# DC-TO-DC CONVERTER

# J87325

# OPERATING METHODS

## 1. GENERAL

**1.01** The J87325 dc-to-dc converter was designed to supply power to the third stage of the TD2 transmitter amplifier. It may, however, be used wherever its characteristics and design meet the requirements of the equipment with which it will be associated.

**1.02** This issue does affect the Equipment Test List.

**1.03** The power source for the converter is a +130 volt battery. A switching regulator converts the +130 volts dc to a regulated +48 volts dc. This voltage is then boosted to +475 volts by the converter. The output voltage to the converter is monitored for excessive high voltage by the high-voltage protection circuit. An output voltage in excess of 550±10 volts will automatically cause the power unit to shut down. It is also equipped to shut down should the 130-volt input decrease to a predetermined low value.

**1.04** This unit is designed to operate on dc voltages ranging from +110 to +140 volts. The −11±2 volts are supplied for the interlock circuit and the K1 relay. The interlock circuit interrupts the output voltage when the −11V is disconnected. The converter circuit will operate with a load current from 0 to 100 mA. The output voltage is nominally 475 volts with a 55 mA load. The output voltage is delayed by 60 seconds from the time the −11V and +130V appear at the input terminals.

**1.05** The converter is equipped with an alarm circuit and a fuse for overload protection.

**1.06** Routine checks should be made when they will cause the least service reaction.

**1.07** The instructions are based on circuit schematic drawing SD-81918-01. For a detailed description of the operation, see the corresponding circuit description.

## 2. LIST OF TOOLS AND TEST APPARATUS

| CODE OR SPEC NO. | DESCRIPTION |
|---|---|
| **TOOLS** | |
| — | 3-Inch C Screwdriver |
| **TEST APPARATUS** | |
| KS-14510 | Volt-Ohm-Milliammeter |

## 3. OPERATION

### Preparing to Start

**3.01** When preparing to put the converter in service, check that:

(a) All external connections are made in accordance with the schematic drawing covering the associated circuit of which the unit is a part.

(b) The correct size fuse is installed in the F1 fuse socket.

(c) The adjustments described in 4.06 have been performed on the converter.

### Starting

**3.02** To place the converter in service, connect the J1 plug.

**Stopping**

**3.03** To remove the converter from service, disconnect the J1 plug.

## 4. ROUTINE CHECKS

**4.01** The converter should be checked periodically in accordance with the Equipment Test List, after any trouble condition has been corrected, or if it has been out of service.

**4.02** Electrolytic capacitors should be maintained in accordance with Section 032-110-701.

**4.03** Circuit packs and semiconductor devices should be maintained in accordance with Section 032-173-301.

**4.04** Fuse alarms should be checked in accordance with Section 201-604-501.

**4.05** The J87325 converter is factory adjusted and should not require adjustment in the field. ***If the converter does not meet the requirements as stated in the routine checks and/or is defective, the defective converter must be replaced with a factory adjusted unit.***

**4.06** ***Output Voltage Check:***

(1) Connect the KS-14510 volt-ohm-milliammeter, set to the 60 VOLTS DC scale, to the OUTPUT pin jacks TP1 and TP2 (ground) on CP1. Allow several minutes for the tube load and converter to reach a thermal steady state.

***Requirement:*** The KS-14510 meter indicates 47.5±0.5 volts.

***Note:*** The reading taken at pin jacks TP1 and TP2 must be multiplied by 10 to obtain the true output voltage.

(2) If the requirement is not met, adjust the ADJ VOLT (R11) potentiometer as necessary until the voltage indicated on the volt-ohm-milliammeter is 47.5 volts.

***Note:*** No further adjustments should be made. All other potentiometers are factory adjusted and should not be adjusted in the field.

(3) Disconnect the volt-ohm-milliammeter.

**4.07** Check that ventilating passages are unobstructed.

## 5. TROUBLES

**5.01** Overload and fault protection is provided by fuse F1 connected at the input. Overvoltage protection is provided by the circuitry of Q1 and Q2 transistors on CP2. If the internal fuse (F1) operates, the trouble may be due to a short circuit or overload at the output, high output voltage, or a defective converter. In the event that the input voltage drops below a predetermined low, the K2 relay de-energizes to cause the switching regulator to become inoperative. When trouble occurs, it may be due to defective components on the circuit packs. No attempt should be made to replace or repair any circuit packs in the field. The entire converter should be replaced with a properly adjusted unit and the faulty unit should be sent to the factory for repairs.