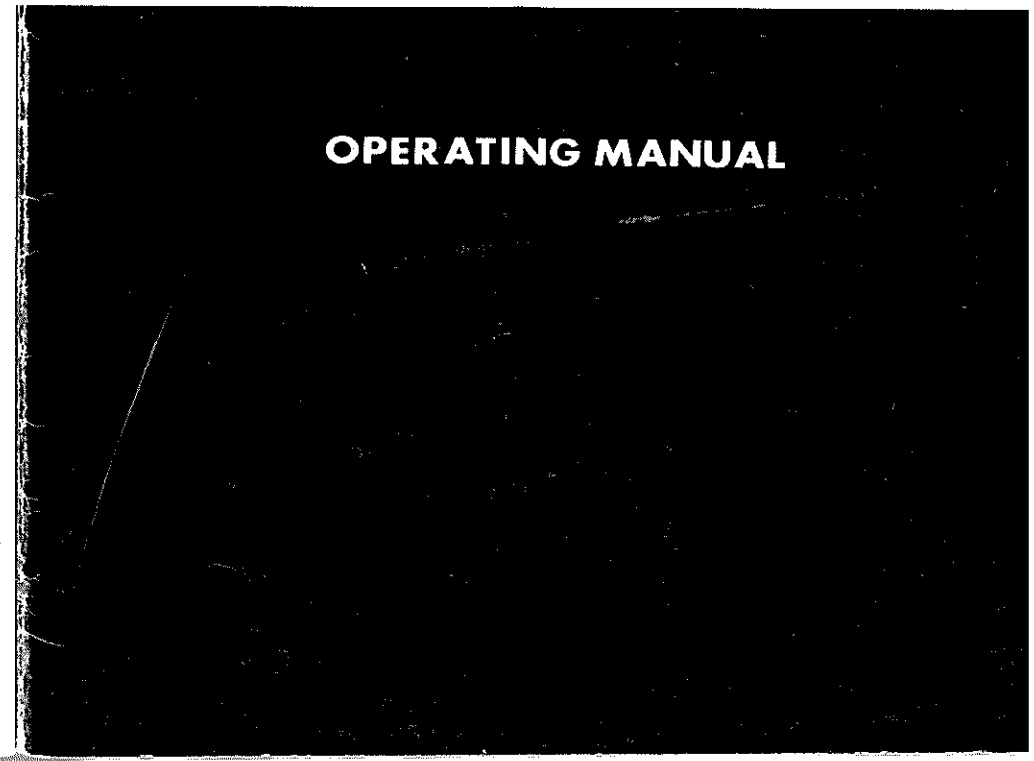
SM3UKE

TRADIPER

MODEL TE-15



Printed in Japan

GENERAL

You are now the proud owner of the Model TE-15 Transistorized Grid Dip Meter which is a (highly and a very accurate) instrument operating from a 9 volt battery power supply. Six plug-in coils are supplied with each unit, covering the frequency range of 360 KHz to 240 MHz.
The Model TE-15 can be used for a number of useful purposes. With the most common use as a Grid Dip Meter, can also be employed as a relative field strength meter. It is ruggedly constructed and very light in weight. Because of transistorized circuit employed there is no need for an AC power supply as used in many other models. The Model TE-15 will certainly prove invaluable to the engineers, ham operatorsand the servicemen.

OPERATING FEATURES:

In order to obtain the optimum results using the Model TE-15 a good thorough undorstanding of each feature and its purpose is very essential. We suggest here that you should read the manual very carefully before actually begin operating this unit.

1. FREQUENCY DIAL

The dial is divided into six separate scales as shown below.

a. Band A ····· 440 KHz — 1.3MHz
b. Band B ····· 1.3MHz — 4.3MHz
c. Band C ····· 4MHz — 14MHz
d. Band D ····· 14MHz — 40MHz
e. Band E ····· 40MHz — 140MHz
f. Band F ····· 140MHz — 280MHz

Each scale is accurately calibrated in its range and the coded marking corresponds with the code marking on the plug-in coil. The knob which is located is the upper part of the unit is the tuning dial knob, and by moving the knob it permits the dial to be rotated for the frequency indication you want. A red hairline on top of the dial will give you a precise and accurate reading.

2. SENSITIVITY CONTROL AND ON-OFF SWITCH

This cotrol switch (marked "OFF" and "SENSITIVITY") powers the units when it is moved from the "OFF" position. Adjust the knob and keep the meter needle at "SET" position.

Note; It you adjust meter needle at the out of "SET" position, Frequency accuracy is bad.

3. COIL SOCKET

A four pin X'tal socket located on top of the Model TE-15 is providcd for the insertion of the six coils that are supplied with this set.

Note; Always be sure to insert the coil with the code marking facing towards you. Although, the coil are encapsulated, exercise great care during the measurements around livepower circuits or where there are high RF potential circuits. Do not allow the case of the unit to come into contact with energized equipment.

4. CHIEF APPLICATIONS

The Model TE-15 may be used for a variety of purposes which could not be fully covered in this manual. We recommend that you ask your dealer or distributor to recommend a book on the finer points of the Grid Dip Meter.

a. Measuring the tuning frequencies.
b. Oscillating frequency circuit to be measured without oscillation.
c. Earphone monitoring-heterodyne frequency meter.
d. Frequency meter.
e. Substitution as a test oscillater.
f. Relative field strength meter.
g. For many other practical uses.

OPERATIONAL PROCEDURES:

A. MEASURING THE RESONANT FREQUENCY OF A TUNED CIRCUIT

1. Select the coil whose range includes the approximate frequency of the circuit. Insert the coil into the X'tal socket on top of the Model TE-15.
2. Turn on the sensitivity knob from "OFF" position to clockwise.
3. Adjust sensitivity knob and keep the meter needle at the "SET" position.
4. Place the coil close to the tuned circuit being measured and rotate the control asharp dip is noted on the meter. Then increase the distance of the coil from the tuned circuit until the dip is hardly noticeable. Recheck for a dip, and then read the frequency indicated

on the appropriate scale. This is the frequency to which the tuned circuit is presently set. If you wish to adjust a variable tuned circuit to a specific frequency, simply set the Model TE-15 to the required frequency and adjust the variable element to the tuned circuit until a dip is observed on the Model TE-15.

Note; Be careful not to place the grid-dip meter excessively close to the resonant circuit, as the measuring accuracy may be affected. During measurements, power should be removed from the circuit being measured.

CAUTION

Even if the TE-15 is not approached to the set under test. you will happen to see the needle dipped. It is called as "False Dip." When measuring, you can identify the false dip by increasing the distance between the unit and the set under test, i. e., if the needle still remains dipped, it is the false dip. However, if the needle resets by leaving the set under test, it is supposed to be the actual dip.

B. OSCILLATING FREQUENCY MEASUREMENT

1. When measuring oscillating frequency, the instrument will function as a variable frequency oscillator, a meter in the grid circuit provides an indication of oscillator activity.
2. If the coil of the TE-15 is placed to a tuned circuit being measured and both are tuned to the same frequency, energy absorbed from the tank circuit will cause a reduction or dip in meter reading.
3. Maximum grid-dip thus occurs when the TE-15 is tuned to exactly the same frequency as the external tuned circuit.
4. This procedure in used to determine the resonant frequency of various tuned circuits such as traps, chokes, tank circuit, IF circuit, RF circuits and filters.
5. With the earphone plugged into the phone jack, the oscillator is now converted into an oscillating detector. The TE-15 can then be used to determine the frequency of an RF source by heterodying or "ZERO-BEATING" the oscillator signal with the signal from the RF source.

C. MEASURING THE HETERODYNE FREQUENCY

1. Insert earphone to jack marked "PHONES" on the TE-15.

2. Place the coil near the oscillating circuitand gently rotate the dial.
3. When the frequency varies of the oscillator and the grid-dip meter are harmonic, beating can be heard.

D. USING THE TE-15 AS A SIGNAL GENERATOR

1. The TE-15 can be used as a signal source for preliminary of receivers. A general outline how to use it is given below.
2. Select the coil whose range covers the desired frequency. Plug c into the unit.
3. Set dial on the TE-15 to the required frequency.
4. The amount of pick-up by the receiver is varied by adjusting the position or distance of the TE-15. Since the output signal is unmodulated, a VTVM is necessary for indicating the proper alignment of the tuned circuit. If the receiver is equipped with an "S-Meter" which operates from an AVC circuit, a VTVM will not be required, proper indications then being obtained on the "S-Meter"

E. USING THE TE-15 AS A RELATIVE FIELD STRENGTH METER

1. The TE-15 can be used to measure the relative field strength of nearby RF sources. Select the coil whose range includes the approximate frequency of the RF source.
2. Switch Sensitivity control to "ON" position, and rotate control so that meter needle is 5% of full scale.
3. Place the coil close to the RF source and rotate the tuning control for maximum indication on the meter. Reduce the setting of the sensitivity control if readings are too great. The frequency of RF source can then be read from the TE-15 dial. In addition, adjustment may be made at the RF source, the change in output being observed on the TE-15 meter.

As a relative field strength meter, the TE-15 will be useful in checkimg transmitter output, neutralization, harmonics, parasitic analysis, and investigation of standing waves on open transmission lines.

F. MEASURING THE COIL INDUCTANCE AND CONDENSER CAPACITY

1. To measure coil inductance, make a resonant circuit with a known condenser capacity.
2. Place TE-15 near to the resonant circuit under test and read the frequency scale on the dial.
3. You now have the coil capacitance of the resonant circuit. By using the following equation, the inductance can be obtained.

$$f = \frac{1}{2\pi\sqrt{LC}}$$

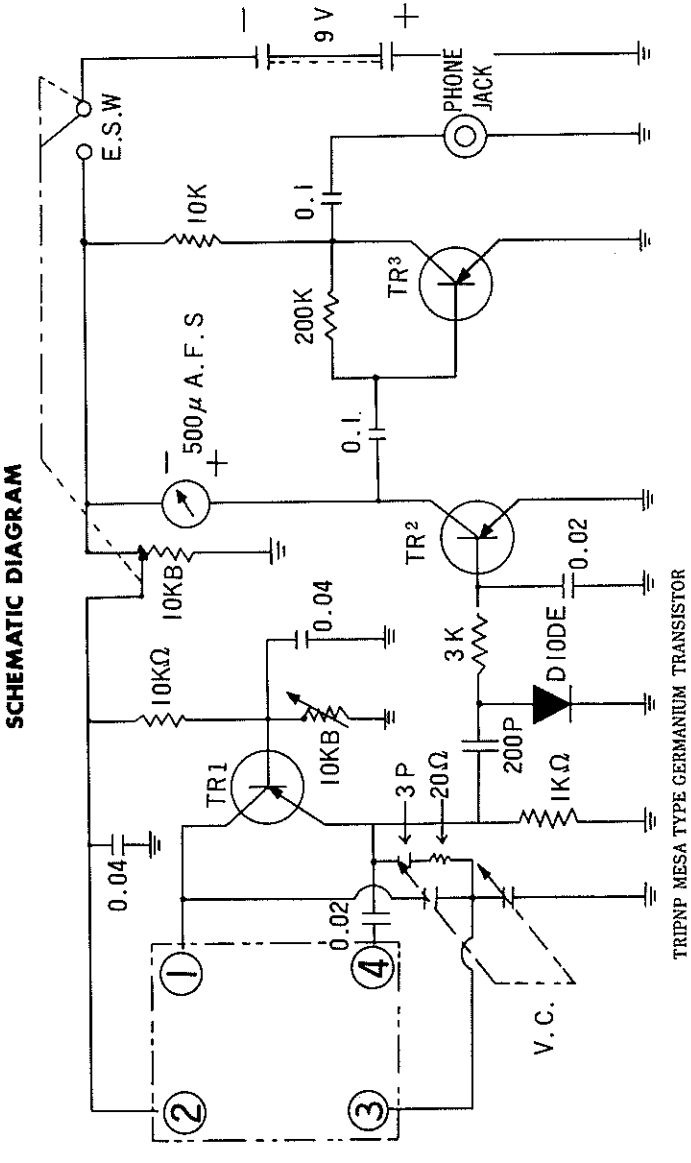
4. To measure the condenser capacity, make a resonant circuit with a known coil inductance.
5. Place the TE-15 near to the resonant circuit under test and read the frequency scale on the dial.
6. You now the condenser capacity of the resonant circuit. By using the capacitance can be obtained.

$$f = \frac{1}{2\pi\sqrt{LC}}$$

G. MEASURING THE "Q" OF THE RESONANT CIRCUIT

1. To measure the "Q" of the resonant circuit, connect RF VTVM to circuit.
2. Place the TE-15 close to the resonant circuit and rotate the control until a sharp dip is observed on the meter. Read scale on the dial. Note the reading down on paper.
3. Then, read and note the voltage indication the VTVM.
4. Gently rotate tuning dial knob of the TE-15 until the voltage indication of the YTVM is 70% of the value.
5. Again read tuning dial knob of the TE-15 until frequency scale.
6. Take the frequency readings you have obtained and the follo - wing equation is observed. f_1

SCHEMATIC DIAGRAM



TRIPNP MESA TYPE GERMANIUM TRANSISTOR
TR2, TR3, PNPTYPE ALLOY-JUNCTION GER. TRANSISTORS.
DIODE POINT CONTACT GER. DIODE.
V. C. MITUMI PVC-25.
BATTERY BL-006P.