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HANDBOOK
INSTALLATION INSTRUCTIONS

VARIABLE MASTER OSCILLATOR TYPE 115 MODEL 1

(NORTHERN RADIO CO., INC.)

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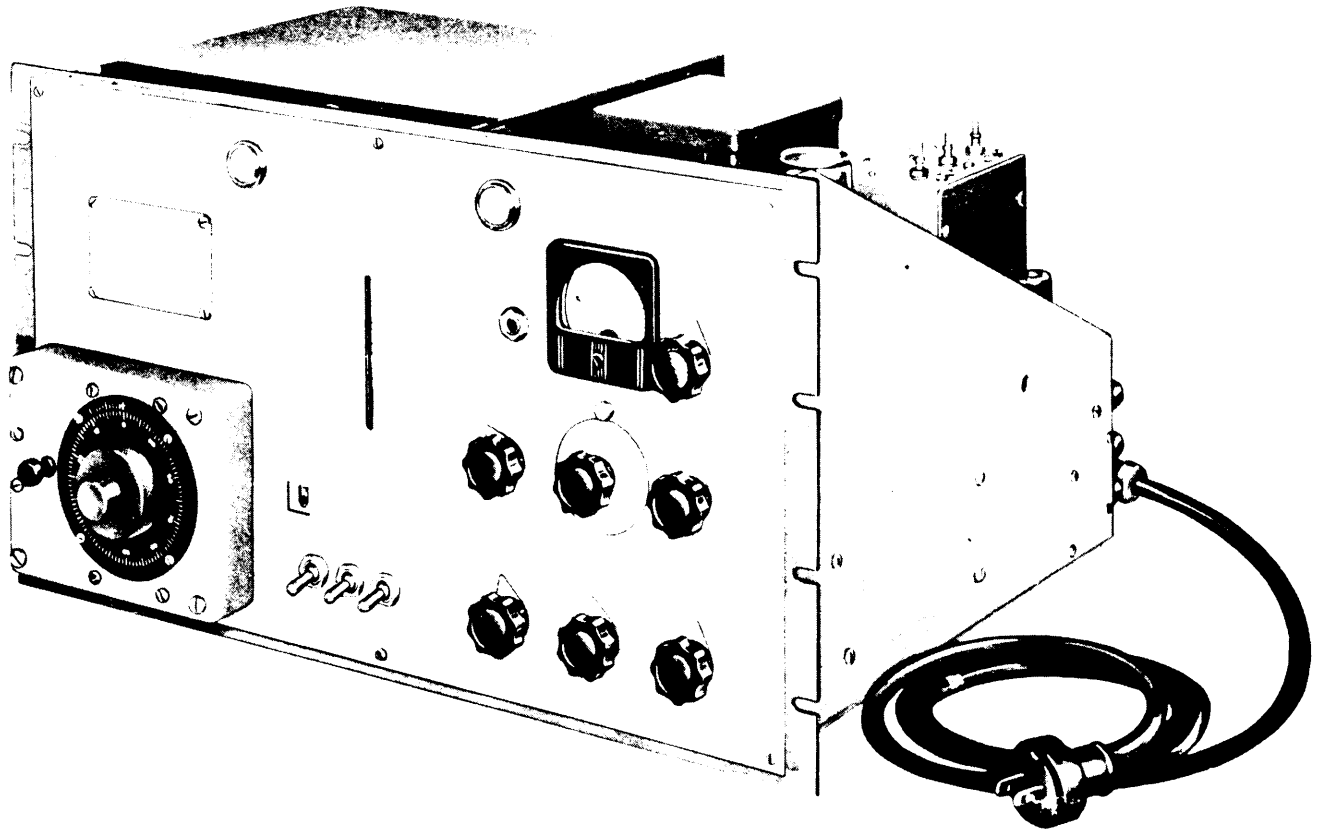

Figure 1-1. Variable Master Oscillator Type 115 Model 1

SECTION I
DESCRIPTION

1-1. SCOPE OF HANDBOOK.

1-2. This handbook covers the installation instructions for the Variable Master Oscillator Type 115 Model 1, manufactured by the Northern Radio Company, Incorporated, New York, N. Y. These instructions provide preliminary data for planning in connection with the installation of this equipment, a photograph of which is shown in figure 1-1.

1-3. PURPOSE OF EQUIPMENT.

1-4. The Variable Master Oscillator Type 115 Model 1 can be used for exciting a transmitter, for supplying local oscillator injection voltage to receivers, or for other applications where r-f signals are required for testing and measuring purposes.

1-5. GENERAL CHARACTERISTICS.

1-6. The variable master oscillator consists of a high-frequency variable or fixed (crystal) oscillator that can be operated in the range of two to four mc. The crystal frequencies can be any one of three preset frequencies within the range indicated.

1-7. In either case, whether a crystal or a variable frequency is used, the high-frequency oscillator output can be applied to a series of frequency multiplier tubes connected in combinations to yield frequencies in the range of two to 32 mc.

1-8. A separate low-frequency crystal oscillator, operating in the range of 450 to 475 kc, supplies a stable output that can be used in a receiver as the beat-frequency oscillator signal for the reception of CW signals.

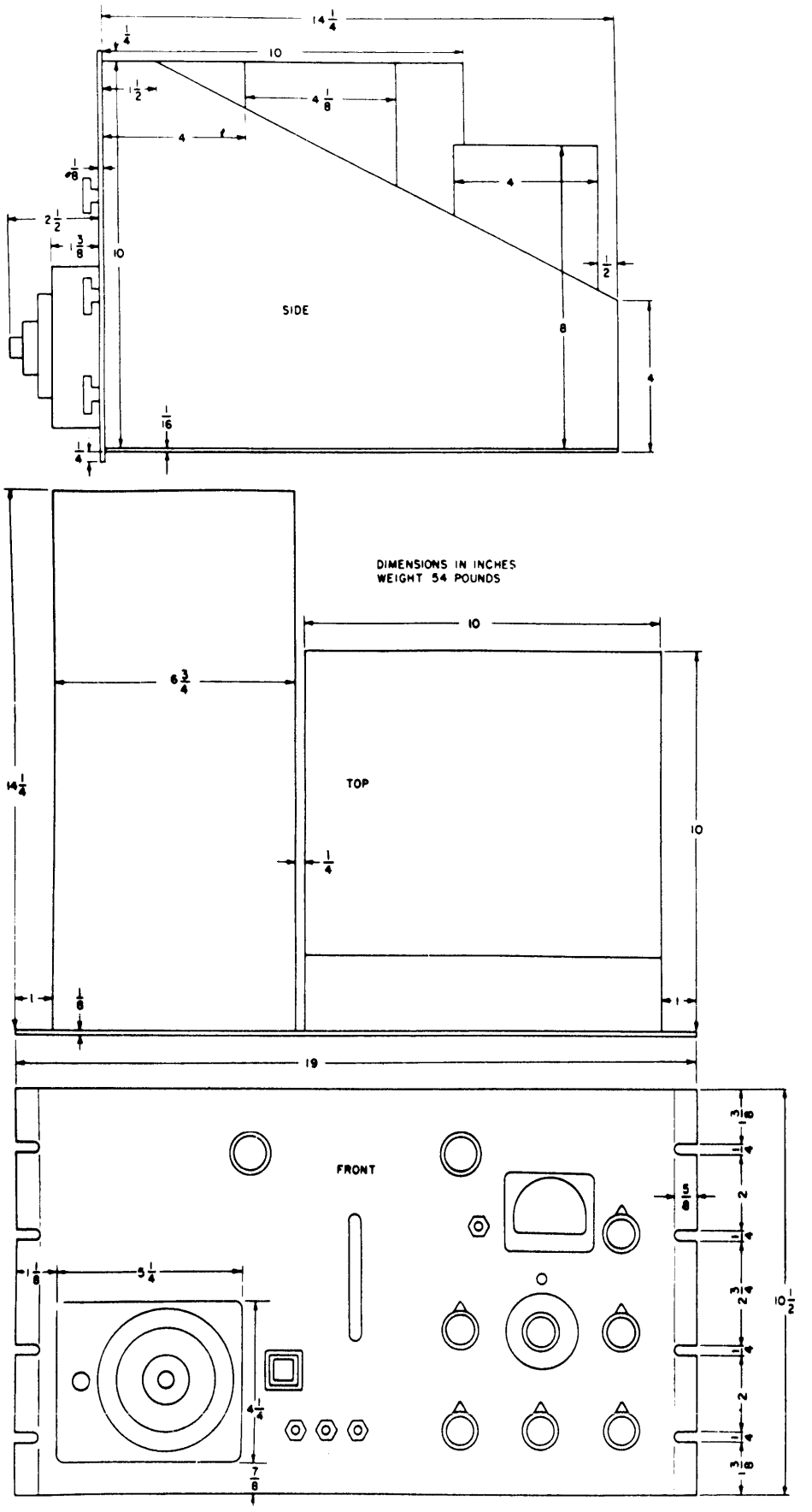

Figure 1-2. Variable Master Oscillator Type 115 Model 1, Outline Dimension Drawing

1–9. PHYSICAL CHARACTERISTICS.

1–10. The variable master oscillator is 10½ inches high, 19 inches wide, and 14 inches deep. It weighs 54 pounds.

1–11. The variable master oscillator is designed to be mounted in a standard 19-inch relay rack or other suitable mounting device. An outline dimension drawing of the equipment is shown in figure 1–2.

1–12. When packing or unpacking, it is important that this electronic equipment receive careful treatment. The variable master oscillator is packed in a wooden export packing crate. It should be kept in an upright position at all times. A nail puller should be used to remove the nails sealing the lid. At least three sides of the crate should also be removed with the puller. The use of a hammer or pinch-bar should be avoided.

CAUTION

The equipment is shipped with electron tubes in place. It is very important, therefore, to avoid mechanical shocks when unpacking and installing the equipment.

When cutting the tape and seals of the case liner, care should be taken to minimize damage to the inner container.

1–13. All packing material should be saved for later use.

1–14. The Variable Master Oscillator Type 115 Model 1 contains a three-section oven to control the temperature of the variable high-frequency oscillator, the buffer, and the calibrating oscillator-converter. An oven thermal control circuit is designed to maintain the temperature of the middle oven assembly at approximately 60° Centigrade (140° Fahrenheit). To prevent overheating in case the main thermostat or oven relay fails, an auxiliary thermostat takes over and the neon indicator light remains on continuously, indicating malfunction of the main thermostat.

1–15. Ambient temperatures should be in the range of 0 to 50° Centigrade (32 to 122° Fahrenheit).

SECTION II
OPERATIONAL DATA

2–1. GENERAL.

2–2. This equipment is designed to operate from a power source of either 110-volt, 50/60 cps, or 220-volt, 50/60 cps. The power consumption is approximately 200 watts.

CAUTION

The variable master oscillator is shipped wired for 110-volt, 50/60-cps operation. For 220-volt, 50/60-cps operation, wiring changes are necessary.

Note

Refer to applicable service instructions.

2–3. The output power is two watts at two to four mc, and 0.5 watt at four to 32 mc.

2–4. The stability of the high-frequency variable oscillator is at follows:

a. ±20 cps/mc for ambient change of ±25° Centigrade over the range of 0 to +50° Centigrade for any eight-hour period.

b. Five cps/mc for 10 percent line voltage change.

c. The resettability is 20 cps/mc to the previously calibrated frequency.

SECTION III
INSTALLATION

3-1. GENERAL.

3-2. The variable master oscillator is designed to be mounted in a standard 19-inch relay rack or other suitable mounting device. Standard hardware is used for mounting. No special tools are needed.

3-3. Adequate space, preferably six feet or more, should be provided at the front and rear of the equipment for routine maintenance and check. Moreover, the area should be well ventilated to provide adequate circulation of air in and about the equipment to avoid overheating of circuit elements.

3-4. Availability of a nearby source of a-c power is essential.

3-5. If the variable master oscillator is installed in the standard 19-inch rack along with other equipment, it is usually desirable that the rack be securely bolted to the floor. Where much weight is involved, consideration must be given to safe floor load limits.

3-6. Interconnections and cabling will be made as determined by the particular operating requirements and arrangements of other units present.

3-7. All tubes are shipped in place. Each tube socket should be inspected to see that the proper tube is firmly seated in it. The equipment should be inspected to determine that there are no bent or cracked controls, connectors are properly inserted, and fuses of correct value are in place.

3-8. Connections to other equipment should be made by using coaxial leads from the fittings provided at the rear of the chassis. Generally, no special tools are necessary. An Allen wrench is packed with the equipment to provide access to the set screws on the flexible coupling located between the oven and the front panel.

SECTION IV
TABLE OF COMPONENTS

4-1. GENERAL.

4-2. The equipment consists of Variable Master Oscillator Type 115 Model 1, and the special Allen wrench mentioned in foregoing paragraph 3-8.

4-3. COMPONENTS REQUIRED BUT NOT SUPPLIED.

4-4. An RF cable of suitable length for the installation is required as shown in figure 3-3 of the Handbook of Service Instructions, AN 16-45-399. Three 83-1SP coaxial connectors are supplied with this oscillator, for use in making up the cable. See paragraph 3-9 of the Handbook of Service Instructions, AN 16-45-399.