower scale is used for ac volts and the center scale is used for both dc volts and dc amperes. Two selector switches are provided, one for ranges and the other for FUNCTION. An OHMS ZERO ADJ knob is used when measuring resistances. Different pin tip jacks are provided for various ranges and for either 1000 ohms per volt or 20,000 ohms per volt sensitivities. A high voltage jack is provided on the MULTIPLIER KIT panel for the 5000 v dc range.

**FITTINGS AND ACCESSORIES:** All range connectors on the Multimeter and Multiplier Kit panels are pin tip jacks, except for the 5000 v, dc connector which is a porcelain insulated banana jack. A total of five cords or leads are supplied. One patch cord is for use with the Multiplier Kit to transfer the divided voltage to the Multimeter. One high voltage cord is provided with a banana plug on one end and an insulated crocodile clip on the other. One test cord is terminated by a telephone plug (PL-55) on the "test" end, and two red and black test leads by the usual insulated pin tip probes. Six alligator clips are available for use as desired. For resistance measurements, a total of four dry cells are necessary (which are not supplied with the equipment) to obtain a 15 volt supply-(3) 4.5 v batteries

Type BA-31; (1) 1.5 v battery Type BA-30. These batteries have their place in a special molded bakelite compartment located at the back of the Multimeter case, behind a panel. The + and - leads are built-in, and the two Connectors supplied are used for inter-cell connections.

**CONSTRUCTION:** The Multimeter and the Multiplier Kit have their place in a grey wrinkle finished aluminum case. The case is provided with a box type cover which houses the accessories. Rubber stands and snap fasteners are provided on the case and its cover. The cover is detachable, and a rubber gasket around the edge of the box makes the equipment waterproof.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp., Newark, N.J.  
Contract W33-083-ac-18059.  
Approximate Cost: \$75.00  
Electronic Measurements Co., Red Bank, N.J.  
Contract W33-083-ac-219-21977.  
Phasotron Co., Pasadena, Calif.  
Contract AF33(038)9774, AF33(038)15118,  
AF33(083)15541, AF(083)50-3364.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals Used.

April 1958

Test-Voltage and Current Measuring

**TS-352/U****MULTIMETER****REFERENCE DATA AND LITERATURE**

AN16-35TS352-3: Technical Manual of Maintenance Instructions for TS-352/U.

TYPE CLASSIFICATION	Standard
DESIGN COGNIZANCE	USAF
PROCUREMENT COGNIZANCE	Spec R-7000 (USAF)
STOCK NO.	
R.D.B. IDENT. NO.	1-1.3.2-1

**SHIPPING DATA**

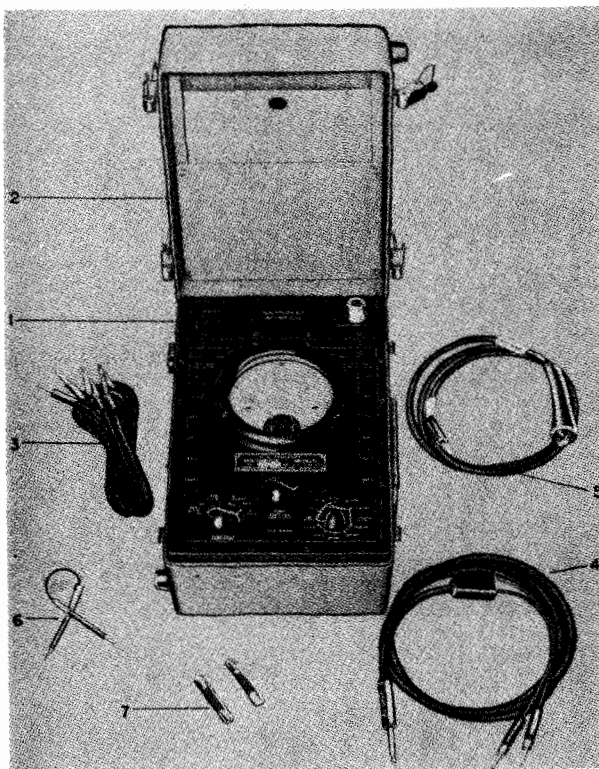
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter TS-352/U w/ Accessories	0.9	10 X 11 X 15	20.9

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-352/U	6-1/4 X 8-3/4 X 11-1/2	14.5
	Consisting of:		
	1 Multimeter ME-9/U		5.4
	1 Multiplier Kit MX-815/U		0.5
	1 Patch Cord CX-939/U	8-1/2 lg	
	1 Cord CX-927/U	48 lg	0.2
	1 Cord CX-468/U	48 lg	0.3
	2 Test lead CX-529/U	48 lg	0.1
	2 Connector PLO042	2 lg	
	6 Alligator clips	1-1/2	
	1 Case	3-1/2 X 8-1/4 X 11-3/8	5.5
	1 Cover	2-1/2 X 8-1/2 X 11-3/8	2.4
	2 Instruction book AN16-35TS352-3		



December 1956

**MULTIMETER****TS-352A/U**

Multimeter TS-352A/U

**FUNCTIONAL DESCRIPTION**

The TS-352A/U is a general purpose multi-range instrument for use in circuit analysis and trouble-shooting on electrical and electronic equipment and is constructed to give accurate and reliable readings on all ranges under extreme conditions of temperature and moisture. All components, with the exception of batteries, are sealed against the entrance of water, thus permitting measurements to be taken under adverse conditions. Special temperature compensation is employed for both AC and DC ranges to permit use of this instrument at temperatures from -40 deg F to 131 deg F. A wide selection of ranges is

provided to adequately measure the operating conditions of nearly any circuit.

No field changes in effect at time of preparation (10 July 1956).

**RELATION TO OTHER EQUIPMENT**

Equipment Required but not Supplied: (1) Battery BA-30, (3) Batteries BA-31.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

TEMPERATURE RANGE: -40 deg C to 55 deg C (-40 deg F to 131 deg F).

MULTIPLIER: Provides 5000 v DC range at 20,000 ohms per volt sensitivity.

MEASUREMENTS: AC volts, DC volts, DC current ohms.

FUNCTION SWITCH: 6 position for type of measurement.

RANGE SWITCH: 12 position for selecting 5 resistance or 7 current ranges.

POWER REQUIREMENTS: (1) 1.5 v DC and (3) 4.5 v DC dry batteries.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Phaostron Co., South Pasadena, Calif.  
Contract AF33(604)-8726, dated 23 June 1953.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(2) 146801

Total Crystals: (2)

**REFERENCE DATA AND LITERATURE**

AN-35TS352-44: Technical Manual for Multi-meter USAF Type TS-352A/U.

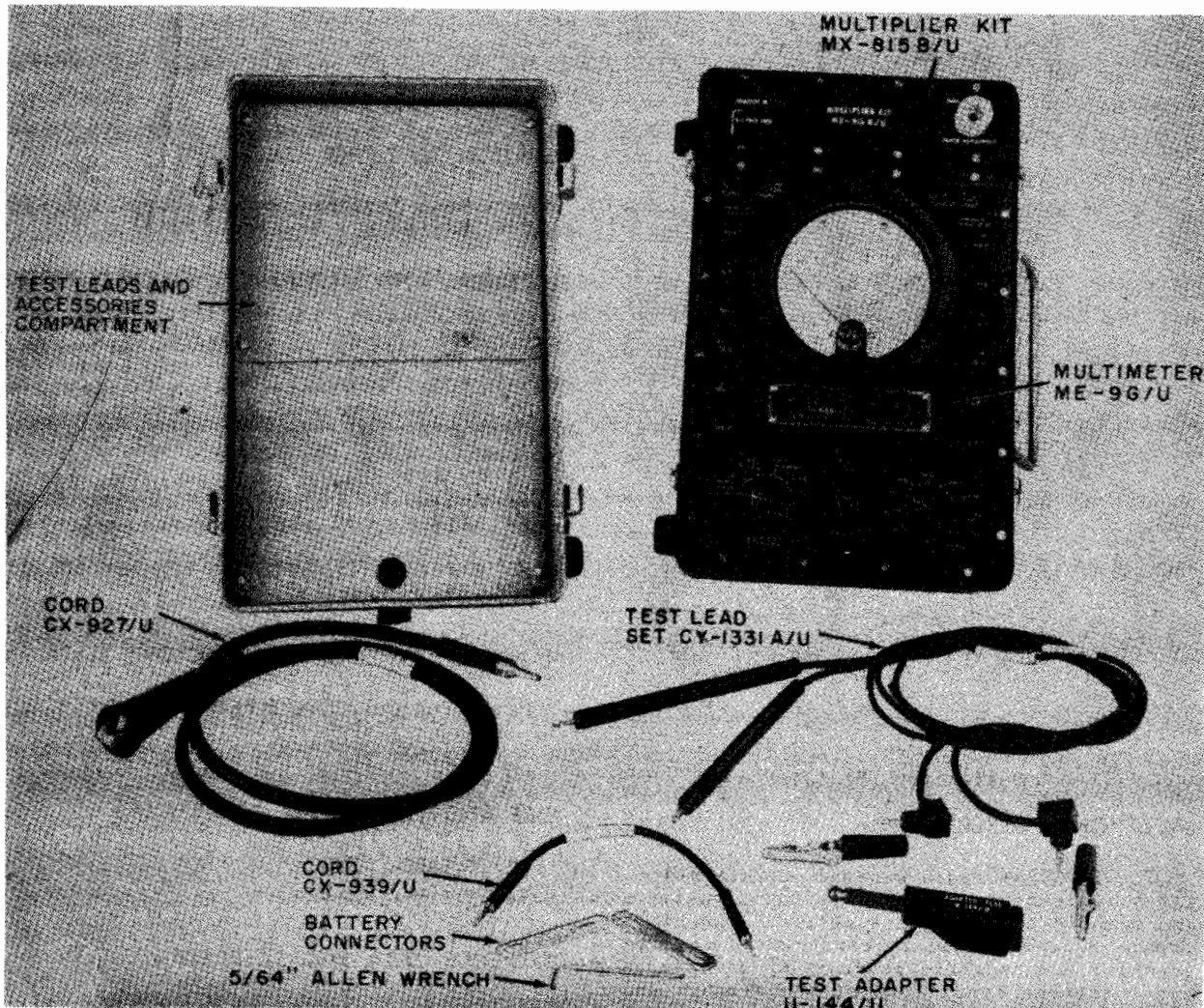
TYPE CLASSIFICATION
DESIGN COGNIZANCE USAF
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-352A/U		
1	Patch Cord CX939/U		
1	Cord CX927/U		
1	Cord Assembly CX1332/U		
1	Test Lead Assembly CX1331/U		
2	Battery Connector		

April 1959

Test-Voltage and Current Measuring

**MULTIMETER****TS-352B/U***Multimeter TS-352B/U***FUNCTIONAL DESCRIPTION**

Multimeter TS-352B/U is a portable multi-range circuit-analysis and trouble-shooting instrument used on electrical and electronic equipment, giving accurate readings, on all ranges, under climatic extremes.

No field changes in effect at time of preparation (30 April 1959).

**RELATION TO OTHER EQUIPMENT**

This equipment, supersedes Ohmmeter I-67, Test Unit I-176, Voltmeter IS-189, Receiver Analyzer Equipment OE-11, and Test Meter TS-

80/U. The main multimeter panel, including all electrical components except the 5,000-volt multiplier and the batteries, is known as Multimeter ME-9/U. The multiplier, providing a 5,000-volt DC range at 20,000 ohms per volt sensitivity, is known as Multiplier Kit MX-815B/U.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED**

Batteries: (1) BA-30, (3) BA-31.

Test-Voltage and Current Measuring

**TS-352B/U**

**MULTIMETER**

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 1.5 v DC, 13.5 v DC.  
 FREQUENCY RANGE: 25 to 5,000 cy.  
 VOLTAGE RANGE: 0 to 2.5; 10; 50; 250; 500;  
 1,000 v AC, DC.  
 CURRENT RANGE: 0 to 250 ua; 2.5, 10, 50,  
 100, 500 ma; 2.5, 10, amp DC.  
 RESISTANCE RANGE: 0 to 1,000; 10,000;  
 100,000; 1 meg; 10 meg.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Phoastron Company, South Pasadena, Calif.  
 Contract AF33(604)-9822.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**REFERENCE DATA AND LITERATURE**

TM11-5527: Technical Manual for Multimeters  
 TS-352/U, TS-352A/U, TS-352B/U.

TYPE CLASSIFICATION STD.  
 DESIGN COGNIZANCE USAF  
 PROCUREMENT COGNIZANCE SPEC MIL-M-4269  
 STOCK NO.  
 I.D.B. IDENT. NO. 1.1.3.2.1

**SHIPPING DATA**

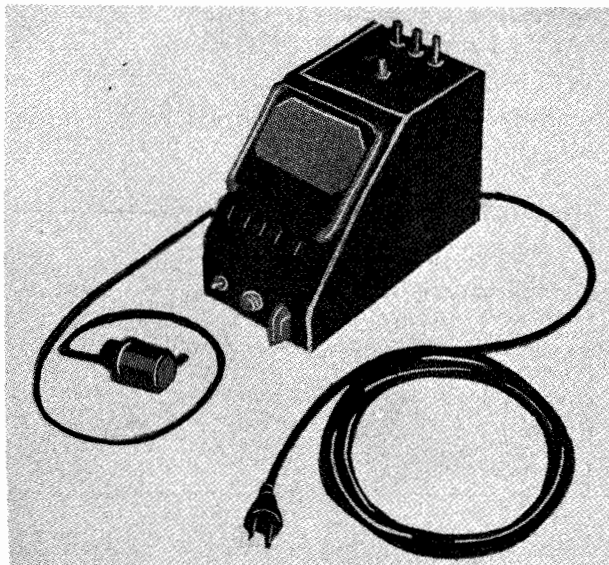
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter TS-352B/U	0.734	15 X 10 X 8-1/2	0.23

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-352B/U Including:	11-3/8 X 8-1/4 X 6	13.72
1	Cord CX-927/U	48 lg	0.200
1	Cord CX-939/U	8-1/2 lg	0.020
1	Test Lead Set CX-1331A/U	49-1/2 lg	0.13
1	Multimeter ME-9G/U	9 X 7 X 5-1/2	4.69
1	Multiplier Kit MX-815B/U	7 X 5-1/2 X 2-1/4	0.5
1	Adapter, Test U-144/U	2-1/2 X 1 X 1/2	0.25
4	Alligator Clips	1-1/2 lg	0.03
1	Case	11-3/8 X 8-1/4 X 3-1/2	5.47
1	Cover	11-3/8 X 8-1/4 X 2-1/2	2.44

# VOLTMETER

Test-Voltage and Current Measuring  
**TS-363/U**



*Voltmeter TS-363/U*

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 100 v AC or DC.  
ACCURACY: 2% of full scale  
FREQUENCY INPUT: 0 to 100 mc.  
OPERATING POWER: 115 v, 60 cps, single ph.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Measurement Corp, Boonton, N.J.

## TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6C5GT            (1) 6H6            (1) 5W4  
Total Tubes: (4)

## FUNCTIONAL DESCRIPTION

The TS-363/U is a vacuum-tube voltmeter for measuring AC or DC voltages.

No field changes in effect at time of preparation (3 December 1956).

## RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied:  
Same as Measurement Model 62.

## REFERENCE DATA AND LITERATURE

TM-11-1200: Technical Manual for Radar Test Equipment.

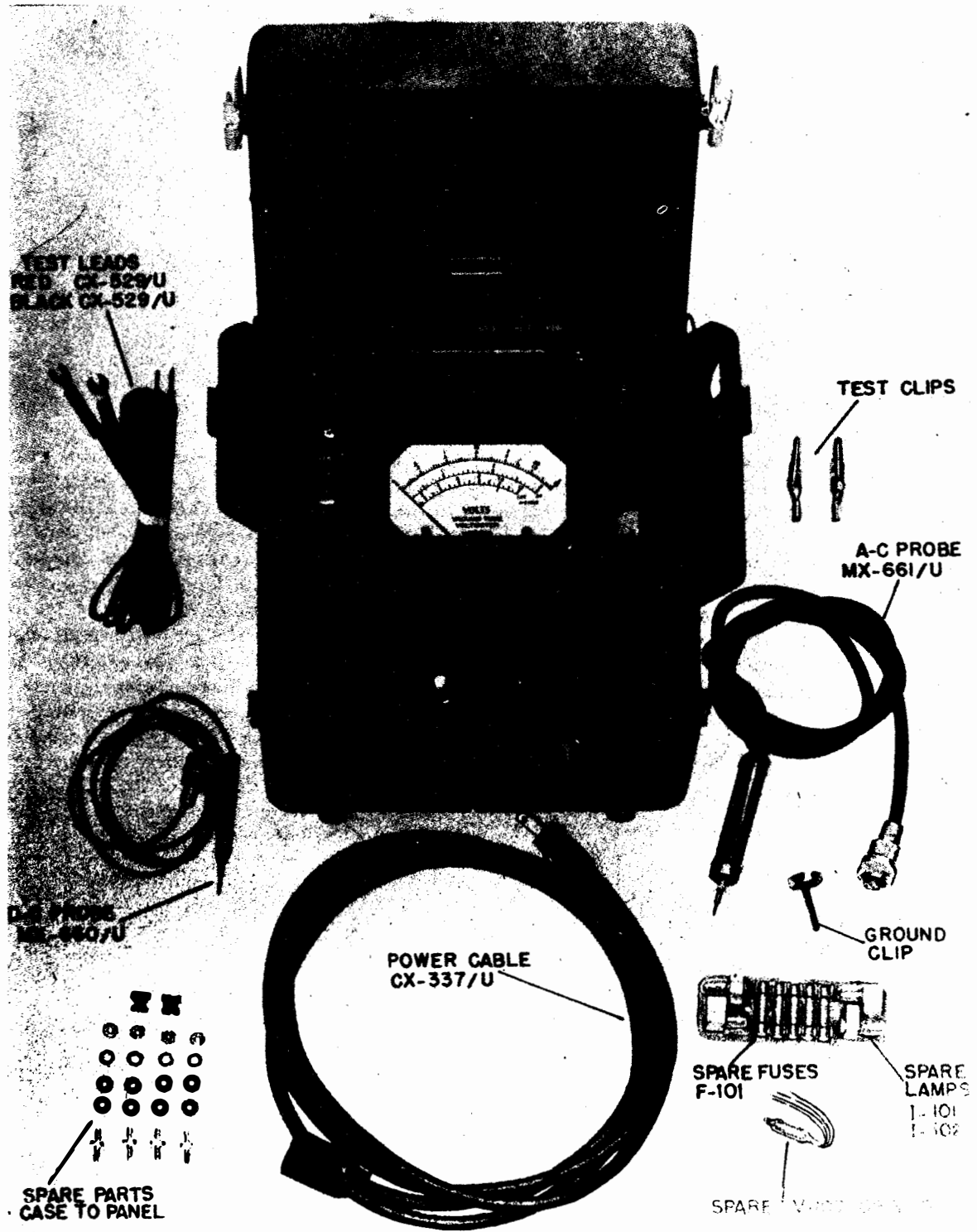
TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter TS-363/U	4-3/4 x 6 x 8-1/2	6

VOLTMETER

TS-375/U



Voltmeter TS-375/U

TS-375/U

VOLTMETER

September 1956

FUNCTIONAL DESCRIPTION

The TS-375/U is a general purpose high impedance AC and DC voltmeter for servicing and testing radio and radar equipment. It is intended particularly for voltage measurement where the sensitivity of frequency range of standard voltmeters is insufficient.

No field changes in effect at time of preparation (26 June 1956).

RELATION TO OTHER EQUIPMENT

The TS-375 A/U is an improved version of the TS-375/U, the improvement being two additional adjustments, a top mark adjustment, and an AC sensitivity adjustment.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

METER RANGE

AC: 0 to 1.2, 3, 12, 30, 120 v.

DC: 0 to 1.2, 3, 12, 30, 120, 300 v.

ACCURACY

AC: 3% to 8% varying with frequency.

DC: 3%.

INPUT IMPEDANCE

AC: 5 meg.

DC: 30 meg.

FREQUENCY RANGE

DIRECT: 40 cps to 50 kc.

PROBE: 10 kc to 150 mc.

POWER REQUIREMENTS: 105 to 125 v, 50 to 1600 cps, single ph, 28 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp.,  
Newark, New Jersey.  
Contract N5sa-2923.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6SJ7            (2) CK606            (1) 5Y3

(1) 6SL7            (2) 991

Total Tubes: (8)

REFERENCE DATA AND LITERATURE

AN16-3TS375-3: Technical Manual for Voltmeter TS-375/U.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUAER
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter TS-375/U	6-3/4 x 10-1/2 x 10-1/2	18.5
1	AC Probe MX-661/U	54 lg	0.3
1	DC Probe MX-660/U	53 lg	0.1
1	Power Cable CX-337/U	96 lg	0.4
1	Test Lead (red) CX-529/U	60 lg	0.1
1	Test Lead (black) CX-529/U	60 lg	0.1
1	Ground Prod	1-1/2 lg	0.03
2	Alligator Clip	1-1/2 lg	0.03

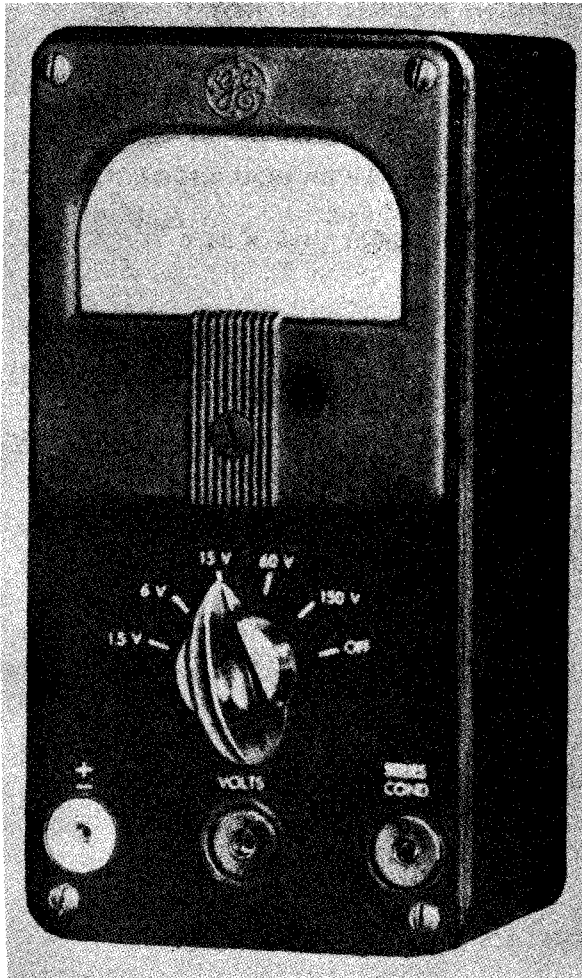
UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

# VOLTMETER

# TS-376/U



Voltmeter TS-376/U

No field changes in effect at time of preparation (22 July 1957).

### RELATION TO OTHER EQUIPMENT

The TS-376/U is the same as Triplet Model 650-SC.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

VOLTAGE RANGES: 0 to 1.5, 6, 15, 60, 150.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Triplet Electrical Instrument Company,  
Bluffton, Ohio.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

TM11-303: Technical Manual for Test Sets  
I-5C-C, D, H, J.

### FUNCTIONAL DESCRIPTION

The TS-376/U is a portable instrument used mainly for checking the AF output voltage of a radio set during an alignment procedure using a signal generator. It has five ranges and contains a full-wave copper-oxide rectifier to change AF current into a proportional direct current which moves the meter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 1.1.1.3

### EQUIPMENT SUPPLIED DATA

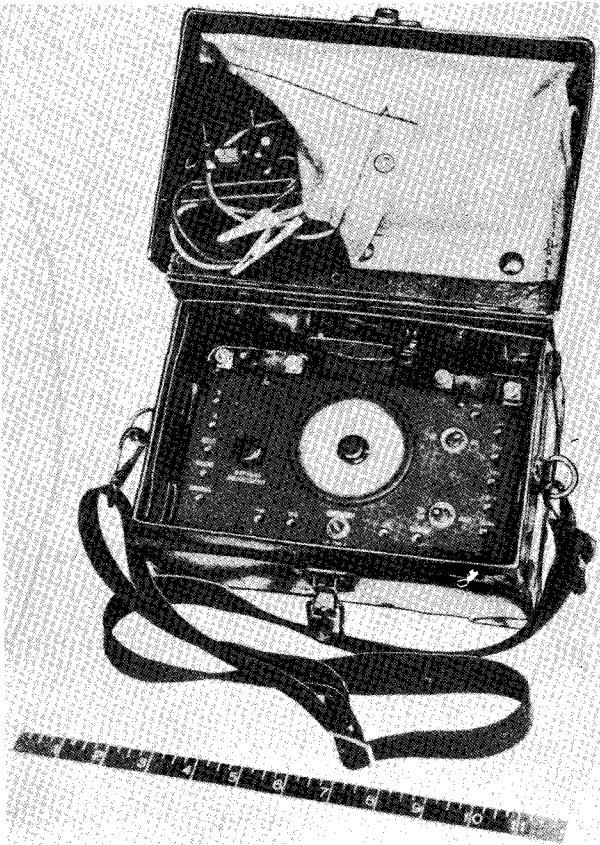
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter TS-376/U	3 X 3 X 5-7/8	1.6

UNCLASSIFIED

4.1 TS-376/U: 1

**MULTIMETER**

**TS-380/U**



*Volt-Ohm-Milliammeter in Carrying Case TS-380/U*

**EQUIPMENT REQUIRED BUT NOT SUPPLIED**

Battery: (1) BA-31.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER REQUIREMENTS: 4.5 v dc.  
 VOLTAGE RANGE: 0 to 3, 15, 30, 150, 30 v, ac, dc.  
 CURRENT RANGE: 0 to 0.15, 3, 15 amp dc.  
 RESISTANCE RANGE: 0 to 1,000; 10,000; 100,000; 1,000,000 ohms.  
 ACCURACY: ±2% (dc); ±5% (ac); ±2% (resistance).

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Western Electric Co., New York, New York.  
 Order No. 1319-MPD-45.  
 Order No. 2674-MPD-44.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**REFERENCE DATA AND LITERATURE**

TM-11-2042: Technical Manual for VOLT-OHM-MILLIAMMETER per D-166852.

**FUNCTIONAL DESCRIPTION**

Multimeter TS-380/U is a portable volt-ohm-milliammeter used in measuring ac and dc voltage, dc current, and resistance of ground wire communication equipment.

No field changes in effect at time of preparation (7 December 1959).

**RELATION TO OTHER EQUIPMENT**

This equipment is similar to Volt-Ohm-Milliammeter Western Electric D-166852.

TYPE CLASSIFICATION (NAVY)  
 DESIGN COGNIZANCE USA, SIG C  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO. 1.1.3.2.1

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter TS-380/U	0.28	6-3/4 x 7-1/2 x 9-1/2	6.5



Test-Voltage and Current Measuring

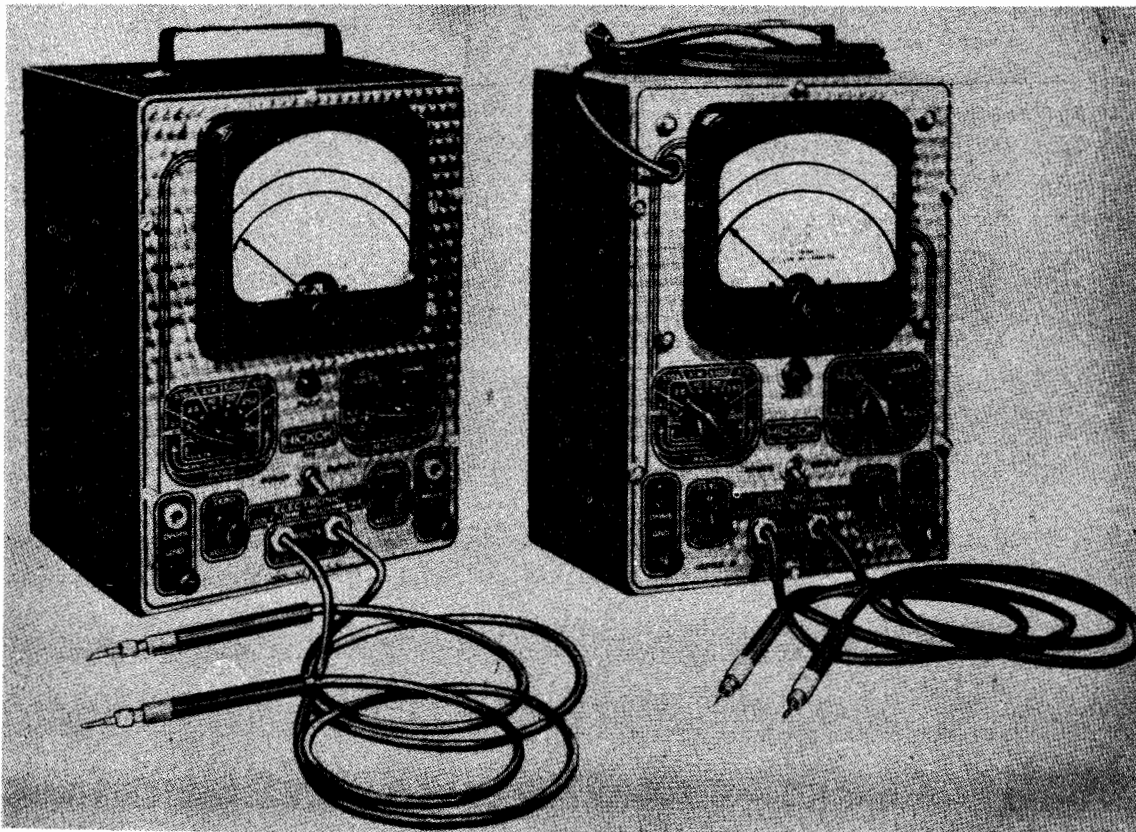
February 1960

TS-380/U

## MULTIMETER

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-380/U includes:	3 x 4 x 7-1/2	3.25
2	Technical Manual TM11-2042		
1	Case	5-7/8 x 6-1/4 x 9	1.75
2	Test Lead	50 lg	

**MULTIMETER****TS-389/U****FUNCTIONAL DESCRIPTION**

The TS-389/U is a portable, electronic volt-ohm-milliammeter. The equipment measures AC volts, DC volts, resistance, and DC current.

No field changes in effect at time of preparation (1 May 1958).

**RELATION TO OTHER EQUIPMENT**

The TS-389/U is supplied as a part of Test Equipment IE-9-C or may be procured separately. This equipment is similar to Hickok Model No. 202 and Reiner No. 450.

Equipment Required but not Supplied (1) 1.5 v battery.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****RANGES**

AC VOLTS: 0 to 1000 volts in 6 ranges.

DC VOLTS: 0 to 1000 volts in 5 ranges.

DC CURRENT: 0 to 1000 ma in 5 ranges.

RESISTANCE: 0.1 ohm to 1000 meg in 5 ranges.

ACCURACY:  $\pm 2\%$ .

POWER REQUIREMENTS: 110 v, 50 to 60 cps, single ph; 1.5 v DC.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Hickok Electrical Instrument Co., Cleveland, Ohio.

Mfr. Model 202A, 202B or 202NX.

Approximate Cost: \$300.00 with equipment spares.

April 1958

Test-Voltage and Current Measuring

**TS-389/U****MULTIMETER****TUBE AND/OR CRYSTAL COMPLEMENT**

No Crystals used.

Hickok Model 202A

(1) 6X5WGT

(1) 6J5

(1) 6SQ7GT

(1) OD3W

Total Tubes: (4)

Hickok Model 202NX

(1) 6SJ7

(1) 6X5WGT

(2) 6SN7WGTA

(1) OD3W

Total Tubes: (5)

Hickok Model 202B

(1) 6X5WGT

(1) 6SN7WGTA

(1) 6SQ7GT

(1) OD3W

Total Tubes: (4)

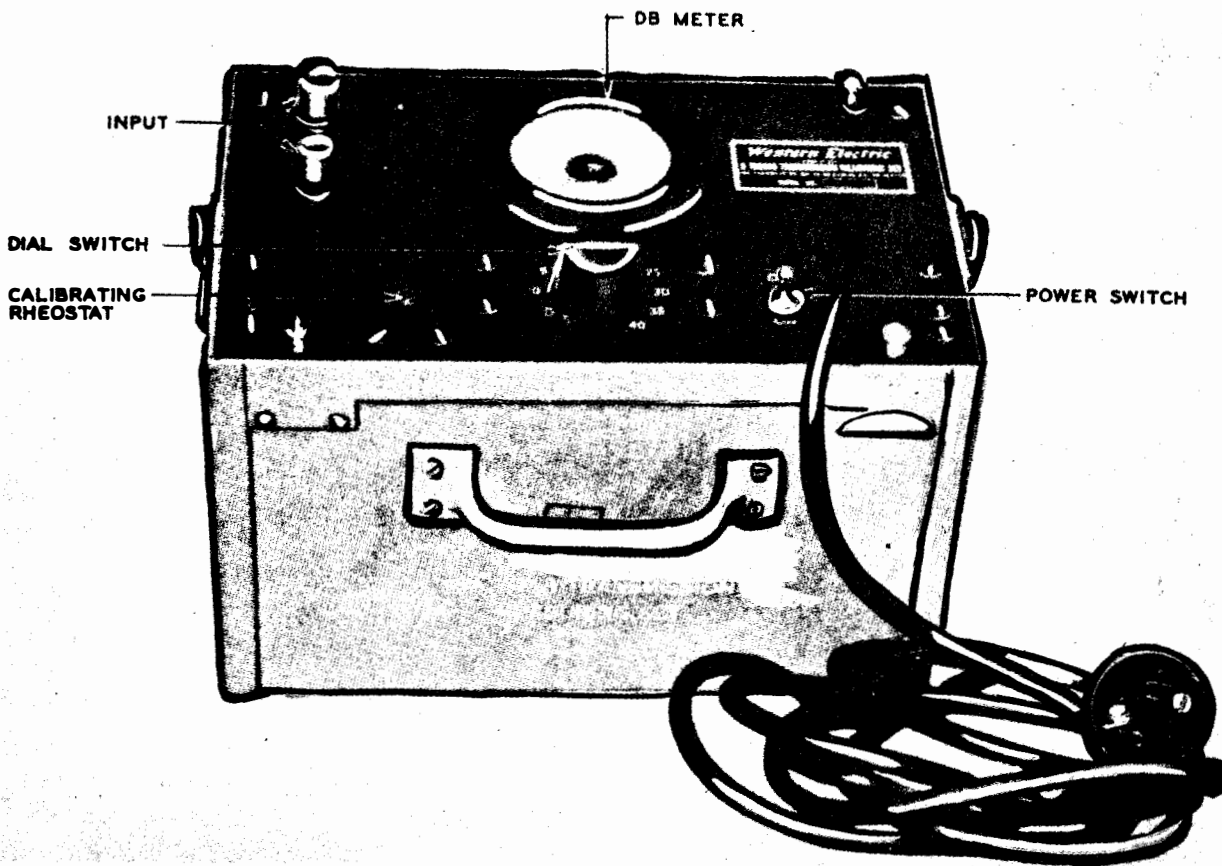
**REFERENCE DATA AND LITERATURE**TM11-2673: War Department Technical Manual  
for Multimeter TS-389/U.

<b>TYPE CLASSIFICATION</b>
<b>DESIGN COGNIZANCE SIGNAL CORPS</b>
<b>PROCUREMENT COGNIZANCE</b>
<b>STOCK NO.</b>
<b>R.D.B. IDENT. NO.</b>

**EQUIPMENT SUPPLIED DATA**

<b>QUANTITY PER EQUIP</b>	<b>NAME AND NOMENCLATURE</b>	<b>OVERALL DIMENSIONS (inches)</b>	<b>WEIGHT (lbs.)</b>
1	Multimeter TS-389/U	6 x 7-7/8 x 10-5/8	
2	Shielded Test Leads		
2	Unshielded Test Leads		
1	Set of Vacuum Tube Spares		

March 1957

**DECIBEL METER****TS-399/U***Decibel Meter TS-399/U***FUNCTIONAL DESCRIPTION**

The TS-399/U is designed for use in making transmission measurements such as loss and gain where portable apparatus is required to measure received testing power.

The set consists essentially of a 3-stage negative feed-back amplifier a copper-oxide rectifier and a DC meter having a loss and gain scale. Measurements are made by means of a meter and a potentiometer adjustable in 5 db steps. A small slide wire rheostat is provided for calibration purposes and is arranged for screw-driver operation from the front of the panel.

No field changes in effect at time of preparation (31 August 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

INPUT IMPEDANCE: 600 ohms.

UNCLASSIFIED

RANGE: -45 DBM to +10 dbm.

FREQUENCY RANGE: 30 to 15,000 cps.

RESPONSE: Flat within 0.7 db approx.

ACCURACY:  $\pm 0.3$  db at frequencies between 50 and 6000 cps; 1 db max at other frequencies.

OPERATING POWER REQUIREMENTS: 105 to 125 v DC or 105 to 125 v, 50 to 60 cps or 105 to 125 v, 25 cps.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Western Electric Company, New York, N.Y.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(2) 6J7

(1) 25Z6GT

(1) 25A6GT or

(1) 25L6GT/G

**TS-399/U**

**DECIBEL METER**

March 1957

Total Tubes: (4)

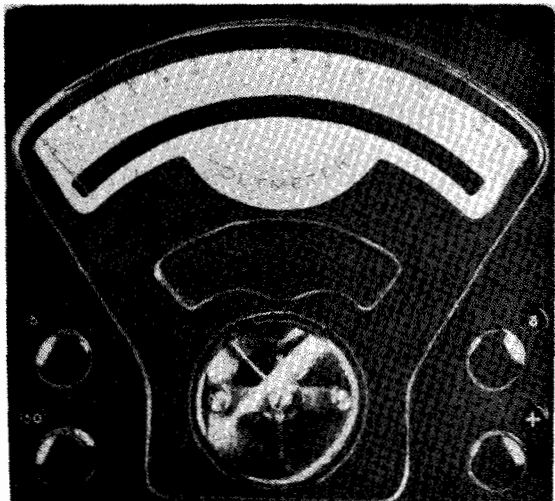
**REFERENCE DATA AND LITERATURE**

TM11-2045: Technical Manual for Decibel  
Meter TS-399/U.

TYPE CLASSIFICATION DESIGN COGNIZANCE TASSA PROCUREMENT COGNIZANCE STOCK NO. R.D.B. IDENT. NO.
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**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Decibel Meter TS-399/U	6-1/2 X 8-1/2 X 11	14

**VOLTMETER****TS-443/U***Voltmeter TS-443/U***ELECTRICAL AND MECHANICAL CHARACTERISTICS**

VOLTAGE RANGE: 0 to 3, 15, 150 v dc.

SENSITIVITY: 100 ohms/v.

ACCURACY:  $\pm 0.25\%$ .**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp., Newark, New Jersey.

Approximate Cost: \$124.31.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**FUNCTIONAL DESCRIPTION**

Voltmeter TS-443/U is a portable, multi-range apparatus used in measuring dc voltage.

No field changes in effect at time of preparation (15 July 1959).

**RELATION TO OTHER EQUIPMENT**

This equipment is similar to DC Voltmeter, Weston Model 1.

**TYPE CLASSIFICATION**  
**DESIGN COGNIZANCE** USA, SIG C  
**PROCUREMENT COGNIZANCE**  
**STOCK NO.**  
**R.D.B. IDENT. NO.** 1.1.1.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter TS-443/U Including:	4-3/4 X 9-5/16 X 11	10
1	Set of Test Leads		0.2

UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

## MULTIMETER

## TS-458/U

### FUNCTIONAL DESCRIPTION

The TS-458/U is a portable test set designed for measuring AC and DC voltage, current, and resistance. It includes test leads and self-contained battery.

No field changes in effect at time of preparation (18 July 1957).

SENSITIVITY: 1000 ohms per v.

POWER REQUIREMENTS: Self-contained battery.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RANGES

VOLTAGE: 0 to 1000 AC and DC.

CURRENT: 0 to 500 ma.

RESISTANCE: 0 to 1 megohm.

#### ACCURACY

AC RANGES:  $\pm 5\%$ .

DC RANGES:  $\pm 2\%$ .

### REFERENCE DATA AND LITERATURE

Nomenclature Card for Multimeter TS-458/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 1.1.3.2.1

### EQUIPMENT SUPPLIED DATA

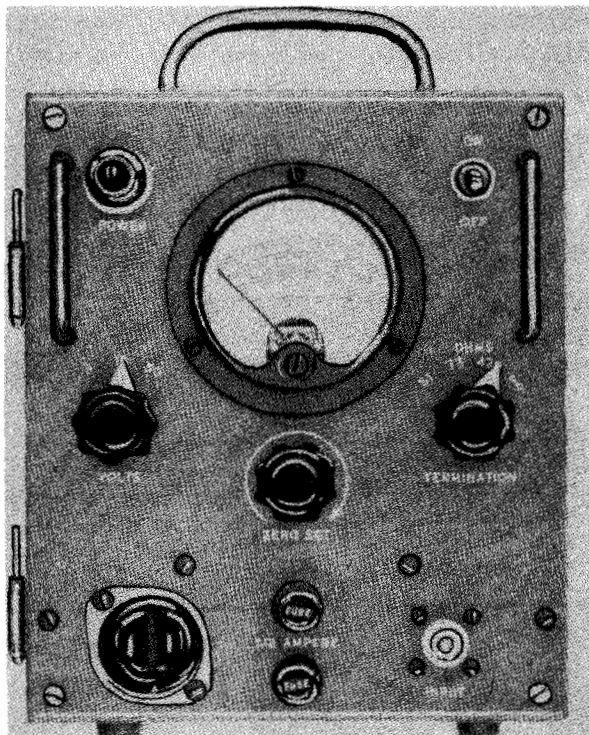
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter TS-458/U	3-27/32 x 5-1/2 x 8-1/4	5
1	Set of Test Leads		

UNCLASSIFIED

4.1 TS-458/U: 1

# VOLTMETER

# TS-487/U



Voltmeter TS-487/U

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 25 W, 105 to 125 v, 50 to 1600 cps.  
VOLTAGE RANGE: 0 to 3, 10, 50 v.  
IMPEDANCE: 51 ohms, 75 ohms, 470 ohms, infinity.  
ACCURACY:  $\pm 5\%$ .

### MANUFACTURER'S OR CONTRACTOR'S DATA

Meridian Inc, Stamford, Conn.  
Contract N-383s-8029.  
Approximate Cost: \$150.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6H6 (1) 6SN7W  
Total Tubes: (4)  
No Crystals used.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 900,607: Handbook of Maintenance  
Instructions for Voltmeter TS-487/U.

### FUNCTIONAL DESCRIPTION

The TS-487/U is a portable instrument used in measuring peak-to-peak voltages of recurrent waves and in setting the levels of video and synchronizing voltages of radar equipment.

No field changes in effect at time of preparation (1 May 1958).

TYPE CLASSIFICATION  
DESIGN COGNIZANCE BUSHIPS  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter TS-487/U including:	7-1/4 x 5 x 8-3/4	13
1	Power Cord	72 lg	
1	Video Cable	48 lg	



27 June 1962

Cog Service: USA FSN:

ELECTRONIC MULTIMETER TS-505/U

Functional Class: 1.1.3.1.2

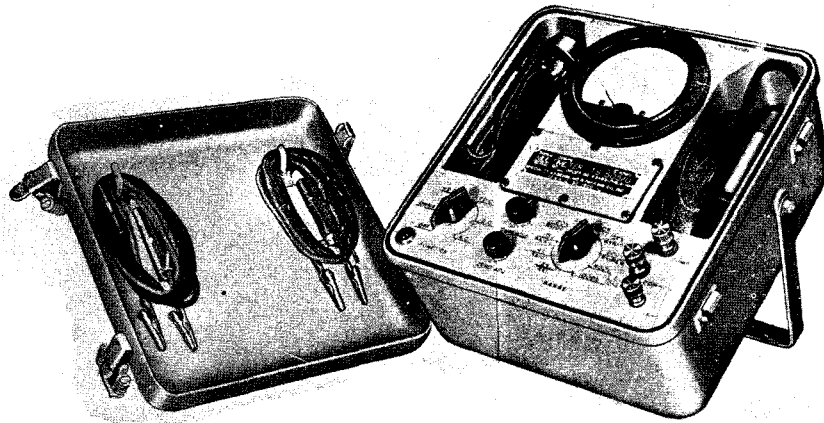
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	USA	USN	USAF
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TYPE CLASS:	Std	Used by	Std
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MANUFACTURER'S NAME/CODE NUMBER: Specialty Assembly and Packing Co. Inc., (74296).



*Electronic Multimeter TS-505/U*

**FUNCTIONAL DESCRIPTION:**

Electronic Multimeter TS-505/U is a portable, vacuum-tube voltmeter and dc ohmmeter designed to measure resistance and ac and dc voltages in electrical and electronic equipments. No field changes in effect at time of preparation (3 April 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 98 to 132 v, 50 to 1,600 cyc, single ph.

INDICATING METER: 1 ma dc (full-scale deflection).

DC VOLTAGE RANGES: 0 to 2, 4, 10, 20, 40, 100, 200, 400, 1,000 v.

DC ZERO CENTER RANGES: M1.25 to P1.25, M2.5 to 2.5, M5 to P5, M12.5 to P12.5, M25 to P25, M50 to P50, M125 to P125, M200 to P200, M500 to P500 v.

AC VOLTAGE RANGES: 0 to 2.5, 5, 10, 25, 50, 100, 250 v.

RESISTANCE RANGES: 0 to 1,000 meg in seven ranges.

FREQUENCY RANGE: 30 cps to 1 mc, ac; 500 kc to 500 mc, rf.

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**TS-505/U ELECTRONIC MULTIMETER**

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INPUT IMPEDANCE: At least 6 meg shunted by 2 uuf at audio-frequencies; 40 meg on 1,000 v dc range, and porm 500 v dc range (zero center scale); 20 meg on all other dc ranges.

ACCURACY: Porm 5% of full scale on dc v; porm 6% of full scale (on all ac ranges including rf) from 30 cps to 500 mc.

**RELATION TO OTHER EQUIPMENT:**

This equipment, part of Test Set AN/GPM-1, supersedes TS-375/U.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(2) Batteries BA-30.

**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electronic Multimeter TS-505/U includes:		6-1/4 x 9-1/8 x 9-3/4	15
4	Test Lead Set CX-1331/U		53 lg	
2	Technical Manual			
1	Probe Subassembly		3/4 dia x 1-3/4	

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**REFERENCE DATA AND LITERATURE:**

TM11-5511: Technical Manual for Electronic Multimeter TS-505/U.

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (2) 6AU6 (1) 6X4 (1) 12AT7 (2) 991 (1) 5726/6AL5

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.09	23

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**PROCUREMENT DATA**

PROCURING SERVICE: USA DESIGN COG: USA, Sig C  
SPEC &/OR DWG: MIL-M-3138

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Specialty Assembly and Packing Co. Inc.	Brooklyn, New York	23493-PHILA-49-7	\$94.25

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21 June 1962

Cog Service: USA FSN:

MULTIMETER TS-505C/U

Functional Class: 1.1.3.1.2

USA

USN

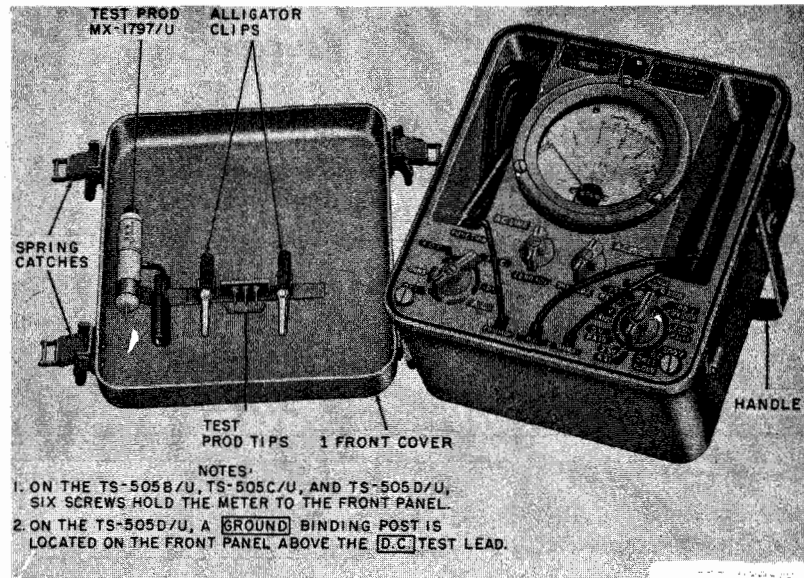
USAF

TYPE CLASS: Std

Used by

Std

MANUFACTURER'S NAME/CODE NUMBER:



*Multimeter TS-505C/U*

#### FUNCTIONAL DESCRIPTION:

Multimeter TS-505C/U is a portable, vacuum-tube voltmeter and dc ohmmeter designed to measure resistance and ac and dc voltages in electrical and electronic equipments.

No field changes in effect at time of preparation (3 April 1962).

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: Approx. 21 W, 98 to 132 v, 50 to 1,000 cyc, single ph.

INDICATING METER: 1 ma dc (full-scale deflection).

DC VOLTAGE RANGES: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000 v.

DC ZERO CENTER RANGES: M1.25 to P1.25, M2.5 to 2.5, M5 to P5, M12.5 to P12.5, M25 to P25, M50 to P50, M125 to P125, M250 to P250, M500 to P500 v.

AC VOLTAGE RANGES: 0 to 2.5, 5, 10, 25, 50, 100, 250 v.

RF VOLTAGE RANGE: 0 to 40 v.

---

**TS-505C/U MULTIMETER**

---

RESISTANCE RANGES: 0 to 1,000 meg in seven ranges.

FREQUENCY RANGE: 30 cps to 1 mc, ac; 500 kc to 500 mc, rf (using Test Prod MX-1797/U).

INPUT IMPEDANCE: At least 6 meg shunted by 2 uuf at audio-frequencies; 40 meg on 1,000 v dc range, and porm 500 v dc range (zero center scale); 20 meg on all other dc ranges.

ACCURACY: Porm 5% of full scale on dc v; porm 6% of full scale (on all ac ranges including rf) from 30 cps to 100 mc; porm 8% of full scale from 100 mc t 10 mc; porm 5% of ohm-meter total arc length on ohms scale.

RELATION TO OTHER EQUIPMENT: None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(2) Batteries BA-30.

---

**MAJOR COMPONENTS**

---

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter TS-505C/U includes:		6-1/8 x 9 x 9-3/4	14
1	Test Prod MX-1797/U		5/8 dia x 3-3/8	
2	Alligator Clip		2 lg	
3	Tip, Test Prod			

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**REFERENCE DATA AND LITERATURE:**

TM11-6625-239-12: Operator's and Organizational Maintenance Manual for Electronic Multimeters TS-505A/U and TS-505B/U and Multimeters TS-505C/U and TS-505D/U.

TM11-6625-239-35: Field and Depot Maintenance Manual for Electronic Multimeters TS-505A/U and TS-505B/U and Multimeters TS-505C/U and TS-505D/U.

---

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (2) 6AU6W (1) 6X4W (1) 12AT7WA (2) 5651WA (1) 5726/6AL5W

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N70A

---

**SHIPPING DATA**

---

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

---

**PROCUREMENT DATA**

---

PROCURING SERVICE: USA  
SPEC &/OR DWG: MIL-M-3138A

DESIGN COG: USA, Sig C

4.1 TS-505C/U: 2

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
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26 June 1962

Cog Service: USA FSN:

ELECTRONIC MULTIMETER TS-505D/U  
Functional Class: 1.1.3.1.2

USA

USN

USAF

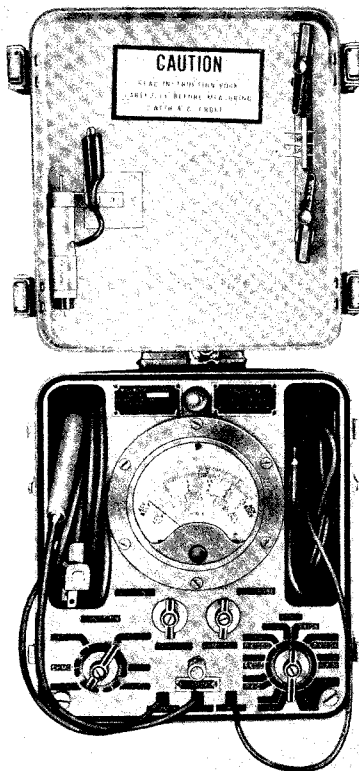
TYPE CLASS:

Std

Used by

Std

MANUFACTURER'S NAME/CODE NUMBER: Anton Electronics Labs Inc., (91491).



*Electronic Multimeter TS-505D/U*

**FUNCTIONAL DESCRIPTION:**

Electronic Multimeter TS-505D/U is a portable, vacuum-tube voltmeter and dc ohmmeter designed to measure resistance and ac and dc voltages in electrical and electronic equipments.

No field changes in effect at time of preparation (3 April 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: Approx 21 W, 98 to 132 v, 50 to 1,000 cyc, single ph.

INDICATING METER: 1 ma dc (full-scale deflection).

DC VOLTAGE RANGES: 0 to 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000 v.

DC ZERO CENTER RANGES: M1.25 to P1.25, M2.5 to P2.5, M5 to P5, M12.5 to P12.5, M25 to P25,

M50 to P50, M125 to P125, M250 to P250, M500 to P500 v.

AC VOLTAGE RANGES: 0 to 2.5, 5, 10, 25, 50, 100, 250 v.

---

**TS-505D/U ELECTRONIC MULTIMETER**

---

RF VOLTAGE RANGE: 0 to 40 v.

RESISTANCE RANGES: 0 to 1,000 meg in seven ranges.

FREQUENCY RANGE: 30 cps to 1 mc, ac; 500 kc to 500 mc, rf (using Test Prod MX-1797/U).

INPUT IMPEDANCE: At least 6 meg shunted by 2 uuf at audio-frequencies; 40 meg on 1,000 v dc range, and porm 500 v dc range (zero center scale); 20 meg on all other dc ranges.

ACCURACY: Porm 5% of full scale on dc v; porm 6% of full scale (on all ac ranges including rf) from 30 cps to 100 mc; porm 8% of full scale from 100 mc to 500 mc; porm 5% of ohmmeter total arc length on ohms scale.

**RELATION TO OTHER EQUIPMENT:** None.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(2) Batteries BA-30.

---

**MAJOR COMPONENTS**

---

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multimeter TS-505D/U includes		6-1/8 x 9 x 9-3/4	14
1	Test Prod MX-1797/U		5/8 dia x 3-3/8	
2	Alligator Clip		2 lg	
3	Tip, Test Prod			

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**REFERENCE DATA AND LITERATURE:**

TM11-6625-239-12: Operator's and Organizational Maintenance Manual for Electronic Multi-meters TS-505A/U and TS-505B/U and Multimeters TS-505C/U and TS-505D/U.

TM11-6625-239-35: Field and Depot Maintenance Manual for Electronic Multimeters TS-505A/U and TS-505B/U and Multimeters TS-505C/U and TS-505D/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (2) 6AU6W (1) 6X4W (1) 12AT7WA (2) 5651WA (1) 5726/6AL5W

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N70A.

---

**SHIPPING DATA**

---

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

---

---

**PROCUREMENT DATA**

---

PROCURING SERVICE: USA  
SPEC &/OR DWG: MIL-M-3138A

DESIGN COG: USA, Sig C

4.1 TS-505D/U: 2

---

ELECTRONIC MULTIMETER TS-505D/U

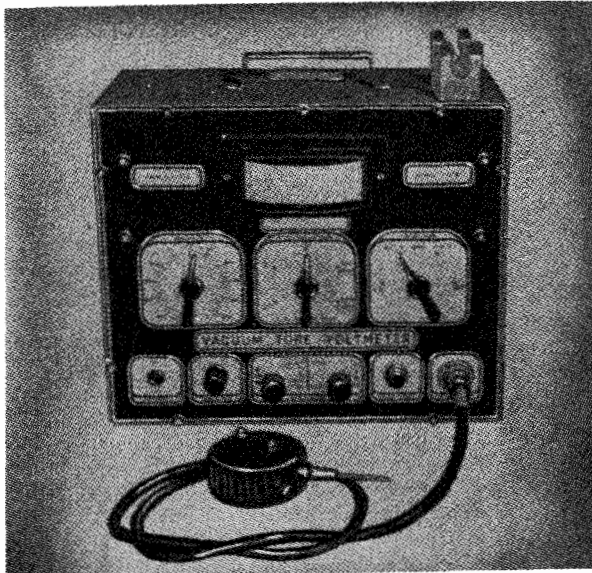
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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Anton Electronics Labs Inc.	Brooklyn, New York	55998-Phila-57-56	

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Test-Voltage and Current Measuring  
**ELECTRONIC MULTIMETER** **TS-520/U**



*Electronic Multimeter*

Model 110-B.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

FREQUENCY RANGE: 10 cps to 200 mc.  
VOLTAGE RANGE  
DC: 0 to 10,000 v.  
AC: 0 to 250 v rmc.  
ACCURACY  
HIGH RANGE: ±5%.  
LOW RANGE: ±3%.  
OPERATING POWER: 105 to 125 v, 50 to 70 cps, single ph, or 220 v, 50 to 70 cps, single ph.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Hickok Instrument Co, Cleveland, Ohio.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(2) 6SN7GT (1) 6X5GT/G  
(1) OD3/VR-150 (1) 9006  
Total Tubes: (5)

**FUNCTIONAL DESCRIPTION**

The TS-520/U is a vacuum tube voltmeter. It is used to measure AC or DC voltages for trouble shooting and checking equipment in the field.

No field changes in effect at time of preparation (27 November 1956).

**RELATION TO OTHER EQUIPMENT**

Same as Hickok Electrical Instrument Co.

**REFERENCE DATA AND LITERATURE**

TM11-2654: Technical Manual for Vacuum Tube Boltmeter TS-520/U.

**TYPE CLASSIFICATION**

DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electronic Multimeter TS-520/U AC Probe and Cable Assy DC Test Lead Ground Lead Ground Lead Technical Manual	3	14 x 18 x 20-1/2	58

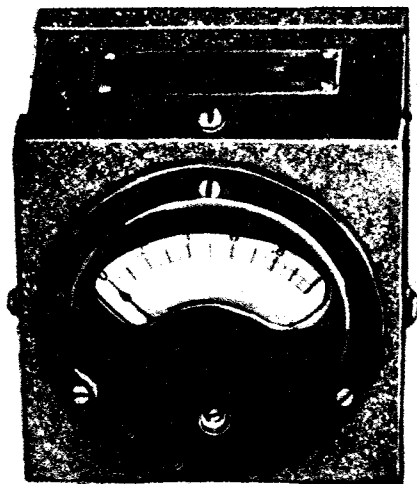
**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electronic Multimeter TS-520/U	7-3/4 x 12-3/4 x 13-1/4	15.5
1	AC Probe and Cable Assy	42 lg	0.6
1	DC Test Lead	42 lg	0.25
1	Ground Lead	42 lg	0.12
2	Technical Manual		
2	Ground Lead	8 lg	0.1

March 1957

## TEST SET

TS-60/U(I-139-A)



Test Set TS-60/U(I-139-A)

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 200 ma DC.  
 ACCURACY:  $\pm 3\%$  approx.  
 RESISTANCE: 75 ohms.  
 AMBIENT TEMPERATURE RANGE: -20 to +122 deg F.  
 OPERATING POWER: None.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Argus Inc, Ann Arbor, Michigan  
 Order 11761-SCGOL-43.  
 Order 12086-WF-43.  
 Order 12013-WF-43.  
 Order 120-14-WF-43.  
 Approximate Cost: \$50.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## FUNCTIONAL DESCRIPTION

The TS-60/U(I-139-A) is a portable DC milliammeter used for general purpose tests on radar and communication equipment. It will check direct current, crystal current, plate current, etc, from 0 to 200 ma. If used with Pick-up Assembly TS-131/AP, the TS-60/U(I-139-A) will measure RF output for tuning RCM equipments.

It is part of Test Equipment IE-19-A and is also issued separately for RCM use. It is used with Radio Transmitter BC-625.

No field changes in effect at time of preparation (21 September 1956).

## REFERENCE DATA AND LITERATURE

NAVSHIPS 900,105: Catalog of Electronic Test Equipment.  
 NAVAER 08-5S-78: Manual of Test Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	USAF
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Test Set TS-60/U(I-139-A)	0.16	5 x 7 x 8	3

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set TS-60/U(I-139-A)	3 x 4 x 4	1.1
1	Set of Equipment spares		

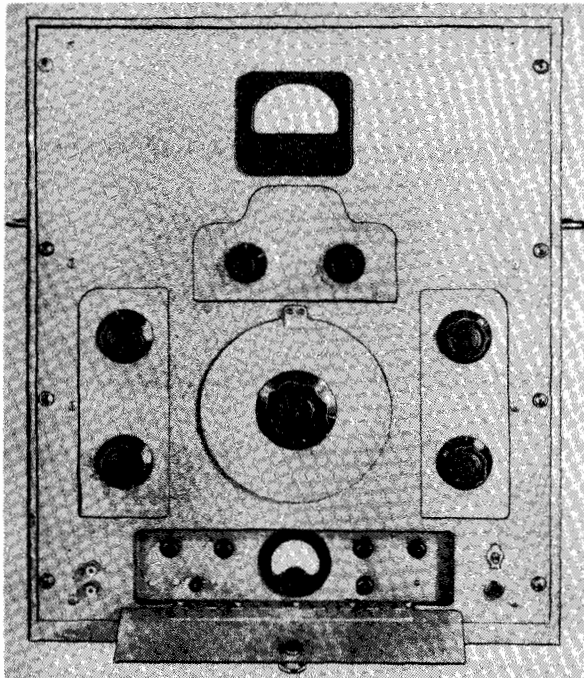
UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

# HARMONIC WAVE ANALYZER

# TS-615A/U



Harmonic Wave Analyzer TS-615A/U

Other uses include the study of noise by integrating portions of the spectrum with the selectivity control adjusted for a wide pass band and the checking of wave filter characteristics with maximum selectivity.

No field changes in effect at time of preparation (8 July 1957).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 16000 cps.  
 FREQUENCY CALIBRATION ACCURACY: Within 3%.  
 MAX INPUT VOLTAGES: 5, 50 and 500 v.  
 METER SCALES: 500, 250, 100, 50, 25, 10, 5, 2.5 and 1.  
 OVERALL VOLTAGE ACCURACY: ±5%.  
 INPUT IMPEDANCE: 200000 ohms.  
 POWER SOURCE REQUIRED: 115 or 230 v, 50 to 60 cps, 120 W.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Hewlett-Packard Co, Palo Alto, California, USA.

### TUBE AND/OR CRYSTAL COMPLEMENT

(4) 6SJ7      (1) 6J7      (1) 6F6      (1) OA2  
 (1) 6SQ7      (1) 6Y6G      (1) 5U4G

Total Tubes: (10)

### REFERENCE DATA AND LITERATURE

NAVSHIPS 91717: Technical Manual for Harmonic Wave Analyzer TS-615A/U.

### FUNCTIONAL DESCRIPTION

The TS-615A/U is a selective voltmeter designed to measure the individual components of complex waves. The selectivity can be varied by means of a selective amplifier to measure either closely or widely spaced harmonics. The instrument covers the audio spectrum from 30 to 16000 cps. It has a wide voltage range, so that full scale voltage readings may be obtained from 1 milovolt to 500 volts.

The TS-615A/U is well adapted to the measurement of the harmonic distortion in audio frequency equipment of all kinds, broadcast receivers, transmitters; to determine the harmonic components in ac machinery and power systems; to the study of induced voltages on telephone lines; to measurement of hum components in rectifier circuits.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

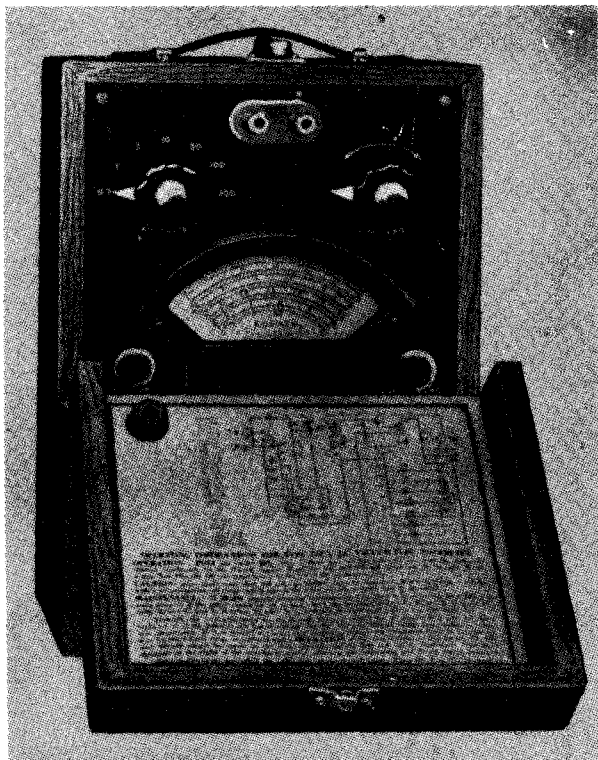
### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Harmonic Wave Analyzer TS-615A/U (Cabinet Model) or	14 X 23-1/4 X 24-1/4	80
1	Harmonic Wave Analyzer TS-615A/U (Rack Model)	13-5/8 X 19 X 22-3/4	80

UNCLASSIFIED

# VACUUM TUBE VOLTMETER

## TS-619/U



*Vacuum Tube Voltmeter*

### RELATION TO OTHER EQUIPMENT

Same as General Radio type 727-A.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 300 v AC.  
ACCURACY:  $\pm 2$  to  $\pm 5\%$ .  
OPERATING POWER: Batteries.

### MANUFACTURER'S OR CONTRACTOR'S DATA

General Radio Co. Cambridge, Mass.

### TUBE AND/OR CRYSTAL COMPLEMENT

(2) 1S5 (1) 957

Total Tubes: (3)

### REFERENCE DATA AND LITERATURE

TM11-487H: Technical Manual for Test Equipment.

### FUNCTIONAL DESCRIPTION

The TS-619/U is a vacuum tube voltmeter designed for measuring AC voltages. It is used for circuit analysis, trouble shooting and for checking voltages in electronic equipment.

No field changes in effect at time of preparation (20 December 1956).

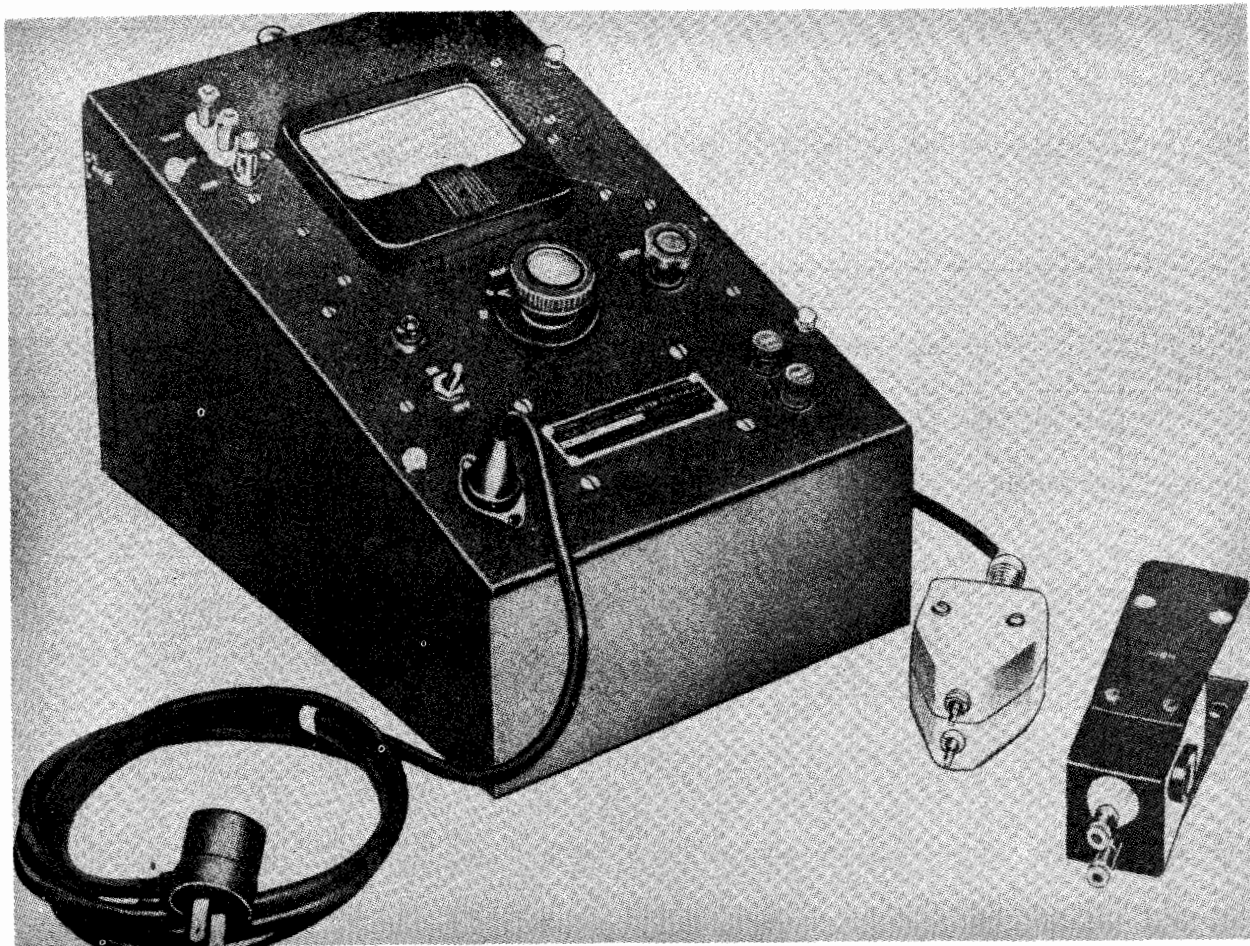
TYPE CLASSIFICATION DESIGN COGNIZANCE TASSA PROCUREMENT COGNIZANCE STOCK NO. R.D.B. IDENT. NO.
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### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Vacuum Tube Voltmeter TS-619/U	5-7/8 x 6-5/8 x 11	10.875

Test-Voltage and Current Measuring  
**VACUUM TUBE VOLTMETER**

**TS-620/U**



*Electronic Multimeter*

**FUNCTIONAL DESCRIPTION**

The TS-620/U is a high-impedance, wide-range vacuum-tube voltmeter. It is used to measure both AF and RF output voltages.

No field changes in effect at time of preparation (20 December 1956).

**RELATION TO OTHER EQUIPMENT**

Same as General Radio type 726-A.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

AC RANGE: 0 to 150 v.  
ACCURACY:  $\pm 2\%$  of full scale on all five ranges.

INPUT IMPEDANCE: 6 meg in parallel with 6.6 uuf correction chart for high frequencies.

OPERATING POWER: 100 to 130 v, 50 to 60 cps, or 200 to 260 v, 50 cps.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

General Radio Co., Cambridge, Mass

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 1V                      (1) 6J7GT                      (1) 955

Total Tubes: (3)

Test-Voltage and Current Measuring

TS-620/U

## VACUUM TUBE VOLTMETER

UNCLASSIFIED

August 1957

### REFERENCE DATA AND LITERATURE

TM11-487H: Technical Manual for Test Equipment.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE TASSA  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Vacuum Tube Voltmeter TS-620/U	8-1/2 X 9-1/2 X 14	17.5
1	Line Cord		
1	Frequency Error Correction Chart		

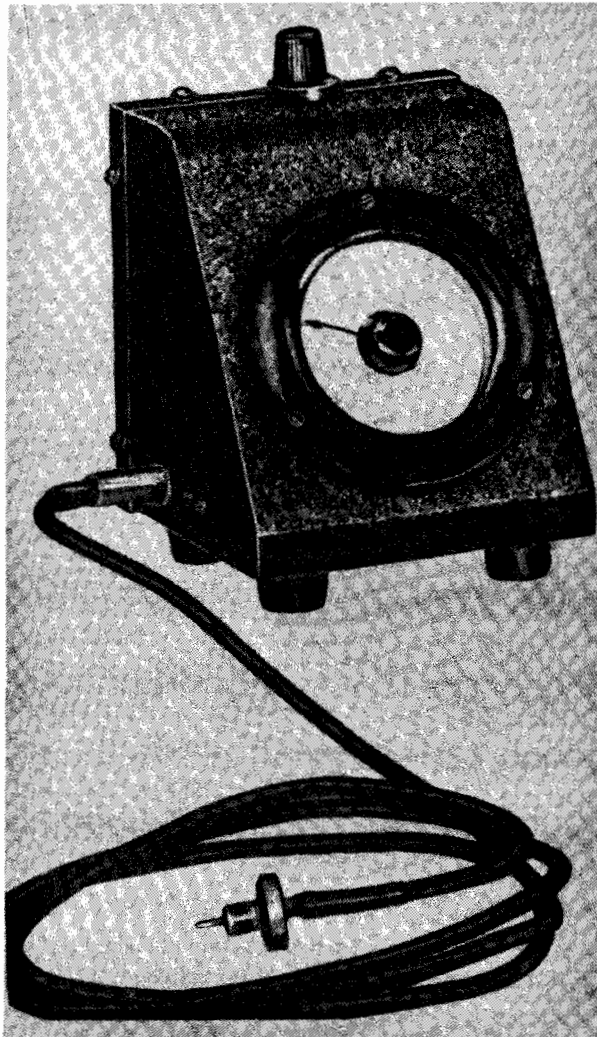
UNCLASSIFIED

January 1958

Test-Voltage and Current Pressurizing

# TEST METER ASSEMBLY

# TS-75/U



*Test Meter Assembly TS-75/U*

### FUNCTIONAL DESCRIPTION

The TS-75/U is a portable AC-DC ammeter employed to measure the intermediate frequency output of radar receivers to indicate proper tuning.

No field changes in effect at time of preparation (16 July 1957).

### RELATION TO OTHER EQUIPMENT

The TS-75/U is a part of Auxiliary Test Kit TS-76/UPM-3.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0 to 200 ua.  
RESISTANCE: 65 ohms.  
ACCURACY:  $\pm 2\%$ .

### MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Company, New York, N.Y.  
Contract NXsa-32197.

### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 1N21

Total Crystals: (1)

### REFERENCE DATA AND LITERATURE

AN08-30APM3-3: Technical Manual for Portable Test Set AN/APM-3.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 1.1.2.5

### EQUIPMENT SUPPLIED DATA

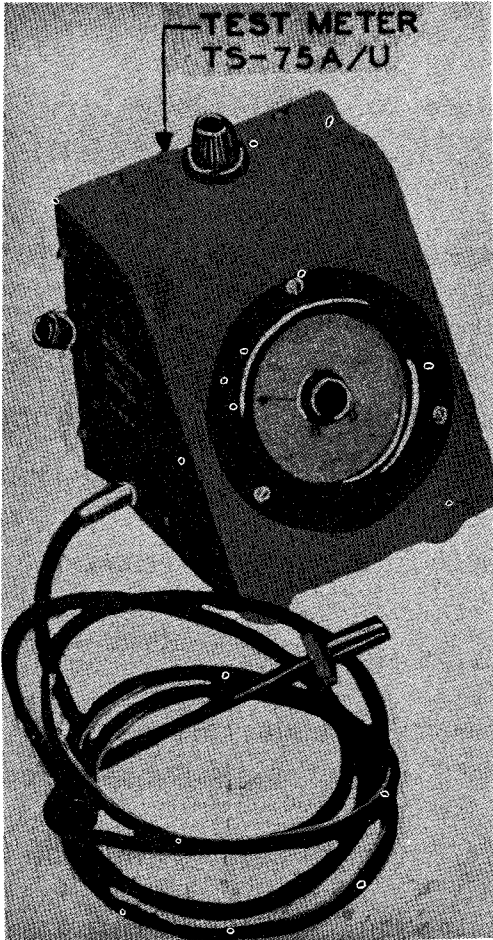
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Meter TS-75/U	4 x 4 x 5	2

UNCLASSIFIED

4.1 TS-75/U: 1

# TEST METER

## TS-75A/U



Test Meter TS-75A/U

No field changes in effect at time of preparation (14 August 1958).

### RELATION TO OTHER EQUIPMENT

The TS-75A/U is similar to the TS-75/U except the TS-75A/U has the selector switch allowing selection of connection.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RANGES

CURRENT: 0 to 200 uamp DC.  
VOLTAGE: 0 to 20 v.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes Used

(1) 1N21  
Total Crystals: (1)

### REFERENCE DATA AND LITERATURE

Nomenclature Card for Test Meter TS-75A/U.  
AN08-30APM3-2: Technical Manual for Portable  
Test Set AN/APM-3A.

### FUNCTIONAL DESCRIPTION

The TS-75A/U is a portable instrument used for tuning a receiver for maximum response. It consists of a crystal rectifier and microammeter inclosed in a case and has a three way switch which allows selection of connection to an attached cable with radio-frequency connector, directly to binding posts, or to binding posts through a resistor making it a voltmeter.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

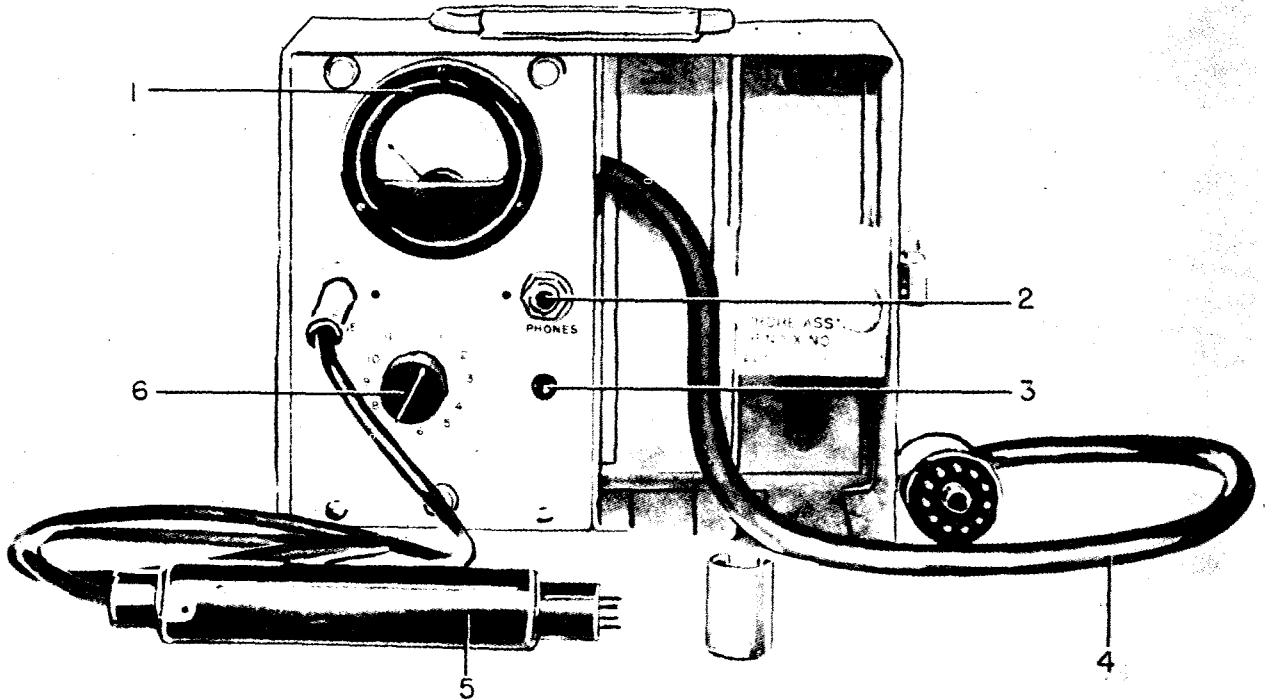
### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Meter TS-75A/U	4 X 4 X 5	2



**RADIO TEST SET**

**TS-777/URD-4**



- 1 Meter
- 2 PHONES jack
- 3 Sensitivity switch

- 4 Eleven-pin probe
- 5 Seven-pin probe
- 6 Meter selector switch

*Radio Test Set TS-777/URD-4*

**FUNCTIONAL DESCRIPTION**

The TS-777/URD-4 provides a means of measuring voltage at test set with tube sockets. One cable assembly is used to connect test set with tube sockets. Integral cable with 11 contact plug provides connection with 11 contact receptacle on R-353/URD-4. The entire unit is portable.

No field changes in effect at time of preparation (24 September 1956).

**RELATION TO OTHER EQUIPMENT.**

Similar to AN/URM-12.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

SENSITIVITY: 10,000 ohms per v.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Bendix Radio Div Bendix Aviation Corp,  
Towson, Md.  
Contract NObsr 52513.  
Contract NObsr 57098.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**TS-777/URD-4**

**RADIO TEST SET**

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91912(A): Technical Manual for  
 Direction Finder Set AN/URD-4.  
 Nomenclature Card for Radio Test Set TS-  
 777/URD-4.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Test Set TS-777/URD-4 consist of:	3-1/2 X 6-1/2 X 8	4
1	Meter		
1	Probe		
1	Cabinet		
1	Cover		

# TEST SET MULTIPLEXER

# TS-856/FR

## FUNCTIONAL DESCRIPTION

The TS-856/FR is designed as a conventional telephone transmission measuring set; with features which enable it to be used for a variety of tests on wire telephone circuits and on the audio circuits of Navy Model UQ Radio Link Equipment. The TS-856/FR incorporates four (4) sections, which can be used either individually or in combination to make transmission tests and measurements on audio equipments. They are as follows: (1) The Send Section, (2) The Receive Section, (3) The Indicating Meter Section and (4) The Calibration Section.

No field changes in effect at time of preparation (12 February 1959).

## RELATION TO OTHER EQUIPMENT

The TS-856/FR is used with but not part of the Navy Model UQ.

The TS-856/FR is the same as commercial Model Daven Co Type 12A.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TEST: Line noise measurement; gain and loss measurement; distortion measurement.

OPERATING FREQUENCY RANGE: 970 to 1030 cps.

OUTPUT LEVEL: -35 to +10 dbm in calibrated steps of 1 db.

OUTPUT IMPEDANCE: 600 ohms.

INPUT IMPEDANCE: 600 ohms.

OPERATING POWER REQUIREMENT: 110 to 120 v, 60 cps, single ph.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone and Radio Corp., Clifton, N.J.

Contract NObsr-52473.

## TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2WA (2) 12AU7 (1) 5U4GB

(1) 5726-6AL5W (1) 6F6 (1) 65J7Y

(2) 6SN7WGTA

Total Tubes: (9)

(4) 1N69

Total Crystals: (4)

## REFERENCE DATA AND LITERATURE

NAVSHIPS 91845 (Vol #1): Technical Manual for Radio Relay Link Navy Model UQ.

Nomenclature Card for Test Set Multiplexer TS-856/FR.

### TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE

STOCK NO.

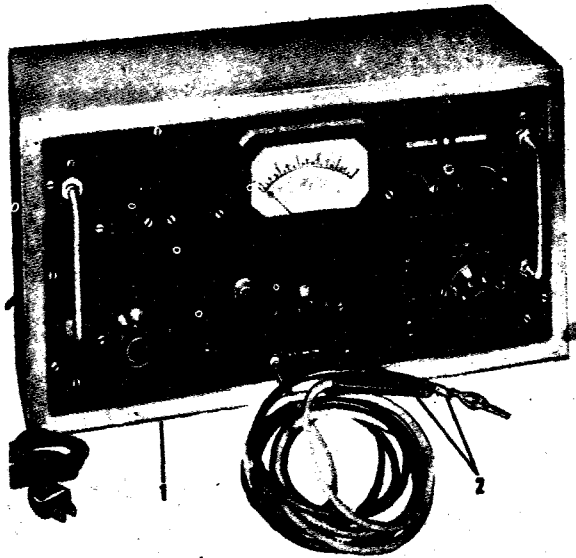
R.D.B. IDENT. NO. 10.1.11

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set Multiplexer TS-856/FR	8-3/4 X 10-1/2 X 19	

October 1957

Test-Voltage and Current Measuring

**TUBE TESTER****TS-9/ASQ***Tube Tester TS-9/ASQ***RELATION TO OTHER EQUIPMENT**

The TS-9/ASQ is similar to TS-9A/ASQ except that the TS-9A/ASQ will test the AN/ASQ tubes in addition to the Mark IV B2 tubes.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

FREQUENCY RANGE: 15000 cps max.

**INPUT**

DC METER: 22 megohms resistance.

AC METER: 2.75 megohms impedance.

METER SCALES: 0 to 10, 100, 1000 v.

POWER REQUIREMENTS: 110 v, 60 cps, 75 W.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 6J5 (2) 6V6GT (2) 6X5WT

Total Tubes: (5)

**REFERENCE DATA AND LITERATURE**

NAVAER 08-5S-78: Manual of Test Equipment for Airborne Electrical and Electronic Equipment.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE BUAER  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO. 1.2.1

**FUNCTIONAL DESCRIPTION**

The TS-9/ASQ primary purpose is for testing certain tubes being used in MAD equipment and was specifically designed for the maintenance of Mark IV B2 equipments. It will test certain tubes for mutual conductance, microphonics, and cathode resistance, provisions being made for checking six tubes at a time.

It contains a Vacuum Tube Voltmeter that is used as a part of the tube testing operation that may also be used for the measurement of external voltages, both AC and DC, within the range for which it was designed.

No field changes in effect at time of preparation (12 July 1957).

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester TS-9/ASQ	6-3/4 x 9-3/4 x 17-1/2	15.3
2	Test Lead		
1	Technical Manual AN08-35TS9-2		

3 April 1962

Cog Service: USN FSN: 6625-649-2435

ELECTRON TUBE TEST SET TV-10/U  
Functional Class: 1.2.1

USA

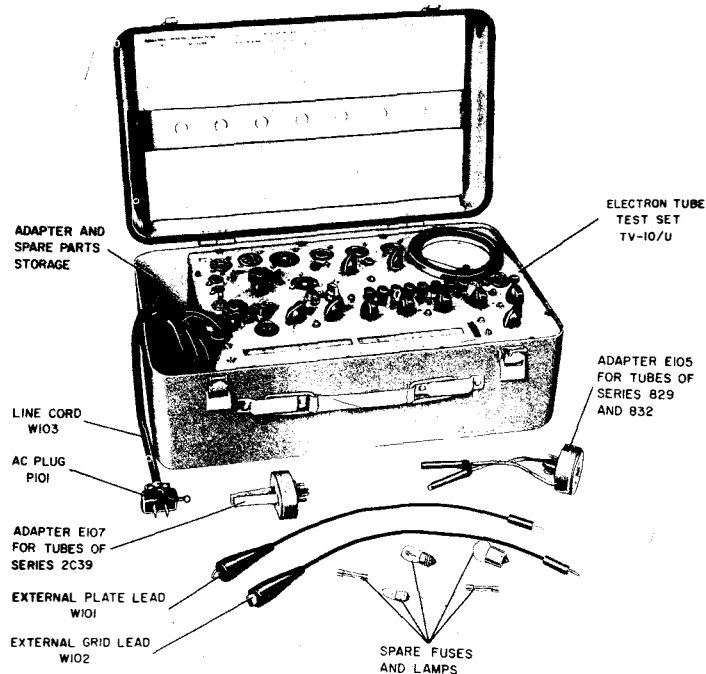
USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** Forway Industries Inc., (00641).



*Electron Tube Test Set TV-10/U*

**FUNCTIONAL DESCRIPTION:**

Electron Tube Test Set TV-10/U is a portable tube tester of the dynamic mutual conductance type designed to test and measure the mutual conductance values of electron tubes of the receiving types and many of the smaller transmitting types. Noise test jacks are included for checking of noisy tubes.

No field changes in effect at time of preparation (2 February 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 45 W, 103.5 to 126.5 v, 50 to 1,000 cyc, single ph.

TESTS THAT CAN BE MADE: Shorts test; Emission test (for rectifier and other diode-type tubes); Dynamic mutual conductance tests (for amplifier-type tubes); Reserve life test (for tubes with filament or heaters); Gas test (for amplifier-type tubes); Continuity test (for ballast tubes); Noise test; Pilot lamp test; Tuning eye test (for tuning eye tubes).

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**TV-10/U ELECTRON TUBE TEST SET**

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FILAMENT VOLTAGE RANGE: 0.6 to 117 v.

METER RANGES

SCALE A: Indicates condition of rectifiers and diodes.

SCALE B: 0 to 3,000 micromhos.

SCALE C: 0 to 6,000 micromhos.

SCALE D: 0 to 15,000 micromhos.

SCALE E: 0 to 30,000 micromhos.

ACCURACY: Porm 10% on all ranges.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electron Tube Test Set TV-10/U		6-1/6 x 8-3/8 x 15-5/8	18
	includes:			
2	Technical Manual NAVSHIPS 93021			
1	Lead; Plate Connector			
1	Lead; Grid Connector			
1	Adapter for 829 and B32 tubes			
1	Adapter for 2C39 tubes			
1*	Pilot Lamp			
1*	Fuse Lamp			
1*	Neon Lamp			
1*	Fuse			
1*	Fuse Lamp, Bias			

\*Equipment Spares

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93021: Technical Manual for Electron Tube Test Set TV-10/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 83 (1) 5Y3WGT/G

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.22	27

4.1 TV-10/U: 2

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/OR DWG: SHIPS-T-1856

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Forway Industries Inc.	Woodbury, N. J.	N0bsr-64838, 30 June 1955	\$108.90

3 April 1962

6625-620-5996

ELECTRON TUBE TEST SET TV-10A/U

Cog Service: USN

FSN: 6625-543-1294 W/S

Functional Class: 1.2.1

USA

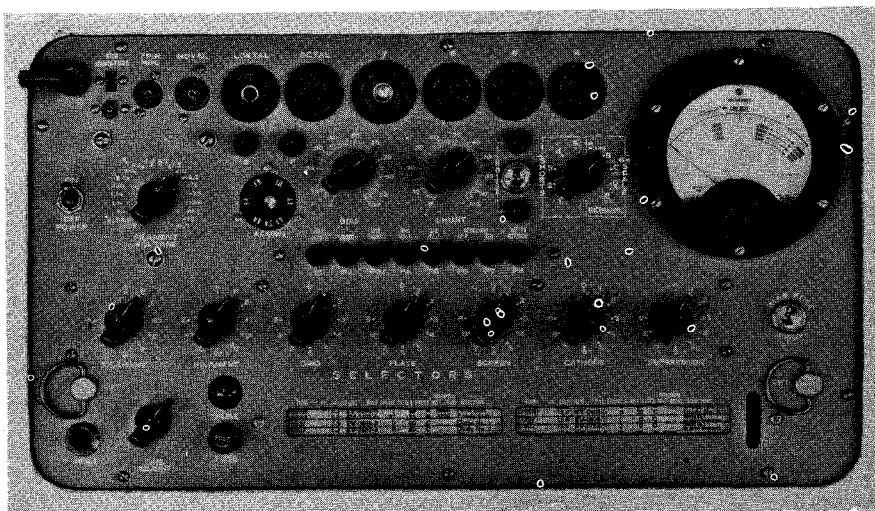
USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** The Hickok Electrical Instrument Co., (28569).



*Electron Tube Test Set TV-10A/U*

**FUNCTIONAL DESCRIPTION:**

Electron Tube Test Set TV-10A/U is a portable tube tester of the dynamic mutual conductance type designed to test and measure the mutual conductance values of electron tubes of the receiving types and many of the smaller transmitting types. Noise test jacks are included for checking of noisy tubes.

No field changes in effect at time of preparation (5 February 1962).

**TECHNICAL CHARACTERISTICS:**

**POWER REQUIREMENTS:** 100 W, 103.5 to 126.5 v, 50 to 1,000 cyc, single ph.

**TESTS THAT CAN BE MADE:** Shorts test; Emission test (for rectifier and other diode-type tubes); Dynamic mutual conductance test (for amplifier-type tubes); Reserve life test (for tubes with filament or heater); Gas test (for amplifier-type tubes); Continuity test (for ballast tubes); Noise test; Pilot lamp test; Tuning eye test (for tuning eye tubes).



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**TV-10A/U ELECTRON TUBE TEST SET**

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FILAMENT VOLTAGE RANGE: 0.6 to 117 v.

METER RANGES

SCALE A: Indicates condition of rectifiers and diodes.

SCALE B: 0 to 3,000 micromhos.

SCALE C: 0 to 6,000 micromhos.

SCALE D: 0 to 15,000 micromhos.

SCALE E: 0 to 30,000 micromhos.

ACCURACY: Form 10% on all ranges.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electron Tube Test Set TV-10A/U includes:		7 x 10-3/8 x 18-3/8	23
2	Technical Manual NAVSHIPS 93069			
1	Lead; Grid and Plate, for Lighthouse Tubes			
1	Lead; Plate Connector			
1	Lead; Grid Connector			
1	Adapter for 829A tubes			
1	Adapter for 2C39 tubes			
1*	Pilot Lamp			
1*	Fuse Lamp			
1*	Neon Lamp			
1*	Fuse			
1*	Fuse Lamp, Bias			

\*Equipment Spares stored in cover.

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93069: Technical Manual for Electron Tube Test Set TV-10A/U.

NAVSHIPS 93069.21: Operating Instruction for Electron Tube Test Set TV-10A/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 83 (1) 5Y3WGT/G

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.



3 April 1962

Cog Service: USN FSN: 6625-702-8868

ELECTRON TUBE TEST SET TV-10B/U  
Functional Class: 1.2.1

USA

USN

USAF

**TYPE CLASS:**

Used by

**MANUFACTURER'S NAME/CODE NUMBER:** Jetronic Industries Inc., (91820).

*(No Illustration Available)*

**FUNCTIONAL DESCRIPTION:**

Electron Tube Test Set TV-10B/U is a portable tube tester of the dynamic mutual conductance type designed to test and measure the mutual conductance values of electron tubes of the receiving types and many of the smaller transmitting types. Noise test jacks are included for checking of noisy tubes.

No field changes in effect at time of preparation (2 February 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 45 W, 103.5 to 126.5 v, 50 to 1,000 cyc, single ph.

TESTS THAT CAN BE MADE: Shorts test; Emission test (for rectifier and other diode-type tubes); Dynamic mutual conductance test (for amplifier-type tubes); Reserve life test (for tubes with filament or heater); Gas test (for amplifier-type tubes); Continuity test (for ballast tubes); Noise test; Pilot lamp test; Tuning eye test (for tuning eye tubes).

FILAMENT VOLTAGE RANGE: 0.6 to 117 v.

**METER RANGES**

SCALE A: Indicates condition of rectifiers and diodes.

SCALE B: 0 to 3,000 micromhos.

SCALE C: 0 to 6,000 micromhos.

SCALE D: 0 to 15,000 micromhos.

SCALE E: 0 to 30,000 micromhos.

ACCURACY: Porm 10% on all ranges.

**RELATION TO OTHER EQUIPMENT:**

This equipment is similar to Electron Tube Test Set TV-10/U and TV-10A/U, except for different component parts.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Electron Tube TV-10B/U includes:		7 x 10-3/8 x 18-3/8	18
2	Technical Manual			

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**TV-10B/U ELECTRON TUBE TEST SET**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Lead, Grid and Plate for Lighthouse Tubes			
1	Lead, Grid Connector			
1	Lead, Plate Connector			
1	Adapter for 829B tubes			
1	Adapter for 2C39 tubes			
1*	Pilot Lamp			
1*	Fuse Lamp			
1*	Neon Lamp			
1*	Fuse			
1*	Fuse Lamp, Bias			

\*Equipment Spares stored in cover.

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**REFERENCE DATA AND LITERATURE:** None.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 83 (1) 5Y3WGT/G

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/OR DWG: MIL-T-15563F(SHIPS), Amend 1

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Jetronic Industries Inc.	Philadelphia, Pa.	N0bsr-75157	\$136.00
		N0bsr-75721	\$159.00

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3 April 1962

Cog Service: USN FSN: 6625-727-0953

ELECTRON TUBE TEST SET TV-10C/U  
Functional Class: 1.2.1

USA

USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Forway Industries Inc., (00641).

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Electron Tube Test Set TV-10C/U is a portable tube tester of the dynamic mutual conductance type designed to test and measure the mutual conductance values of electron tubes of the receiving types and many of the smaller transmitting types. Noise test jacks are included for checking of noisy tubes.

No field changes in effect at time of preparation (2 February 1962).

**TECHNICAL CHARACTERISTICS:**

POWER REQUIREMENTS: 103.5 to 126.5 v, 50 to 1,000 cyc, single ph.

TESTS THAT CAN BE MADE: Shorts test; Emission test (for rectifier and other diode-type tubes); Dynamic mutual conductance tests (for amplifier-type tubes); Reserve life test (for tubes with filament or heater); Gas test (for amplifier-type tubes); Continuity test (for ballast tubes); Noise test; Pilot lamp test; Tuning eye test (for tuning eye tubes).

FILAMENT VOLTAGE RANGE: 0.6 to 117 v.

**METER RANGES**

SCALE A: Indicates condition of rectifiers and diodes.

SCALE B: 0 to 3,000 micromhos.

SCALE C: 0 to 6,000 micromhos.

SCALE D: 0 to 15,000 micromhos.

SCALE E: 0 to 30,000 micromhos.

ACCURACY: Form 10% on all ranges.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Electron Tube TV-10C/U includes:		7-1/2 x 11 x 18-3/8	
2	Technical Manual			
2	Test Lead (for plate and grid)			
1	Adapter-Tube Socket (for testing tube 829A)			

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**TV-10C/U ELECTRON TUBE TEST SET**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Adapter-Tube Socket (for testing tube 2C39)			
1	Adapter-Tube Socket (for testing tube 15R)			
1	Adapter-Tube Socket (for testing tube 708A)			
1*	Pilot Lamp			
1*	Fuse Lamp			
1*	Neon Lamp			
1*	Fuse			
1*	Fuse Lamp, Bias			

\*Equipment Spares stored in cover.

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**REFERENCE DATA AND LITERATURE:** None.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 83 (1) 5Y3WGT

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/OR DWG: MIL-T-15563D(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Forway Industries Inc.	Woodbury, N. J.	N0bsr-71761	\$187.00

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27 June 1962

Cog Service: USA FSN:

TEST SET, ELECTRON TUBE TV-2/U  
Functional Class: 1.2.1

USA

USN

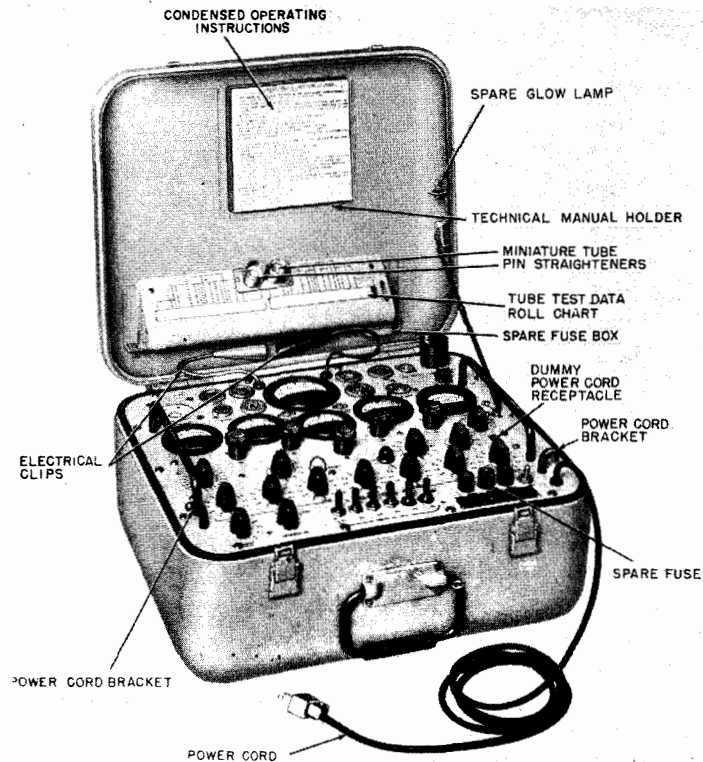
USAF

TYPE CLASS:

Std

Used by

MANUFACTURER'S NAME/CODE NUMBER: CBS Columbia Div. of Columbia Broadcasting System, Inc., (92708).



*Test Set, Electron Tube TV-2/U*

#### FUNCTIONAL DESCRIPTION:

Electron Tube Test Set TV-2/U is a portable tube tester of the dynamic mutual conductance type. It is used to test and to measure performance capabilities and to determine rejection limit for electron tubes used in receivers, low-powered transmitters, and other electronic equipment. The following tests can be made with the tube tester: short test, interelement leakage test, filament continuity test, dynamic mutual conductance test for amplifier tubes, emission test for vacuum rectifier tubes, test of gas rectifier tubes, test of voltage regulator tubes, plate current tests for triodes, test of thyratron tubes, electron-ray indicator test for electronic indicator tubes and ballast tube test.

No field changes in effect at time of preparation (26 July 1961).

#### TECHNICAL CHARACTERISTICS:

##### POWER SUPPLY

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## TV-2/U TEST SET, ELECTRON TUBE

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INPUT VOLTAGE: 103.5 to 126.5 v ac.  
FREQUENCY: 50 to 1,000 cyc, single ph.  
POWER CONSUMPTION: 70 w (no tube under test).  
TEMPERATURE RANGE: 4 deg to 125 deg F.

### FILAMENT VOLTS METER

TYPE: DC voltmeter movement.  
FREQUENCY RANGE: 50 to 1,000 cps.  
AC VOLTAGE RANGES: 0 to 2.5, 10, 40, 120 v; red lines at 0.625, 6.3, 12.6, 117 on appropriate scale.  
ACCURACY: Porm 5% error at full scale.

### GRID BIAS VOLTS METER

TYPE: DC voltmeter.  
SENSITIVITY: 1,000 ohms per volt.  
DC VOLTAGE RANGES: 0 to 5, 10, 50 v.  
ACCURACY: Porm 2% error at full scale.

### PLATE METER

TYPE: DC voltmeter.  
SENSITIVITY: 1,000 ohms per volt.  
VOLTAGE RANGES: 0 to 250 v dc, with red lines at 45, 90, 180, 225. 0 to 50 v ac, with 20 ac and 35 ac marked in red.  
OHMMETER RANGES: 0.1 to 1.0 meg.  
ACCURACY: Porm 2% error at full scale.

### SCREEN VOLTS METER

TYPE: DC voltmeter.  
SENSITIVITY: 1,000 ohms per volt.  
VOLTAGE RANGE: 0 to 250 v dc.  
ACCURACY: Porm 2% error at full scale.

### SIGNAL METER

TYPE: AC iron vane-type ammeter.  
FREQUENCY RANGE: 50 to 1,000 cps.  
METER RANGE: 45 ma ac full scale; red line at approx two-thirds full scale (35 ma ac).  
ACCURACY: Porm 5% error at full scale.

### PERCENT QUALITY METER (TRANSCONDUCTANCE)

TYPE: DC microammeter.  
SENSITIVITY: 10,000 ohms per volt (150 ua full scale deflection).  
PERCENT QUALITY RANGES: To 60,000 umhos (in equivalent percentage values).  
ACCURACY: Porm 2% error at full scale.

### RELATION TO OTHER EQUIPMENT:

This equipment is designed to replace Tube Tester I-177.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.



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**TEST SET, ELECTRON TUBE TV-2/U**

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Electron Tube TV-2/U includes:		8-3/8 x 16-1/16 x 17-11/16	37
2	Technical Manual TM11-6625-316-12			
1	9-Pin Miniature Tube Straightener			
1	7-Pin Miniature Tube Straightener			
1	Running Spares consists of:			
set				
1	Electron Tube, 83			
1	Electron Tube, 6X4W			
5	Fuses, 3 amp, 250 v		1/4 dia x 1-1/4	
1	Glowlamp NE-51			

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**REFERENCE DATA AND LITERATURE:**

TM11-2661: Technical Manual for Electron Tube Test Set TV-2/U, TV-2A/U and TV-2B/U.  
TM11-6625-316-12: Operator and Organizational Maintenance Manual for Test Sets Electron Tube TV-2/U, TV-2A/U and TV-2B/U.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (2) 6X4W (1) 83

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	2.16	60

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**PROCUREMENT DATA**

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PROCURING SERVICE: USA  
SPEC &/OR DWG: MIL-T-10441(Sig C)

DESIGN COG: USA, Sig C

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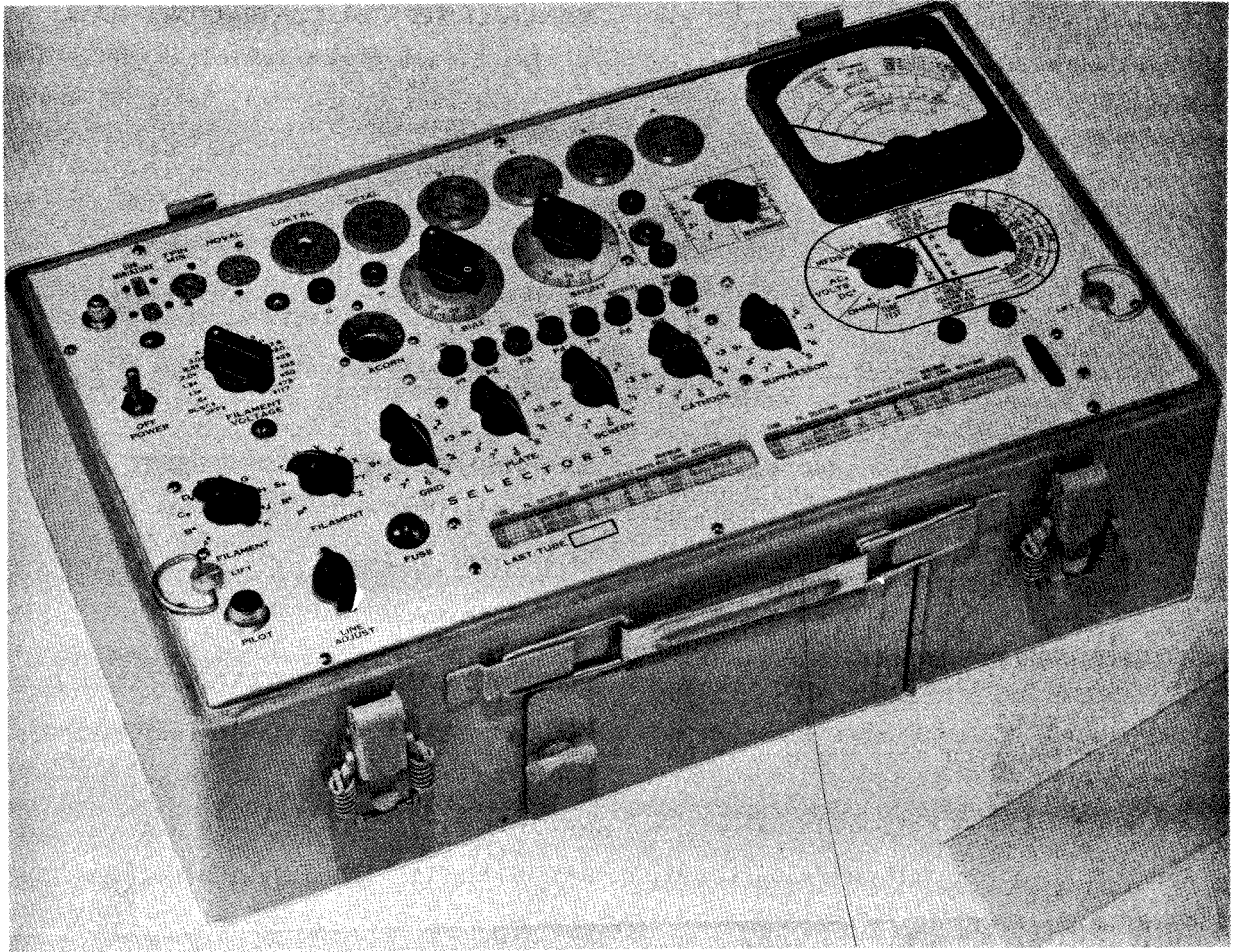
**TV-2/U TEST SET, ELECTRON TUBE**

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX. UNIT COST</b>
CBS Columbia Div. of Columbia Broadcasting System, Inc. Pt/Dwg no. OD-A-1001	Brooklyn, N. Y.	DA36-039-sc-36528 11654-PH-52-93	\$289.00

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April 1958

**TUBE TESTER****TV-3/U,-3A/U,-3B/U,-3C/U***Tube Tester TV-3B/U***FUNCTIONAL DESCRIPTION**

The TV-3/U, TV-3A/U, TB-3B/U, and TV-3C/U are portable tube testers of the dynamic mutual conductance type designed to test and measure the mutual conductance values of electron tubes of the receiving types and many of the smaller transmitting types. They include a multimeter section, using the same indicator, which permits measurements of both alternating and direct current voltage, direct current milliamperes, resistance, and capacity.

They are similar electrically and mechanically, differing mainly in that the TV-3/U has no provisions for testing sub-miniature

in-line tubes while the other models contain a tube docket for this purpose, and the TV-3B/U and TV-3C/U are provided with adapters for testing tube types 832A, 829B, and 2C39. The TV-3/U and TV-3A/U include the circuit diagrams for testing tube types 832A, 829B, and 2C39, but are not supplied with the adapters.

Data on this sheet reflects the following field changes: FC-1 for TV-3/U, TV-3A/U, TB-3B/U (18 November 1957).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****TUBE TYPES ACCOMMODATED**

TV-3/U: 4, 5, 6, 7 pin standard, 7 pin miniature, 8 pin sub-miniature, acorn, octal, loktal, noval.

## Test-Voltage and Current Measuring

## TV-3/U,-3A/U,-3B/U,-3C/U

## TUBE TESTER

April 1958

TV-3A/U, -3B/U, -3C/U: 4, 5, 6, 7 pin standard, 7 pin miniature, 7 pin sub-miniature in-line, 8 pin sub-miniature, acorn, octal, loktal, noval.

## METER RANGES

## MICROMHOS

TV-3/U: 0 to 3000, 6000, 15000.

TV-3A/U, -3B/U, -3C/U: 0 to 3000, 6000, 15000, 30000.

## VOLTS (AC AND DC)

TV-3/U, -3A/U: 0 to 20, 200, 500, 1000.

TV-3B/U, -3C/U: 0 to 5, 10, 50, 100, 500, 1000.

## MILLIAMPERES (DC)

TV-3/U, -3A/U: 0 to 20, 200.

TV-3B/U, -3C/U: 0 to 1, 5, 10, 50, 100, 500.

## RESISTANCE

TV-3/U, -3A/U: 0 to 1, 100 megohms.

TV-3B/U, -3C/U: 0 to 1000, 10000, 100000 ohms, 0 to 1, 10, 100 megohms.

## CAPACITY

TV-3/U, -3A/U: 0 to 5, 50 uf.

TV-3B/U, -3C/U: 0 to 0.02, 0.2, 2, 20 uf.

## SENSITIVITY (VOLTAGE RANGES)

TV-3/U, -3A/U: 1000 ohms per v on all ranges.

TV-3B/U, -3C/U: 1000 ohms per v on all AC ranges, 20000 ohms per v on all DC ranges.

## ACCURACY

DC RANGES:  $\pm 3\%$  of full-scale deflection at +25 deg C.AC RANGES:  $\pm 5\%$  of full-scale deflection at +25 deg C.

## RESISTANCE RANGES

TV-3/U, -3A/U:  $\pm 5\%$  at mid-scale values at 20 deg C.TV-3B/U, -3C/U:  $\pm 3\%$  of full-scale arc in degrees at 25 deg C.MICROMHOS:  $\pm 10\%$  on all ranges.

## POWER REQUIREMENTS

TV-3/U: 105 to 125 v, 50 to 1600 cps, single ph, 50 W min at 60 cps, 0.33 amps current drain.

TV-3A/U: 105 to 125 v, 50 to 1600 cps, single ph, 45 W at 60 cps, 0.38 amps current drain.

TV-3B/U, -3C/U: 105 to 125 v, 50 to 1000 cps, 75 W min at 60 cps, 0.5 amps current drain.

## MANUFACTURER'S OR CONTRACTOR'S DATA

The Hickok Electrical Instrument Co, Cleveland, Ohio.

Contract NObsr-42081, dated 27 January 1948 (TV-3/U).

Contract NObsr-43282, dated 18 May 1949 (TV-3A/U).

Contract NObsr-49238, dated 30 June 1950 (TV-3A/U).

Contract NObsr-52672, dated 25 June 1951 (TV-3B/U).

Jetronic Industries, Inc, Philadelphia, Pa.

Contract NObsr-59586, dated 23 December 1952 (TV-3C/U).

Approximate Cost: \$190.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5Y3WGTB

(1) 83

Total Tubes: (2)

No Crystals

## REFERENCE DATA AND LITERATURE

NAVSHIPS 91254: Technical Manual for Tube Tester TV-3/U.

NAVSHIPS 91435: Technical Manual for Tube Tester TV-3A/U.

NAVSHIPS 91747: Technical Manual for Tube Tester TV-3B/U.

NAVSHIPS 92193: Technical Manual for Tube Tester TV-3C/U.

## TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE MIL-T-15563C (SHIPS)

STOCK NO.

R.D.B. IDENT. NO. 1.2.1

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Tube Tester TV-3/U Export Pack Domestic Pack	3.4 2.1	13-1/8 X 19-1/2 X 22-3/4 10-1/2 X 17 X 20	52 35

UNCLASSIFIED

Test-Voltage and Current Measuring

April 1958

## TUBE TESTER

TV-3/U,-3A/U,-3B/U,-3C/U

## SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Tube Tester TV-3A/U	5.3	13-1/2 X 23 X 29-1/2	90
1	Tube Tester TV-3B/U	2.8		52
1	Tube Tester TV-3C/U	1.06		24

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester TV-3/U or	6-7/8 X 10-7/8 X 16-3/4	19
	Tube Tester TV-3A/U or	6-7/8 X 10-7/8 X 18-3/4	20
	Tube Tester TV-3B/U or	6-3/4 X 10-9/16 X 18-9/16	23
	Tube Tester TV-3C/U	7-5/32 X 10-1/8 X 18-1/8	22
	including:		
	(2) Technical Manual		
	(1) Lead, Grid and Plate, Lighthouse Tube		
	(1) Lead, Plate Connector		
	(1) Lead, Red Test Prod		
	(1) Lead, Black Test Prod		
	(1) Lead, Grid Connector		
	(1) Lead, Capacity Test*		
	(1) Adapter, 8298 Tube†		
	(1) Adapter, 2C39 Tube†		
	(1) Set of Equipment Spares		

NOTE: \*-For TV-3/U and TV-3A/U only.  
†-For TV-3B/U and TV-3C/U only.

UNCLASSIFIED

4.1 TV-3/U: 2

UNCLASSIFIED

April 1958

Test-Voltage and Current Measuring

### TUBE TESTER

TV-5/U

#### FUNCTIONAL DESCRIPTION

The TV-5/U is a static transconductance unit used in determining the peak emission, transductance, and the cutoff point of various subminiature series tubes used as an electrometers.

No field changes in effect at time of preparation (24 April 1958).

Approximate Cost: \$972.00 with equipment spares.

#### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

#### RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Battery BA-30, (2) Eveready No. 412.

#### REFERENCE DATA AND LITERATURE

NAVSHIPS 91321: Technical Manual for Tube Tester TV-5/U.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 1.5 v, 22.5 v, 45 v DC.

#### MANUFACTURER'S OR CONTRACTOR'S DATA

San Francisco Naval Shipyard, San Francisco, Calif.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

#### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tube Tester TV-5/U	5-3/4 X 7-3/4 X 12-1/2	4-1/2

UNCLASSIFIED

4.1 TV-5/U: 1

UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

**ELECTRON TUBE TEST SET**

**TV-7/U**



*Electron Tube Test Set TV-7/U*

**RELATION TO OTHER EQUIPMENT**

Similar to TV-7A/U.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

METER RANGE: 0 to 120 arbitrary units.  
 OPERATING POWER: 115 v  $\pm$ 10%, single ph, 50 to 1000 cps, 45 W.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 83 (1) 5Y3GT  
 Total Tubes: (2)

**REFERENCE DATA AND LITERATURE**

TM11-5083: Technical Manual for Electron Tube Test Set TV-7/U and TV-7A/U.

**FUNCTIONAL DESCRIPTION**

The TV-7/U is a portable tube tester of the dynamic mutual conductance type. It is used to test and measure the performance capabilities and to determine the rejection limits for electron tubes used in receivers, in low power transmitters, and in many other electronic equipments.

Data on this sheet reflects the following field changes, FC-1 (4 December 1956).

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electron Tube Test Set TV-7/U	1.22	11-1/16 X 13-3/8 X 20-5/8	

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set TV-7/U	6-1/16 X 8-3/8 X 15-5/8	18
1	Adapter 829B and 832-A tubes	2 dia X 1-7/16	

UNCLASSIFIED

4.1 TV-7/U: 1

## TV-7/U

## ELECTRON TUBE TEST SET

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Adapter, 2C39 tube	15 lg	
1	Adapter, subminiature		
2	Test Lead		
1	Set Spare Parts consist of:		
2	Neon Glow Lamp NE-45		
2	Pilot Lamp Type 47		
3	Fuse Lamp Type 81		
1	Tube Type 83		
1	Tube 5Y3GT		



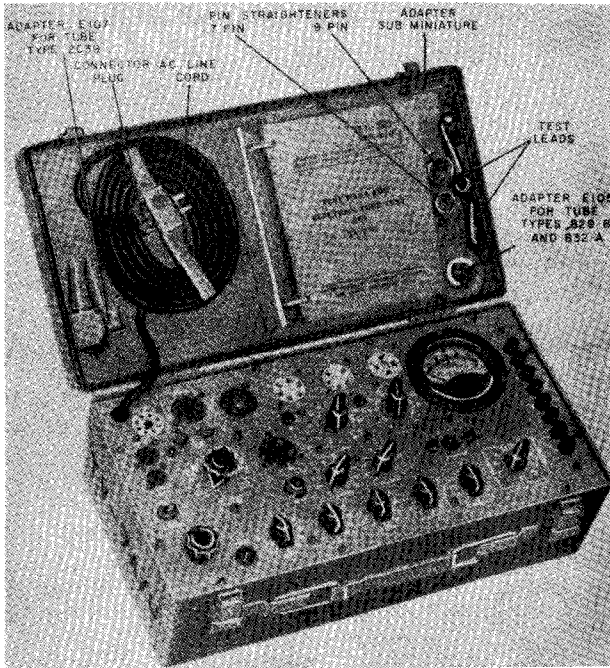
UNCLASSIFIED

January 1958

Test-Voltage and Current Measuring

# ELECTRON TUBE TEST SET

# TV-7A/U



No field changes in effect at time of preparation (15 July 1957).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

**TESTS POSSIBLE:** Dynamic mutual conductance, Emission, shorts, gas, noise, continuity and pilot lamp.

**METER RANGE:** 0 to 120 arbitrary units.

**POWER CONSUMPTION:** 45 watts at 115 v, 50 cps.

**POWER SOURCE REQUIRED:** 115 v, 50 to 1000 cps, single ph.

### TUBE AND/OR CRYSTAL COMPLEMENT

(1) 83  
Total Tubes: (2) (1) 5Y3WGT

### REFERENCE DATA AND LITERATURE

TM11-5083, T.O. 33AA21-5-11, C1; Technical Manual for Electron Tube Test Sets TV-7/U and TV-7A/U.

*Electron Tube Test Set TV-7A/U*

### FUNCTIONAL DESCRIPTION

The TV-7A/U is a portable tube tester of the dynamic mutual conductance type. The instrument is used to test and measure the performance capabilities and to determine the rejection limits for electron tubes used in receivers, in low power transmitters, and in many other electronic equipments.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	1.2.1

### SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electron Tube Test Set TV-7A/U			

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Set incl tubes and lamps	6-1/16 X 8-3/8 X 15-5/8	18
1	Adapter: 829-B and 832-A tubes	1-7/16 X 2 dia	
1	Adapter: 2C39 tube		
1	Subminiature adapter		
2	Test leads	15 lg	
1	Set of maintenance spares		

UNCLASSIFIED

4.1 TV-7A/U: 1

21 June 1962

Cog Service: USN FSN:

TEST SET, ELECTRON TUBE TV-8/USM-31

Functional Class: 1.2.1

USA

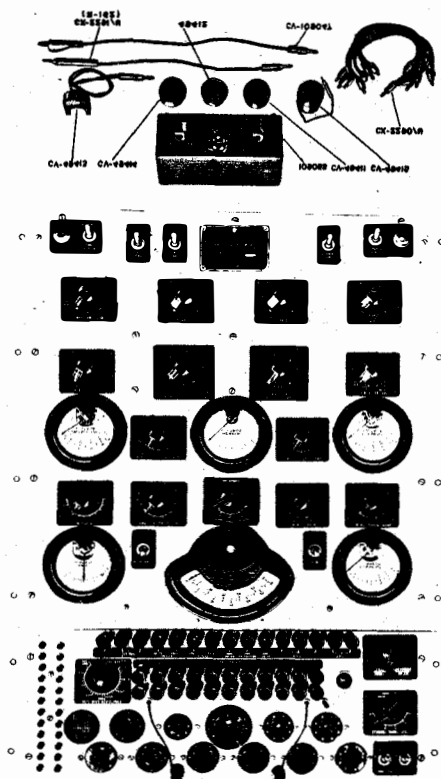
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Weston Electrical Instrument Corporation, (65092).



Test Set, Electron Tube TV-8/USM-31

#### FUNCTIONAL DESCRIPTION:

Test Set, Electron Tube TV-8/USM-31 is designed to measure the electrical characteristics of an electron tube under simulated operating conditions. Basically, it is comprised of a well-filtered, accurately metered, adjustable power supply of ac and dc potentials, and a specially compensated and calibrated transconductance meter.

No field changes in effect at time of preparation (26 March 1962).

#### TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 185 W, 105 to 125 v or 210 to 230 v, 50 to 60 cyc, single ph.

HEATER VOLTAGE: 0 to 2, 4, 8, 20, 50, 125 v ac; perm 2%.

ELEMENT VOLTAGE: 0 to 60, 150, 300 v dc; perm 2%.

ELEMENT CURRENT: 0 to 3, 12, 60, 120 ma dc; perm 2%.

---

**TV-8/USM-31 TEST SET, ELECTRON TUBE**

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GRID CURRENT: 15 to 0 to 15, 1,500 to 0 to 1,500 ua dc; porm 5%.  
GRID VOLTAGE: 0 to 10, 50, 100 v dc; porm 2%.  
TRANSDUCTANCE: 600, 13,000, 6,000, 15,000, 30,000 micromhos; porm 6%.

**RELATION TO OTHER EQUIPMENT:**

This equipment is part of Test Set, Electron Tube AN/USM-31.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Electron Tube TV-8/USM-31		7-3/8 x 19-7/8 x 26-1/8	105

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91849: Technical Manual for Electron Tube Analyzer TV-8/USM-31.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 3B4 (1) 5U4G (1) 6CB6 (1) 6C4W (1) 6X4 (1) 0B2W

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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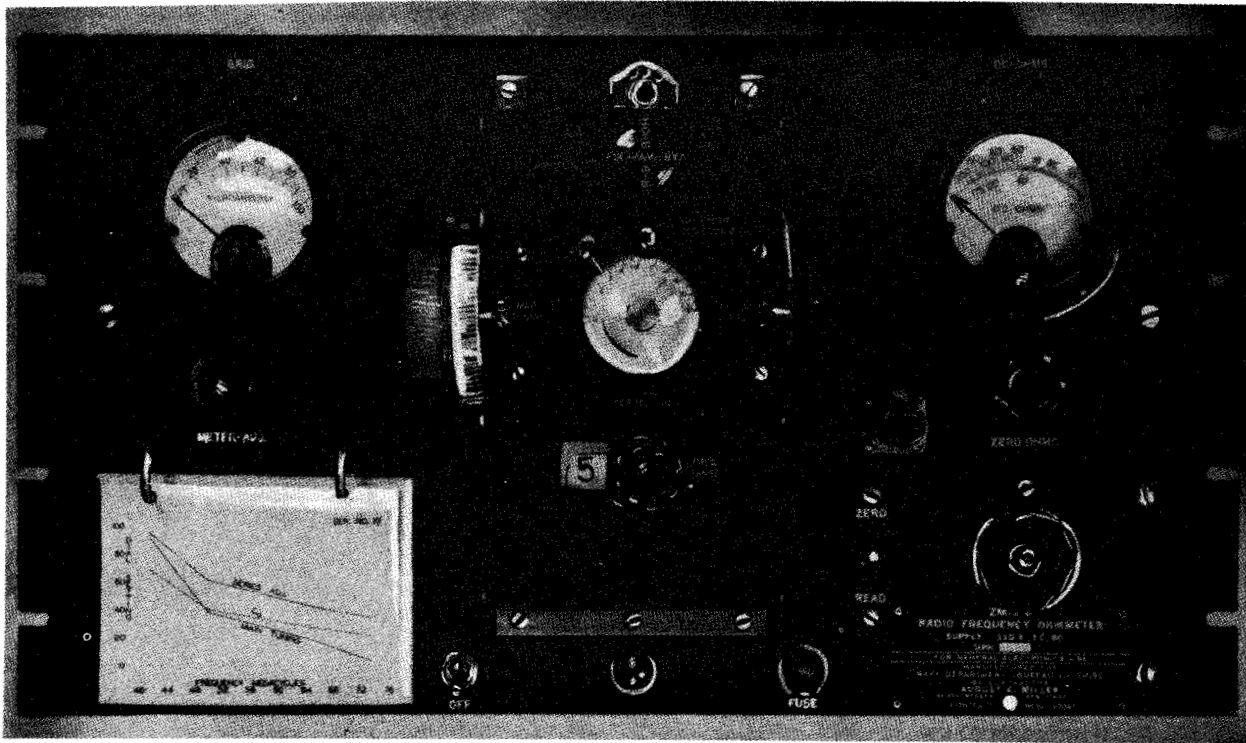
**PROCUREMENT DATA**

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PROCURING SERVICE: USN DESIGN COG: USN, BuShips  
SPEC &/OR DWG: SHIPS-T-852, Amend 2

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Weston Electrical Instrument Corporation	Newark, New Jersey	N0bsr-52388, 18 April 1951	

April 1958

**RADIO FREQUENCY OHMMETER****ZM-2/U***Radio Frequency Ohmmeter ZM-2/U***FUNCTIONAL DESCRIPTION**

The ZM-2/U is used to measure the series resonance resistance of quartz units in the range of 9 to 108 megacycles.

No field changes in effect at time of preparation (6 January 1958).

**RELATION TO OTHER EQUIPMENT**

The ZM-2/U is being replaced by xtal Impedance Meter TS-683/TSM.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

RANGE: 9 to 108 mc.  
 POWER SOURCE REQUIRED: 110 v, 60 cps, single ph.  
 MTG: 19 in. relay rack.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

August E. Miller, North Bergen, N.J.  
 Contract NObsr 42045.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 0A2WA (1) 2C51 (1) 6X4WA  
 Total Tubes: (3)

No Crystals.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 91406: Technical Manual for Radio Frequency Ohmmeter ZM-2/U.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

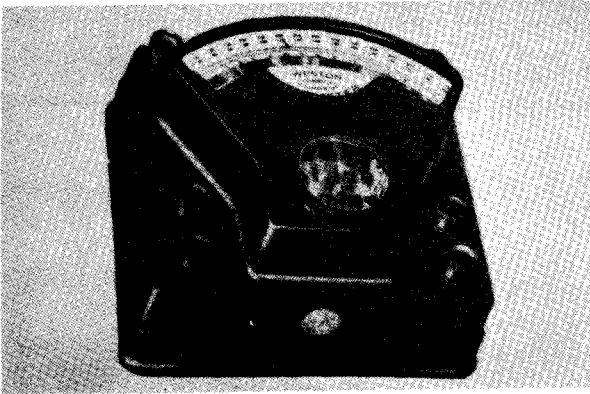
Test-Voltage and Current Measuring

**ZM-2/U****RADIO FREQUENCY OHMMETER**

April 1958

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Frequency Ohmmeter ZM-2/U		

**AMMETER****1 (CV)***Ammeter Model 1 (CV)*ACCURACY:  $\pm 0.25\%$ .**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp., Newark, New Jersey.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**REFERENCE DATA AND LITERATURE**

Weston Electrical Instruments Catalog No. 13A for Model 1.

**FUNCTIONAL DESCRIPTION**

Ammeter 1 (CV) is a portable, multi-range apparatus used in measuring dc ampere.

No field change in effect at time of preparation (15 July 1959).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

CURRENT RANGE: 0 to 0.6, 1.8 amp dc.

SENSITIVITY: 48 mv across terminals.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE COMMERCIAL  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO. 1.1.2.3

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter 1 (CV) including:	3-1/2 X 6 X 6-1/2	7.5
1	Set of Test Leads		
1	Carrying Case		

UNCLASSIFIED

March 1957

Test-Voltage & Current Measuring

# AMMETER 1 (0 TO 1.5, 0 TO 3 AND 0 TO 7.5)

## FUNCTIONAL DESCRIPTION

The Model 1 (Weston) is a portable instrument designed to measure DC amperes in the 0 to 1.5, 0 to 3 and 0 to 7.5 ranges. The scale is hand calibrated by direct comparison with accurate reference standards, and it is supplied in a leather carrying case with a convenient handle.

It is designed for use with and includes an external shunt and is calibrated to suit the shunt selected.

No field changes in effect at time of preparation (1 October 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

### SCALE DATA

RANGE: 0 to 1.5, 3 and 7.5 amps DC.

GRADUATION: 150 scale divisions (linear).

SENSITIVITY: 50 mv drop across terminals.

ACCURACY:  $\pm 0.25\%$  at full scale deflections.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp.,  
Newark, N.J.

Approximate Cost: \$130.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

Weston Electrical Instruments Catalog No. 13A for Model 1.

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

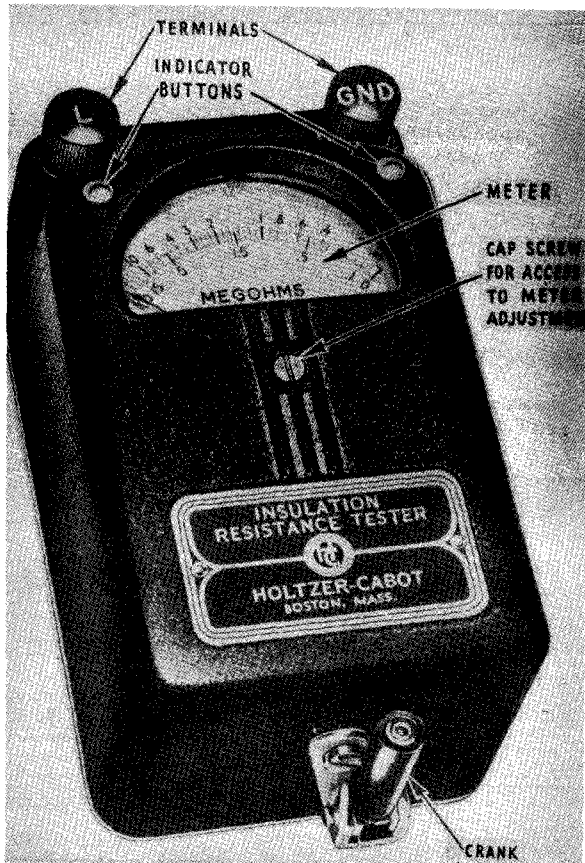
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter, Weston Model 1	3-1/2 x 6 x 6-5/8	7.5
1	Carrying Case		
1	Shunt, External, 50mv	60 lg	
2	Test Lead		

UNCLASSIFIED

4.1 1(0 TO 1.5, 0 TO 3 AND 0 TO 7.5): 1

**INSULATION RESISTANCE TESTER**

**10-B**



*Insulation Resistance Tester 10-B*

notes the necessity of a high potential test which may cause equipment to break down or weaken insulation. The instrument may be used to measure insulation resistance between wiring and ground, between two conductors and/or between two windings.

No field changes in effect at time of preparation (8 June 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER SOURCE: Self contained hand generator.

OUTPUT VOLTAGE: 500 v DC.

RESISTANCE RANGE: 0 to 100 meg.

METER

FULL SCALE DEFLECTION CURRENT: 0.90 ma.

DC RESISTANCE: 105 ohms  $\pm$ 20%.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Holtzer Cabot, Inc., Boston, Mass  
Model 10-B

**TUBE COMPLEMENT**

(2) JAN 5517

Total Tubes: (2)

**REFERENCE DATA AND LITERATURE**

Operating Instructions for Electronically Controlled Insulation Resistance Tester Model 10B.

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**FUNCTIONAL DESCRIPTION**

The Model 10-B (Holtzer-Cabot) is designed to measure Insulation Resistance from 0 to 100 megohms at a potential of 500 volts. It provides a method of checking the condition of all kinds of electrical insulation. Its regular use will aid in preventing equipment damage caused by circuit failure due to faulty insulation. The use of the Model 10-B elimi-

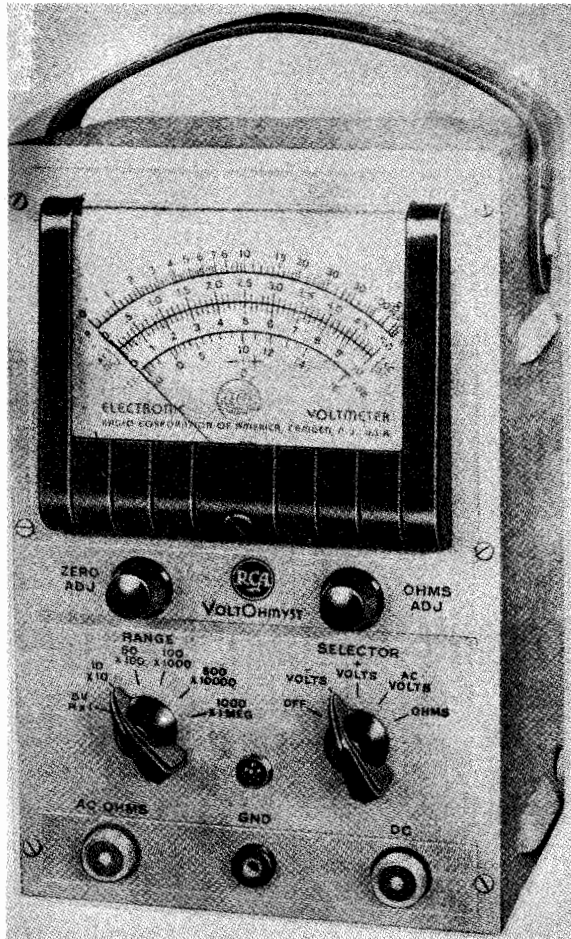
**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Insulation Tester Model 10-B		
1	Leather Carrying Case		
1	Red Test Lead		
1	Black Test Lead		
1	Technical Manual		



## VOLTOHMYST

195-A



*Voltohmyst 195-A*

### FUNCTIONAL DESCRIPTION

The Voltohmyst is designed to measure DC, AC (AF) voltages and resistances over an extremely wide range. Outstanding features of the instrument are its high input resistance; foolproof voltmeter which is automatically protected against burn-out; "ZERO-ADJ" and "OHMS-ADJ" that do not have to be reset when changing ranges; and its "signal tracing" type of test probe which permits dynamic voltage measurements in signal carrying circuits. Another feature is a diode circuit capable of measuring throughout the audio spectrum, up to 100 v rms, on a linear scale. It may be used to measure voltages

of power line frequencies up to 1000 v. A zero center scale is provided for use in aligning FM or AFC discriminator circuits, indicating bridge balance, etc. The instrument uses a push-pull DC electronic vacuum tube voltmeter.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE: 105 to 125 v, 50 to 60 cycles single ph.

POWER CONSUMPTION: 14 W at 117 v, 60 cycles  
DC VOLTMETER

RANGES: 0 to 5/10/50/100/500/1000 v.

INPUT RESISTANCE: 10 megohms.

SENSITIVITY: 2 megohms per v on 5 v range.

CIRCUIT: Differential vacuum tube bridge zero center scale.

### ELECTRONIC OHMMETER

RANGE: 0.1 ohm to 1000 megohms over 6 ranges RX1/X10/X100/X1000/X1 meg.

### AC (AF) VOLTMETER

RANGES: 0 to 5/10/50/100/500/1000 v rms.  
INPUT IMPEDANCE

WITH CABLE: Approx 170 uuf shunted by an equivalent resistance of approx-200,000 ohms.

FREQUENCY RESPONSE: Flat 30 to 100,000 cycles up to 100 v. Flat at power line frequencies up to 1000 v.

CIRCUIT: Balanced linear diode.

### OUTPUT METER

DECIBEL SCALE: Base on volume unit system with zero reference level of 0.1 mw at 600 ohms (0.775 v across 600 ohms).

### METER

SENSITIVITY: 200 uamp DC.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corporation of America, Harrison, New Jersey.  
Type 195-A

### TUBE COMPLEMENT

(1) 6H6 (2) 6K6GT (1) 6X5GT  
Total Tubes: (4)

REFERENCE DATA AND LITERATURE

1B-4195-6  
Instruction Book for Voltohmyst Type  
195-A.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE COMMERCIAL  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs)
3	Cable Assemblies		
1	Case, Metal		
1	Alligator Clip		
3	Electrical Connectors		
1	Power Cord		
1	Pin Plug		

March 1957

**RADIO TEST EQUIPMENT****202B****FUNCTIONAL DESCRIPTION**

The 202B is a portable electronic type test instrument for measuring the values of AC and DC voltages, resistance and current of electronic and electrical equipment.

The design of the instrument is such that there is little danger of damaging the equipment due to over voltage when making AC and DC voltage measurements. However when making current measurements the usual precautions should be observed to prevent burn out of the meter.

No field changes in effect at time of preparation (7 September 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****RANGES**

AC VOLTS: 0 to 0.5, 2.5, 10, 50, 250, 1000 volts.

DC VOLTS: 0 to 2.5, 10, 50, 250, 1000 v.

OHMMETER: .1 to 1000 meg in 5 ranges.

MILLIAMPERE: 0 to 2.5, 10, 50, 250, 1000 ma.

**INPUT IMPEDANCE**

AC VOLTS: 1.3 megs all ranges.

DC VOLTS: 11 megs all ranges.  
OHMMETER VOLTAGE SOURCE: 1-1/2 v battery.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Hickok Electrical Instrument Co. Cleveland, Ohio.  
Contract NXss 33800.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) VR-150/30 (1) 6SN7  
(1) 6X6GT (1) 6SQ7  
Total Tubes: (4)

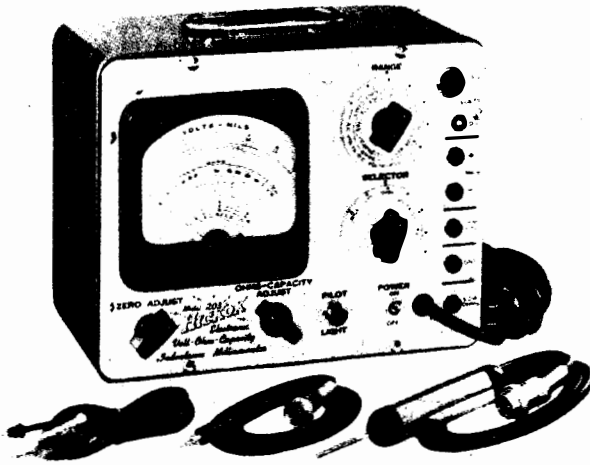
**REFERENCE DATA AND LITERATURE**

Technical Manual for Radio Test Equipment 202B.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Test Equipment 202B consisting of:		
1	A.C. Voltmeter		
1	D.C. Voltmeter		
1	Electronic Ohmmeter		



Meter-Multimeter 203

RESISTANCE: 0 to 10000 ohms, 0 to infinity.  
 CAPACITY: 0 to 1000, 0 to infinity uuf;  
 0 to 10 uf, 0 to infinity.  
 DECIBEL: -20 to +5, -8 to +17, 0 to +25.  
 RANGES  
 VOLTAGE: 0 to 3, 12, 30, 120, 300 v AC;  
 0 to 3, 12, 30, 120, 300, 1200 v DC.  
 CURRENT: 0 to 3, 12, 30, 120, 300, 1200 ma DC  
 CAPACITY: 0 to 10000 uuf in 2 ranges, 0 to 1000 uf in 5 ranges.  
 INDUCTANCE: 50 millihenries to 100 henries.  
 RESISTANCE: 0.1 to 10,000 megohms in 8 ranges.  
 FREQUENCY: 5 mc max.  
 INPUT IMPEDANCE  
 DC VOLTS: 15 megohms.  
 AC VOLTS: 12 megohms shunted by 150 uuf.  
 METER  
 TYPE: S44.  
 SENSITIVITY: 350 uamp.

**FUNCTIONAL DESCRIPTION**

The Model 203 is a portable, electronic volt-ohm-capacity-milliammeter test instrument which may be used in making measurements of DC currents, AC and DC voltages, resistances, capacitances and inductances permitting analysis of radio and electrical circuits

No field changes in effect at time of preparation (5 June 1956).

**RELATION TO OTHER EQUIPMENT**

The Model 203 is identical to the model 203PR with the exception of the type of cable assembly supplied for making AC voltage measurements.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER SOURCE: 105 to 125 v, 50 to 70 cps.  
 POWER CONSUMPTION: 20 W at 115 v.  
 SCALES  
 VOLTS: 0 to 3, 0 to 12 mv DC; 0 to 3 v DC; 0 to 3 v AC.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

The Hickok Electrical Instrument Co.  
 Cleveland, Ohio.  
 Model 203.

**TUBE COMPLEMENT**

(2) 6X5GT (1) 6SJ7  
 (1) 6SN7GT (1) OD3/VR-150  
 Total Tubes: (5)

**REFERENCE DATA AND LITERATURE**

IB-203-2-1050: Technical Manual Electronic Volt-Ohm-Capacity-Milliammeter Models 203-203PR.

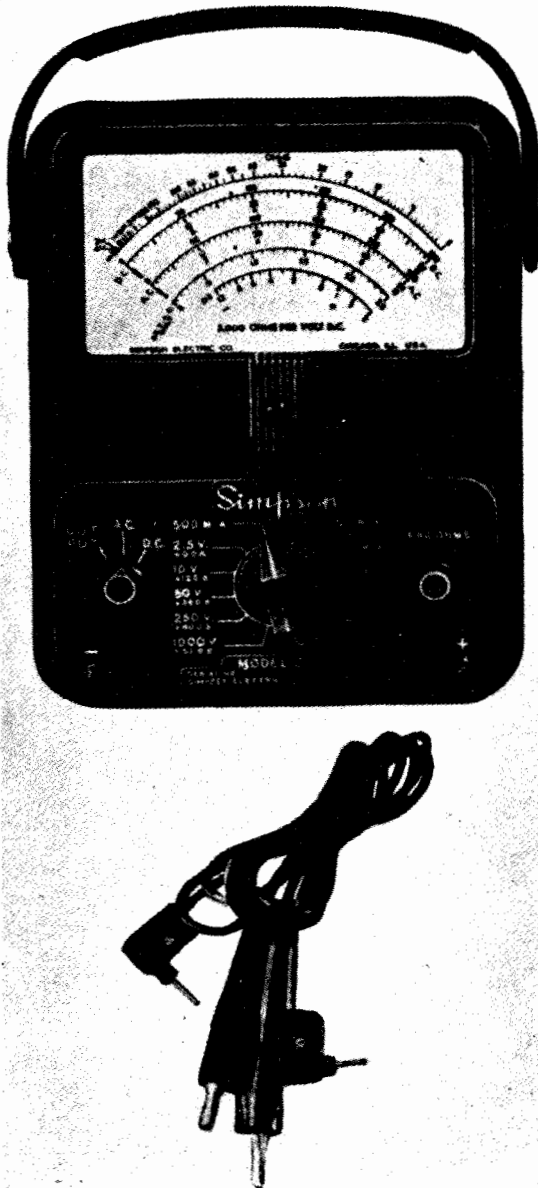
TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVER-ALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electronic Volt-Ohm-Capacity-Milliammeter Model 203	5-1/4 X 9 X 11-1/4	125
1	Red Test Lead	48 in. lg.	
1	Black Test Lead	48 in. lg.	
1	Cable Assembly, DC, shielded, yellow	48 in. lg.	
1	Cable Assembly, AC, shielded, red	48 in. lg.	

## VOLT-OHM-MILLIAMMETER

215



Volt-Ohm-Milliammeter 215

## FUNCTIONAL DESCRIPTION

The Simpson Electric Co. Model 215 is a small, compact and complete instrument with high sensitivity for testing and locating trouble in all types of circuits. It provides a long scale easy to read and the compact arrangement of control allows the over-all size of the housing to be comparatively small for maximum portability. The electrical

circuit is designed to give maximum insurance against inaccuracy and damage to the component parts.

No field changes in effect at time of preparation (7 September 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

ACCURACY (FULL SCALE DEFLECTION): 3% DC, 5% AC.

## MEASUREMENT RANGES

DC VOLTAGE: 0 to 2.5, 10, 50, 250 and 1000 v, sensitivity 5000 ohms/volt.

AC VOLTAGE: 0 to 2.5, 10, 50, 250 and 1000 v, sensitivity 1000 ohms/volt.

AF OUTPUT VOLTAGE: 0 to 2.5, 10, 50, 250 and 1000 v.

VOLUME LEVEL(DECIBELS): -12 to +3 db, 0 to +15 db, +15 db, +14 to +29 db, +28 to +43 db and +40 to +55 db calibrated for use across a 500 ohm line.

DC RESISTANCE: 0 to 4000 ohms (30 ohm center), 0 to 400,000 ohms (3000 ohm center) and 0 to 4 megohms (30,000 ohm center).

CURRENT IN DC CIRCUITS: 250 ua, 10,100 and 500 ma.

POWER REQUIREMENTS: (5) 1.5 v dry cell batteries.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Simpson Electric Company, Chicago, Ill.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

Simpson Electric Co. Technical Manual for Volt-Ohm-Milliammeter Model 215.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

Test-Voltage and Current Measuring

June 1957

215

## VOLT-OHM-MILLIAMMETER

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Milliammeter Simpson Model 215	2-1/4 X 5-1/2 X 7	3-1/4
1	Set Test Leads with Insulated Clips		
1	Technical Manual		

298

## MULTIMETER



*Multimeter 221*

### FUNCTIONAL DESCRIPTION

The Model 221 is a portable multimeter with two separate meters. One is an ohm meter and is used for insulation resistance testing and has a potential of 500 v. The other meter reads DC voltage and amperes.

No field changes in effect at time of

preparation (2 October 1956).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### RESISTANCE

RANGE: 0 to 2000 ohms; 0 to 200 megohms.

VOLTAGE: 500 v DC (test potential).

#### VOLTAGE

RANGE: 0 to 30, 150, 300 v DC.

#### CURRENT

RANGE: 0 to 3, 30, 300 amp.

ACCURACY:  $\pm 1\%$  of full scale deflection.

POWER REQUIREMENTS: (2) 1-1/2 v internal batteries.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

Technical Manual for Associated Research  
Inc. Model 221 Vibrotest.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	Commercial
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter Model 221	8-1/2 x 8-3/4 x 11-3/4	

March 1957

Test-Voltage and Current Measuring

**MULTIMETER****260 RT**

Multimeter 260 RT

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****AC VOLTAGE**

RANGE: 0 to 2.5, 10, 50, 250, 1000, 5000

v.

SENSITIVITY: 1000 ohms per v.

**DC VOLTAGE**

RANGE: 0 to 2.5, 10, 50, 250, 1000, 5000

v.

SENSITIVITY: 20000 ohms per v.

**AF OUTPUT VOLTAGE**RANGE: 0 to 2.5, 10, 50, 250, 1000 v  
(0.1 uf internal series capacitor).**DECIBELS**RANGE: -12 to +3 db; 0 to +15 db; +14 to  
+29 db; +28 to +43 db; +40 to +55 db  
(calibrated for use across a 500 ohm  
line).**RESISTANCE****RANGE**

0 to 2000 ohms (12 ohm center).

0 to 200000 ohms (1200 ohm center).

0 to 20 megohms (120000 ohm center).

**CURRENT**RANGE: 0 to 100 ua; 0 to 10, 100, 500  
ma, 0 to 10 amps.ACCURACY:  $\pm 2\%$  on DC ranges;  $\pm 5\%$  on AC ranges.

METER SENSITIVITY: 50 ua.

POWER REQUIREMENTS: (1) 1.5 v and (2) 3 v  
internal batteries.**FUNCTIONAL DESCRIPTION**

The Model 260 RT (Simpson) is a portable multimeter for general service testing and maintenance of electronic equipment. It includes a built in carrying case and test lead compartment with a roll top cover for protection.

No field changes in effect at time of preparation (9 October 1956).

**RELATION TO OTHER EQUIPMENT**

The model 260 RT is the same as the Model 260 except that it includes the safety case with the roll top.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

Simpson Electrical Instruments Catalog No. 16.

<b>TYPE CLASSIFICATION</b>
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter Model 260 RT including	4-3/4 X 5-3/8 X 9	6.5
2	Test Leads		
1	Operators Manual		



UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

## VOLTMETER

280

### FUNCTIONAL DESCRIPTION

The Model 280 (Weston) is a miniature, magnetically shielded DC portable instrument covering the 0 to 120 volt range, and is for general purpose use.

No field changes in effect at time of preparation (11 October 1956).

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes

### REFERENCE DATA AND LITERATURE

Weston Electrical Instrument Catalog No. 13A for Model 280.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### SCALE DATA

RANGE: 0 to 120 v cw.

GRADUATION: 60 scale divisions, linear.

ACCURACY:  $\pm 1\%$  at full scale deflection.

SENSITIVITY: 100 ohms per v.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp, Newark, N.J.

TYPE CLASSIFICATION DESIGN COGNIZANCE COMMERCIAL PROCUREMENT COGNIZANCE STOCK NO. R.D.B. IDENT. NO.
---

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter Model 280	1-1/2 x 4-2/5 x 4-3/5	1.1

UNCLASSIFIED

4.1 280: 1

UNCLASSIFIED

August 1957

Test-Voltage and Current Measuring

## AMMETER

## 280 (O-3A DC)

### FUNCTIONAL DESCRIPTION

The Weston Model 280 is a miniature portable instrument designed to measure from 0 to 3 amperes direct current. The scale is hand calibrated and is provided with a knife edged pointer and mirror to eliminate parallax errors.

No field changes in effect at time of preparation (19 December 1956).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### SCALE DATA

RANGE: 0 to 3 amps DC cw.

GRADUATIONS: 60 scale divisions, linear.

ACCURACY:  $\pm 1\%$  at full scale deflection.

SENSITIVITY: 50 mv drop across terminals.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp., Newark, N.J.

Approximate Cost: \$25.00 with equipment spares.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

Weston Electrical Instruments Catalog No. 13A.

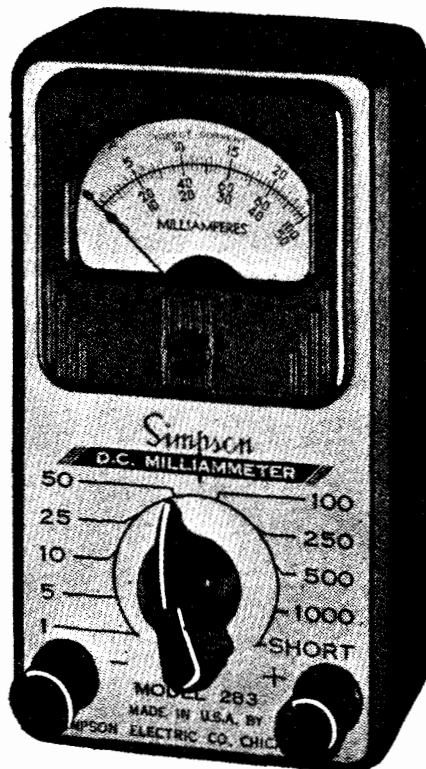
TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter Weston Model 280	1-1/2 x 4-2/5 x 4-3/5	1.1

UNCLASSIFIED

4.1 280(O-3A DC): 1

**MILLIAMETER****283**

Milliammeter 283

**FUNCTIONAL DESCRIPTION**

The Model 283 (Simpson) is a portable general purpose DC milliammeter.

No field changes in effect at time of preparation (8 October 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

RANGE: 0 to 1, 5, 10, 25, 50, 100, 250, 500, 1000 ma

SHORTING: May be shorted out of circuit by setting to "short" position switch.

ACCURACY:  $\pm 2\%$  at full scale deflection.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

Simpson Electric Catalog No. 15 for Electrical Instruments.

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Milliammeter Model 283	1-3/4 X 2-7/8 X 5-1/4	1.25

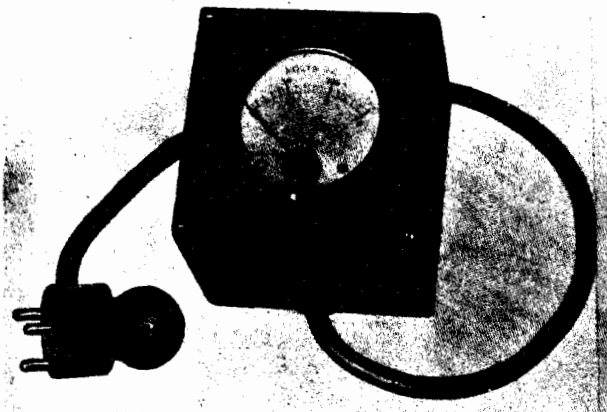
UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

# VOLTMETER

# 31992



Voltmeter 31992

### MANUFACTURER'S OR CONTRACTOR'S DATA

Friez Instrument Division of Bendix Aviation Corp, Baltimore, Md.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 900348: Technical Manual for Navy Model RAU-2 Receiving and Recording Equipment.

### FUNCTIONAL DESCRIPTION

The Part No. 31992 (Friez Inst. Div of Bendix Aviation Corp) is a DC portable dual range instrument suitable for checking both plate and filament sections of the radiosonde battery of the AN/AMQ-1 Series Radiosonde.

It is equipped with a special plug in order to facilitate connection to the battery, and resistors are contained within the case so that the battery is tested while delivering current similar to those required in actual use.

No field changes in effect at time of preparation (17 October 1956).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### SCALE DATA

RANGE: 0 to 7.5 kv and 0 to 150 kv.

GRADUATION: 30 scale divisions, linear.

ACCURACY: ±2% at full scale deflection.

SENSITIVITY: 125 ohms per v.

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter Friez Part 31992 including: Cord, Connecting Plug	2-9/16 X 3-1/8 X 3-1/8	

UNCLASSIFIED

UNCLASSIFIED

March 1957

Test-Voltage and Current Measuring

# VOLTMETER

# 433

## FUNCTIONAL DESCRIPTION

The Model 433 (Weston) is an AC portable instrument covering the range of 0 to 150 volts. It may be left in a circuit continuously without overheating. It is contained in a molded bakelite case and is provided with a leather carrying strap.

No field changes in effect at time of preparation (12 October 1956).

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tube.

## REFERENCE DATA AND LITERATURE

Weston Electrical Instruments Catalog No. 1  
13A for Model 433.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

### SCALE DATA

RANGE: 0 to 150 v AC cw.

GRADUATION: 150 scale divisions, linear.

ACCURACY:  $\pm 1/4\%$ .

SENSITIVITY: 2.5 va power consumption.

CIRCUIT APPLICATION: 25, 50, 2400 cps.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE Commercial  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp, Newark,  
N.J.

## EQUIPMENT SUPPLIED DATA

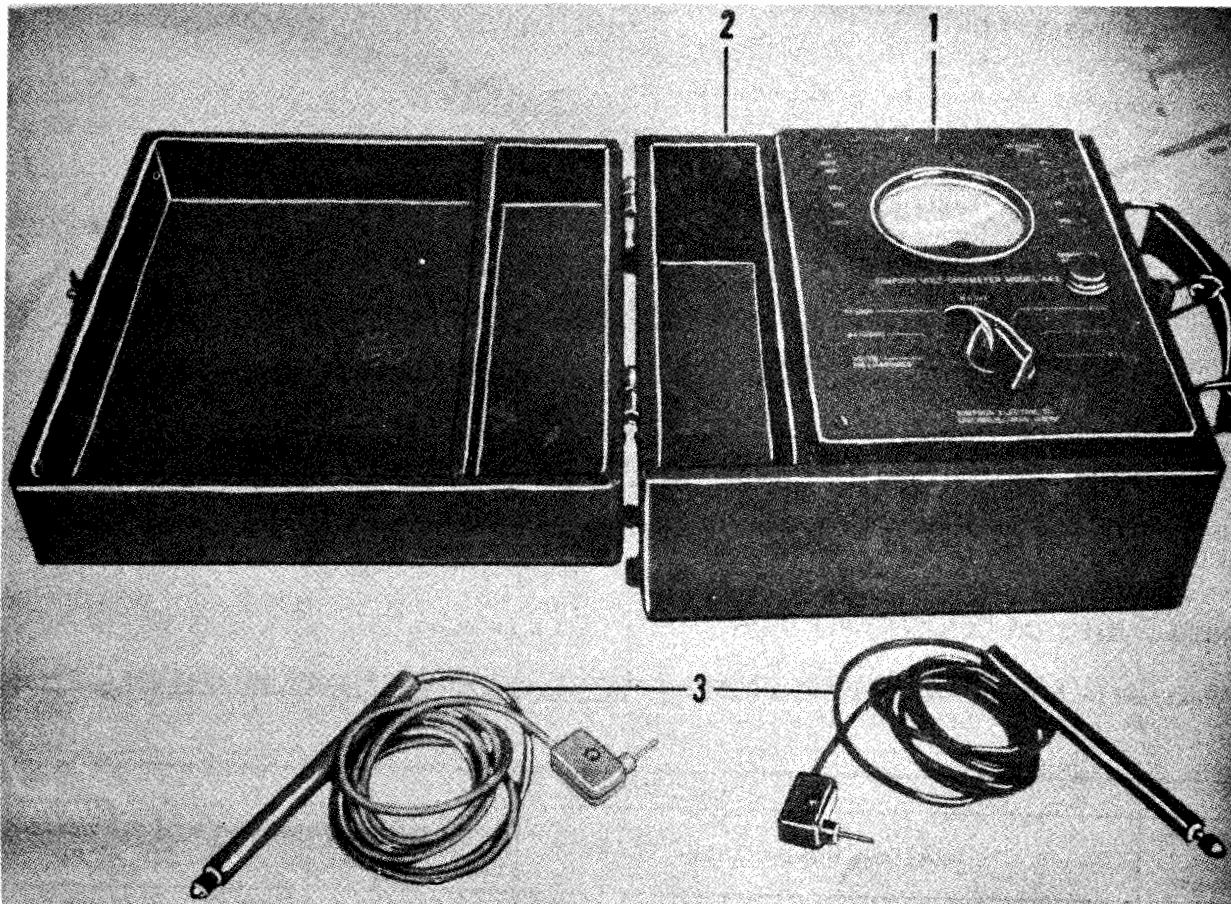
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter Model 433	3-1/4 x 5-1/16 x 6-1/32	2.5

UNCLASSIFIED

4.1 433: 1

# MULTIMETER

443



Multimeter 443

## FUNCTIONAL DESCRIPTION

The Model 443 (Simpson) is a portable multimeter designed for general service testing and maintenance of electronic equipment. No field changes in effect at time of preparation (9 October 1956).

## RELATION TO OTHER EQUIPMENT

Same as Weston Model 663 except for battery complement.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

DC VOLTS  
RANGE: 0 to 2.5, 10, 100, 250, 500, 1000  
v.  
SENSITIVITY: 1000 ohms per v.  
DC MILLIAMPERES  
RANGE: 0 to 1, 5, 25, 100 ma.

RESISTANCE  
RANGE: 0 to 200, 1000, 10000, 100000  
ohms, 1 meg, 10 meg.  
POWER REQUIREMENT: (1) Type BA-30 and (3)  
Type BA-31, batteries.  
ACCURACY:  $\pm 2\%$  of full scale deflection.  
METER SENSITIVITY: 50 ua.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

NAVAER 08-5S-78: Technical Manual of Test Equipment for Airborne Electrical and Electronic Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	Commercial
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

Test-Voltage and Current Measuring

443

# MULTIMETER

UNCLASSIFIED  
June 1957

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter Model 443 including:	4-1/2 X 8-7/8 X 9	
1	Carrying Case		
2	Test Leads		

March 1957

**AMMETER****45****FUNCTIONAL DESCRIPTION**

The Model 45 (Weston) is a DC portable instrument covering the 0 to 25 ampere range. It is contained in a wood case, and is for general test work requiring an exceptionally rugged instrument. It may be left in a circuit continuously or subjected to wide changes in temperature without serious effect on the accuracy.

No field changes in effect at time of preparation (11 October 1956).

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp, Newark,  
N.J.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

Weston Electrical Instruments Catalog No.  
13A for Model 45.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****SCALE DATA**

RANGE: 0 to 25 amp cw.

GRADUATION: 125 scale divisions, linear.

ACCURACY:  $\pm 1/2\%$  at full scale deflection.

SENSITIVITY: 50 mv drop across terminals.

<b>TYPE CLASSIFICATION</b> DESIGN COGNIZANCE COMMERCIAL PROCUREMENT COGNIZANCE STOCK NO. R.D.B. IDENT. NO.
--

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter Model 45	4-3/4 X 8 X 8	9.9



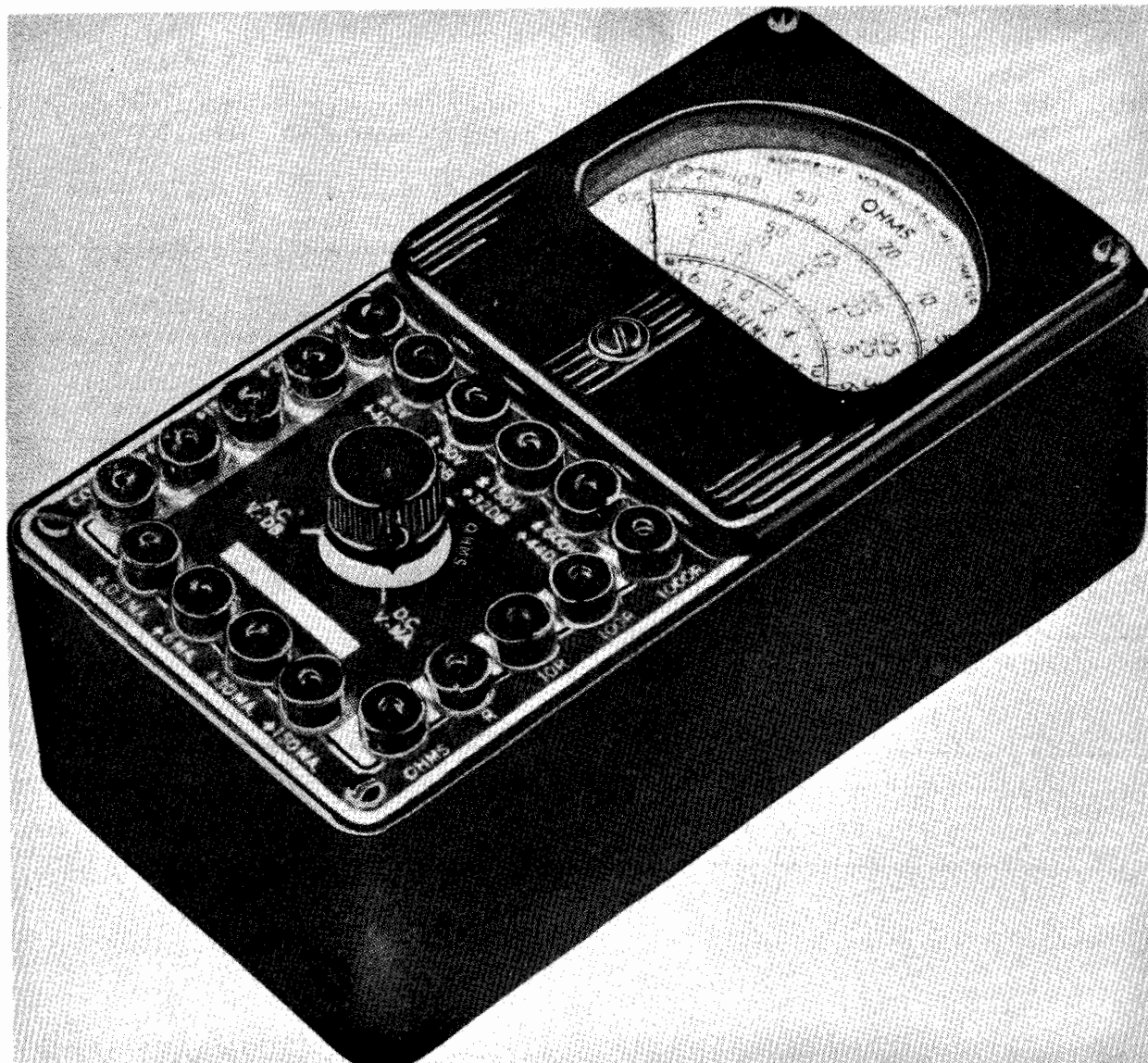
UNCLASSIFIED

February 1960

Test-Voltage and Current Measuring

## MULTIMETER

60039



*Multimeter 60039*

### FUNCTIONAL DESCRIPTION

Multimeter 60039 is a portable instrument used in measuring ac and dc voltage, direct current, resistance, and attenuation.

No field changes in effect at time of preparation (14 July 1959).

### RELATION TO OTHER EQUIPMENT

This equipment is identical with TS-290/U,

and is similar to MULTIMETER, Supreme Model 542-B.

### EQUIPMENT REQUIRED BUT NOT SUPPLIED

Battery: (4) 1.5 v.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 6 v dc.

UNCLASSIFIED

4.1 60039: 1

Test-Voltage and Current Measuring

**60039**

**MULTIMETER**

VOLTAGE RANGE: 0 to 6; 30; 150; 600 v ac; 0 to 6; 150; 300; 1,500 v dc.  
 CURRENT RANGE: 0 to 0.3, 6, 30, 150 ma dc.  
 ATTENUATION RANGE: -6 to +50 db.  
 RESISTANCE RANGE: 0 to 2,000; 20,000; 200,000 ohms; 2 meg.  
 SENSITIVITY: 5,000 ohms/v.  
 ACCURACY: ±3% (ac); ±5% (dc).  
 METER MOVEMENT: 200 ua.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes or Crystals used.

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 95647: Technical Manual for Pocket Multimeter Supreme Model 542.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Supreme Instrument Corp., Greenwood, Miss.  
 Contract No. NXs-3430.

TYPE CLASSIFICATION (NAVY) STD  
 DESIGN COGNIZANCE USN, BUSHIPS  
 PROCUREMENT COGNIZANCE NAVY SPEC: RE9374  
 STOCK NO.  
 R.D.B. IDENT. NO. 1.1.3

**SHIPPING DATA**

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Multimeter 60039			2

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter 60039	2-1/8 X 3-1/16 X 5-7/8	1.5

UNCLASSIFIED

June 1957

# VACUUM TUBE VOLT-OHMETER 60044

Test-Voltage and Current Measuring



will measure DC voltages which are positive or negative with respect to ground without switching leads.

No field changes in effect at time of preparation (1 October 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

### RANGES

- DC VOLTAGE: 0 to 1000 v.
- AC VOLTAGE: 0 to 1000 v.
- RESISTANCE: 0 to 1000 megohms.

### INPUT IMPEDANCE

- DC VOLTS: 11 megohms.
- AC VOLTS: 1000 ohms per volt.

ACCURACY: ±2%.

SENSITIVITY: 200 uamp.

POWER SOURCE: 105 to 130 v, 60 cps, single ph and 3 v DC.

## MANUFACTURER'S OR CONTRACTOR'S DATA

RCA Mfg. Co. Inc., Camden, N.J.  
 Model 165  
 Contract NXs 5073, 26 September 1942,

## TUBE AND/OR CRYSTAL COMPLEMENT

- (2) 6K6GT
  - (1) 6X5GT
- Total Tubes: (3)

Vacuum Tube Volt-Ohmmeter 60044

## FUNCTIONAL DESCRIPTION

The NT 60044 is designed to measure DC and AC voltages and resistances over an extremely wide range. Outstanding features of the instrument are its ease of operation, high input resistance, foolproof DC voltmeter which is automatically protected against burnout, zero adj and ohms adj that do not have to be reset when changing ranges and its "signal tracing" type of test probe which permits dynamic voltage measurements in signal carrying circuits without interfering with the action of the circuit. The instrument

## REFERENCE DATA AND LITERATURE

Technical Manual for Navy Type CTK 60044.  
 Vacuum Tube Volt-Ohmmeter.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Vacuum Tube Volt-Ohmmeter 60044		9
1	Black Test Lead		
1	Red Test Lead		
1	Blue Test Lead		

UNCLASSIFIED

29 May 1962

TEST METER 60058

Cog Service: USN FSN:

Functional Class: 1.1.2.3

USA

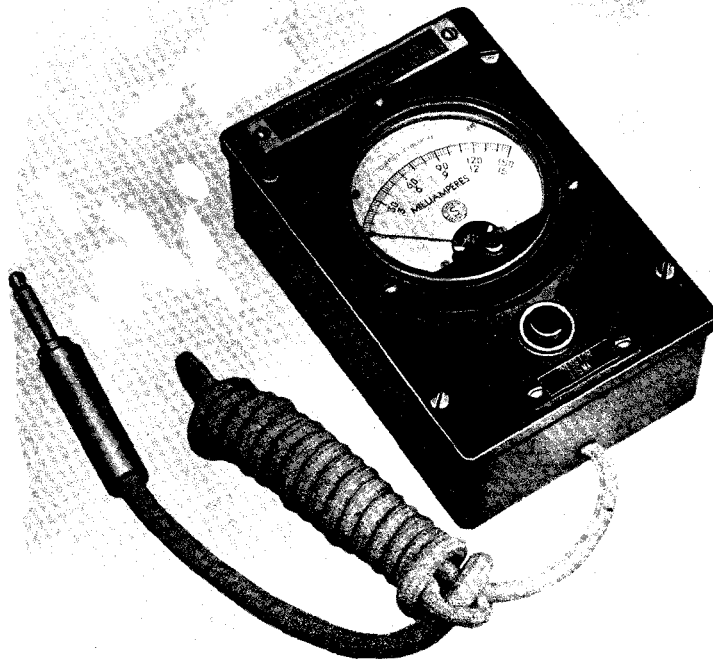
USN

USAF

TYPE CLASS:

Std

MANUFACTURER'S NAME/CODE NUMBER: Radio Corporation of America, RCA Div., (79089).



*Test Meter 60058*

**FUNCTIONAL DESCRIPTION:**

Test Meter 60058 is a portable, dual-range, dc milliammeter used as an aid in tuning aircraft radio equipments.

No field changes in effect at time of preparation (26 February 1962).

**TECHNICAL CHARACTERISTICS:**

CURRENT RANGE: 0 to 15, 150 ma dc.

METER RESISTANCE: 990 ohms.

DEFLECTION SENSITIVITY: 1.5 ma.

ACCURACY: Form 3%.

POWER REQUIREMENTS: None.

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**60058 TEST METER**

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**RELATION TO OTHER EQUIPMENT:**

This equipment is identical with Test Set I-206-A.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:** None.

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**MAJOR COMPONENTS**

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Meter 60058		1-7/8 x 3-5/8 x 5-7/16	2

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**REFERENCE DATA AND LITERATURE:** None.

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**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

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**SHIPPING DATA**

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PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC. &/OR DWG:

DESIGN COG: USN, BuWeps

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Radio Corporation of America, RCA Division	Camden, New Jersey	NXs-6722	
Tensor Electric Development Company	Brooklyn, New York	N3B3s-50925, 2 April 1951	

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4.1 60058: 2

# VOLT-OHM MILLIAMMETER

# 60068

## FUNCTIONAL DESCRIPTION

The Navy Type 60068 is a combination Alternating Current (AC) and Direct Current (DC) Volt-Ohm-Milliammeter providing complete coverage of the electrical measurements most commonly encountered in service work. The meter used is the Hickok Type 48-S. Test leads are inserted in two (2) jacks in the panel, and all ranges except for the output meter are connected to these jacks by a rotary switch. A separate jack is provided on the panel for connection to the output meter which inserts a capacitor in the circuit for blocking Direct Current (DC) voltages, in order to measure signal voltages.

No field changes in effect at time of preparation (30 September 1958).

## RELATION TO OTHER EQUIPMENT

The Navy Type 60068 is the equivalent to Hickok Model 4956.

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

### DC AND AC VOLTMETER

RANGES: 0 to 10, 0 to 50, 0 to 250 and 0 to 500 v.

SENSITIVITY: 1000 ohms per v.  
DC CURRENT RANGES: 0 to 500 ua; 0 to 5, 0 to 50, 0 to 500 ma.  
OPERATING POWER REQUIREMENTS: 1-1/2 and 67-1/2 v DC batteries.

## MANUFACTURER'S OR CONTRACTOR'S DATA

The Hickok Electrical Instrument Co.,  
Cleveland, Ohio.  
Approximate Cost: \$35.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals.

## REFERENCE DATA AND LITERATURE

Navy Type 60068: Technical Manual for Hickok Radio Test Equipment Model 4956.

### TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE

STOCK NO.

R.D.B. IDENT. NO. 1.1.3.2.1

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Milliammeter NT60068 Including:	3-1/2 x 4-3/4 x 7-1/2	
1	Set of Test Leads		

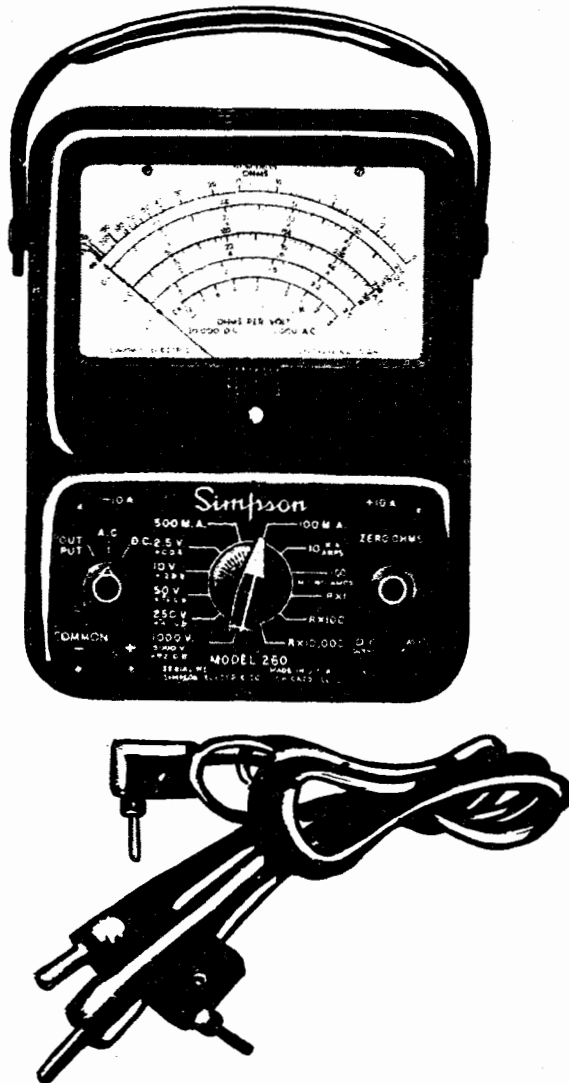
UNCLASSIFIED

March 1957

Test-Voltage and Current Measuring

## MULTIMETER

60086



Multimeter 60086

### RELATION TO OTHER EQUIPMENT

The NT-60086 is the same as Simpson Model 260, and Tassa Model IS-189.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### AC VOLTAGE

RANGE: 0 to 2.5, 10, 50, 250, 1000, 5000 v.

SENSITIVITY: 1000 ohms per v.

#### DC VOLTAGE

RANGE: 0 to 2.5, 10, 50, 250, 1000, 5000 v.

SENSITIVITY: 20,000 ohms per v.

#### AF OUTPUT VOLTAGE

RANGE: 0 to 2.5, 10, 50, 250, 1000 v  
(0.1 uf internal series capacitor).

#### DECIBELS

RANGE: -12 to +3 db; 0 to +15 db; +14 to +29 db; +28 to +43 db; +40 to +55 db  
(Calibrated for use across a 500 ohm line).

#### RESISTANCE

##### RANGE

0 to 2000 ohms (12 ohms center).  
0 to 200000 ohms (1200 ohms center).  
0 to 20 megohms (120000 ohms center).

#### CURRENT

RANGE: 0 to 100 ua; 0 to 10, 100, 500 ma  
0 to 10 amps.

ACCURACY:  $\pm 2\%$  on DC ranges;  $\pm 5\%$  on AC ranges.

METER SENSITIVITY: 50 ua.

POWER REQUIREMENTS: (1) 1.5 v and (2) 3 v internal batteries.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

NAVSHIPS 95559: Technical Manual for Simpson Model 260 Volt-Ohm-Milliammeter.

### FUNCTIONAL DESCRIPTION

The NT-60086 is a portable general purpose AC, DC, Volt, Ohm, Milliammeter designed for general electronic and electrical service work.

No field changes in effect at time of preparation (1 October 1956).

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

UNCLASSIFIED

4.1 60086: 1

Test-Voltage and Current Measuring

UNCLASSIFIED

March 1957

60086

MULTIMETER

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Multimeter NT-60086	3-1/4 X 5-1/2 X 7	3.25



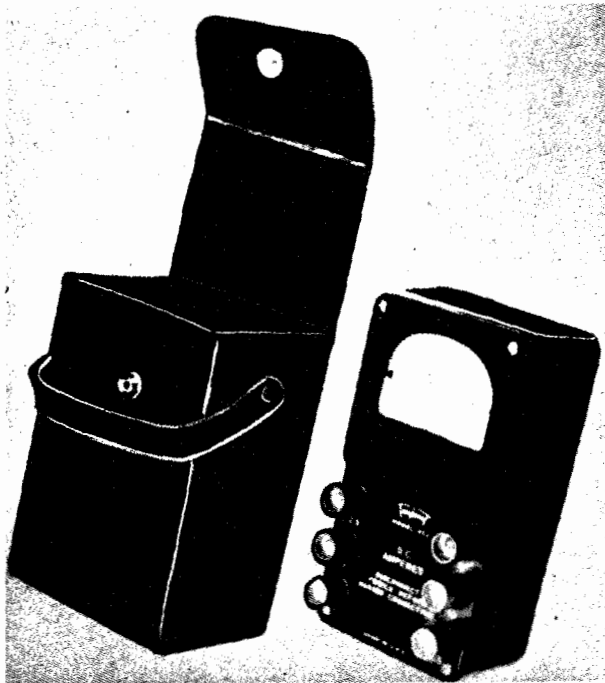
UNCLASSIFIED

June 1957

Test-Voltage and Current Measuring

# AMMETER

# 60118



Ammeter 60118

### RELATION TO OTHER EQUIPMENT

Same as Triplett No. 674.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGES: 0 to 1 amp DC.  
 0 to 2.5 amp DC.  
 0 to 5 amp DC.  
 0 to 10 amp DC.  
 0 to 25 amp DC.

ACCURACY:  $\pm 2\%$ .

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

### REFERENCE DATA AND LITERATURE

Technical Manual for U. S. Marine Corp  
Electronics Catalog

### FUNCTIONAL DESCRIPTION

The NT-60118 is a precision analyzing instrument for measuring DC from a fraction of an ampere to 25 ampere.

No field changes in effect at time of preparation (27 September 1956).

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE BUSHIPS  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

### SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Ammeter NT-60118	0.1		5

### EQUIPMENT SUPPLIED DATA

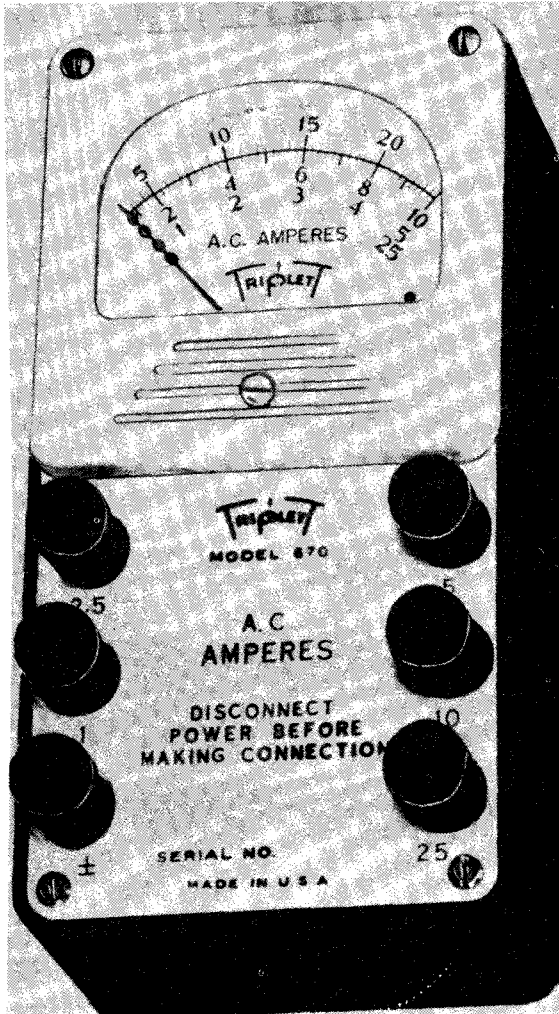
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter NT-60118	2-1/8 X 3-1/16 X 5-7/8	3.13
1	Carrying Case		
2	Test Leads	50 lg	

UNCLASSIFIED

4-1 60118: 1

# AMMETER

# 60120



Ammeter 60120

### RELATION TO OTHER EQUIPMENT

This equipment is similar to Triplet Model 670.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 400 cps.  
CURRENT RANGE: 0 to 5, 10, 25 amp AC.  
ACCURACY:  $\pm 5\%$ .

### MANUFACTURER'S OR CONTRACTOR'S DATA

Triplet Electrical Instrument Co., Bluffton, Ohio.  
Contract NObsr-44739.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### REFERENCE DATA AND LITERATURE

Triplet Catalog of Test Instrument Model 670.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE Navy Spec RE13A971A
STOCK NO.
R.D.B. IDENT. NO. 1.1.2.2

### FUNCTIONAL DESCRIPTION

Ammeter NT-60120 is a portable unit used in measuring alternating current.

No field changes in effect at time of preparation (17 March 1959).

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter	3 X 3.125 X 5-15/16	
2	Test Lead		

UNCLASSIFIED  
April 1959

Test-Voltage and Current Measuring

## AMMETER

60121

### FUNCTIONAL DESCRIPTION

Ammeter NT-60121 is a portable unit used in measuring alternating current.

No field changes in effect at time of preparation (17 March 1959).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 400 cps.

CURRENT RANGE: 0 to 2.5, 5, 10 amp AC.

ACCURACY:  $\pm 5\%$ .

### MANUFACTURER'S OR CONTRACTOR'S DATA

Triplett Electrical Instrument Co., Bluffton, Ohio.

Type No. 670-H.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### REFERENCE DATA AND LITERATURE

Triplett Catalog of Test Equipment Model 670.

#### TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE NAVY SPEC RE13A971A

STOCK NO.

R.D.B. IDENT. NO. 1.1.2.2

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter 60121	3-1/8 X 3-3/16 X 5-15/16	
1	Leather Carrying Case		

UNCLASSIFIED

4.1 60121: 1

UNCLASSIFIED

April 1959

Test-Voltage and Current Measuring

# VOLTMETER

## 622(0 TO 1000 MV)

### FUNCTIONAL DESCRIPTION

The Model 622 (Weston) is a portable direct current voltmeter designed for general purpose testing of electronic equipment.

No field changes in effect at time of preparation (16 June 1958).

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### SCALE DATA

RANGES: 0 to 2, 0 to 10, 0 to 50, 0 to 200 and 0 to 1,000 mv.

GRADUATION: Linear.

ACCURACY: ±0.25% accuracy at full scale.

SENSITIVITY: 5000 ohms per v.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp; Newark, N.J.

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### REFERENCE DATA AND LITERATURE

Weston Electrical Instrument Corporation Catalog, Model 622.

#### TYPE CLASSIFICATION

DESIGN COGNIZANCE COMMERCIAL

PROCUREMENT COGNIZANCE

STOCK NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Voltmeter, 622(0 to 1000 mv)	4-1/16 x 7-3/4 x 8-3/4	8.5

UNCLASSIFIED

4.1 622(0 to 1000 MV): 1

UNCLASSIFIED  
April 1958

Test-Voltage and Current Measuring

## VOLTMETER

## 622(0-1000 V)

### FUNCTIONAL DESCRIPTION

The Model 622 (Weston) is a portable direct current voltmeter designed for general purpose testing of electronic equipment

No field changes in effect at time of preparation (16 June 1958).

### TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

### ELECTRICAL AND MECHANICAL CHARACTERISTICS

#### SCALE DATA

RANGES: 0 to 2, 0 to 5, 0 to 10, 0 to 20,  
0 to 50, 0 to 100, 0 to 200, 0 to 500  
and 0 to 1000 v.

GRADUATION: Linear.

ACCURACY:  $\pm 0.25\%$  accuracy at full scale.

SENSITIVITY: 1000 ohms per v.

### REFERENCE DATA AND LITERATURE

Weston Electrical Instrument Corporation  
Catalog, Model 622.

### MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp ; Newark,  
N.J.

TYPE CLASSIFICATION  
DESIGN COGNIZANCE COMMERCIAL  
PROCUREMENT COGNIZANCE  
STOCK NO.  
R.D.B. IDENT. NO.

### EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	voltmeter, 622 (0 to 1000 v)	4-1/16 x 7-3/4 x 8-3/4	8.5

UNCLASSIFIED

4.1 622(0-1000 v): 1

March 1957

## AMMETER

622 (0 TO 50 AMP)

## FUNCTIONAL DESCRIPTION

The Model 622 (Weston) is a portable thermo ammeter, single range instrument, designed to measure AC in the 0 to 50 ampere range and DC in the 0 to 20 ampere range. It is of the external precalibrated thermo element type, and one thermo element and five foot shielded leads for connecting to the instrument are provided.

No field changes in effect at time of preparation (18 October 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

## SCALE DATA

RANGE: 0 to 50 amp cw.

GRADUATION: Nonlinear scale.

ACCURACY:  $\pm 1\%$  at 50 mc to  $\pm 3\text{-}1/2\%$  at 100 mc at full scale deflection.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corporation,  
Newark, New Jersey.

Approximate Cost: \$150.00 with equipment  
spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

Weston Electrical Instruments Catalog No.  
13A for Thermo Instruments Model 622.

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIP	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter Model 622	4-1/16 X 7-3/4 X 8-3/4	8.5
1	Thermocouple Type C (50 amps)		

March 1957

## AMMETER

622 (0 TO 50 MA)

## FUNCTIONAL DESCRIPTION

The Model 622 (Weston) is a portable thermo milliammeter, single range instrument, designed to measure DC and AC of any frequency up to 2000 kilocycles in the 0 to 50 milliammeter range. It is supplied with a single plug-in, precalibrated, replaceable thermo element, and it is magnetically and statically shielded.

No field changes in effect at time of preparation (10 October 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

## SCALE DATA

RANGE: 0 to 50 ma cw.

GRADUATION: 100 nonlinear scale divisions.

## ACCURACY

AC: 1/2% 25 deg C, 1.5% from 20 to 30 deg C.

DC: 1% at 25 deg C, 2% from 20 to 30 deg C.

SENSITIVITY: 195 mv drop across terminals.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Weston Electrical Instrument Corp, Newark, N.J.

Approximate Cost: \$160.00 with equipment spares.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

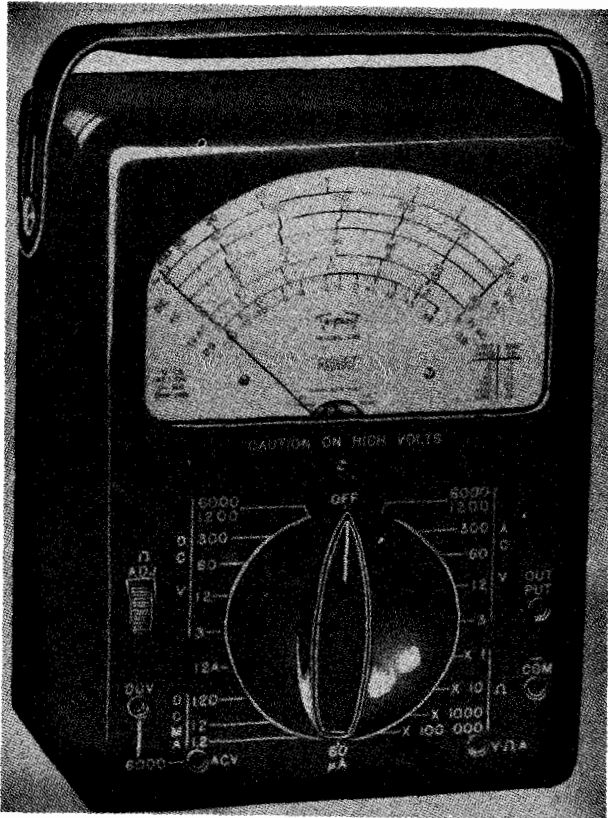
Weston Electrical Instruments Catalog No. 13A for Thermo Instruments Model 622.

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Ammeter Model 622	4-1/16 X 7-3/4 X 8-3/4	8.5
1	Thermocouple Type V (50 ma)		

**VOLT-OHM-MIL-AMMETER**



*Volt-Ohm-Mil-Ammeter 630*

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

POWER SUPPLY: One 30 v and one 1.5 v battery.  
 AC VOLTAGE RANGE: 0 to 3, 12, 60, 300, 1200, 6000 v full scale.  
 DC VOLTAGE RANGE: 0 to 3, 12, 60, 300, 1200, 6000 v full scale.  
 OUTPUT LEVEL RANGE: -30 to +4, +16, +30, +44, +56, +70 db.  
 DC CURRENT RANGE: 0 to 60 ua; 0 to 1.2, 12, 120 ma; 0 to 12 amp.  
 RESISTANCE RANGE: 0 to 1000, 10000 ohms; 0 to 1, 100 meg.  
 AC (AF) OUTPUT RANGE: 0 to 3, 12, 60, 300, 1200, 6000 v W/O.1 ufd condenser in series w/output jack.  
**SENSITIVITY**  
 AC VOLTAGE: 5000 ohms per v.  
 DC VOLTAGE: 20000 ohms per v.  
**METER ACCURACY:** ±3% on all DC ranges except the 6000 v range and on all resistance ranges; ±5% on the 6000 v DC range and all AC ranges.  
**METER SENSITIVITY:** 50 ua; 350 mv.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

The Triplet Electrical Instrument Co.  
 Bluffton, Ohio.

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes

**REFERENCE DATA AND LITERATURE**

Instruction Manual for Triplet Model 630 Volt-ohm-milliammeter.  
 Triplet Catalog of Test Equipment #9439.

**FUNCTIONAL DESCRIPTION**

The Model 630 (Triplet) is a small portable general purpose multirange Volt-ohm-milliammeter designed for general electronic and electrical service work. It measures AC and DC voltage up to 6000 v, DC current up to 12 amp, DC resistance, output voltage and output level. The instrument may also be used to make capacity measurements.

No field changes in effect at time of preparation (7 June 1956).

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	COMMERCIAL
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Mil-Ammeter-Model 630	3-7/32 x 5-1/2 x 7-1/2	4 lb.
2	Lead	50 lg	



**ELECTRONIC MULTI-TESTER****662***Electronic Multi-Tester 662***FUNCTIONAL DESCRIPTION**

The Model 662 is a portable electronic multi-tester used as a service instrument incorporating a vacuum tube voltmeter for measuring AC and DC voltages, resistance and capacities within the ranges required in service testing radio and radar equipment.

The instrument is housed in a steel cabinet having a sloping metal front panel upon which is mounted the direct reading multi scale indicating meter, together with the necessary controls, jacks, switches and pilot light indicator.

The instrument is calibrated to read the effective value of any complex voltage wave. This is equivalent to a 707 times the peak value of a sine wave.

No field changes in effect at time of preparation (10 September 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****RANGES**

DC VOLTAGE: 0 to 6, 0 to 30, 0 to 150, 0 to 600 0 to 1500 and 0 to 6000 v.

AC VOLTAGE: 0 to 3, 0 to 6, 0 to 30, 0 to 150, 0 to 600, 0 to 1500 and 0 to 6000 v.

RESISTANCE: 0.1 ohms to 1000 megohms in seven ranges.

CAPACITANCE: 50 uufd to 2000 ufd in seven ranges; .002, .02, .2, 2, 20, 200 and 2000 ufd.

INPUT RESISTANCE: 16 megohms for all ranges up to 600 v and 160 megohms for the 1500 and 6000 v ranges on both AC and DC.

INPUT CAPACITY: Less than 50 uufd, 125 uufd w/shielded lead.

ACCURACY: 3% of full scale on AC; 5% on AC.  
POWER SOURCE: 105 to 130 v, 60 cps, single ph.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Radio City Products Co, Inc New York, N. Y.

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 6K6GT/G (1) 6X5GT/G (1) VR-105/30  
Total Tubes: (3)

**REFERENCE DATA AND LITERATURE**

AN-08-45-6: Technical Manual for Electronic Multitester Model 662.

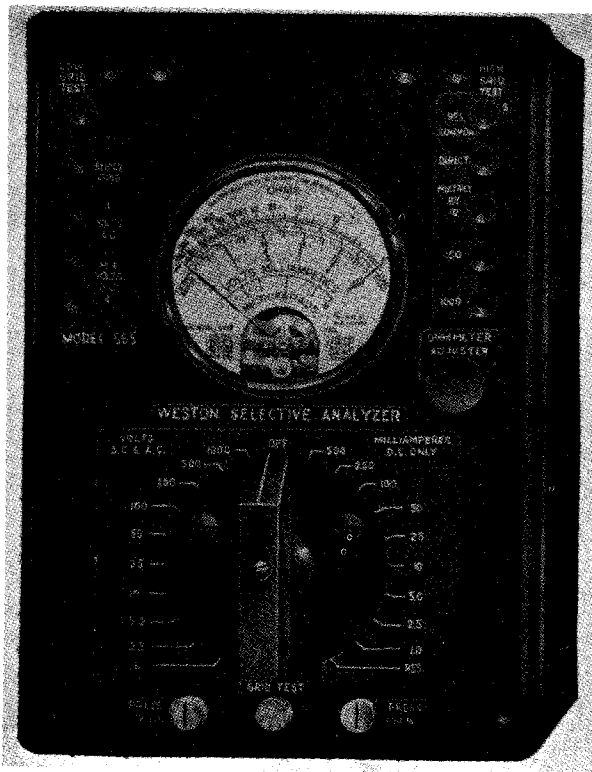
TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electronic Multi-Tester Model 662	7-1/2 x 9-1/4 x 9-7/8	10-1/2
1	Rubber Covered Shielded Lead, Black (4 ft)		
1	Rubber Covered Shield Lead, Red (4 ft)		
1	Rubber Covered High Voltage Lead, Red (4 ft)		
1	Rubber Covered High voltage Lead, Black (4 ft)		
3	Electron Tubes		
1	Battery ANBA205/U		

**VOLT-OHM-MILLIAMMETER**

**665 type 1**



*Volt-Ohm-Milliammeter 665-1*

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

ACCURACY:  $\pm 2\%$  for DC and  $\pm 5\%$  for AC ranges.  
 SENSITIVITY: 1000 ohms per v on both AC and DC ranges.

RECTIFICATION: Copper oxide, full wave bridge type rectifier.

OUTPUT MEASUREMENTS: Made through a self-contained fixed condenser.

**RANGES**

VOLTAGE: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 v AC and DC.

RESISTANCE: 0 to 1000, 10000, 100000, 1000000 ohms full scale; 0 to 25, 250, 2500, 25000 ohms center scale.

CURRENT: 0 to 1, 2.5, 5, 10, 25, 50, 100, 250, 500 ma DC.

OUTPUT: 1 to 1000 v AC.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp, Newark, N. J.

**FUNCTIONAL DESCRIPTION**

The Model 665 Type 1 (Weston Elec Inst Corp) is a multirange, portable master test unit which measures AC and DC voltages, direct current and resistances. The instrument is used for production tests on motors electrical equipment and parts as well as general maintenance and laboratory work. It incorporates a simplified switching and pinjack arrangement to facilitate rapid operation.

No field changes in effect at time of preparation (5 June 1956).

**TUBE AND/OR CRYSTAL COMPLEMENT**

No Electron Tubes.

**REFERENCE DATA AND LITERATURE**

Weston Aviation Instruments - Ideas for profitable Servicing Catalog.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	COMMERCIAL
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

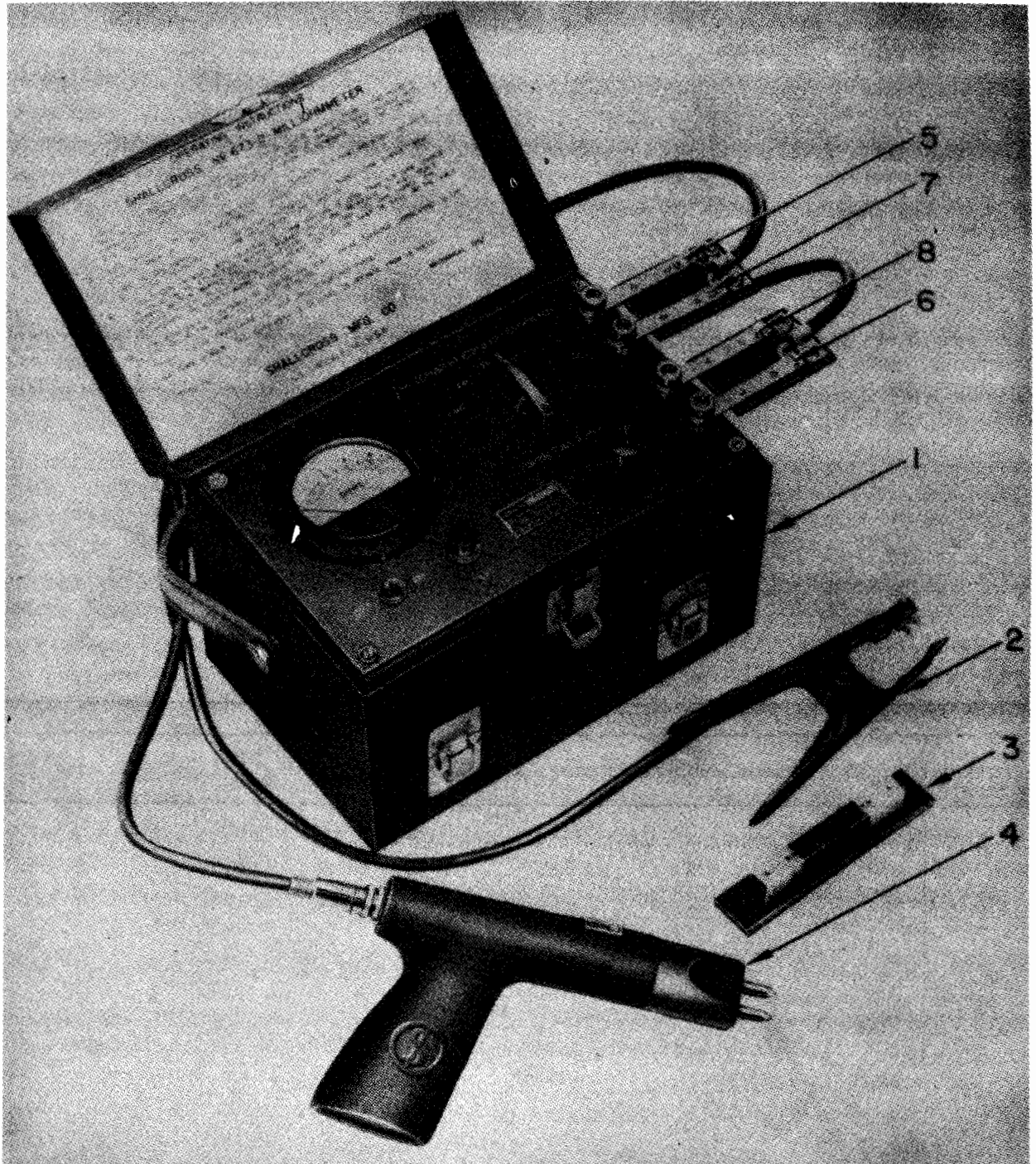
**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Volt-Ohm-Milliammeter-CV-665-1	3-27/32 X 5-1/2 X 8-1/4	5
1	Carrying Case.		

September 1956

## MILLIOHMETER

673-D



- |  |                           |
|--|---------------------------|
| 1. No. 673-D Milliohmeter                | 5. Probe 1 Current Lead   |
| 2. No. 676-B Fixed Clamp                 | 6. Probe 2 Current Lead   |
| 3. No. 271 0.0025 Ohm Test Standard      | 7. Probe 1 Potential Lead |
| 4. No. 657-B Pistol Grip Exploring Probe | 8. Probe 2 Potential Lead |

*Milliohmeter 673-D*

673-D

MILLIOHMMETER

September 1956

FUNCTIONAL DESCRIPTION

Mass. Model-673-D  
 Contract NObsr-64614 dated 28 Jan. 1955.

The 673-D is a milliohmmeter used for measuring electrical resistances from 0.0001 to 5 ohms. It is a self contained portable instrument.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGES: 0 to 0.005 ohms; 0 to 0.01 ohms  
 9 to 9.5 ohms; 0 to 1 ohms; 0 to 5 ohms.  
 ACCURACY: ±2%.  
 SCALE DIVISIONS: 50.  
 POWER SOURCE: Two no. 6 dry cell batteries  
 1.5 v ea.  
 METER TYPE: 3-1/2 in. dia round flange.  
 SCALE: Nonlinear.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92473 Includes: T-1 dated 14 April 1955. Shallcross Precision Products Instruction Manual for Milliohmmeter 673-D.

MANUFACTURER'S OR CONTRACTOR'S DATA

Shallcross Manufacturing Co. Collingdale,

TYPE CLASSIFICATION  
 DESIGN COGNIZANCE COMMERCIAL  
 PROCUREMENT COGNIZANCE  
 STOCK NO.  
 R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Fixed Clamp 676-B w/terminal block		
1	0.0025 Ohm Test Standard No. 271		
1	Pistol Grip Exploring Probe 657-B		
1	Milliohmmeter 673-D	6-1/2 X 8-3/8 X 10	10
1	Current Probe		
1	Potential Probe		

March 1957

## D.C. AMMETER

674-H

## FUNCTIONAL DESCRIPTION

The 674-H is a portable direct current measuring instrument contained in a plastic case. It will measure current values from 0 to 100 amperes in three ranges. The linear scale is divided into 50 scale divisions. Test connections are made by means of 6 binding post type terminals located on the front panel. It is provided with a self-contained meter, a leather carrying case and a pair of test leads. Current values are read from a meter scale of black markings against a white background.

No field changes in effect at time of preparation (3 October 1956).

## ELECTRICAL AND MECHANICAL CHARACTERISTICS

## RANGES

CURRENT: 0 to 5, 10, 100 amp.

ACCURACY:  $\pm 4\%$ .

SENSITIVITY: 1000 mv drop across terminals.

## GRADUATION DATA

SCALE TYPE: linear.

SCALE DIVISION: 50.

## MANUFACTURER'S OR CONTRACTOR'S DATA

Triplett Electrical Instrument Co., Bluffton, Ohio-Model 674-H.

## TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

## REFERENCE DATA AND LITERATURE

Federal Supply Catalog Item Identification Card

Triplett Test Equipment Catalog Mode 674.

TYPE CLASSIFICATION
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

## EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Leather Carrying Case		
1	DC Ammeter Model 674-H	3-1/8 X 3-3/16 X 5-15/16	
2	Test Leads		

**ELECTRONIC ANALYZER****769-1B***Electronic Analyzer 769-1B***FUNCTIONAL DESCRIPTION**

The Weston Model 769 is a portable multi-purpose analyzer and vacuum tube voltmeter providing facilities in one instrument for measurement of practically all voltage, current, and resistance values in electronic equipment. The instrument has been carefully designed to achieve maximum versatility of use, therefore all possible ranges are made independent of the AC power lines, and it may be used as a wide range analyzer in many places where no AC lines are available.

In addition when plugged into an AC power line it may be used as a diode probe type vacuum tube voltmeter for measurement of audio and radio frequency voltages, a DC vacuum tube voltmeter for measurement of either positive or negative potentials at an input resistance of 15 megohms with or without an isolating probe and an electronically operated ohmmeter to extend the range of resistance measurement up to 2000 megohms.

No field changes in effect at time of preparation (19 September 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS****VOLT-OHM-MILLIAMMETER****SCALE DATA**

DC VOLTS: 0 to 3, 12, 30, 120, 300 and 1200 v at 10,000 ohms per volt.  
AC VOLTS: 0 to 3, 12, 30, 120, 300 and 1200 v at 1,000 ohms per volt.

DECIBELS: -6 to +62 db at zero level of 1 mw on 600 ohm line.

DC CURRENT: 0 to 300 ua, 0 to 1.2, 6, 30, 120 and 600 ma.

**RESISTANCE**

FULL SCALE: 0 to 2000, 20000 and 200000 ohms.

CENTER SCALE: 0 to 20, 200 and 2000 ohms.

**ACCURACY**

DC:  $\pm 3\%$ .

AC:  $\pm 5\%$ .

**ELECTRONIC VOLT-OHMMETER****SCALE DATA**

DC VOLTS: 0 to 3, 12, 30, 120, 300 and 1200 v pos or neg with respect to ground.

**RESISTANCE**

FULL SCALE: 0 to 2, 20 and 2000 megohms.

CENTER SCALE: 0 to 20000 and 200000 ohms, 0 to 20 megohms.

VOLTMETER RESISTANCE: 15 megohms (all ranges).

ACCURACY:  $\pm 4\%$  of full scale (all ranges).

**PROBE TYPE VACUUM TUBE VOLTMETER****SCALE DATA**

AC VOLTS(RMS): 0 to 3, 12, 30 and 120 v.

DECIBELS: -6 to 42 db.

**INPUT DATA**

RESISTANCE: 5 megohms.

CAPACITY: 5 uuf.

ACCURACY:  $\pm 5\%$  from 50 cps to 150 mc,  $\pm 12\%$  from 150 to 300 mc,  $\pm 8\%$  (with correction curve) from 150 to 300 mc.

INPUT VOLTAGE TO PROBE (MAX): 500 v (DC plus peak to peak AC).

POWER REQUIREMENTS: 105 to 130 v, 50 to 60 cps, single ph and (2) 1-1/2 v dry cell batteries.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Weston Electrical Instrument Corp. Newark  
5, New Jersey

**TUBE AND/OR CRYSTAL COMPLEMENT**

(2) 6SJ7 (1) 6SL7 (1) 6X5

Total Tubes: (4)

**REFERENCE DATA AND LITERATURE**

Weston Electrical Instrument Corp. Technical Manual for Electronic Analyzer Model 769-1B.

<b>TYPE CLASSIFICATION</b> <b>DESIGN COGNIZANCE</b> <b>PROCUREMENT COGNIZANCE</b> <b>STOCK NO.</b> <b>R.D.S. IDENT. NO.</b>
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Test-Voltage and Current Measuring

UNCLASSIFIED

June 1957

**769-1B**

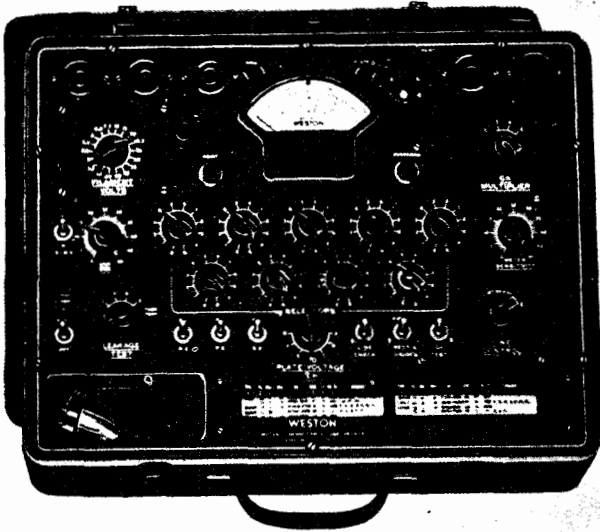
**ELECTRONIC ANALYZER**

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electronic Analyzer Model 769-1B		
1	DC Probe		
1	AC Probe		
1	Test Lead, Red		
1	Test Lead, Black		

June 1957

Test-Voltage and Current Measuring

**TUBECHECKER****981-3***Tubechecker 981-3***ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**POWER REQUIREMENTS:** 100 to 125 v, 60 cps, single ph, 30 W.

**TUBE SOCKETS PROVIDED:** 4, 5, 6, 7 pin; 7, 9 pin min; 7, 8 pin sub min; Acorn; Loctal, Octal.

**SCALE INDICATIONS**

**TRANSCONDUCTANCE:** 0 to 3000 micromhos.

**VOLTAGE:** 0 to 200 v DC.

**RESISTANCE:** 0 to 10 meg.

**SCALE MARKINGS:** "Diodes ok" and "Rectifiers ok".

**OSCILLATOR FREQUENCY:** 5000 cps.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Western Electrical Instrument Corp;  
Newark 5, New Jersey.

**FUNCTIONAL DESCRIPTION**

The Model 981 Type 3 is a tubechecker of the proportional mutual conductance type employing DC plate, screen grid and control grid voltages. One of the features of this model is the switching system utilized in connecting the various tube elements to their proper potentials. This means connecting a screen grid to a voltage which is in the proper proportion to the plate voltage supplied; by testing twin triodes with identical sections as completely separate units, etc.

No field changes in effect at time of preparation (19 September 1956).

**TUBE AND/OR CRYSTAL COMPLEMENT**

(1) 3A4

Total Tubes: (1)

**REFERENCE DATA AND LITERATURE**

Weston Electrical Instrument Corp, Technical Manual for Tubechecker 981.3.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

**EQUIPMENT SUPPLIED DATA**

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tubechecker Model 981-3	6 x 13-1/4 x 17-1/2	