

JACKSON

Radio Testing Equipment

CONDENSER TESTER

MODEL 112

OPERATING INSTRUCTIONS

THE JACKSON ELECTRICAL INSTRUMENT CO.

DAYTON, OHIO, U. S. A.

TM Reg. U. S. Pat. Off.

OPERATING INSTRUCTIONS FOR JACKSON MODEL 112

CONDENSER TESTER

The Model 112 tests condensers for shorted, leaky, open, intermittent, incorrect capacity and bad power factor conditions. Two tests are made upon the condenser to indicate the above conditions. The Capacity Test indicates the true capacity of the condenser. This test also shows open, shorted, intermittent and bad power factor conditions. The LEAKAGE TEST rejects condensers with excessive leakage resistance and supplies the correct polarizing voltage to electrolytics for test.

DIAL CALIBRATIONS: The Capacity control knob rotates through an arc of approximately 300 degrees. For convenience in reading and to provide a long effective scale length the arc has been divided into two sections and two pointers provided on the control arm. When the long pointer is on the scale the outside arc is used. When the short pointer is on the scale the inside arc is used. These scales are designated on the dial scale and on the selector buttons. A special High Capacity scale is provided for testing condensers above 30 microfarads.

OPERATION: Connect the instrument to a power line and turn the OFF-ON switch to the ON position. Allow sufficient time for the tubes in the instrument to warm up.

PAPER AND MICA CONDENSERS

1st - Connect condenser to the jacks by means of the test leads or insert the leads of the condenser directly in the jacks. When accurate measurement of the capacity of small value mica condensers is made the condenser must be connected directly to the jacks to eliminate the stray capacity of the connecting leads.

2nd - Set the TEST VOLTAGE selector to the 500 volt position to obtain maximum leakage sensitivity. (If the value of the condenser is above 1 MFD set to the 200 volt position.)

3rd - Press the PAPER-MICA leakage button. If the shadow remains closed the condenser has excessive leakage and should be rejected. If the shadow opens the leakage value is satisfactory.

4th - Press the CAPACITY TEST button covering the approximate value of the condenser. Rotate capacity dial to the point of maximum angle of the indicator tube. Read the capacity value on the range selected by the capacity test button.

Note: - The POWER FACTOR control should be set to zero when the C_H or C_1 range is used in testing paper and mica condensers. Bad power factor of paper and mica condensers will be indicated by the inability to obtain a complete balance at any point on the capacity dial scale. If the condenser is open it will balance at the "OPEN" end of the capacity dial. Shorted condensers will balance at the "SHORT" end of the dial.

Intermittent condensers will usually show open or shorted and sometimes are indicated by variation of capacity value when jarred or tapped.

ELECTROLYTIC CONDENSERS

1st - Connect the positive lead of the condenser to the positive tip jack. Connect the negative lead to the negative tip jack.

2nd - Set the TEST VOLTAGE selector to the position providing the correct rated voltage of the condenser under test. If the voltage rating of the condenser is between the values indicated, set to the next lower voltage position. For example, if the rating of the condenser is 450 volts set the TEST VOLTAGE selector to the 400 volt position.

3rd - Now press the ELECTROLYTIC leakage test button. If the condenser is formed or has been used recently the shadow should open immediately. In case the condenser is new or has been out of service for a period of time it may require approximately 1 minute for the plates to form sufficiently for the shadow to open. A closed shadow indicates excessive leakage current and the condenser should be rejected. If the shadow opens to any extent the leakage value is satisfactory.

4th - CAPACITY AND POWER FACTOR: The capacity of all ordinary electrolytic condensers falls within the capacity ranges of C_H and C_1 . On these two ranges the POWER FACTOR control is connected in the circuit.

To test the capacity and power factor press the Capacity Test button C_H or C_1 and adjust the pointer for maximum shadow angle. Next adjust the POWER FACTOR control for further balance (maximum angle) of the indicator tube. Read the capacity value on the dial scale. The POWER FACTOR control reads directly in percent, the power factor of the condenser.

If no balance can be obtained at any setting of the POWER FACTOR control the condenser has a higher power factor than 60 percent and should be rejected.

Intermittent condensers will usually show open or shorted and are sometimes indicated by a variation of capacity.

Note: - A. C. ELECTROLYTIC MOTOR STARTING CAPACITORS. These condensers do not have polarity. Make the leakage test first by inserting the leads in the test jacks, disregarding polarity. Next reverse the leads to the jacks and repeat the leakage test. The leakage value should be satisfactory for both connections.

CONDENSER TOLERANCE

The permissible capacity limits for condensers must be determined by their application in the circuit, however, the following limits should normally prove satisfactory:

PAPER AND MICA condensers used solely for R.F. and A.F. bypass may vary plus or minus 20 percent. Condensers used for coupling or in R.F. padding circuits are more critical and the tolerance must be determined for each case.

ELECTROLYTIC condensers used in ordinary power supply filters may vary from minus 20 to 30 percent to plus 100 percent. Condensers used in tuned filters require close tolerance limited by the particular application.

Electrolytic condensers used for power filtering purposes may have a power factor from zero to 50 percent without seriously affecting the filtering efficiency. When an electrolytic condenser is used as a combination filter and R.F. bypass or as a straight R.F. or A.F. bypass it should have a power factor lower than 10 percent. High power factor in audio bypass condensers frequently cause motor-boating.

A. C. ELECTROLYTIC condensers used for motor starting purposes should ordinarily have a capacity tolerance of plus or minus 20 percent. The power factor should be under 15 percent to prevent heating and provide high starting torque.

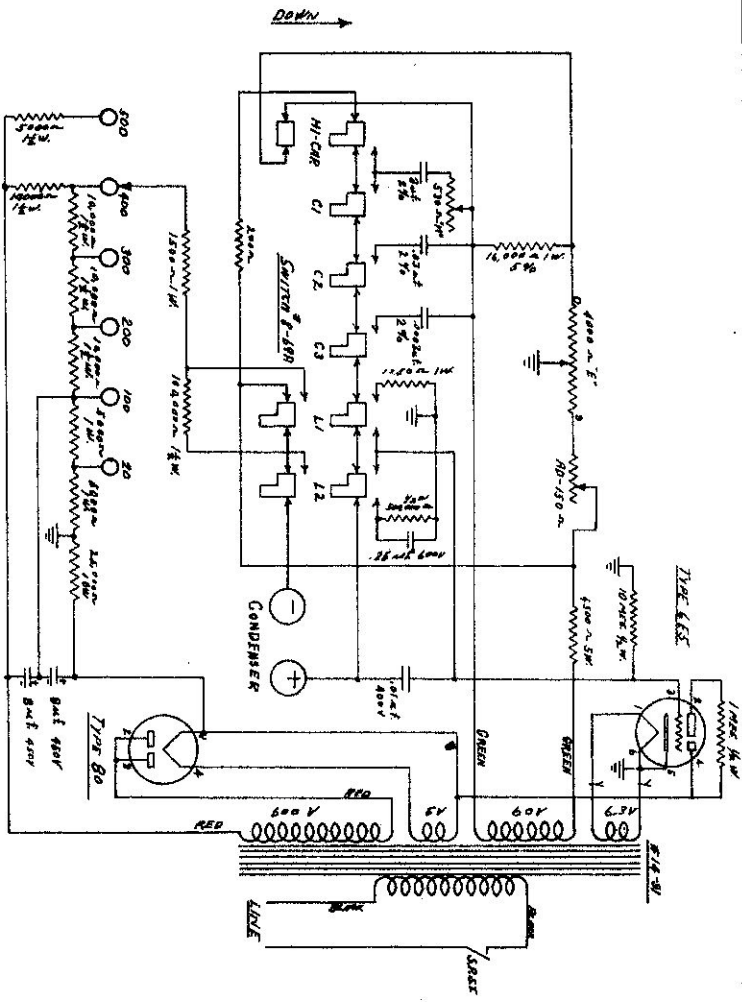
IMPORTANT: The voltages indicated on the TEST VOLTAGE selector are actually applied to the condenser through a resistive network when making the leakage test. These voltages are dangerous and care should be taken not to come in contact with the leads. The two leakage buttons do not lock down but do release the capacity test buttons. When all buttons are up the test jacks are shorted, thereby discharging the condenser. Therefore by depressing a leakage button momentarily any CAPACITY TEST buttons which were down will be released and the condenser terminals shorted. The condenser can then be removed without any danger from shock.

GENERAL INFORMATION

Mail the Registration Card for your instrument promptly, giving correct name and address, so that additional technical bulletins from our factory will be properly delivered. Notify us of a change of address, listing model number and serial number of your instrument in the notice.

Repairs and adjustments will be made under the terms and conditions stated in the guarantee furnished with this instrument. The instrument should not be returned to our factory except where we authorize such return to be advisable. When corresponding concerning this instrument, always mention model number and serial number. Be certain to describe fully and accurately the information desired.

THE JACKSON ELECTRICAL INSTRUMENT COMPANY
DAYTON, OHIO



THE JACKSON ELECTRICAL INSTRUMENT CO.
 DAYTON, OHIO

MODEL 112 & 600A CIRCUIT

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DWN. BY R.C.H.

CHECKED BY

SER. NO. 4,401-

PART NO.

DRAWING NO. C-472