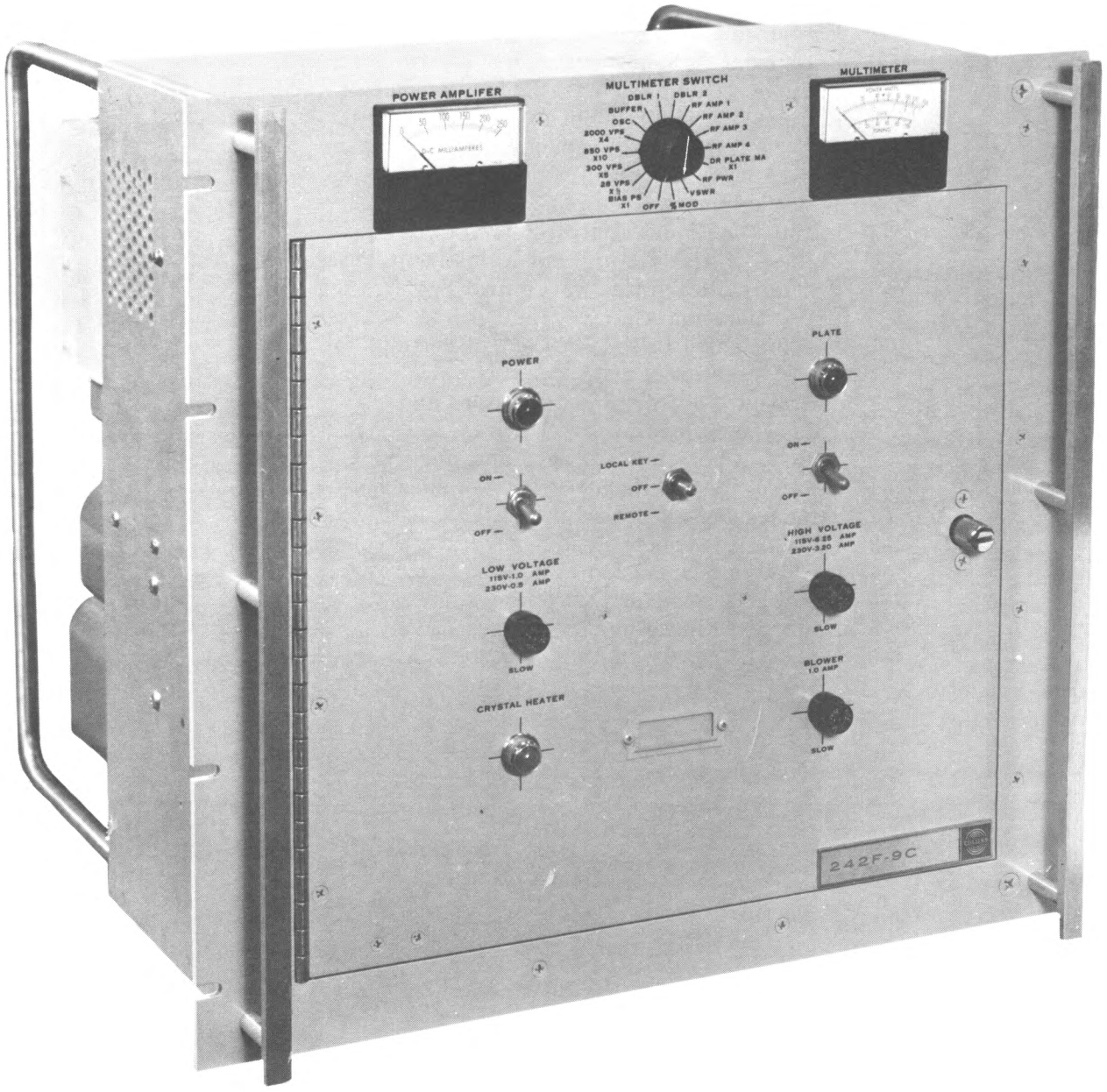

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Figure 1-1. 242F-9C VHF/UHF Transmitter.

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ASSIGNED TO (JOB TITLE)	LOCATION

REV. NO.	REVISION DATE	INSERTION DATE	BY	REV. NO.	REVISION DATE	INSERTION DATE	BY
3rd Ed	5 April 68						
1	1 July 69						

SERVICE BULLETIN LIST

SERVICE BULLETIN NO.	SUBJECT	MANUAL ED/REV NUMBER	MANUAL REVISION DATE
1	Improved personnel safety protection.		3-15-68
2	Diode removal and spark gap addition for increased reliability.		6-17-68
3	Replacement of screws in the PA tuned cavity.		6-17-68
4	Reduction of transistor failure rate.		10-25-68

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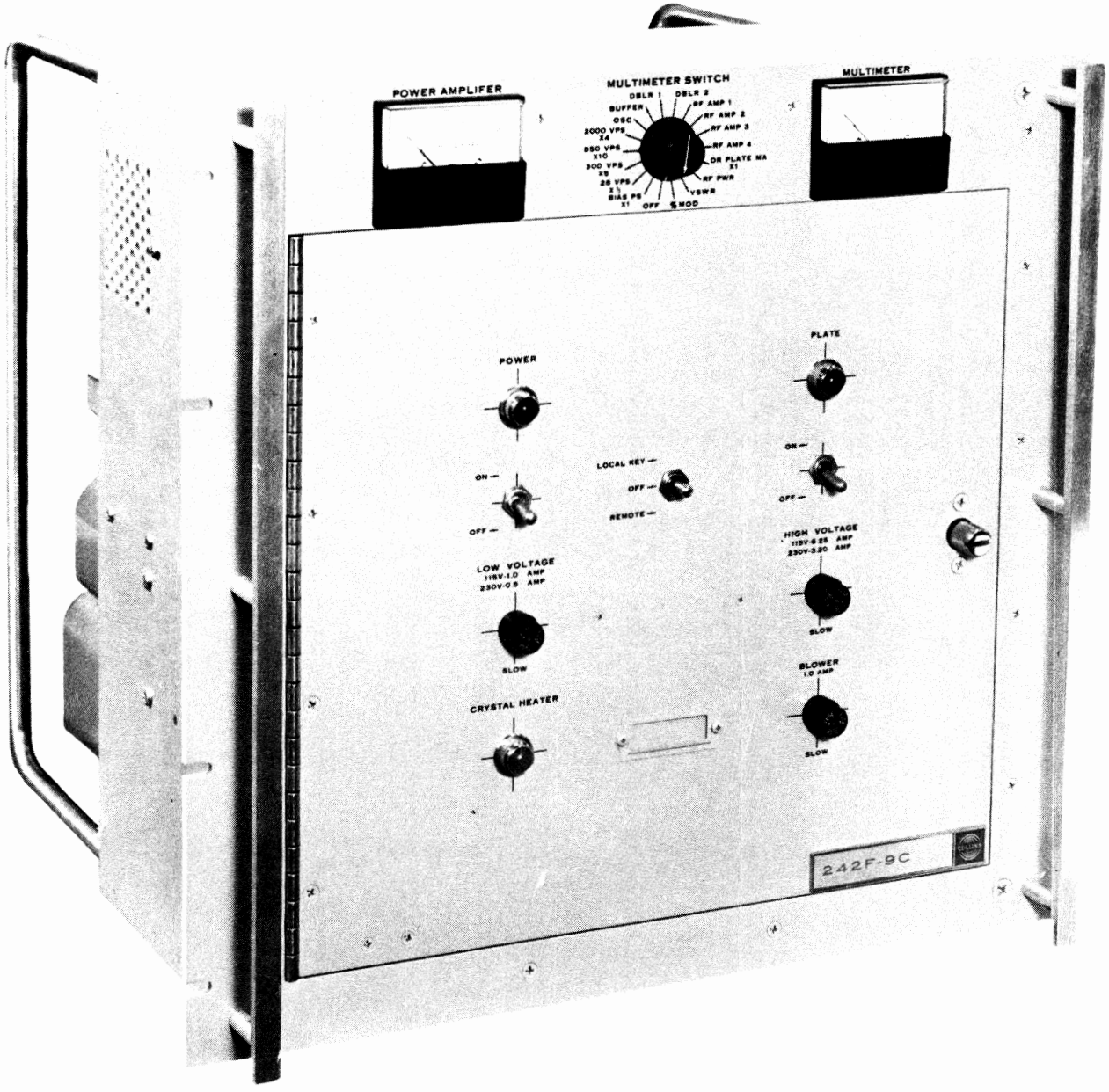

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Figure 1-1. 242F-9C VHF/UHF Transmitter.

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1.4 EQUIPMENT REQUIRED BUT NOT SUPPLIED

Table 1-4 lists the equipment required but not supplied with each transmitter.

1.5 EQUIPMENT SPECIFICATIONS

Table 1-5 lists the specifications for the 242F-9C.

Table 1-4. Equipment Required But Not Supplied.

EQUIPMENT	FUNCTION	DESCRIPTION
Crystal, CR-65/U	Determines the transmitter output frequency	HC-6/U holder
Microphone	Local voice operation	Low impedance carbon type with a 3-wire circuit or transistorized, dynamic, carbon microphone replacement, Turner A25338A, Collins 020-0200-000
Antenna transmission line	Connects transmitter rf output to antenna	Coaxial with 50-ohm impedance, RG-213/U, Collins 425-0952-000

Table 1-5. 242F-9C VHF/UHF Transmitter Specifications.

CHARACTERISTIC	SPECIFICATION
Rf power output	50-watt carrier power at 90% modulation.
Vhf frequency range	116 to 152 MHz.
Uhf frequency range	225 to 400 MHz.
Frequency stability	±0.0014% using internal tuning circuit.
Channels	1.
Oscillator	Crystal controlled with CR-65/U type crystal (±0.001% tolerance). An external oscillator may be used in place of the internal oscillator.

Table 1-5. 242F-9C VHF/UHF Transmitter Specifications (Cont).

CHARACTERISTIC	SPECIFICATION
Harmonic attenuation	Not less than 80 db down from carrier.
Rf intermodulation	
Vhf	At least 55 db below carrier.
Uhf	At least 50 db below carrier.
Undesired radiation	Not more than 45 db above 1 microvolt, 25 to 440 MHz. Not more than 50 db above 1 microvolt, 440 to 1000 MHz.
Modulation	Low-level, up to 90%.
Audio input	600 or 150-ohm balanced inputs, -15 to +10 dbm, low impedance microphone.
Audio response	
Narrow band	±1.5 db, 300 to 3000 Hz; -15 db, 10 kHz.
Wide band	±3 db, 100 to 20,000 Hz.
Audio limiting	Not more than a 3-db increase in modulation percentage with a 20-db increase in audio input.
Audio distortion	Not more than 10% with a 50-watt output.
Carrier rise/fall time	Not more than 35 milliseconds.
Noise level	Not less than 50 db below 90% modulation.
Carrier shift	Not more than 10%.
Weight	94 pounds.
Temperature	-10 to +60 °C (+14 to +140 °F).
Humidity	0 to 95%.
Power source requirement	115 or 230 volts, 50 to 60 Hz, single-phase. (Units are factory wired for 115 vac.)

section 2
installation

2.1 GENERAL

This section contains information pertaining to the installation of the 242F-9C VHF/UHF Transmitter. This information includes initial procedures for turning on and aligning the transmitter. Also included are procedures for converting the modulator from narrow to wide audio band operation, and for converting a vhf to a uhf transmitter and vice versa.

2.2 UNPACKING

Carefully unpack the 242F-9C. Open the front panel door and inspect the interior areas for evidence of breakage, damage, or connections which may have worked loose during shipping. Inspect all components on the front and rear portions of the transmitter for breakage and damage. Check all switches and controls for freedom of movement. Any claim for damage should be filed promptly with the transportation company. If a claim is to be filed, the unit must be repacked in its original shipping container.

2.3 AC POWER CABLE

If the 242F-9C is to be used with a 115-volt ac power source, the power cable supplied with the transmitter should be used (refer to tables 1-1 or 1-2). The 242F-9C also has the capability of being powered from a 230-volt ac power source. To use the 230-volt ac power source, the following procedure should be performed:

Caution

Under no circumstances should the transmitter be connected to a 230-volt ac power source when the transmitter power supplies are wired for 115 volts ac.

a. Remove parallel-connected jumpers on transformers T401 and T402 and install jumpers for series connections. Refer to figure 2-1.
b. Replace the 115-volt ac fuses on the front panel door with appropriate 230-volt ac fuses.
c. If necessary, replace facility outlet connector on furnished power cable with a standard 230-volt ac connector.

2.4 EXTERNAL OSCILLATOR

The 242F-9C has an internal crystal oscillator. If the customer desires to use an external oscillator (HP-606 or equivalent, 50- to 100-mv level) instead of the crystal oscillator, the following procedure should be performed:

a. Remove crystal oven from oscillator-doubler module.
b. Connect rf cable from external oscillator to AUXILIARY OSCILLATOR INPUT jack J12 on oscillator-doubler module.

Note

If the external oscillator cable connector does not mate with J12, the furnished mating connector may be used. Refer to figure 2-2.

2.5 INSTALLATION

The 242F-9C is designed to be mounted in a standard 19-inch relay rack. Refer to figure 2-3 for the vertical and depth requirements. Careful consideration should be given to the placement of the transmitter, particularly with regard to the power line source, antenna location, servicing access area, and ventilation. Because the transmitter uses forced-air cooling, it should be located in an area having a

reasonably clean environment. The transmitter should be placed as close as possible to the antenna to prevent excessive losses in the coaxial cable connecting the transmitter to the antenna. The ambient equipment temperature should not exceed +60 °C (+140 °F) in order to prolong component life.

2.6 ANTENNA TRANSMISSION LINE

The antenna transmission line should be connected to RF OUTPUT jack J11.

Note

If the antenna transmission line connector does not mate with J11, the furnished connector may be used instead. Refer to figure 2-4.

2.7 INITIAL TUNING AND ADJUSTMENT PROCEDURES

2.7.1 General

After the 242F-9C has been installed in its operating position, certain tuning and adjustment procedures must be performed. These tuning and adjustment procedures consist of checking the power supply outputs, adjusting the driver and power amplifier bias supplies, tuning the rf stages, and adjusting the modulator circuit. However, before beginning the tuning and adjustment procedures, determine whether narrow audio band or wide audio band modulation is to be used (reference paragraph 2.8). Also determine whether the 242F-9C is to be operated as a vhf transmitter or as a uhf transmitter. Paragraph 2.9 provides the information on rf band conversion.

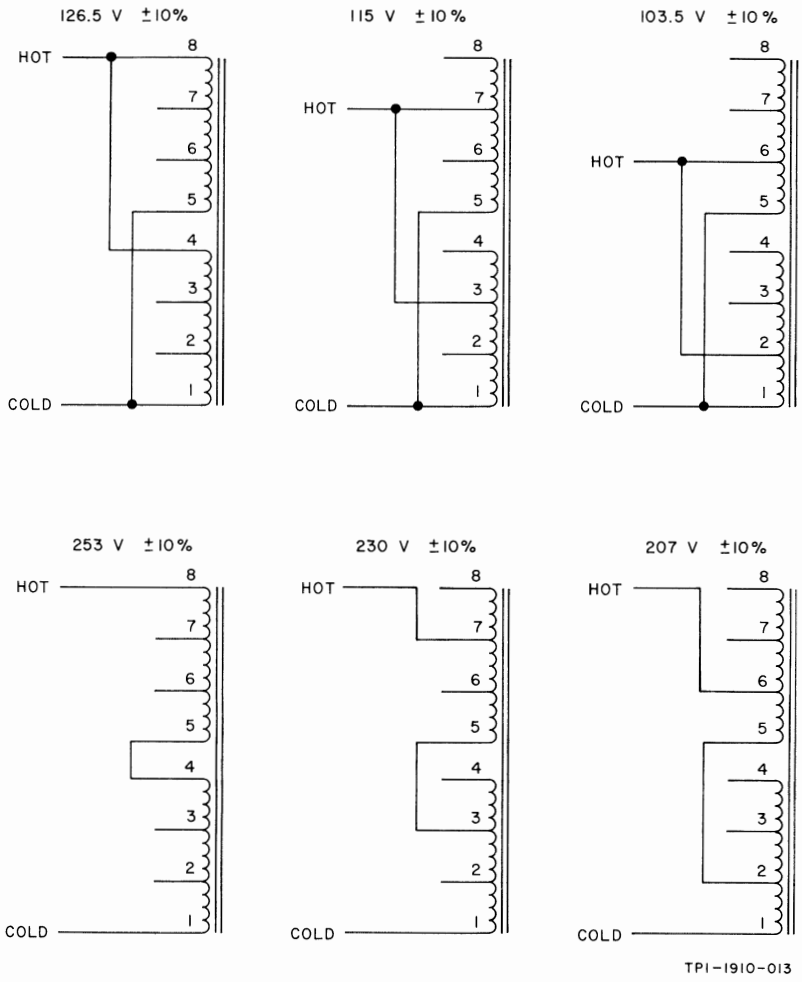

Figure 2-1. Power Supply Connections, T401 and T402.

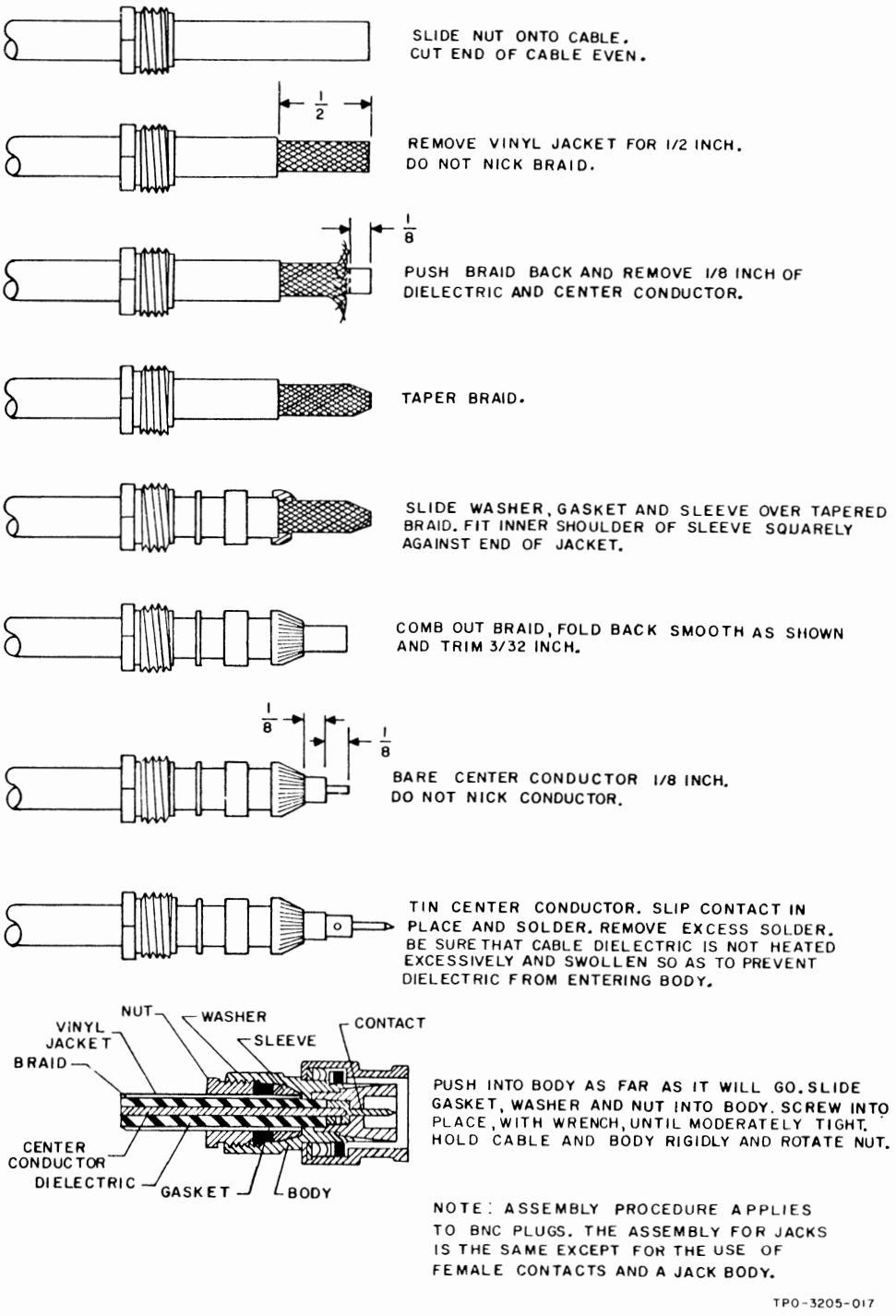

Figure 2-2. Assembly of BNC-Type Coaxial Connector.