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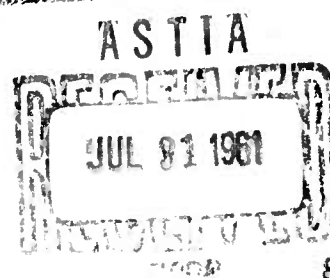
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CATALOGED BY ASTIA
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HANDBOOK OF INSTRUCTIONS FOR

TEST SET, OSCILLATOR QRC-133A(T)

61-4-1
NOX



the **hallicrafters** co.

4401 WEST 5TH AVENUE

Chicago 24, Ill.

CONTAINS 36 PAGES

HANDBOOK OF INSTRUCTIONS

FOR

TEST SET, OSCILLATOR

QRC-133A(T)

CONTRACT NO. AF33(60⁴~~9~~)-21206

The Hallicrafters Company

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092-012175

Figure 1-1. Test Set, Oscillator QRC-133A(T) and Cable Assembly, Special Purpose, Electrical W1.

SECTION I

DESCRIPTION AND LEADING PARTICULARS

1-1. GENERAL.

1-2. This publication comprises operation and maintenance instructions for Test Set, Oscillator QRC-133A(T) designed and manufactured by The Hallicrafters Company under Air Force Contract Number AF33(609)⁴-21206. Figure 1-1 illustrates the test set.

1-3. PURPOSE OF EQUIPMENT.

1-4. Test Set, Oscillator QRC-133A(T) is used for testing the high potential operating parameters of the BWO (backward wave oscillator) in the QRC-133A(T). This test set enables maintenance personnel to adjust operating voltages on the BWO and to pinpoint malfunctions to a particular high voltage supply or regulator circuit. All parameters are monitored simultaneously.

1-5. DESCRIPTION OF EQUIPMENT.

1-6. The test set consists of eleven meters that measure the various outputs of the BWO, a capacitor-resistor network that permits the display of the BWO cathode voltage on an oscilloscope, and two interconnecting cables.

The test set is housed in a ruggedized water-tight aluminum case with two spring-return handles and four luggage type latches. The inside of the case has two sections. One section contains Test Set, Oscillator QRC-133A(T); the other section contains the Cable Assembly, Special Purpose, Electrical W1 which, when stored in its case, is fastened to a receptacle. The test block on the other end of the cable is secured by four threaded thumb screws. The Cord, W2 is clipped and strapped in place. (See figure 8-1 for the method of storing cables in Test Set, Oscillator QRC-133A(T)). A hold down clip, fastened to the coaxial cable that plugs into the anode current receptacle, activates the CW TEST switch on the transmitter front panel and allows the switch to remain activated.

1-7. LIST OF EQUIPMENT SUPPLIED.

1-8. A list of the equipment supplied with Test Set, Oscillator QRC-133A(T) is given in table 1-1. The dimensions and weight of the test set are also listed.

TABLE 1-1. EQUIPMENT SUPPLIED.

QUANTITY	COMPONENT	OVERALL DIMENSIONS (Inches)			WEIGHT
		Height	Length	Width	
1	Case	14-5/8	20	16-1/2	55 lbs.
1	Test Set, Oscillator QRC-133A(T)				
1	Cable Assembly, Special Purpose, Electrical W1				
1	Cord, W2				

1-9. Interconnections between the equipment under test and the test set are facilitated by the use of the test point block connector and its associated cable and the high voltage test block on the right side of the transmitter. A coaxial cable connects the ANODE I receptacle (J111) on the transmitter to the test set.

1-10. SAFETY PRECAUTIONS.

1-11. The test set has been designed with operator safety in mind. All high voltage leads are teflon insulated and the meters have been covered with plexiglas to protect the operator from high voltage. The interconnecting high voltage cable is protected by a flexible grounded shield.

SECTION II

SPECIAL SERVICE TOOLS

2-1. SPECIAL TOOLS AND FIXTURES.

2-2. No special tools and fixtures are required.

SECTION III

PREPARATION FOR USE

3-1. GENERAL.

3-2. This section contains instructions for unpacking and inspecting Test Set, Oscillator QRC-133A(T).

3-3. UNPACKING AND CHECKING.

3-4. The test set is packed with all meters installed. Unpack the equipment and perform the following checks to ensure proper operation.

- A. Examine for evidence of damage in shipment. This will be indicated by dents and scratches or chipped or broken receptacles.
- B. Remove the test set from its case and examine all components for signs of physical damage.
- C. Clean and dry equipment if evidence of extreme moisture is present.
- D. Replace the test set into its case and ascertain that it is securely fastened.
- E. Remove the two interconnecting cables from the cover of the case and examine for signs of physical damage.

3-5. If there is no evidence of damage in shipment, the test set is ready for operation.

SECTION IV
OPERATION INSTRUCTIONS .

4-1. GENERAL

4-2. This section contains operation instructions for Test Set, Oscillator, QRC-133A(T).

4-3. INSTRUCTIONS FOR TESTING QRC-133A(T).

4-4. Proceed in testing the QRC-133A(T) in the following way:

WARNING

VOLTAGES ARE PRESENT IN THIS EQUIPMENT WHICH ARE DANGEROUS
TO LIFE. ALL CONNECTORS SHOULD BE PROPERLY SECURED BEFORE
POWER IS APPLIED.

- A. Remove the interconnecting cables from the cover of the Test Set, Oscillator QRC-133A(T).
- B. Turn off the QRC-133A(T).

NOTE

MAKE CERTAIN THE PUMP MOTOR IN THE HEAT EXCHANGER HAS COMPLETELY
STOPPED BEFORE REMOVING HIGH VOLTAGE TEST RECEPTACLE COVER. IF
THIS PRECAUTION IS NOT TAKEN, EXCESSIVE OIL WILL FLOW WHEN THE
HIGH VOLTAGE TEST RECEPTACLE COVER IS REMOVED.

- C. Remove the High Voltage Test Receptacle cover and connect the High Voltage Interconnecting cable between J2 of the Test Set, Oscillator QRC-133A(T) and the High Voltage Test Receptacle. Engage the knurled screws on the plug and tighten until test plug is properly seated against the side of Transmitter QRC-133A(T).
- D. Connect the coaxial cable between J1 of the Test Set, Oscillator QRC-133A(T) and J111 of Transmitter QRC-133A(T).

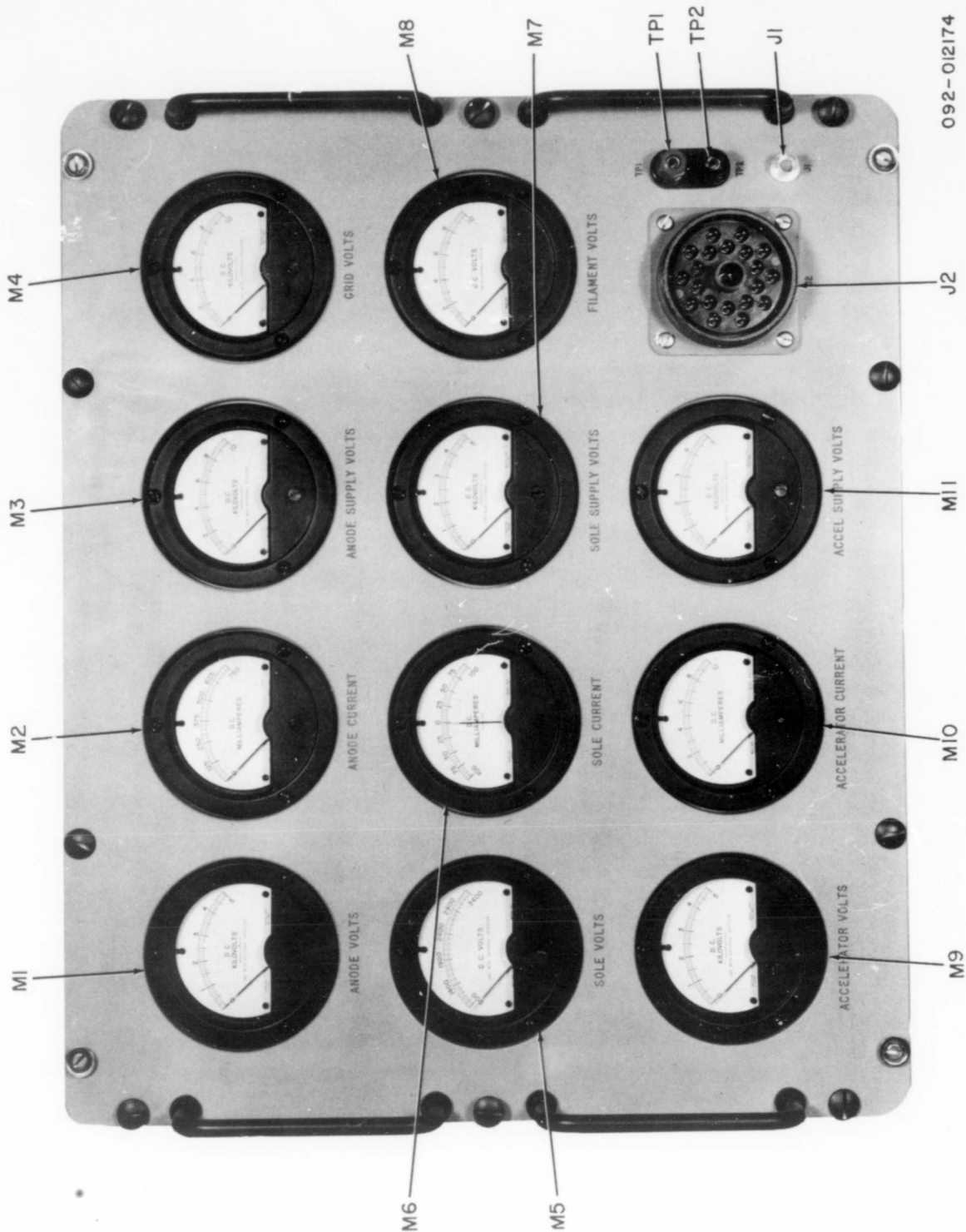
E. Refer to the Handbook of Instructions for the QRC-133A(T) for correct operating procedure and meter readings.

4-5. TEST SET, OSCILLATOR QRC-133A(T) METERS.

4-6. Table 4-1 is a list of meters in Test Set, Oscillator QRC-133A(T). Figure 4-1 illustrates the meters of the test set. By using this test set, it is possible to monitor the following voltages and currents:

TABLE 4-1. TEST SET, OSCILLATOR METERS.

METER DESIGNATION	RANGE	FUNCTION
M1, ANODE VOLTS	0-5 KVDC	Measures anode-to-cathode DC voltage.
M2, ANODE CURRENT	0-750 MA	Measures anode-to-cathode (beam) current.
M3, ANODE SUPPLY VOLTS	0-10 KVDC	Measures accelerating anode regulator supply voltage.
M4, GRID VOLTS	0-1 KVDC	Measures grid-to-cathode voltage.
M5, SOLE VOLTS	0.9 KVDC-3.4 KVDC	Measures sole-to-cathode DC voltage.
M6, SOLE CURRENT	100-0-100 MA	Measures sole current.
M7, SOLE SUPPLY VOLTS	0-5 KVDC	Measures sole regulator supply voltage.
M8, FILAMENT VOLTS	0-10 VDC	Measures heater AC voltage.
M9, ACCELERATOR VOLTS	0-5 KVDC	Measures accelerating anode-to-cathode DC voltage.
M10, ACCELERATOR CURRENT	0-10 MA	Measures accelerating anode current.
M11, ACCELERATOR SUPPLY VOLTS	0-5 KVDC	Measures total anode supply voltage.



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Figure 4-1. Test Set, Oscillator QRC-133A(T), Front Panel.

SECTION V

INSPECTION

5-1. GENERAL.

5-2. This section includes instructions for inspecting Test Set, Oscillator QRC-133A(T).

A visual inspection should be performed before operating the test set and any obvious faults corrected. Any part which fails to meet standards must be repaired or replaced.

5-3. VISUAL INSPECTION.

5-4. Perform a thorough visual inspection of the equipment and its parts. Indicate on an inspection tag any damage that is noticed, such as listed in table 5-1.

TABLE 5-1. VISUAL INSPECTION CHECK LIST

ITEM	CHECK
Cables	Not properly dressed
Capacitors	Damaged casings or broken leads
Covers and housings	Cracked, dented or distorted
Connectors	Bent pins, creacked inserts
Control knobs	Cracked or broken
Insulation (Sleeving)	Worn or damaged
Variable resistors	Cracked case or broken terminal leads
Resistors	Cracked, broken, signs of overheating
Solder connections	Insecure or broken
Switches	Action and tightness
Wiring	Frayed or broken

SECTION VI

TROUBLE SHOOTING

6-1. GENERAL.

6-2. When Test Set, Oscillator QRC-133A(T) fails to function properly, the trouble may be corrected by mechanical or electrical adjustment or, if necessary, by replacement of one or more defective parts.

6-3. TROUBLE SHOOTING PROCEDURES.

6-4. When a malfunction occurs, the normal procedure is to identify the trouble and localize the source to a particular circuit or component by means of the trouble shooting chart (table 6-1) and the schematic diagram of the test set (figure 8-3).

6-5. Time can often be saved by first looking for bent terminals, faulty switches, and opened or shorted wiring connections which, at times, can be identified by visual inspection alone.

TABLE 6-1. TROUBLE SHOOTING CHART.

Trouble	Probable Cause	Remedy
1. No signal at TP1.	a. Broken wire in circuit.	a. Check wiring behind meter panel.
	b. Defective capacitor.	b. Check C2 and replace if faulty.
	c. Defective resistor.	c. Check R10 and replace if faulty.
2. Abnormally high signal at TP1.	a. Defective capacitor.	a. Check C2 and replace if faulty.
	b. Defective resistor.	b. Check R10 and replace if faulty.
3. Open circuit at J2.	a. Broken wire in circuit.	a. Check wiring behind meter panel.
4. TP2 is ungrounded.	a. Broken wire in circuit.	a. Check wiring behind meter panel.

TABLE 6-1. TROUBLE SHOOTING CHART (CONT).

Trouble	Probable Cause	Remedy
ANODE VOLTMETER (M1)		
1. Anode Voltmeter fails to indicate.	a. Broken wire in circuit.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin U and pin R of J2. Resistance of circuit would indicate open meter winding M1 or open multiplier resistor R1. Replace meter or multiplier resistor.
2. Anode Voltmeter indicates too high or too low.	a. Defective multiplier resistor. b. Defective meter M1.	a. Check multiplier resistor R1. Replace resistor. b. Replace meter.
3. Anode Voltmeter movement sticky or sluggish.	a. Defective meter M1.	a. Replace meter.
ANODE CURRENT METER (M2)		
1. Anode Current Meter fails to indicate.	a. Broken wire in circuit. b. Defective meter M2.	a. Check cable wiring and wiring behind meter panel. b. Replace meter.
2. Anode Current Meter indicates too high or too low.	a. Defective meter M2. b. Poor solder connection on J1 or connector of W2.	a. Replace meter. b. Resolder the connection.
3. Anode Current Meter movement is sticky or sluggish.	a. Defective meter M2.	a. Replace meter.
ANODE SUPPLY VOLTMETER (M3)		
1. Anode Supply Voltmeter fails to indicate.	a. Broken wire in circuit.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin C and pin F of J2.

TABLE 6-1. TROUBLE SHOOTING CHART (CONT).

Trouble	Probable Cause	Remedy
2. Anode Supply Voltmeter indicates too high or too low.	b. Resistance of circuit is 10 megohms.	b. Open circuit would indicate open meter winding (M3) or open multiplier resistor (R2 or R3). Replace meter or multiplier resistor.
	a. Defective multiplier resistor.	a. Check multiplier resistor R2 and R3. Replace resistor.
	b. Defective meter M3.	b. Replace meter.
3. Anode Supply Voltmeter movement is sticky or sluggish.	a. Defective meter M3.	a. Replace meter.
GRID VOLTMETER (M4)		
1. Grid Voltmeter fails to indicate.	a. Broken wire in circuit.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin P and pin R of J2.
	b. Resistance of circuit is 1 megohm. Open circuit would indicate open meter M4 winding or open multiplier resistor R8.	b. Replace meter or multiplier resistor.
2. Grid Voltmeter indicates too high	a. Defective multiplier resistor.	a. Check multiplier resistor R8. Replace resistor.
	b. Defective meter M4.	b. Replace meter.
3. Grid Voltmeter movement is sticky or sluggish.	a. Defective meter M4.	a. Replace meter.
SOLE VOLTMETER (M5).		
1. Sole Voltmeter fails to indicate.	a. Broken wire in circuit.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin L and pin R of J2.

TABLE 6-1. TROUBLE SHOOTING CHART (CONT).

Trouble	Probable Cause	Remedy
2. Sole Voltmeter indicates too high or too low.	b. Resistance of circuit is 3.4 megohms. Open circuit would indicate open meter winding M5 or open multiplier resistor R7. a. Defective multiplier resistor R7.	b. Replace meter or multiplier resistor. a. Check multiplier resistor R7. Replace resistor.
3. Sole Voltmeter movement is sticky or sluggish.	b. Defective meter M5. a. Defective meter M5.	b. Replace meter. a. Replace meter.
SOLE CURRENT METER (M6)		
1. Sole Current Meter fails to indicate.	a. Broken wire in circuit. b. Defective meter M6.	a. Check cable wiring and wiring behind meter panel. b. Replace meter.
2. Sole Current Meter indicates too high or too low.	a. Defective meter M6.	a. Replace meter.
3. Sole Current Meter movement is sticky or sluggish.	a. Defective meter M6.	a. Replace meter.
SOLE SUPPLY VOLTMETER (M7)		
1. Sole Supply Voltmeter fails to indicate.	a. Broken wire in circuit. b. Resistance of circuit is 5 megohms. Open circuit would indicate open meter M7 or open multiplier resistor R6.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin A and pin R of J2. b. Replace meter or multiplier resistor.
2. Sole Supply Voltmeter indicates too high or too low.	a. Defective multiplier resistor.	a. Check multiplier resistor R6. Replace resistor.

TABLE 6-1. TROUBLE SHOOTING CHART (CONT).

Trouble	Probable Cause	Remedy
3. Sole Supply Voltmeter movement is sticky or sluggish.	b. Defective meter M7.	b. Replace meter.
	a. Defective meter M7.	a. Replace meter.
FILAMENT VOLTMETER (M8)		
1. Filament Voltmeter fails to indicate.	a. Broken wire in circuit. b. Defective diode CR1, CR2, CR3, CR4. c. Defective capacitor. d. Defective meter. e. Open or shorted multiplier resistor.	a. Check cable wiring and wiring behind meter panel. b. Check and replace suspected diode. c. Check C3 and C1. Replace faulty capacitor. d. Check meter M8 and replace if faulty. e. Check R9, R11, and R12. Replace defective resistor.
2. Filament Voltmeter indicates too high or too low.	a. Meter calibration incorrect. b. Defective diode CR1, CR2, CR3, CR4. c. Defective capacitor. d. Defective meter. e. Open or shorted multiplier resistor.	a. Recalibrate meter according to instructions. b. Check and replace diode. c. Check C1 and C3. Replace faulty capacitor. d. Check meter M8 and replace if faulty. e. Check R9, R11, and R12. Replace defective resistor.
3. Filament Voltmeter movement is sticky or sluggish.	a. Defective meter M8.	a. Replace meter.

TABLE 6-1. TROUBLE SHOOTING CHART (CONT).

Trouble	Probable Cause	Remedy
ACCELERATOR VOLTMETER (M9)		
1. Accelerator Voltmeter fails to indicate.	a. Broken wire in circuit. b. Resistance of circuit is 5 megohms.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin H and pin R of J2. b. Open circuit would indicate open meter winding (M9) or open multiplier resistor R5. Replace meter or multiplier resistor.
2. Accelerator Voltmeter indicates too high or too low.	a. Defective multiplier resistor. b. Defective meter M9.	a. Check multiplier resistor R5. Replace resistor. b. Replace meter.
3. Accelerator Voltmeter movement is sticky or sluggish.	a. Defective meter.	a. Replace meter.
ACCELERATOR CURRENT METER (M10)		
1. Accelerator Current Meter fails to indicate.	a. Broken wire in circuit. b. Defective meter M10.	a. Check cable wiring and wiring behind meter panel. b. Replace meter.
2. Accelerator Current Meter indicates too high or too low.	a. Defective meter M10.	a. Replace meter.
3. Accelerator Current Meter movement is sticky or sluggish.	a. Defective meter M10.	a. Replace meter.

TABLE 6-1. TROUBLE SHOOTING CHART (CONT).

Trouble	Probable Cause	Remedy
ACCELERATOR SUPPLY VOLTMETER (M11)		
1. Accelerator Supply Voltmeter fails to indicate.	a. Broken wire in circuit. b. Resistance of circuit is 5 megohms. Open circuit would indicate open meter winding (M11) or open multiplier resistor R4.	a. Check cable wiring and wiring behind meter panel. Make ohmmeter check between pin D and pin F of J2. b. Replace meter or multiplier resistor.
2. Accelerator Supply Voltmeter indicates too high or too low.	a. Defective multiplier resistor. b. Defective meter M11.	a. Check multiplier resistor R4. Replace resistor. b. Replace meter.
3. Accelerator Supply Voltmeter movement is sticky or sluggish.	a. Defective meter M11.	a. Replace meter.

SECTION VII

CALIBRATION

7-1. GENERAL.

7-2. The purpose of this section is to ensure the reliability of the readings and indications obtained with the FILAMENT VOLTS Meter M8 of Test Set, Oscillator QRC-133A(T).

7-3. REQUIRED EQUIPMENT.

7-4. The following equipment is required to calibrate the FILAMENT VOLTS Meter.

A. Transmitting Set, Countermeasures QRC-133A(T).

B. Weston Voltmeter Model 443 (25 to 1000 CPS) or equivalent.

7-5. METER CALIBRATION PROCEDURE.

7-6. Proceed in the following manner.

A. Remove the dust cover over the high voltage test block receptacle on Transmitter, QRC-133A(T).

B. Loosen turn lock fasteners and remove Test Set, Oscillator QRC-133A(T) from the combination case.

C. Connect Cable Assembly, Special Purpose, Electrical W1 between J2 of the test set and the high voltage test block receptacle on the transmitter.

D. Connect the Weston Voltmeter between the anode of CR4 and the anode of CR3.

E. Place the transmitter in the standby condition.

F. After warmup, set the transmitter filament voltage to 6.3 volts on the Weston Voltmeter. Refer to the Handbook of Instructions for Transmitting Set, Countermeasures QRC-133A(T) (Hallicrafters NO. 094-902627) for the voltage setting.

- G. Loosen set screws on the locking ring around R12 in the test set.
(Use wrench stored in cover of combination case.)
- H. Adjust R12 until reading obtained on FILAMENT VOLTS Meter M8 reads 6.3 volts.
- I. Tighten set screws on locking ring (be sure meter reading has not changed).
- J. Turn transmitter off.
- K. Remove high voltage cable W1.
- L. Replace test set in its combination case. Secure turn lock fasteners.
- M. Replace dust cover on side of transmitter.

SECTION VIII
REPLACEABLE PARTS LIST

8-1. GENERAL.

8-2. This section contains a description and part number of each of the replaceable parts used in Test Set, Oscillator, QRC-133A(T). Reference symbols are identical to those component symbols indicated on the schematic diagram (see figure 8-3) and on the illustrations of the test set. Figures 4-1, 8-1, and 8-2 illustrate the components of the test set.

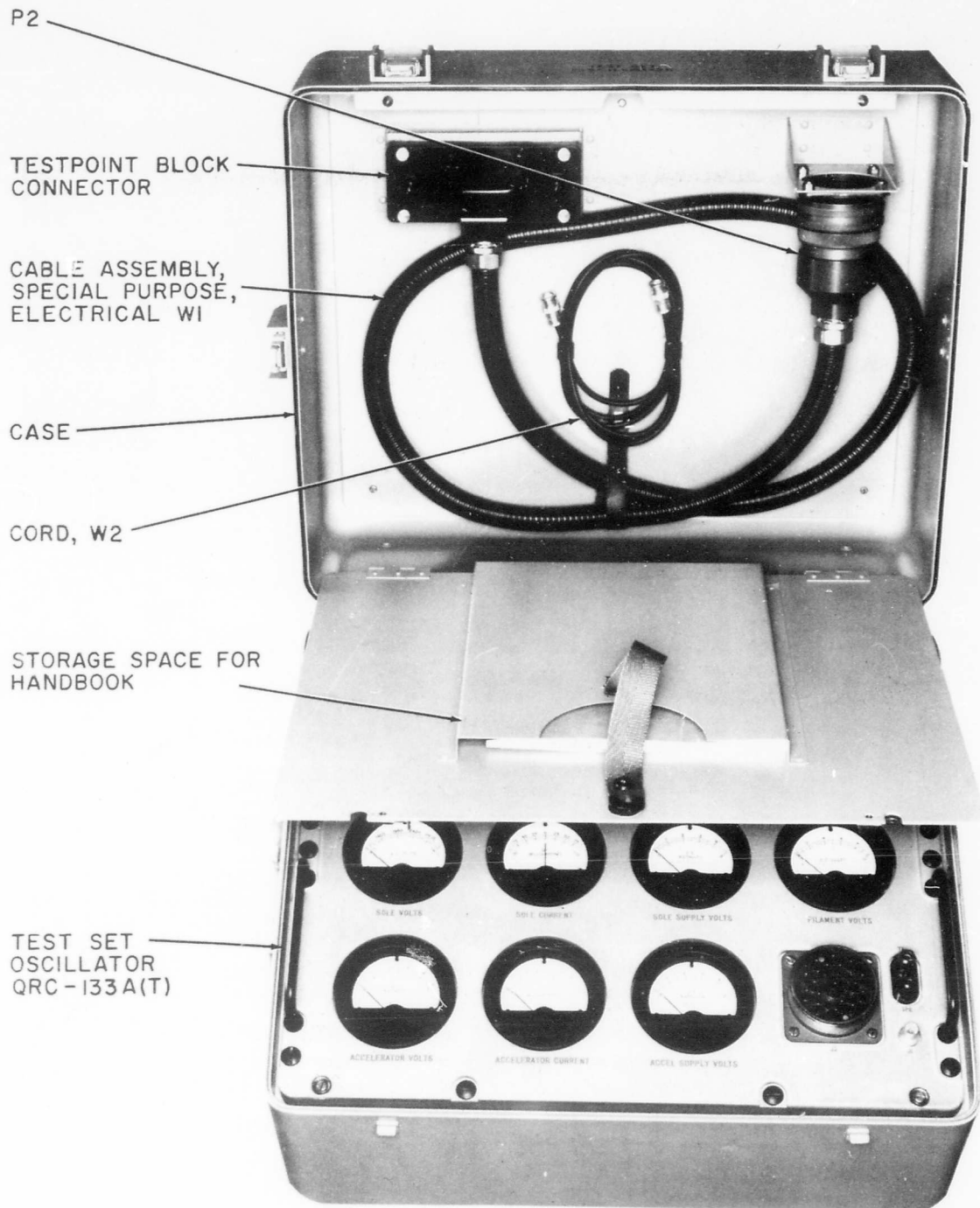
8-3. MANUFACTURER'S CODE NUMBERS.

8-4. The code numbers listed below are used in the replaceable parts list to denote the manufacturers of specific parts. The code numbers were taken from the Federal Supply Code for Manufacturers (Cataloging Handbook H-4-1).

<u>Code NO.</u>	<u>Vendors Name and Address</u>
02660	Amphenol Electronics Corp., Chicago, Ill.
26916	The Hallicrafters Co., Chicago, Ill.
80031	Mepco Division of Sessions Clock Co., Morristown, N. J.
81312	Winchester Electronics Co. Inc., Norwalk, Conn.
81349	Military Specifications
91637	Dale Products, Inc., Columbus, Nebr.
99120	Plastic Capacitors, Inc., Chicago, Ill.

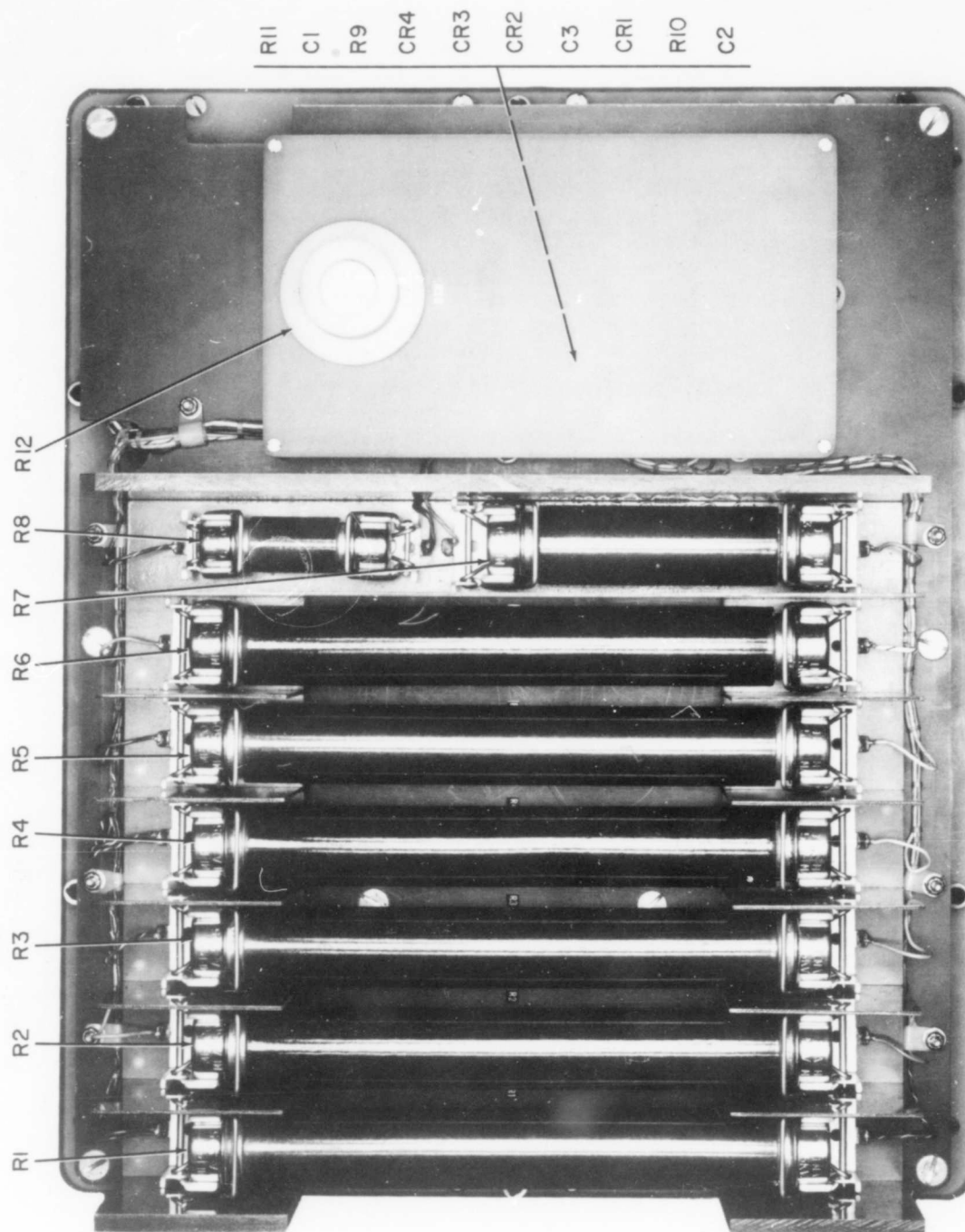
TABLE 8-1. REPLACEABLE PARTS LIST FOR TEST SET, OSCILLATOR QRC-133A(T).

REF SYMBOL	FIGURE NO.	DESCRIPTION	MFR CODE	MFR PART NO.	HLC PART NO.	FEDERAL STOCK NO.
C1	8-2	Capacitor, Fixed Electrolytic (1.0 UF, 10%, 35 VDC)	81349	CS13AF010K	045-000771	
C2	8-2	Capacitor, Fixed, Plastic (0.005 UF, 10%, 20K VDC)	99120	OF200-502	146-000211	
C3	8-2	Capacitor, Fixed, Ceramic (1000 UF, 500 VDC)	81349	CK50AW102M	047-001596	
CR1	8-2	Semiconductor, Device, Diode	81349	JAN IN547	019-002653	
CR2	8-2	Same as CR1				
CR3	8-2	Same as CR1				
CR4	8-2	Same as CR1				
J1	4-1	Connector, Receptacle, Electrical	02660	31-102-UG-657/U	010-100873	
J2	4-1	Connector, Receptacle, Electrical	81312	301-3102A40	010-002144	
M1	4-1	Voltmeter, DC (0-5 KVDC Scale)	81349	MR36W005DCKVR	082-000528	
M2	4-1	Ammeter, DC (0-5 MA Movement, 16.3 Ohm Internal Resistance, 0-750 MA Scale)	26916		083-000931	
M3	4-1	Voltmeter, DC (0-10 KVDC Scale)	81349	MR36W010DCKVR	082-000527	
M4	4-1	Voltmeter, DC (0-1 KVDC Scale)	81349	MR36W001DCKVR	082-000526	
M5	4-1	Voltmeter, DC (0-1 MA Movement, 900-3400 VDC Scale)	26916		083-000930	
M6	4-1	Voltmeter, DC (100-0-100 VDC Movement, 100-0-100 MA Scale)	26916		083-000928	
M7	4-1	Same as M1				
M8	4-1	Ammeter, DC (0-1 MA Movement, 0-10V Scale)	26916		083-000929	
M9	4-1	Same as M1				
M10	4-1	Voltmeter, DC (0-10 MA Scale)	26916		083-000927	
M11	4-1	Same as M1				
F1		Connector, Plug, Electrical	88044	UG88C/U	010-100769	
P2	8-1	Connector, Plug, Electrical	81312	302-3106A40	010-002152	
F101		Connector, Plug, Electrical	26916		150-002882	
F111		Same as F1				
R1	8-2	Resistor, Fixed, Film (5 Megohm, 0.5%, 20W)	80031	MFA505	023-000392	
R2	8-2	Same as R1				
R3	8-2	Same as R1				
R4	8-2	Same as R1				
R5	8-2	Same as R1				
R6	8-2	Same as R1				
R7	8-2	Resistor, Fixed, Film (3.4 Megohm, 0.5%, 30W)	80031	MFB345	023-000393	
R8	8-2	Resistor, Fixed, Film (1 Megohm, 0.5%, 100W)	80031	MFC105	023-000391	
R9	8-2	Resistor, Fixed, Wire Wound (2K Ohm, 1%, 2-1/2W)	91637	Type RS-2C	446-235202-00	
R10	8-2	Resistor, Fixed, Composition (100K Ohm, 10%, 1/2W)	81349	RC20GF104K	450-242104	
R11	8-2	Resistor, Fixed Wire Wound (5.6K Ohm, 1%, 2-1/2W)	91637	Type RS-2	446-235562-00	
R12	8-2	Resistor, Variable, Wire Wound (1.5K Ohm, 10%, 2W)	81349	RA20NAS1152A	024-001389	
TP1, TP2	4-1	Binding Post Assembly	26916		011-001205	
		Cable Assembly (Includes F1 and F111)	26916		087-006845	
		Cable Assembly (Includes P2 and F101)	26916		087-007079	
		Case Assembly	26916		150-001914	
		Ferrule, Handle (Qty 8)	26916		077-002613	
		Handle, Bow (Qty 4)	26916		030-000722	
		Knob Assembly	26916		150-002953	
		Lock, Knob	26916		150-002954	
VR-1		Lamp, glow (105-125v)	24455	NE-2H	039-000671	



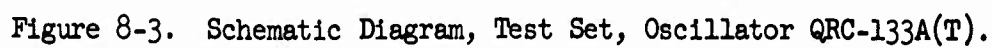
092-012259

Figure 8-1. Test Set, Oscillator QRC-133A(T), Cover Open.



092-012177

Figure 8-2. Test Set, Oscillator QRC-133A(T), Bottom Exposed View.



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