

INSTRUCTIONS FOR OPERATING



The C-D CAPACITOR BRIDGE

Model BN

... 110 Volts A.C., 60 Cycles



CORNELL-DUBILIER ELECTRIC CORPORATION

SOUTH PLAINFIELD, N. J., U.S.A. CABLE ADDRESS: CORDU

Other Plants in New Bedford, Worcester and Cambridge, Mass.;
Providence, R. I.; Indianapolis, Ind.; Fuquay Springs and San-
ford, N. C.; and Plants of Subsidiary Radiart Corporation,
Cleveland, Ohio.

• **GUARANTEE** •

This Capacitor Bridge is guaranteed to perform as described and to be free from any defects in materials or workmanship. Any failure due to these causes will be adjusted by repair or replacement without charge if the instrument is returned prepaid to our factory within 90 days from date of purchase.

Capacitor Bridge, Model BN, Manufactured Under Cornell-Dubilier U. S. Patents 1,823,492 and 1,757,659. Other Patents Pending.

Printed in U. S. A.

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INSTRUCTIONS FOR OPERATING THE C-D CAPACITOR BRIDGE

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THE Model BN Midget Capacitor Bridge quickly and accurately measures the capacity of all capacitors from .00001 to 50. mfd. All measurements are made on Wien Bridge, the balance condition of which is indicated by dual type "visual eye" detector.

A 12AX7 tube is used as rectifier and amplifier while a 6AF6-G tube indicates bridge balance.

To place the Model BN Capacitor Bridge in operation follow the procedure outlined below.

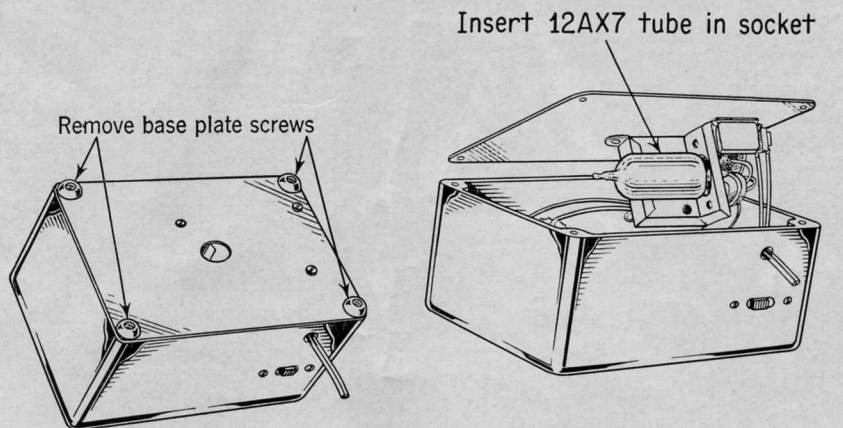
1. Remove screws in base plate as shown in Fig. 1.
2. Insert 12AX7 tube in socket ~~and attach grid clip~~. See Fig. 2.
3. Replace the base plate with screws which were removed.
4. Insert 6AF6-G tube in panel socket as shown in Fig. 3.
5. Attach test leads to insulated tip jacks.
6. Attach line cord plug to 110 volt A.C., 60 cycle power line receptacle and push slide switch to rear position for "ON."
7. Attach capacitor to test lead clips.

READ SPECIAL INSTRUCTIONS (PAGE 6) CAREFULLY BEFORE PROCEEDING WITH TESTS.

8. Turn tap switch knob to range corresponding with the approximate capacity of the capacitor under test.

9. Turn large bridge control knob until maximum opening of "visual eye" is attained. The balance condition is obtained at the maximum dark segment, approximately 120° , in 6AF6-G tube.

10. Read capacity directly from calibrated scale when balance condition of eye is attained.



● INSTRUCTIONS FOR OPERATING

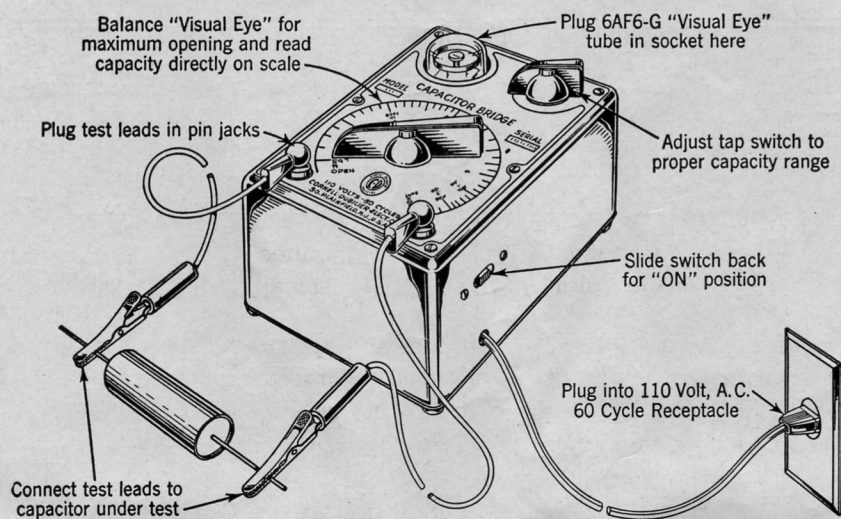


FIG. 3

Position of Range Switch	Capacity Range
Lo	.00001 to .002 Mfd.
M	.001 to .2 Mfd.
Hi	.1 to 50 Mfd.

The position of the indication given by the visual eye tube may be changed if desired. Simply grasp the tube firmly and turn to position considered satisfactory. This adjustment should not be made beyond 45° of the original position as the connections to the socket may become shorted.

DEFECTIVE CAPACITORS

1. **Open Circuit:** Bridge control will balance at "OPEN" for all positions of range switch.

2. **Short Circuit:** Bridge control will balance at "SHORT" for all positions of range switch.

3. **Intermittent Operation:** This type of defect usually tests as open or short because of low A.C. voltage connected to capacitor. It may also change balance when final balance position is attained.

4. **High Capacity:** For filter and most bypass applications capacitors may be above 30% of rated value and yet give very satisfactory operation. However for tuned circuits and some bypass uses the capacitor should not be more than 10% high.

5. **Low Capacity:** Capacitors that measure more than 30% lower than rated capacity should be replaced. Electrolytic capacitors should be measured at temperatures above 70° F. to obtain operating capacity. For tuned circuits and some bypass applications capacity should be within 10% of rated value.

6. **High Power Factor:** The degree of balance indication, that is, the extent of opening of the "visual eye" may be used as a check of power factor. When measuring some electrolytic capacitors the "eye" will not open fully when balance is reached, because the power factor is sufficiently high to prevent a perfect balance.

If a definite balance point can be obtained, even though the eye does not open fully the capacitor under test will generally give satisfactory operation. When an electrolytic capacitor does not give a balance on this instrument it should be aged at rated voltage until leakage current is low and then measured again.

Wet electrolytic and low voltage dry electrolytic capacitors, with inherently high power factor, will give entirely satisfactory operation although the capacity balance on this instrument may not be clear. All electrolytic capacitors should be tested at temperatures above 70° F. to obtain operating characteristics.

● THE C-D CAPACITOR BRIDGE ●

SPECIAL INSTRUCTIONS

THE POWER LINE PLUG HAS A POLARITY EFFECT AND MUST BE PLACED IN WALL RECEPTACLE IN ONE POSITION ONLY. TO DETERMINE CORRECT POLARITY AFTER INSTRUCTIONS 1 TO 7 (PAGE 3) HAVE BEEN COMPLETED, SET RANGE SWITCH AT "LO" AND ROTATE CAPACITY CONTROL TO "OPEN." THE VISUAL EYE SHOULD BALANCE NEAR "OPEN." IF THE BALANCE CHANGES WHEN A PANEL SCREW IS TOUCHED, REVERSE THE LINE PLUG POSITION IN THE WALL RECEPTACLE.

The line plug must always be connected as described above to obtain satisfactory measurements and to avoid any possibility of shock when panel is touched. DO NOT GROUND THE PANEL.

When measuring capacitors less than .0002 mfd., for best accuracy plug capacitor leads directly into test jacks. This procedure will eliminate capacity normally introduced by the long test leads.

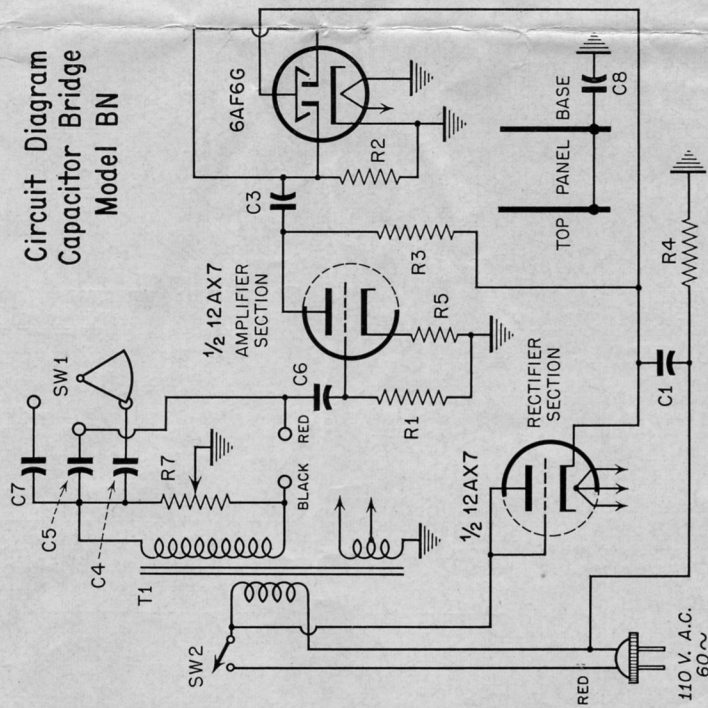
To use this instrument to check continuity set range switch at "LO" and rotate capacity control to "SHORT." Then use test leads in usual connections to check circuit continuity. Resistance circuits up to 500,000 ohms can be checked in this manner, with "visual eye" giving regular balance indication for complete circuit or no change for open circuit.

To preserve fluorescent coating and sensitivity of 6AF6-G "visual eye" tube, do not have tube lighted when the Capacitor Bridge is not being used. Simply press slide switch to front position for "OFF" when completing test.

WHEN USING THE BN CAPACITOR BRIDGE BE SURE NO PART OF THE INSTRUMENT IS GROUNDED. A grounded test will prevent balance of instrument and will result in excessive wear on 6AF6-G tube.

The test leads may be connected to a capacitor installed in a radio receiver provided the line cord of the receiver is disconnected from the supply line and the chassis is not grounded in any way.

Circuit Diagram
Capacitor Bridge
Model BN

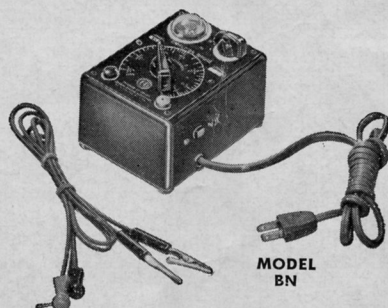


PARTS LIST

Pt. No.	Value	Rating	C-D Pt. No.
C 1	8.0 MFD.	250 V.DC	BR 825
C 3	.05 MFD.	400 V.DC	HC 3502
C 4	.02 MFD. $\pm 2\%$	200 V.DC	2B4020
C 5	.0002 MFD. $\pm 4\%$	600 V.DC	5R5T2
C 6	.00025 MFD.	600 V.DC	5W5T25
C 7	2.0 MFD. $\pm 2\%$	60 V.A.C	HC 3296
C 8	.0045 MFD.	600 V.DC	1W.0045
R 1	10 MEG.	BT $\frac{1}{2}$	2159
R 2	1 MEG.	BT $\frac{1}{2}$	21590
R 3	.2 MEG.	BT $\frac{1}{2}$	21341
R 4	75,000 OHMS	BT $\frac{1}{2}$	21342
R 5	3,000 OHMS	BT $\frac{1}{2}$	21587
R 7	4,000 OHMS	Control	20886
T 1	—	Transformer	20887
SW1	—	Switch	20876
SW2	—	Switch	21020

CORNELL-DUBILIER CAPACITOR BRIDGE - Model BN and CAPACITOR DECADES

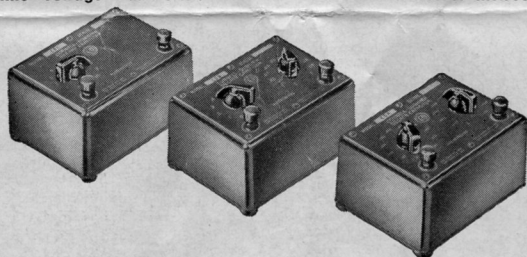
MODEL BN CAPACITOR BRIDGE



Net Price
Complete
With Tubes
\$22.39

FEATURES OF MODEL BN CAPACITOR BRIDGE

1. Measures Capacity—Accurately measures capacity of paper, mica, electrolytic and air capacitors from .00001 mfd. to 50 mfd.
2. Indicates Power Factor—Power factor of electrolytic capacitor indicated by means of visual eye detector tube.
3. Detects Defective Capacitors—Detects open and short circuits, high and low capacity, and high power factor.
4. Checks Circuit Continuity—May be used as continuity meter. A handy instrument for checking circuits, coils, transformers and many other uses. For operation on 110 volts, 60 cycles.
5. Employs Wien Bridge—Employs Wien Bridge circuit for all measurements. Accuracy independent of line voltage variations.
6. Visual Eye Bridge Balance—Dual type visual bridge balance for accurate measurements facilitates quick tests on service jobs.
7. Direct Reading Scale—Direct reading ranges will all scale markings directly in microfarads. Clear reading dial scale. All capacity calibrations marked on panel. No charts or multipliers required.
8. Self-Contained—The Capacitor Bridge is complete in itself and requires no headphones, standards, external meters, etc.
9. Extremely Compact—The unusually small size of this bridge makes it particularly handy for portable use—3 $\frac{3}{8}$ " x 5" x 3" weight 2 lbs.
10. Attractive—Supplied in attractive walnut Bakelite case complete with detachable test leads and useful instruction booklet.



CORNELL-DUBILIER CAPACITOR DECADES provide a reliable and accurate source of measured capacitances for substitution purposes in a wide variety of electronic applications within the voltage and capacitance ratings of each unit. Units of capacitance can be selected from the direct reading switch scale markings and the precise value may be read directly from the hand calibrated chart provided with each instrument.

CORNELL-DUBILIER CAPACITOR DECADES may be grouped in parallel to provide a wide range of accurate standards with maximum flexibility. For example, one each of decades CDA, CDB and CDC in parallel will permit a selection of capacitances from 0 to 11.111 mfd., in steps of .0001 mfd. Five C-D Decade models are available with ratings and tolerances as shown below:

Rated Voltage—600 D.C.—220 A.C.

Model	Capacity	+ or - Tol.	Dielectric	Net Price
CDA-5	.011 mfd. in .0001 mfd. steps	5%	Mica	\$9.35
CDB-5	1.1 mfd. in .01 mfd. steps	5%	Oil-Paper	9.35
CDB-3	1.1 mfd. in .01 mfd. steps	3%	Oil-Paper	13.20
CDC-5	10.0 mfd. in 1.0 mfd. steps	5%	Oil-Paper	19.25
CDC-3	10.0 mfd. in 1.0 mfd. steps	3%	Oil-Paper	21.45

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