

Simpson

INSTRUMENTS THAT STAY ACCURATE

OPERATOR'S MANUAL

MODEL 381
CAPACITY BRIDGE

SIMPSON ELECTRIC COMPANY

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SIMPSON CAPACITY BRIDGE MODEL 381

GENERAL

The Simpson Model 381 Capacity Bridge is a small compact and inexpensive instrument intended for use in measuring the quantity of capacity in any ordinary condenser. It is useful in confirming the manufacturer's markings on his product, in matching pairs or sets of condensers regardless of tolerance ratings, in determining the capacity of condensers with no marking or with an obliterated marking, and for many other purposes.

The bridge is intended for use with a 117 volt 60 cycle a-c input. It reads the quantity of capacity directly on a graduated scale continuous in four ranges. The meter is used to indicate the null point at which the bridge is balanced for each use. Maximum right-hand deflection of the meter needle for each capacitor checked is the null point. Each range is selected by pressing down the appropriate push-button at the bottom of the panel. Pressing down any button will apply 117 volts a-c to the transformer primary after selecting the proper circuit resistance and will turn the instrument on during the time the button is depressed. When the push-button is released, the primary of the transformer does not receive any voltage and the instrument is off. The Model 381 is designed for intermittent operation and should not have any push-buttons depressed over long periods of time.

OPERATION

To use the Model 381 proceed as follows:

1. Plug into a 117 volt 60 cycle a-c source.
2. Connect the condenser to be checked between the two binding posts at the top of the front panel. Use leads as short as practical.
3. Press the button at the bottom of the front panel corresponding to the range within which the capacitive value of the condenser is expected to lie.
4. Rotate the knob and pointer until the meter is deflected furthest to the right. Be sure of the setting by rotating the knob beyond the point of maximum right-hand deflection and then returning to it. In case of any doubt about the setting of the pointer, rotate the knob back and forth over the null point to help determine the exact point at which maximum right-hand meter deflection occurs.
5. Read the quantity of capacity directly under the red line in the pointer on the scale selected by the push-button. The unit MMF (micromicrofarad) or MF (microfarad), is indicated directly above the push-button.

Note that maximum right-hand deflection of the meter occurs when no

current is flowing through the meter. A perfectly balanced bridge produces zero current in the meter with full right-hand deflection. If the null point does not produce full right-hand deflection, this does not in any way affect the accuracy of the reading, but rather reflects the relative "Q" of the capacitor being checked. The lower the "Q", the further left the null point will occur. Low "Q" is normal in electrolytic capacitors, but may indicate leakage in other types. Check this with an ohmmeter.

The push-buttons correspond to the ranges of the instrument from left to right as follows:

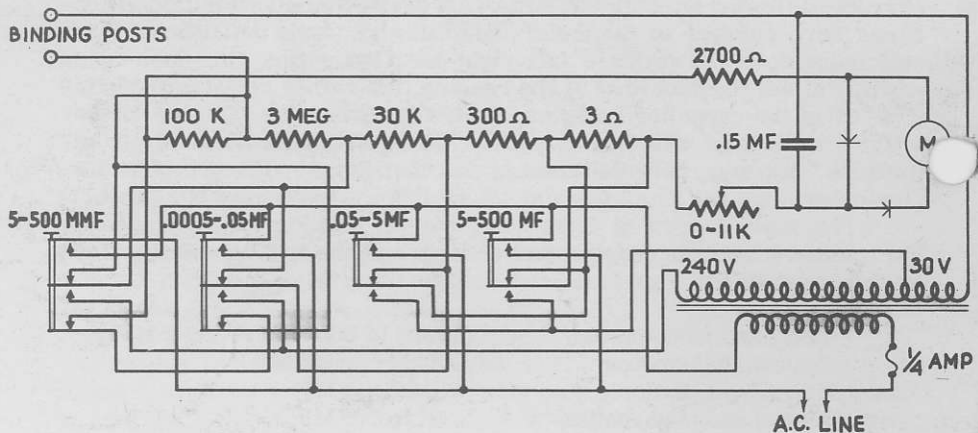
| | |
|------------------------|---------------------------|
| Left hand push-button | 5MMF to 5000MMF (.0005MF) |
| Second push-button | .0005MF to .05MF |
| Third push-button | .05MF to 5MF |
| Right hand push-button | 5MF to 500MF |

Electrolytic capacitors will have values within the last two ranges shown above. To protect the capacitors, a lower voltage is applied to the bridge for these ranges.

MAINTENANCE

The Model 381 should give trouble-free action for many years of service, providing it is not subjected to abuse. The only maintenance which may be required will be adjustment of the spring tension on the switches under the push-buttons. If a push-button should fail to release, open the instrument by removing the four screws through the front cover and, with a spring bender or long nose pliers, carefully adjust the spring tension on the leaf furthest from the front panel to produce the releasing action on the push-button. Then check the contact sequence to see that it has not been changed by this bending action. Correct it if necessary with the spring bender or long nose pliers.

The pointer knob is critically set on the potentiometer shaft for calibration of the unit at the factory. If it should be loosened for any reason, recalibrate the instrument by connecting a standard capacity of known value between the binding posts and turning the potentiometer shaft, while pressing the appropriate push-button, and obtaining the null indication. Then tighten the knob and pointer to the shaft with the red line in the pointer over the capacity reading corresponding to the value of the known standard.



WARRANTY

SIMPSON ELECTRIC COMPANY warrants each instrument and other articles of equipment manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any instrument or other article of equipment which shall within 90 days after delivery of such instrument or other article of equipment to the original purchaser be returned intact to it, or to one of its authorized service stations, with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and SIMPSON ELECTRIC COMPANY neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sale of its products.

This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside the SIMPSON ELECTRIC COMPANY factory or authorized service stations, nor which has been subject to misuse, negligence or accident, incorrect wiring by others, or installation or use not in accord with instructions furnished by the manufacturer.