

**MANUAL MOBILE RADIO**  
**BASE STATION TERMINAL EQUIPMENT**  
**B1 AND B2 VOGAD**  
**GENERAL TEST INFORMATION**

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**1. GENERAL**

**1.01** A vogad (voice operated gain adjusting device) does not require routine maintenance. Maintenance procedures for certain vogad components are provided in this section. Alignment and trouble location procedures for a vogad are in Section 404-203-501.

**1.02** This section is reissued to remove specific test information which is now provided in Section 404-203-501. Arrows normally used to indicate changes have been omitted.

**1.03** If a vogad is arranged for ac power operation using regulated tube rectifier J86207B L2 for the plate supply, the rectifier should be maintained in accordance with Section 169-603-302. The grid battery in the rectifier should be replaced when the voltage is less than 80 volts with the front panel control in a fully counterclockwise position.

**1.04** Vacuum tubes and polar relays should be tested first in case of trouble in a vogad. Tests should be performed with the vogad removed from service. In the case of a working vogad, a spare vogad should be patched in to maintain service.

**2. VACUUM TUBES**

**2.01** Four types of tubes are used in a vogad: 337A in sockets A1 and A2, 310A in sockets A3 and B1, 352A in sockets B2 and B3, and 262B in socket GD.

*Caution: Use approved tools and exercise care when removing and handling the tubes; there is a danger of implosion of glass tubes. Dispose of defective tubes so there will be no hazard to personnel.*

**2.02** Vogad tubes should be tested in an approved tube tester according to the instructions for that tube tester. If a vogad meets transmission requirements, the tube cathode-activity tests may be omitted.

**2.03** Tubes which have given satisfactory service for a period long enough to stabilize usually will continue to give satisfactory service for a prolonged period. There will be a normal gradual decrease in cathode current due to aging. Replacement of tubes strictly on a routine basis is not recommended.

**FILAMENT CURRENT**

**2.04** Check tube filament current or voltage according to whether the vogad is operated from dc or ac power.

**A. DC Operation of B1 or B2 Vogad**

(1) Connect a dc ammeter to the AMP FIL jack and to the GI FIL jack, in turn, to measure the current in the two filament circuits in the vogad.

*Note:* Select the proper scale to measure current at approximately 700 mA. Connect a

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2W27A cord to the proper terminals on the ammeter. Hold the ammeter at least six inches away from the metal frame of the bay so a true indication may be obtained.

- (2) Record the AMP FIL current and the GI FIL current values.
- (3) Observe the indication on the power board voltmeter and note the amount this voltage differs from 24 volts.
- (4) Correct the measured AMP FIL current and GI FIL current values by adding or subtracting 2.8 mA for each 0.1 volt difference between the actual voltage and 24 volts.

**Requirement:** The corrected values of AMP FIL and GI FIL current are between 580 and 700 mA.

- (5) Remove all test connections.

### B. AC Operation of B2 Vogad

- (1) Measure the ac voltage across vogad terminal B1 and B2 on the rear panel.

**Requirement:** 9.5 to 10.5 volts ac.

**Note:** The filament voltage is supplied from a 10-volt filament transformer. If the requirement is not met and the ac line voltage is near normal value, change taps on the external filament transformer to obtain a voltage as close as possible to 10 volts.

- (2) Remove all test connections.

### 3. POLAR RELAYS

**3.01** Two 209FA polar relays, designated GI and GM, are required in a vogad. These polar relays must be in the proper mechanical and electrical adjustment for use in a vogad. Polar relays can be tested and adjusted in a relay test set. Polar relay maintenance procedures are explained in Section 040-231-701. Spare adjusted

polar relays should be available to permit immediate replacement of suspected relays in case of trouble.

**3.02** Check that the polar relay sockets are firmly mounted and that the socket pins are not bent or missing. Check that each polar relay can be inserted without difficulty and that the relay seats properly.

## 4. OTHER COMPONENTS

### POTENTIOMETERS

**4.01** Perform the following steps, when required, to maintain the potentiometers.

- (1) Check that the connections make solid mechanical and electrical contact.
- (2) Remove the cover.
- (3) Clean the contact surfaces with an approved contact cleaner.
- (4) Apply a very thin coat of petroleum jelly to contact surfaces.
- (5) Replace the cover.

### SWITCHES

**4.02** Maintenance of the switches is limited to keeping the switches clean. Contacts may be burnished to clear trouble. Make a visual inspection during switch operation to reveal the need for further action.

### RESISTORS, CAPACITORS, COILS, AND WIRING

**4.03** Make visual inspection for evidence of damage, overheating, or arcing.

**4.04** Coils are subject to permanent damage if the cores are magnetized by excessive direct or alternating current through the windings. Ordinary buzzers and similar equipment should not be used for making continuity tests. Ohmmeters may be used to check the coil windings.