



INSTRUCTIONS

Absorption Frequency Meters

The No. 90600 and No. 90601 series of Midget Absorption Frequency Meters are accurate laboratory calibrated instruments with direct reading scales, having an accuracy of calibration of 1% or better. They are not to be judged in the same class as the instruments of the same general circuit characteristics, employing pilot bulb indicators, plug-in coils, etc. The No. 90600 and No. 90601 series of instruments are designed to measure the frequency of any oscillator or other r-f source. The instrument is used to determine the fundamental frequency of an oscillator, or to pick the correct harmonic from a harmonic crystal oscillator, frequency doubler, or frequency quadrupler. Each of the instruments in a frequency meter set consists of a coil, a calibrated dial scale, a knob, and a variable capacitor.

Method of Operation

a. When the approximate frequency of the circuit under measurement is known, select the absorption meter that covers the desired frequency band. Connect a milliammeter of suitable range in either the plate or the grid circuit of the vacuum tube in the circuit to be measured, (or connect an output meter

(over)

if a receiver is being tested.) Couple the absorption meter by holding it near the inductance coil of the circuit with one hand. With the other hand, turn the knob of the meter until a sharp rise (or dip) is seen on the milliammeter. Continue adjustment until a maximum (or minimum) occurs. When this point is determined, couple the frequency meter more and more loosely until the change in the indication is barely perceptible. The reading of the frequency meter dial at this point is then the actual frequency of the resonant circuit in the absorption frequency meter and consequently, the frequency of the power in the circuit under test. **Do not couple the frequency meter too closely!** When a frequency meter is coupled too closely, the indication will be very broad and incorrect. Be sure to couple the frequency meter to the circuit under test as loosely as possible and still get a sharp dip or rise on the indicator in the circuit under test. When checking the frequency of a circuit in a receiver or transmitter where other circuits are quite near the circuit under test, care must be taken to couple the frequency meter only to the desired circuit. The maximum external field of any coil is at the end of the coil. To be certain that the frequency meter is coupled only to the desired circuit, be careful to align the coil on the frequency meter with the coil in the circuit under test as much as possible. This will allow the maximum pickup from the circuit under test and the minimum coupling to other circuits. The frequency is then read on the absorption meter dial scale opposite the indicating line of the pointer.

b. When the approximate frequency of the circuit under test is unknown, start with the absorption meter of the lowest range, and follow the instructions in subparagraph a, preceding. The lowest frequency at which indication of resonance is obtained is either the fundamental frequency of the circuit under measurement, or a harmonic of it, if the fundamental frequency is below the range of the absorption meters. If no indication is obtained on any of the frequency meters, the frequency of the circuit under test is either higher than the calibration of any of the frequency meters or lower than the calibration of any of the frequency meters, or the absorption meter has not been held close enough to the circuit whose frequency is to be measured.

c. In using Frequency Meter No. 90600 or No. 90601, always connect the resonance indicating device to the circuit under test, or to associated parts, so that any change in the losses of the circuit being measured will produce a change in the indicator.

Procedures during Operation

a. The accuracy of the reading is affected by the degree of coupling to the circuit under measurement. The most accurate reading is obtained when there is the least amount of coupling necessary for a readable indication of resonance. Be careful when making frequency measurements on transmitters. **If the absorption meter is coupled too closely to circuits of large power, sufficient voltage may build up in the meter to cause permanent damage to the unit, or the capacitor in the meter may arc over.** The frequency meter should be held by the thumb and forefinger at the sides of the calibrated panel at the points marked "HOLD HERE." Care should be used to keep stray capacity and hand capacity to the frequency meter at a minimum for most accurate frequency measurements.

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