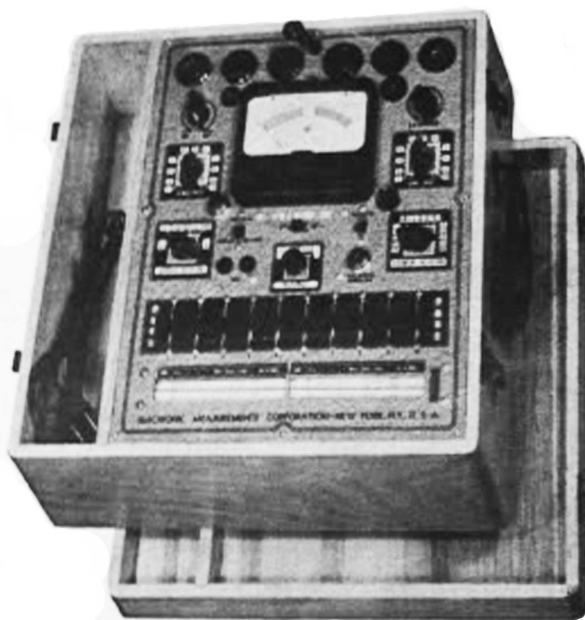


OPERATING INSTRUCTIONS

E.M.C. Model 206

Mutual Conductance Tube Tester



Model 206 Tube Tester

WARNING: Do not misplace this book. It contains complete tube charts necessary for the operation of this instrument. DO NOT plug instrument into a DC POWER LINE! Unless otherwise indicated, this instrument is designed for 105-135 volt, 60 cycle AC power.

ELECTRONIC MEASUREMENTS CORP.

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OPERATING INSTRUCTIONS FOR MODEL 206

GENERAL

Model 206 is a mutual conductance type tube tester checking the transconductance of a tube on a "Reject-Good" scale, as well as on a calibrated micromho scale.

Vacuum tube amplifiers can also be checked for gas content.

The instrument contains one 6H6 rectifier tube, a type NE51 neon bulb, and a type 47 pilot light.

The lever switches should normally be kept at the "K" position.

The "Normal-Special" switch should normally be kept at the "N" position, unless the tube chart indicates otherwise, by preceding the tube with an S).

OPERATION

I. Before inserting a tube into its socket, the following procedure should be followed:

1. Set "Filament Selector" to value indicated on tube chart.
2. Set "Normal-Special" switch to "N" position, unless tube type is preceded by S), as for example the S)3S4, in which case the "Normal-Special" switch is set to "S", or "Special."
3. Press the lever switch in the "S" column of the tube chart down to the "S" position. All the other slide switches should be in the "K" position. If more than one lever switch is mentioned in the "S" column of the tube chart, only the first number is pressed down to the "S" position at this time. For example, when checking the 1A5 tube, only the "2" slide switch is set to "S" position. The second switch in the "S" column is pressed down to the "S" position when making the quality test on the tube.
4. Set "Sensitivity" and "Grid Bias" controls to values indicated on tube chart.

II. LINE VOLTAGE TEST

1. Insert tube into proper socket.
2. Turn "Circuit Selector" to "LV" position.
3. Turn "On-Off" switch to "ON" position.
4. Set meter pointer to arrow in center of scale with the "LV" control.

III. SHORT TEST

1. Turn "Circuit Selector" to "SH" position.
2. Press lever switches up, one at a time, to "P" position, and return them to "K" position.
3. The single switch in the "S" position is not touched, but is left in the "S" position.
4. Unless the tube chart indicates otherwise it is normal for the neon lamp to glow when only one of the slide switches is pressed to "P" position. This simply indicates filament or heater continuity. However, unless the tube chart indicates otherwise, if the neon lamp glows when more than one lever switch is pressed to "P" position, the tube is defective and should be discarded without further test. A momentary flash of the neon lamp should be disregarded.

5. A shorted tube should not be checked for quality, since it might overload the meter or transformer.
6. Tubes having a filament or heater voltage of 25 volts or higher sometimes show a steady leakage at the rated heater voltage, although they are satisfactory to use. In such cases reduce the heater voltage to about $\frac{1}{2}$ the rated value. If the glow still persists at the reduced heater voltage, the tube is actually defective. If it dies down at the lower voltage, disregard the glow; reset the filament switch to the rated value, and continue with the quality test.

IV. NOISE TEST

1. Keep "Circuit Selector" at "SH" position.
2. Connect the noise jacks to antenna and ground posts of radio receiver.
3. Press the lever switches, one at a time, up to "P" position, and tap the tube under test with the fingers.
4. If the tube is noisy, it will be reproduced as static by the loud-speaker when the tube is tapped.

V. QUALITY TEST

A. DIODES, RECTIFIERS AND COLD CATHODE TUBES

1. Make sure that "Sensitivity" control is correctly set to value indicated on the tube chart. Unless tube chart indicates otherwise, the "Grid Bias" control may be left in any position.
2. Turn "Circuit Selector" to either "Diodes," "Rect." or "Cold K" position, as indicated in the "Notations" column.
3. Press any switch shown in the "G" column to the "G" position.
4. Press the switch number or numbers listed in the "P" column to the "P" position. When there is more than one number in the "P" column, press them to the "P" position at about the same time.
5. Press the "Press for Diodes Etc." switch and note whether tube is good or should be rejected.
6. If the tube has more than one section, turn the "On-Off" switch to "Off" position while resetting controls for the second section.

B. AMPLIFIER TUBES ("Reject-Good" scale)

1. Set "micromhos" switch to "R-G" position.
2. Make sure that "Sensitivity" and "Grid Bias" controls are set to correct values as indicated on tube chart.
3. Press the second switch, if any, in the "S" column down to the "S" position. The first switch in the "S" column should be down in the "S" position before this.
4. Press the switch, or switches, in the "G" column up to "G" position.
5. Press the switch, or switches, in the "P" column up to "P" position. If there is more than one switch indicated in the "P" column, press them both up at about the same time.
6. Turn "Circuit-Selector" to "AMP" position and read condition of the tube on "Reject-Good" scale.
7. If there is more than one setting for a tube, turn "Current Selector" switch to "Rect." position while resetting controls for second test.

C. AMPLIFIER TUBES (Calibrated micromho scale)

1. After completing the quality test on the "Reject-Good" scale, as outlined above, the value of the mutual conductance in micromhos can be determined as indicated. All controls and switches are kept in the same position as for the "Reject-Good" test except for the "Micromhos" switch, which is set to the range desired.
 - (a) For the 0-3000 micromho range, readings are taken direct on the 0-3000 micromho range on the meter dial.
 - (b) For the 0-6000 micromho range, readings on the 0-3000 scale are multiplied by 2 to get value in micromhos.
 - (c) For the 0-12000 micromho range, readings on the 0-3000 scale are multiplied by 4 to get value in micromhos.

VI. GAS TEST

After completing the quality test, vacuum amplifier tubes may be checked for gas content by keeping all settings as for the quality test ("Reject-Good" scale) except for the "Grid-Bias" control, which is turned until the meter reads about 3 divisions or 150 micromhos. Press the "Press for Gas" switch. If the meter point moves up less than one division on the meter, the gas content of the tube is satisfactory.

VII. BALLAST TUBES (Refer to Ballast Tube Chart for listings)

1. Turn "On-Off" switch to "ON" position.
2. Set filament selector to "Bal" position.
3. All slide switches except those listed should be in "K" position.
4. Turn "Circuit Selector" to "SH" position.
5. Press lever switches listed, one at a time, to "P" position. If the tube is good, neon lamp will glow each time a slide switch is pressed up to "P" position.
6. After pressing a lever switch to "P" position, and noting whether or not the neon lamp glows, it should be returned to "K" position before another switch is thrown to "P" position.

VIII. VOLTAGE REGULATOR TUBES, VR75, VR90, VR105, and VR150

1. Turn "Sensitivity" control to "O" position.
2. Turn "Circuit Selector" switch to "Cold K" position.
3. Press "2" switch up to "P" position.
4. If tube is good, it will glow. Do NOT press the "Press for Diodes Etc." switch.

N O T E

IN ORDER TO MAKE SURE THAT POWER AMPLIFIER TUBES HAVE ENOUGH SPARE CAPACITY TO OPERATE UNDER ADVERSE CONDITIONS, IT IS ADVISABLE TO CHECK THEM AT A FILAMENT SETTING ONE POSITION LOWER ON THE FILAMENT SWITCH THAN THE RATED VALUES INDICATED ON THE TUBE CHART. ALL OTHER SETTINGS AND VALUES INCLUDING MICROMHO VALUES REMAIN UNCHANGED.

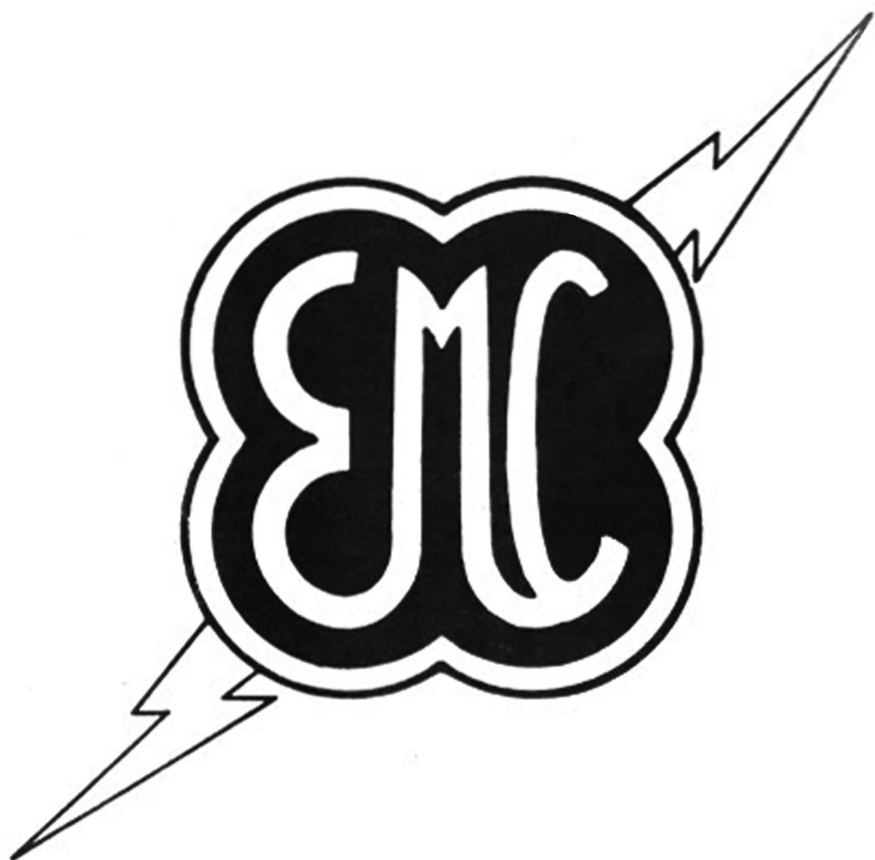
FOR EXAMPLE - TYPE 45 TUBES SHOULD BE CHECKED AT 2 VOLTS INSTEAD OF 2.5 VOLTS AS INDICATED ON TUBE CHART.

GOOD TUBES WILL CHECK ABOUT THE SAME WITH THE REDUCED FILAMENT VOLTAGE AS THEY WILL WITH RATED FILAMENT VOLTAGE. HOWEVER, TUBES WITH INSUFFICIENT SPARE CAPACITY WILL SHOW UP AS "WEAK" OR "REJECT" TUBES WHEN CHECKED UNDER REDUCED FILAMENT VOLTAGE AND SHOULD BE DISCARDED.

BALLAST TUBE CHART

TUBE TYPE	LEVER SWITCHES IN "P" POSITION
1A1	1
1B1	1
1C1	1
1D1	1
1E1	1
1F1	1
1G1	1
1K1	2
1R1	2
1T1C	2
1X1	1
1Y1	1
1Z1	1
2	1
2UR224	3-8
2LR212	1-2-4
3	1
03G	3
4	1
5	1
6	1
7	1
8	1
9	1
10A	3
10AB	3-8
K17B	3-8
M17C	3-8
K23B	3-8
30A	3
K30D	2-3-8
33A	3
K34B	3-8
36A	3
K36B	3-8
KX36A	2
36D	2-3-8
L36DJ	2-3-4-8
K36H	1-2-8
L40S1	1-3-5
42A	3
42A1	4
42A2	1-4
K42B	3-8
KB42D	2-3-8
LX42D	1-2-3
K42E	3-8
KX42C	3-8
L42S1	2-3-5
49A	3
KX49A	3-8
49A1	4
49A2	1-4
K49B	3-8

TUBE TYPE	LEVER SWITCHES IN "P" POSITION
KZ49B	2-5
K49BJ	3-4-8
L49S2	2-3-5
49AJ	3
KX49B	3-8
L49DJ	2-3-4-8
L49S3	2-3-5
50A2	2-3
50B2	2-5
50X3	2
K52H	1-2-8
K54B	3-8
55A	3
55A1	4
KX55A	2
55B	3-8
55A2	1-4
K55C	2-3
K55D	2-3-8
L55E	3-8
L55S1	2-3-5-8
60R30G	2-3
64.23	3
67A	3
K67B	3-8
L73B	3-8
80A	3
K79B	3-8
K80F	3-8
92A	3
L92B	3-8
L99D	2-3-8
100R8	3-8
120R	2
120RS	3-8
135KLA	3-4-8
140L4	1-2-3
165L4	2-3
165R	2
165L44	1-2-3
185L4	2-3
185R	2
185L44	1-2-3
200R	2
250RS	3-8
300R4	3-8
340	2
808-1	3-4-8
E14980	3-8
3334	2-3-8
8593	3-8
3ER248	2-3-4-8
3CR241	2-3-8



GUARANTEE

This instrument is guaranteed for 90 days from date of purchase to be free of any defect in workmanship or material. **ELECTRONIC MEASUREMENTS CORPORATION** will replace any defective part or parts within this period without charge, if tests at our factory show that the defect was not caused by abuse or tampering.

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