

SECTION V  
MAINTENANCE

5-1.            INTRODUCTION.

5-2.            This section provides information for servicing the Stereo 5 Console. Standard testing techniques for semiconductor devices apply to circuitry contained in this unit.

5-3.            Measure dc voltages with the same meter that will be used for maintenance. Record these voltages on the schematic for reference should troubleshooting be required.

5-4.            Do not remove or insert transistors on integrated circuits with power applied. The failure time for these devices is measured in microseconds and a momentary short is all that is required to damage them in some circuits. Observe polarities when installing new capacitors and diodes.

5-5.            PREVENTIVE MAINTENANCE.

5-6.            Preventive maintenance for this unit is limited to standard good housekeeping practices. Dust and dirt should be removed periodically. Using a soft brush, remove dust and dirt from power transformers, rectifiers, and other components that require heat dissipation for proper operation.

5-7.            CORRECTIVE MAINTENANCE.

5-8.            BIAS ADJUSTMENTS.

5-9.            The following bias adjustment should be checked when associated circuit components are replaced or component value changes are suspected.

5-10.           MONITOR OUTPUT AMPLIFIER. Refer to schematic 852 7854 001. In the left channel replace resistor 2R130, selecting a new component value to set the no-signal dc voltage across resistor 2R70 (or 2R71) to  $7.7 \text{ mV} \pm 2.5 \text{ mV}$ . In the right channel, replace resistor 2R131. Set the no-signal dc voltage across 2R79 (or 2R80) to  $7.7 \text{ mV} \pm 2.5 \text{ mV}$ .

5-11.           TROUBLESHOOTING.

5-12.           GENERAL TROUBLESHOOTING TECHNIQUES. When a malfunction occurs, the first step is to isolate the problem to a particular channel or amplifier. This is accomplished by noting which signal paths and controls affect the troublesome operation. Possibly, disconnecting certain input or output wiring will stop the malfunction, indicating a bad ground connection or shorted-load condition.

5-13.           If the trouble is in the console, the next step is to measure the dc circuit voltages. Check pin 6 of all integrated circuits for  $0 \text{ Vdc} \pm 50 \text{ mV}$ . Also, check audio output stages for  $0 \text{ Vdc} \pm 50 \text{ mV}$  at the test points

listed in table 5-1. A large variation in voltage (near dc power supply level) indicates a faulty integrated circuit. Low level voltages tend to indicate defective components such as coupling capacitors.

Table 5-1. Output Amplifier Test Points

<u>AMPLIFIER</u>	<u>TEST POINT</u>
Left audio output, 2Q1 and 2Q2	junction of 2R36 and 2R37
Right audio Output, 2Q3 and 2Q4	junction of 2R46 and 2R47
Left Monitor Output, 2Q5 and 2Q6	junction of 2R70 and 2R71
Right Monitor Output, 2Q7 and 2Q8	junction of 2R79 and 2R80
Cue Output, 2Q9 and 2Q10	junction of 2R88 and 2R89

5-14. **FAULT ISOLATION GUIDE.** The information contained in table 5-2. Fault Isolation Guide, is presented as an aid to troubleshooting. This table lists the most common trouble symptoms for this type of equipment and includes the probable cause and corrective action required.

Table 5-2. Fault Isolation Guide

TROUBLE SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
ALL CHANNELS AND FUNCTIONS INOPERATIVE.	<ol style="list-style-type: none"> <li>1. Power Supply ac line cord.</li> <li>2. Blown fuse, 3F1.</li> <li>3. Power transformer connections.</li> </ol>	<ol style="list-style-type: none"> <li>1a. Provide connection to 117 Vac (or 234 Vac) power source.</li> <li>2a. Check 3F1, replace if defective.</li> <li>3a. Determine that proper power connections for the primary of 3T1 are provided on terminal board 3T1. If operation from 117 Vac is desired, the jumper configuration should be as shown on schematic 852 7854 001. For operation from a 234 Vac source, connect the two primary windings in series. Refer to Transformer Diagram 816 7787 001.</li> </ol>
FUSE 3F1 BLOWS REPEATEDLY.	<ol style="list-style-type: none"> <li>4. Diode bridge open.</li> <li>5. Power transformer 3T1 defective.</li> </ol>	<ol style="list-style-type: none"> <li>4a. Check diodes 2CR11 and 2CR12. Replace if defective.</li> <li>5a. Check 3T1. Replace if defective.</li> </ol>
	<ol style="list-style-type: none"> <li>1. Capacitor 2C5 shorted.</li> <li>2. Power transformer 3T1 primary power connection incorrect.</li> </ol>	<ol style="list-style-type: none"> <li>1a. Check 2C5. Replace if defective.</li> <li>2a. Check jumpers on terminal board 3T1. Provide proper connections for desired power source.</li> </ol>

WARNING: Disconnect primary power prior to servicing.

Table 5-2. Fault Isolation Guide (Continued)

TROUBLE SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
	3. Power transformer winding shorted. 4. Diode bridges shorted. 5. Shorted dc load.	3a. Sequentially disconnect transformer windings and check resistance. Replace if defective. 4a. Check diodes. Replace if defective. 5a. Sequentially remove dc loads until fuse does not blow. Correct shorted condition.
MUTING RELAYS DO NOT OPERATE	1. Power Supply 2. No dc voltage on channel key switch. 3. No dc voltage on mic selector.	1a. Check power supply. 2a. Check voltage at terminal 2E12. Check wiring to switch. 3a. Check wiring from terminals 3E5 and 4E5 to channel key switch. Check position of channel key switch.
MUTING RELAYS DO NOT OPERATE. DC VOLTAGES OK.	1. Relay or associated components.	1a. Check relay contacts, coil and socket. Check diode and capacitor mounted on relay socket. Replace if defective.
LEFT CHANNEL PROGRAM, MONITOR AND CUE INOPERATIVE.	1. Left channel power supply (Ø) inoperative.	1a. Check power supply. Repair if required.
RIGHT CHANNEL PROGRAM AND MONITOR INOPERATIVE.	1. Right channel power supply (#) inoperative.	1a. Check power supply. Repair if required.

Table 5-2. Fault Isolation Guide (Continued)

TROUBLE SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
MONITOR INOPERATIVE, PROGRAM CHANNELS OPERATING PROPERLY.	<ol style="list-style-type: none"> <li>1. Fuse 2F1 (left) or 2F2 (right) blown.</li> <li>2. Left booster amplifier (2U9) or right booster amplifier (2U10) defective.</li> <li>3. Monitor gain control, AT6.</li> <li>4. Monitor select switch, S6.</li> </ol>	<ol style="list-style-type: none"> <li>1a. Shorted output. Check output connections.</li> <li>2a. Check voltage on pins 4 and 7.</li> <li>2b. Check for ac signal input.</li> <li>2c. Capacitor 2C53 (left) or 2C63 (right) open. Check and replace if required.</li> <li>3a. Setting too low. Increase gain in accordance with operating instructions, section III.</li> <li>3b. Check AT6 for open elements. Replace if defective.</li> <li>4a. Check contacts and wiring. Replace or repair as required.</li> </ol>
LEFT OR RIGHT PROGRAM CHANNEL INOPERATIVE, MONITOR OPERATING PROPERLY.	<ol style="list-style-type: none"> <li>1. Left booster amplifier (2U5) or right booster amplifier (2U6).</li> <li>2. Master gain control 2R27 (left) or 2R28 (right).</li> <li>3. Output transformer 2T5 (left) or 2T6 (right).</li> </ol>	<ol style="list-style-type: none"> <li>1a. Check voltage on pins 4 and 7.</li> <li>1b. Check for ac signal input.</li> <li>2a. Setting too low. Increase gain in accordance with operating instructions, section III.</li> <li>2b. Check for open elements. Replace if defective.</li> <li>3a. Check for open windings. Replace if defective.</li> </ol>

WARNING: Disconnect primary power prior to servicing.

Table 5-2. Fault Isolation Guide (Continued)

TROUBLE SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
<p>CUE INOPERATIVE, PROGRAM AND MONITOR OPERATE PROPERLY</p>	<p>4. Shorted output.                      1. Cue amplifier (2U13).                      2. Cue gain control, AT7.                      3. Mixing channel key switch in wrong position.                      4. Speaker muted.</p>	<p>4a. Check output connections.                      1a. Check voltage on pins 4 and 7.                      2a. Setting too low. Increase gain in accordance with operating instructions, section III.                      2b. Check for open elements. Replace if defective.                      3a. Set desired key switch to desired position.                      4a. Check operation with headset. Check muting operation.</p>
<p>HIGH FREQUENCY OSCILLATION.</p>	<p>1. Input or output lines improperly grounded.                      2. Power improperly grounded.</p>	<p>1a. Check input and output ground connections. Restore connections if required.                      2a. Check system power ground and input/output devices for ground loops.</p>
<p>METER POINTER NOT AT ZERO</p>	<p>1. Zero adjustment.</p>	<p>1a. The pointer adjustment is located on the rear of the meter case between the terminals.</p>