LAFAYETTE

TE-18

GRID DIP METER

OPERATING MANUAL

GENERAL

The Lafayette Model TE-18 Grid Dip Meter is a highly sensitive and accurate test instrument operating from a power source of 105–120 volts, 50–60 cycles AC. Eight color-coded plug-in coils are supplied with each unit, covering the frequency range of 360 Kc to 220 Mc. Each of the eight coils is plastic encapsulated and coded by means of a colored vinyl band which is matched by a similar color on the appropriate scale of the calibrated dial. In addition, a chart is provided on the container for the coils which clearly outlines the coding system used for frequency coverage.

The TE-18 may be used for a number of purposes. Most commonly, however, it is employed as a grid-dip meter and relative field strength meter. Ruggedly constructed and light in weight, the TE-18 will prove invaluable to the engineer, ham operator and serviceman.

OPERATING FEATURES

A good understanding of each feature and its purpose is essential if optimum results are to be obtained with this instrument. If you are unfamiliar with this type of unit, we suggest that you read all the instructions very carefully.

FREQUENCY DIAL

The dial is divided into eight separate scales. These are as follows:

Band A (Black dot)·····0.36–0.62 Mc.
Band B (Brown dot) ·····0.62–1.3 Mc.
Band C (Red dot) ·····1.3–3.0 Mc.
Band D (Orange dot)·····3.0–7.0 Mc.
Band E (Yellow dot)·····7.0 16.5 Mc.
Band F (Green dot) ·····16.5–38 Mc.
Band G (Blue dot)·····38–90 Mc.
Band H (White dot) ·····90–220 Mc.

Each scale is accurately calibrated in its range and is marked with a letter and a colored dot which corresponds to the coding found on the plug-in coil. The thumb-actuated tuning control which is located on the right side of the TE-18 permits the dial to be rotated for frequency indication. A hairline drawn vertically beneath the dial glass permits an accurate and precise reading to be taken.

METER

The instrument is equipped with a sensitive 0–500 micro-ampere meter, the meter scale is calibrated in increments of 50, permitting

readings of 50, 100, 150, 200, 250, 300, 350, 400, 450 and 500 microamperes.

SENSITIVITY CONTROL

This control provides a means of adjusting the meter to a suitable scale reading - - usually about mid-scale. Movement to the right increases the sensitivity of the TE-18 while movement to the left decreases it.

ON/OFF SWITCH

This slide switch powers the unit when placed in the ON position. The TE-18 should be plugged into a 105-120 volt, 50-60 cycle AC source only.

OSC/DIODE SWITCH

when this switch is placed in the OSC position, the instrument functions as a variable frequency oscillator, a meter in the grid circuit providing an indication of oscillator activity. If the coil of the TE-18 is placed close to the tuned circuit being measured and both are tuned to the same frequency, energy will be absorbed from the tank circuit, causing a reduction or "dip" in meter reading. Maximum grid dip thus occurs when the TE-18 is tuned to exactly the same frequency as the external tuned circuit. This procedure is used for finding the resonant frequency of various tuned circuits such as traps and circuits such as traps and chokes,tank circuits, IF circuits, RF circuits and filters, etc.

With earphones plugged into the p one jack, the oscillator is converted into an oscillating detector. The TE-18 can then be used to determine the frequency of an RF source by heterodyning or "zero-beating" the oscillator signal with the signal from the RF source.

In the DIODE position, the instrument functions as an RF pick-up device where the meter deflection is proportional to the signal picked up by the coil. All readings obtained are relative only. In this mode, the TE-18 functions as an absorption wave-meter and can be used to indicate the frequency and relative strength of nearby RF sources.

With phones plugged in, the meter is disconnected and the user can monitor the modulation on the signal from an RF source.

COIL SOCKET

A socket at the top of the TE-18 is provided for the insertion of any one of the eight coils supplied. Although four holes are provided in this socket, only three contain contacts. ALWAYS INSERT A COIL WITH THE CODE LETTER FACING YOU WHEN VIEWING THE TE-18 FROM THE FRONT. It is possible to insert the coil in the reverse position, but this is incorrect.

GENERAL OPERATING PROCEDURE

WARNING

Although the coils are encapsulated, exercise extreme caution during measurements around live power circuits or where there are high RF potential circuits. Do not allow the case of the unit to come into contact with energized equipment.

USING THE TE-18 AS A CRID DIP METER

The grid dip meter can be used to determine the resonant frequency of a tuned circuit. The method used is as follows:

1. Select the coil whose range includes the approximate frequency of the tuned circuit. plug the coil into the TE-18.
2. Set the OSC/DIODE switch to OSC.
3. Switch the TE-18 on and allow 10 minutes for the unit to warm up.
4. Rotate the SENSITIVITY control for approximately mid-scale meter reading.
5. Place the coil close to the tuned circuit being measured and rotate the TUNING control until a sharp dip is noted on the meter. Then increase the distance of the coil trom the tuned circuit until tht dip is barely noticeable. Recheck for a dip and 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 TE-18 to the required frequency and adjust the variable element of the tuned circuit until a dip is observed on the TE-18.

   NOTE: During these measurements, power should be removed from the circuit being measured.

USING THE TE-18 AS A RELATIVE FIELD STRENGTH METER

In this mode, the TE-18 can be used to measure relative field strength of nearby RF sources.

1. Select the coil whose range includes the approximate frequency of the RF source.
2. Set the OSC/DIODE switch to DIODE.
3. Switch the TE-18 on and allow 10 minutes for the unit to warm up.
4. Rotate the SENSITIVITY control maximum clockwise.
5. 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 the RF source can then be read from the TE-18 dial. In iddition, adjustments may be made at the RF source, the change in output being observed on the TE- 18 meter.

As a relative field strength meter, the TE-18 will be useful in checking transmitter output, neutralization, harmonic and parasitic analysis and investigation of standing waves on open transmisston lines.

EARPHONE MONITORING

Eaphones may be used to monitor the modulation on an RF signal. Insertion of the phone plug disconnects the meter and allows the earphones to be used for the determination of hum and noise, distortion and quality Use high impedance earphones equipped with a miniature plug,

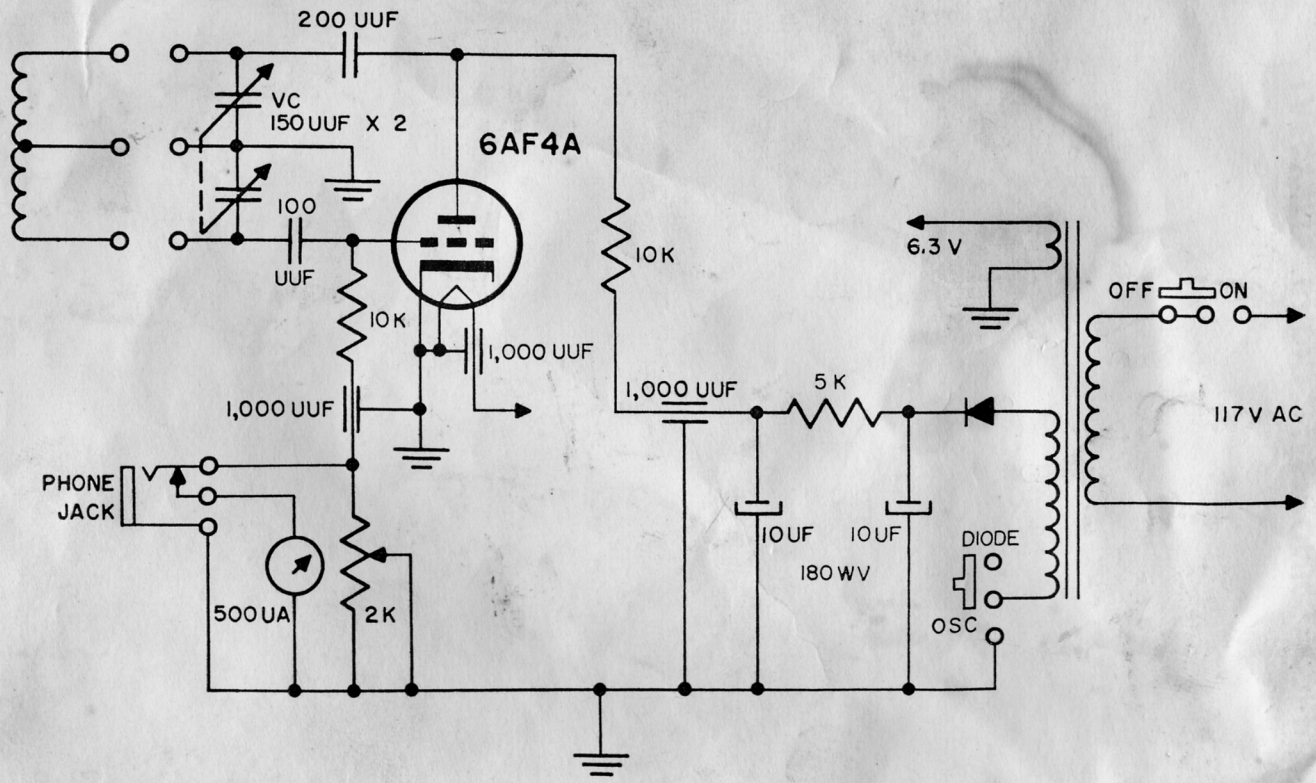
USING THE TE-18 AS A SIGNAL GENERATOR

The TE-18 can be used as a signal source for preliminary alignment of receivers. A general procedure is given below:

1. Select the coil whose range covers the desired frequency. Plug the coil into the TE-18.
2. Set the OSC/DIODE switch to OSC.
3. Switch the TE-18 on and allow 10 minutes for the unit to warm up.
4. Set the dial on the TE-18 to the repuired frequency.
5. The amount of pick-up by the receiver is varied by adjusting the position or distance of the TE-18. Since the output signal is unmodulated. a VTVM is necessary for indicating the proper alignment of the tuned chrcuits. If the receiver is equipped with an "S" metet which operates from the AVC circuit, a VTVM will not be required, proper indications then being obtained on the "S" meter.

APPLICATIONS

The TE-18 may be used for a variety of purposes, all of which could not be covered in detail in this manual. To receive maximum benefit from the use of this instrument we recommend that you obtain a book such as "How to Use Grid Dip Oscillators" by Rufus P. Turner (a Rider publication, Lafayette #BK-796). This book provides complete information on grid-dip oscillators plus a wide range of uses for units of this type.



SCHEMATIC DIAGRAM

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