

SECTION 1 GENERAL DESCRIPTION

1. PURPOSE AND APPLICATION

The Model 43 THRULINE Wattmeter is an insertion type RF wattmeter, designed to measure power flow and load match in 50-ohm coaxial transmission lines. It is intended for use on CW, AM, FM, and TV modulation envelopes, but not pulsed modes. The Model 43, when used in 50-ohm applications, has an insertion VSWR of less than 1.05:1 up to a frequency of 1000 MHz. The meter is direct reading in watts, expanded down scale for easy reading, and is graduated 25, 50, and 100 watts full scale. The power ranges used are determined by the Plug-In Elements, which fall in ten frequency band groups covering from 2 to 2300 MHz plus additional special Elements in various power and frequency ranges (see Section 4). Further characteristics may be found in the Summary Sheet on page A.

2. DESCRIPTION

The Model 43 THRULINE, Figure 1-1, is a portable unit contained in a die cast aluminum housing, with a formed metal enclosure on the back which is easily removed. Included with the unit is a leather carrying strap, four rubber shock feet on the base, and four rubber bumpers on the back, which allow the Model 43 to stand or lie flat when used. For additional protection, the microammeter is specially shock mounted. A slotted screw is provided on the lower front face of the meter for zeroing the pointer. Below the meter, the RF line section face protrudes slightly from the wattmeter housing with the Plug-In Element socket in the center.

A shielded cable connects the microammeter to the dc jack which is attached to the side of the RF line section casting. This cable, nearly three feet long, permits removal of the RF line section from the Wattmeter housing. Meter connections may be maintained with any installations outside of the hous-

ing. This permits permanent additional installations to be made. See Section 3, INSTALLATION.

Inside the dc jack assembly, there is a filter capacitor which shunts the meter circuit to prevent mis-readings caused by stray RF energy existing in the Plug-In Element. Mounted on the dc jack is a phosphor bronze spring finger, which protrudes through a lateral hole and into the Plug-In Element socket of the RF line section. The finger has a button on its end which mates with the contacts of the Plug-In Element. The nickel plated brass RF line section is precision made to provide the best possible impedance match to the coaxial RF transmission line in which the Model 43 is inserted. The ends of the line section are nested in mating slots to provide additional mechanical support.

At each end of the line section are Bird Quick-Change type RF connectors, which may be quickly interchanged with any other Bird "QC" connector by removing the four screws on the mounting flanges. The Wattmeter housing does not interfere with any connector changes.

To make measurements, the cylindrical shaped Plug-In Element is inserted into the line section socket and rotated against one stop. A small catch in the upper right hand corner of the casting face presses on the shoulder of the Plug-In Element to keep it in proper alignment and assure a good contact with the dc jack and between the lower edge of the Element and line section body. On diametrically opposite sides of the Plug-In Element body are contacts to provide dc pick-up in either direction. These contacts make connection with the spring finger of the dc jack only when the Plug-In Element is in the precise forward or reverse position, and with the index pin on the Element on the lower level of the line section casting face against its respective stop.