



## SOLID-STATE DIPPER

The Millen No. 90652 Solid-State Dipper introduces a new dip oscillator with performance comparable to that of the best vacuum-tube grid dip meters previously available, but with the universal advantage of battery power which eliminates the power cord and provides a portability which is not restricted by the requirement for a-c power.

The operating features of the No. 90652 Solid-State Dipper include (1) a sensitive oscillator-dipper for checking resonant frequencies of non-energized resonant circuits, and (2) an absorption-type wavemeter with the oscillator circuit arranged to act as a Q-Multiplier Amplifier, providing both a sharp tuning response and great sensitivity. The frequency range of 1.7 to 300 Mc/s is covered by 7 plug-in coils, with some overlap between ranges. The lowest frequency coil (1.7 to 4.0 Mc/s) is wound on a powdered-iron core to increase Q and improve coupling to circuits being checked.

The circuit of the No. 90652 Solid-State Dipper is reliable and straight-forward, making use of standard semiconductor elements. The oscillator is a 3N128 MOS-FET in a Colpitts circuit. The r-f voltage across the tank circuit is rectified by 2-1N3604 diodes in a full-wave connection to develop a d-c voltage proportional to the r-f present in the coil. This d-c voltage is indicated by means of a JFET (2N5459) d-c amplifier on a rugged 1 ma. full-scale meter using a taut-band suspension. A suppressed-zero

system is used to enhance the sensitivity of the dip indication. Provision is made for the use of headphones to aid in detecting beats and in listening to any modulation which may be present on a signal. The meter-setting potentiometer incorporates an easily visible indicator to show whether the battery switch is ON or OFF.

The performance of the Millen No. 90652 Solid-State Dipper is equal to or superior to that of the previous standards of the industry, the Millen No. 90651-A and No. 90662-A Grid Dip Meters. In addition, it offers the convenience of self-contained battery power for complete portability.

The No. 90652 Solid-State Dipper is supplied in a convenient polypropylene carrying case with a complete set of coils and a 9-volt alkaline battery to provide instant operation. A 1/4"-20 tapped socket hole is provided for attachment of a wrist strap, or other retaining device to prevent dropping the dipper when using it in hazardous locations, such as on antenna masts for checking beam antennas.

**Size of Dipper** —  $7\frac{1}{4}$ "L x  $3\frac{1}{2}$ "W x  $3\frac{3}{16}$ "H

**Weight of Dipper** —  $2\frac{1}{2}$  Pounds with battery

**Size of Carrying Case With Dipper and Coils** —  $11\frac{3}{8}$ "L x  $5\frac{1}{8}$ "W x 4"H

**Shipping Weight** — 7 Pounds

**Price of Complete Unit** — \$110.00